Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Vicinity Map **FIGURE 1**

ATTACHMENT H

Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Verified Wetlands Delineation FIGURE 2

Legend

Jurisdictional Areas
- Section 10 - Wetlands
- Section 10 - Waters
- Section 404 - Freshwater Wetlands
- Section 404 - Freshwater Wetlands 3' average in width
- Section 404 - Waters

Nonjurisdictional Habitats
- Isolated Wetlands

- Property Line
- Wetland Delineation Boundary
- P# Data Points - Parsons
- JS# Data Points - Jones & Sokolow

scale in feet
0 300 600

U.S. Army Corps of Engineers, San Francisco District Regulatory Branch

Extent of Corps of Engineers jurisdiction at the Petaluma wastewater recycling facility, 4440 Lakeville Highway, Petaluma, Sonoma County, California

All jurisdictional areas are accurately mapped, according to the legend in the box above. Section 10 wetlands and other waters are subject to jurisdiction under the Rivers and Harbors Act. Section 404 wetlands and other waters are subject to jurisdiction under the Clean Water Act. Isolated wetlands are not regulated by the Corps, but may be regulated by other agencies, such as the Regional Water Quality Control Board

Project Boundary

File No. 28171N Date 13 February 2004 Page 1 of 1

Lakeville Highway

Oakmead/Northbay Business Park

Parcel A

Parcel B

Parcel C

Shollenberger Park

Isolated Wetland

3' average

15' average width

Ellis Creek

Petaluma River

POND No. 1
POND No. 2
POND No. 3
POND No. 4
POND No. 5
POND No. 6
POND No. 7
POND No. 8
POND No. 9
POND No. 10

10' wide
6' wide
3' wide
Section 404 - Waters

This Region Not Surveyed

4.5' Elevation = Mean High Water

Existing Outfall

Contingency Outfall Project Location

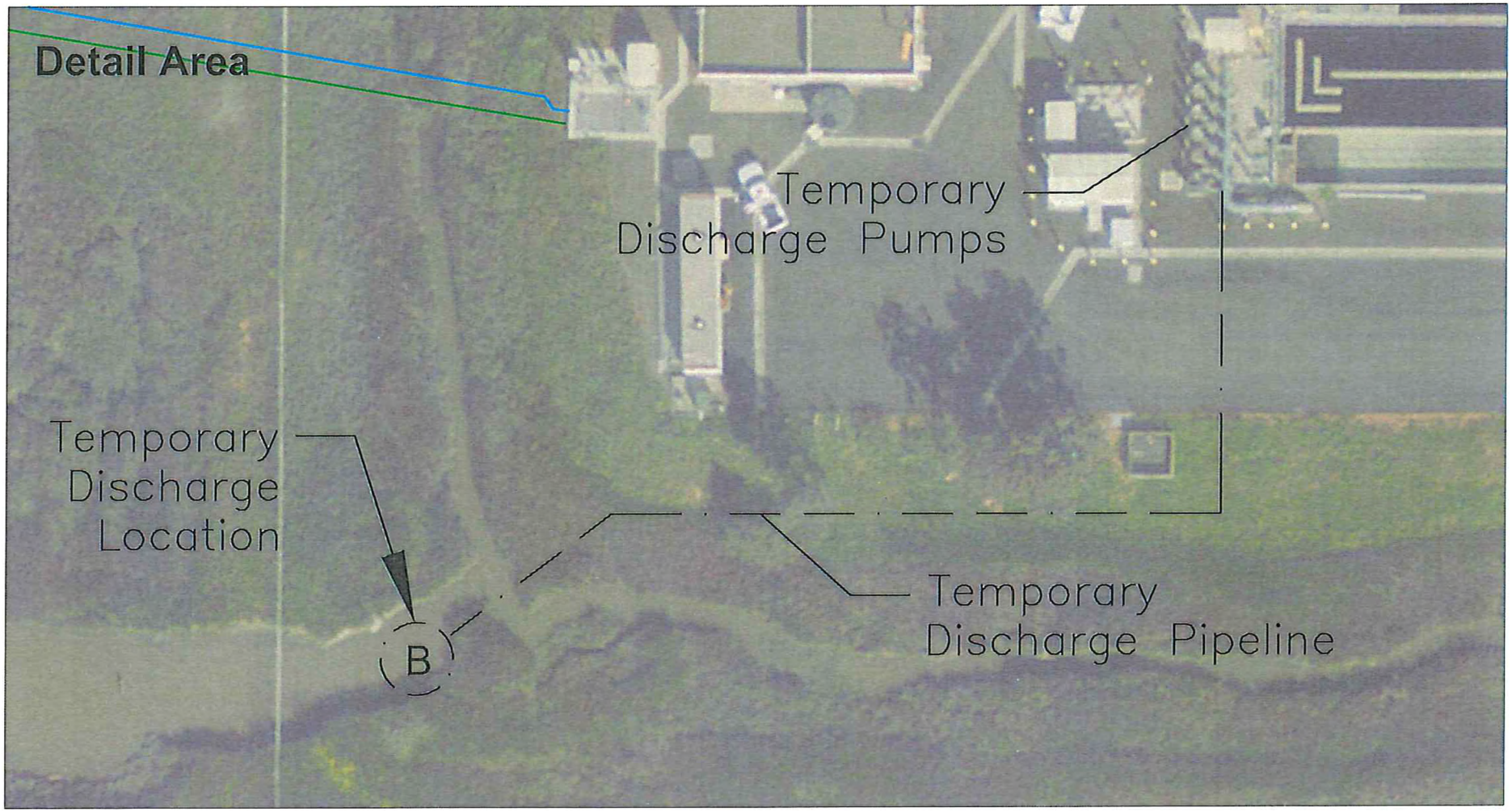
PREPARED FOR
carollo engineers
January 2004

U. S. ARMY CORPS of ENGINEERS PRELIMINARY DELINEATION of WATERS of the UNITED STATES			
City of Petaluma Water Recycling Facility	Prepared by: Jane Valerius Environmental Consulting May 2003	PARSONS	Figure 1

Last Saved By: Bill Alexander (SAC) 1-27-04 11:33am
File: 72040\figs\set\ESW\Wetlan1.dwg Date: 04/30/03
H:\Client\Petaluma_SAC\50695110\Dwg\Sub\Wetland 1-29-04 10:01am balexander XREFS: ScanWetlands; tempscan; wetlands0000;

2004 FEB -2 PM 2:33

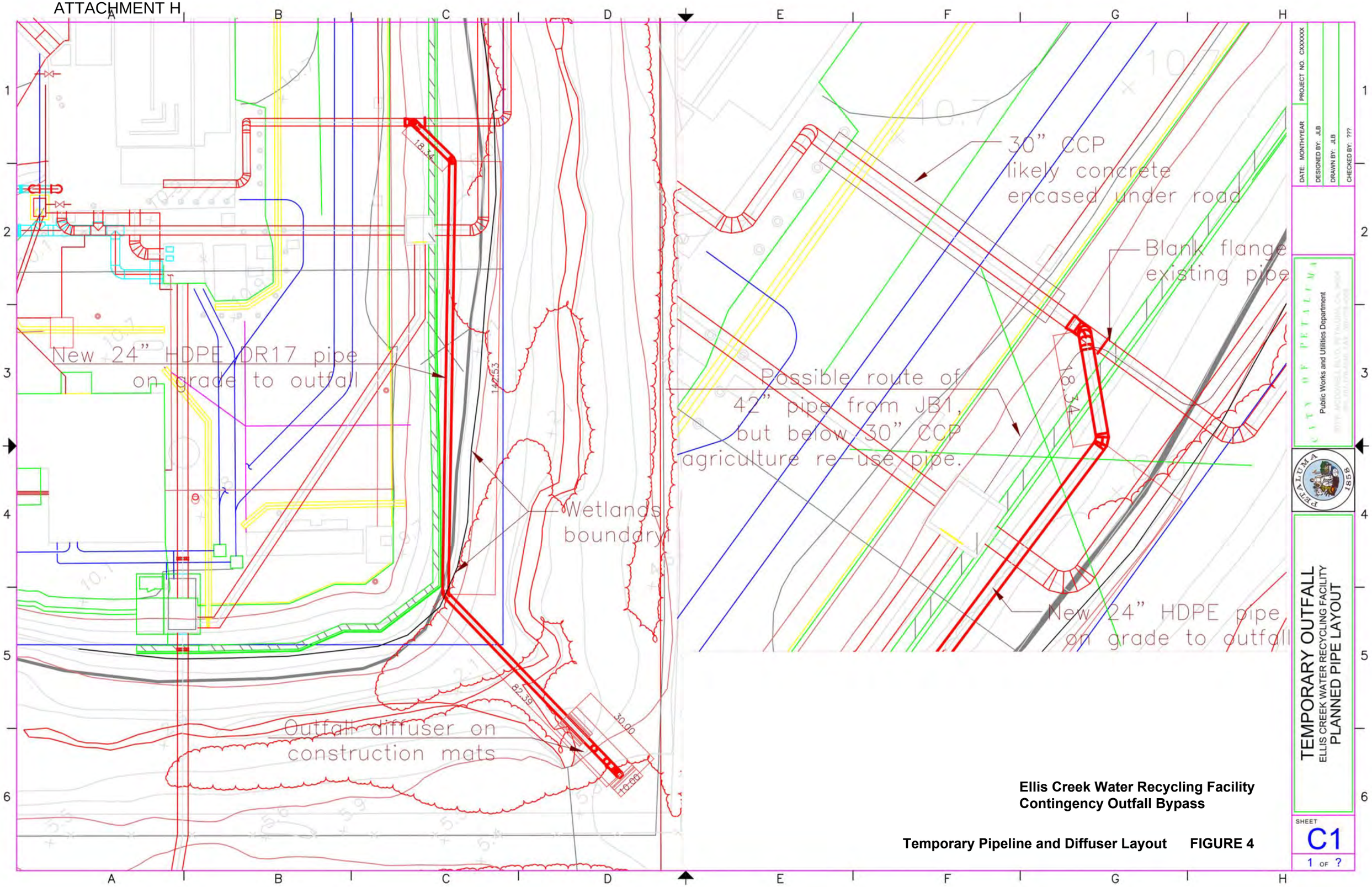
ATTACHMENT H



Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Temporary Pipeline and Discharge Location FIGURE 3

ATTACHMENT H



Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

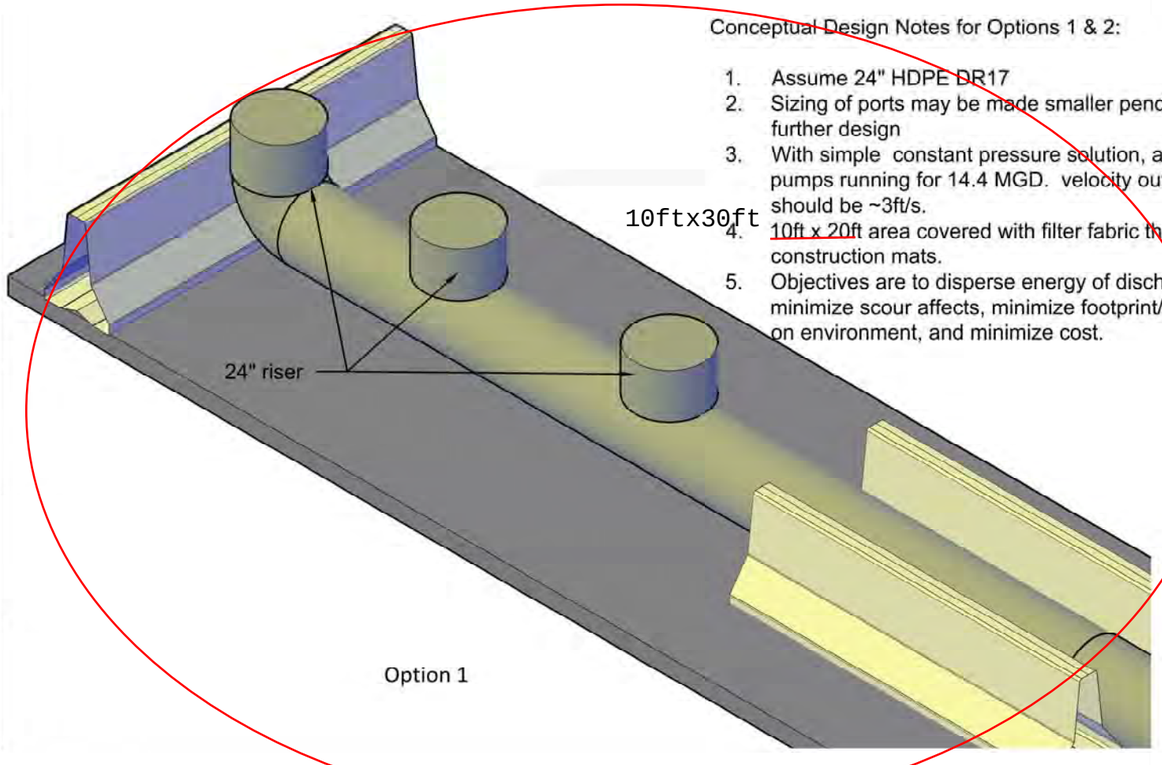
Temporary Pipeline and Diffuser Layout FIGURE 4

ATTACHMENT H

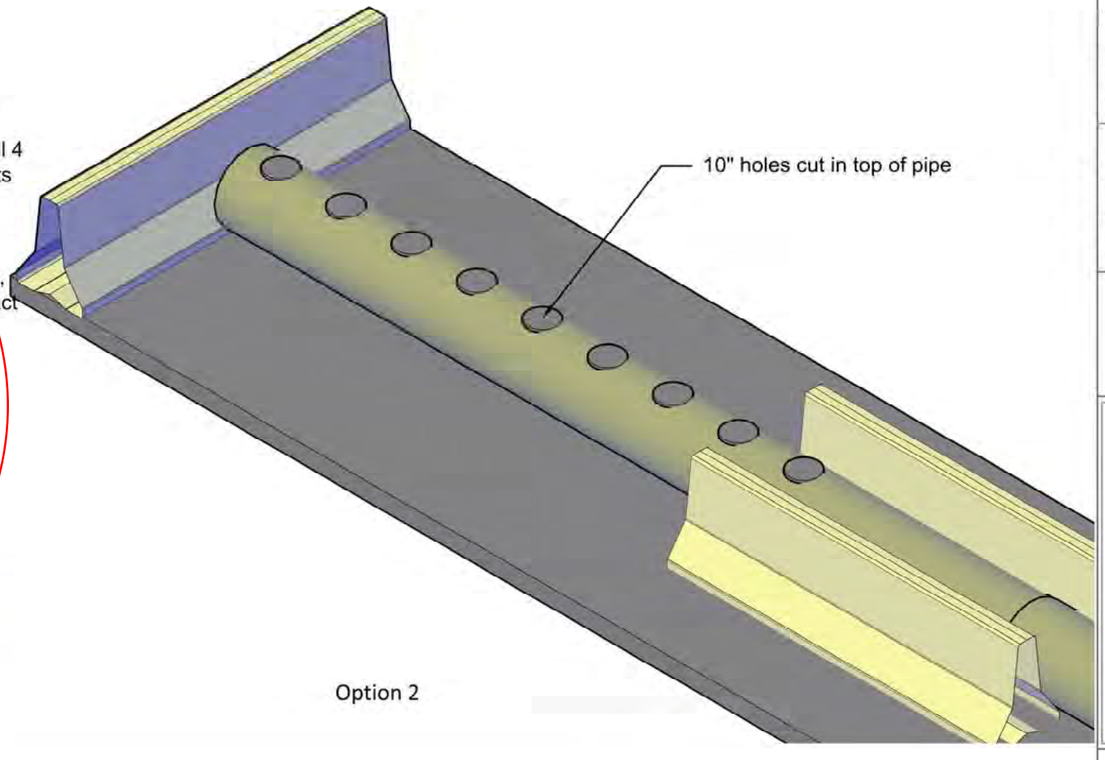
Conceptual Design Notes for Options 1 & 2:

1. Assume 24" HDPE DR17
2. Sizing of ports may be made smaller pending further design
3. With simple constant pressure solution, and all 4 pumps running for 14.4 MGD. velocity out ports should be ~3ft/s.
4. 10ft x 20ft area covered with filter fabric then construction mats.
5. Objectives are to disperse energy of discharge, minimize scour affects, minimize footprint/impact on environment, and minimize cost.

10ftx30ft



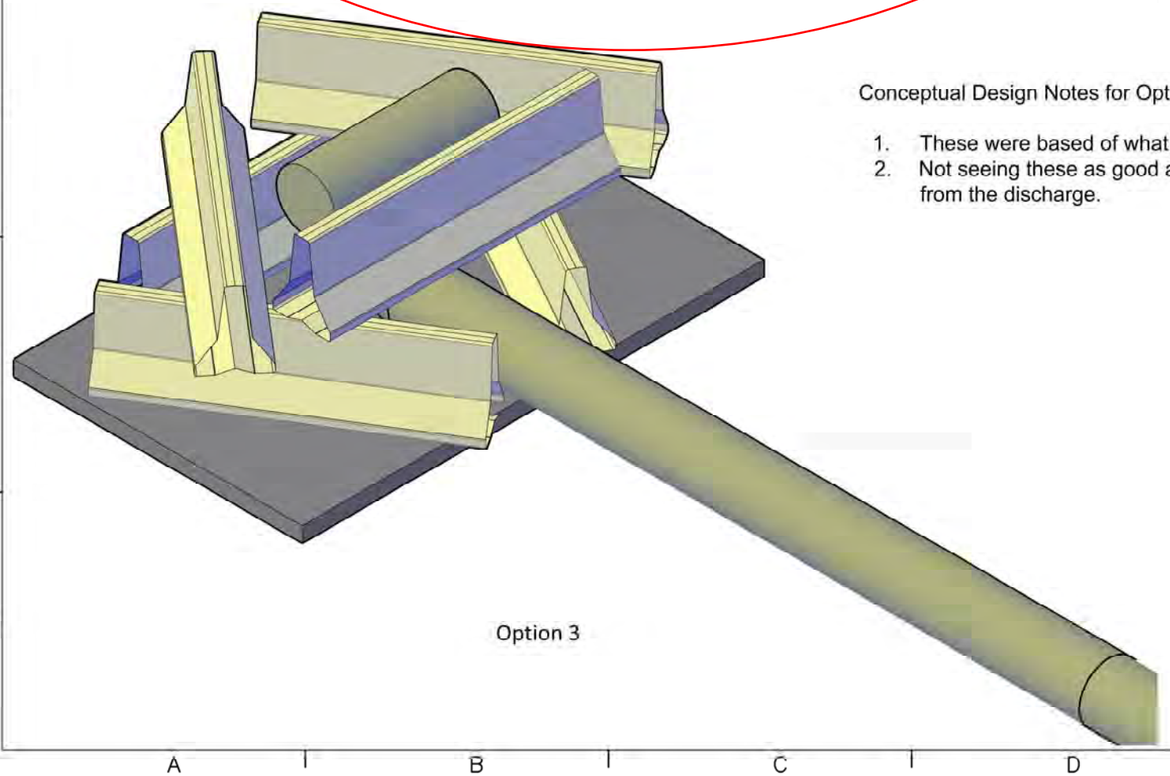
Option 1



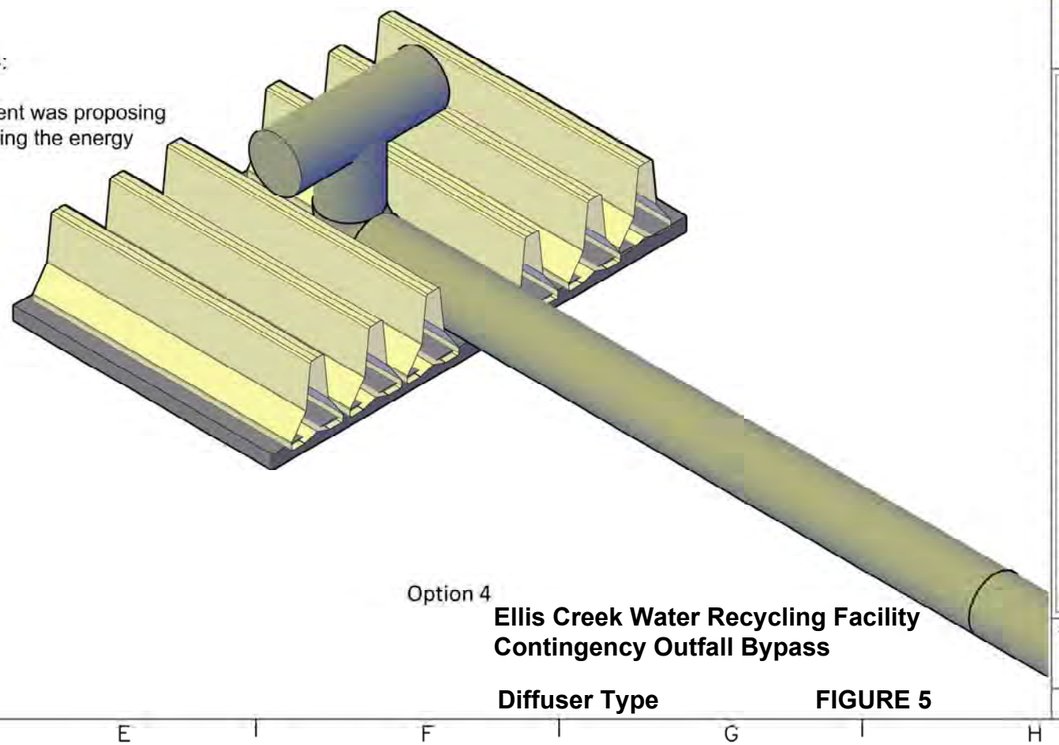
Option 2

Conceptual Design Notes for Options 3 & 4:

1. These were based of what Rain 4 Rent was proposing
2. Not seeing these as good as dispersing the energy from the discharge.



Option 3



Option 4

Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Diffuser Type **FIGURE 5**

PROJECT NO. CXXXXXX
DATE: MONTH/YEAR
DESIGNED BY: JLB
DRAWN BY: JLB
CHECKED BY: ???

CITY OF PETALUMA
Public Works and Utilities Department

WR&C

TEMPORARY OUTFALL DIFFUSER
Ellis Creek Water Recycling Facility
Conceptual designs of diffusers

SHEET C2
1 OF ?

2016 VIDEO AND VISUAL INSPECTION

- Fiberglass pipe (Techite?)
- Transverse and longitudinal cracks on bottom at ~110-120ft

Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Photographs of Existing Outfall Pipeline Damage **FIGURE 6A**

ATTACHMENT H

2016 VIDEO AND VISUAL INSPECTION

220' pipe is collapsing. Hinge cracks visible at 12, 3 and 9 o'clock

From 210'-225' compression damage at top of pipe. Pipe is collapsing.

- Pipe is collapsing at 210'-225' out.
- At 220' : Height-32"; width - 51"
- Inspection stopped at 230ft due to water level covering camera
- Working to schedule inspection of remainder of pipe.

Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Photographs of Existing Outfall Pipeline Damage FIGURE 6B

ATTACHMENT H

Pat Collins

From: Pierce, Matthew <MPIERCE@ci.petaluma.ca.us>
Sent: Wednesday, November 02, 2016 5:02 PM
To: Beatty. Jason
Cc: Wilson, Robert; Walker, Leah
Subject: FW: Ellis Creek WRF CA0037810

Hi Jason,

Per the email below, the RWQCB will allow the City to use the temporary discharge location if needed.

-Matt

From: Christian, Vince@Waterboards [mailto:Vince.Christian@waterboards.ca.gov]
Sent: Wednesday, November 02, 2016 3:03 PM
To: Pierce, Matthew
Subject: RE: Ellis Creek WRF CA0037810

Hi Matt,

I consider this a bypass (see Attachment D, section I.G), which is allowed by your permit and doesn't require approval. Thank you for the notification.

Vince
510-622-2336

From: Pierce, Matthew [mailto:MPIERCE@ci.petaluma.ca.us]
Sent: Tuesday, November 01, 2016 4:06 PM
To: Christian, Vince@Waterboards
Subject: RE: Ellis Creek WRF CA0037810

Good Afternoon Vince,

Just checking on the status of our request for approval of a temporary discharge location should the existing discharge pipeline fail. We are waiting to hear back from the Water Board before finalizing contingency plans.

Regards,
Matt

Matthew Pierce
Operations Supervisor
City of Petaluma, Ellis Creek Water Recycling Facility
3890 Cypress Drive, Petaluma, CA 94954
mpierce@ci.petaluma.ca.us
Phone (707) 776-3726

From: Christian, Vince@Waterboards [mailto:Vince.Christian@waterboards.ca.gov]
Sent: Wednesday, October 05, 2016 5:29 PM

ATTACHMENT H

To: Pierce, Matthew
Subject: RE: Ellis Creek WRF CA0037810

Thanks, Matt. In the future, please don't send the paper. Our office is paperless. We have no way to store or manage paper files.

Vince
510-622-2336

From: Pierce, Matthew [mailto:MPIERCE@ci.petaluma.ca.us]
Sent: Wednesday, September 28, 2016 10:39 AM
To: Christian, Vince@Waterboards
Cc: Walker, Leah; Wilson, Robert
Subject: Ellis Creek WRF CA0037810

Dear Mr. Christian

As we discussed during our phone conversation on September 14, 2016, the City has discovered the condition of the outfall pipeline has significantly deteriorated since 2015, and we are concerned the pipeline could fail during the discharge season leaving the City without the ability to discharge effluent to the Petaluma River during the winter. The City is requesting pre-approval for an anticipated bypass of the effluent outfall location in the event the existing outfall pipeline can no longer remain in service.

The City is developing contingency plans in the event the pipeline fails, but any repairs or replacement is anticipated to take a considerable amount of time; therefore in the attached letter the City is requesting approval of an alternate discharge location from October 2016 through April 2018.

If you have any questions or would like to discuss please feel free to contact me at (707) 776-3726 or by email. A hard copy of the letter will be mailed.

Sincerely,
Matt

Matthew Pierce
Operations Supervisor
City of Petaluma, Ellis Creek Water Recycling Facility
3890 Cypress Drive, Petaluma, CA 94954
mpierce@ci.petaluma.ca.us
Phone (707) 776-3726

ATTACHMENT H

CITY OF PETALUMA

POST OFFICE BOX 61
PETALUMA, CA 94953-0061

September 28, 2016

Regional Water Quality Control Board
Attention: Vince Christian, Engineer
1515 Clay Street, Suite 1400
Oakland, CA 94612

Re: Outfall Pipeline Anticipated Bypass

Order #R2-2016-0014
NPDES Permit #CA0037810

Mr. Christian:

As we discussed during our phone meeting on September 14, 2016, the City of Petaluma has discovered significant deterioration in the structural integrity of our outfall pipeline as compared to the inspection conducted in 2015. During the 2016 inspection, City staff discovered longitudinal cracks along the top and bottom of the pipe, joints of the pipe were separating, and sections of the pipe were significantly flattened into an oval shape. Based on the inspection it appears that the pipe is constructed out of a composite material called Techite, a common pipe material used in the 1970s. Techite is brittle and has been the cause of many catastrophic pipeline failures nationwide. It is the concern of the City that the pipeline could fail during our discharge season leaving the City without the ability to discharge during wet weather.

Based on the above information the City of Petaluma is preparing a contingency plan, and is requesting pre-approval for an anticipated bypass of the effluent outfall location in the event the existing outfall pipeline can no longer remain in service. The proposed alternative discharge location is in a tidal slough near the facility's old chlorine contact basin (see attached map). In addition, the City is proposing to temporarily relocate two of the Receiving Water monitoring locations when the alternative discharge location is used (see table below).

Monitoring Location Type	Monitoring Location Name	Monitoring Location Description	Monitoring Location GPS Coordinates
Receiving Water	RSW-001	In the Petaluma River at the confluence of tidal slough	38°12'29.8439" N 122°34'51.5223" W
Receiving Water	RSW-002A	In the Petaluma River 500 feet downstream of the confluence of tidal slough	38°12'27.2159" N 122°34'45.8663" W

Public Works & Utilities

City Engineer
11 English Street
Petaluma, CA 94952
Phone (707) 778-4303

Environmental Services
Ellis Creek Water Recycling Facility
3890 Cypress Drive
Petaluma, CA 94954
Phone (707) 776-3777
Fax: (707) 776-3746

Parks & Facility Maintenance
840 Hopper St. Ext.
Petaluma, CA 94952
Phone (707) 778-4303
Fax (707) 778-4437

Transportation Services
555 N. McDowell Blvd.
Petaluma, CA 94954
Phone (707) 778-4421
Fax (707) 776-3799

Utilities & Field Operations
202 N. McDowell Blvd.
Petaluma, CA 94954
Phone (707) 778-4546
Fax (707) 206-6034

E-Mail: publicworks@ci.petaluma.ca.us

ATTACHMENT H

If granted pre-approval for the alternative discharge location, the City will notify the Water Board should the need arise to implement the contingency plan. During the anticipated bypass the effluent quality will remain unchanged, and all treatment processes will remain in service. The wetlands mode of discharge which utilizes the polishing wetlands to naturally dechlorinate the effluent will remain the primary mode of operation, and the combined mode of discharge which utilizes parallel disinfection processes will be available when the facility needs to increase effluent flows to greater than allowed by the wetlands mode. These operations modes are shown in the attached flow schematics.

The contingency plan includes reconfiguring four existing pumps at the chlorine contact basin to pump dechlorinated effluent to the temporary discharge location. A flow diffuser and diffusion mats will be used to minimize erosion within the slough. Implementation of the contingency plan involves the relocation of the final effluent composite sampler, and depending on mode of discharge may involve reconfiguring chemical injection locations and sample pump locations for the chlorine and bisulfite analyzers. The facility is expected to remain compliant with all effluent limits and sampling requirements while discharging at the temporary discharge location.

The pipeline replacement project is anticipated to take a considerable amount of time and the City is requesting approval of an alternate discharge location from October, 2016 through April, 2018.

If there are any questions concerning this report, please feel free to contact me at (707) 776-3777.

Sincerely,

Matthew Pierce
Water Recycling Plant Operations Supervisor

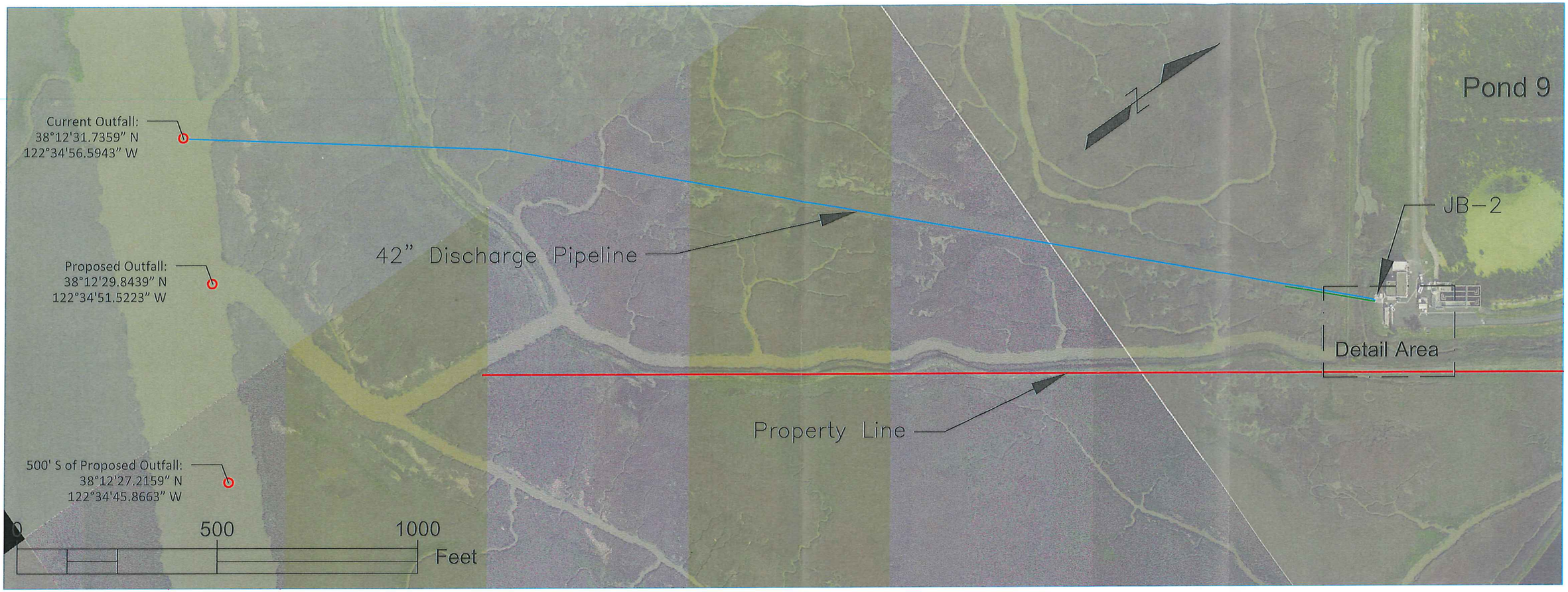
Attachments

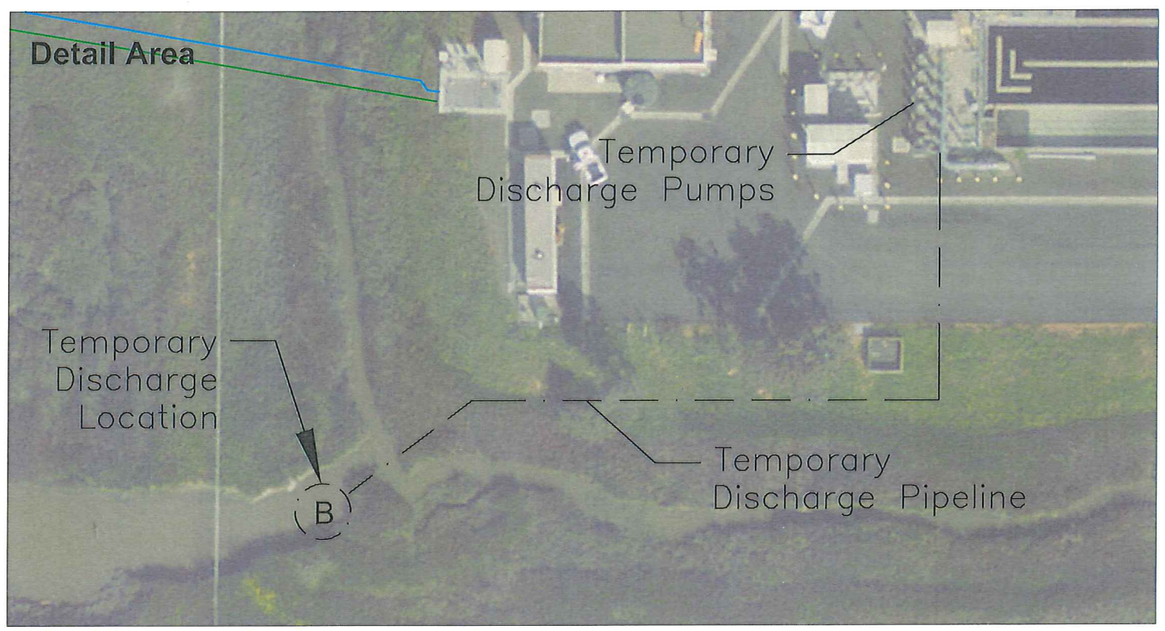
1. Map of Proposed Alternate Discharge Location
2. Process Flow Schematic: Wetlands Mode of Operation Using Temporary Discharge Location
3. Process Flow Schematic: Combined Mode of Operation Using Temporary Discharge Location
4. Process Flow Schematic: Standard Flow Schematic

C: Dan St. John, F.ASCE, Director of Public Works & Utilities
Leah Walker P.E., Environmental Services Manager

ATTACHMENT H

Attachment 1





Ellis Creek Water Recycling Facility- Discharge Pipeline Failure/Contingency Plan

Existing Discharge Conditions::

Existing Pipeline Length: 3130'

Existing Pipeline Diameter: 42"

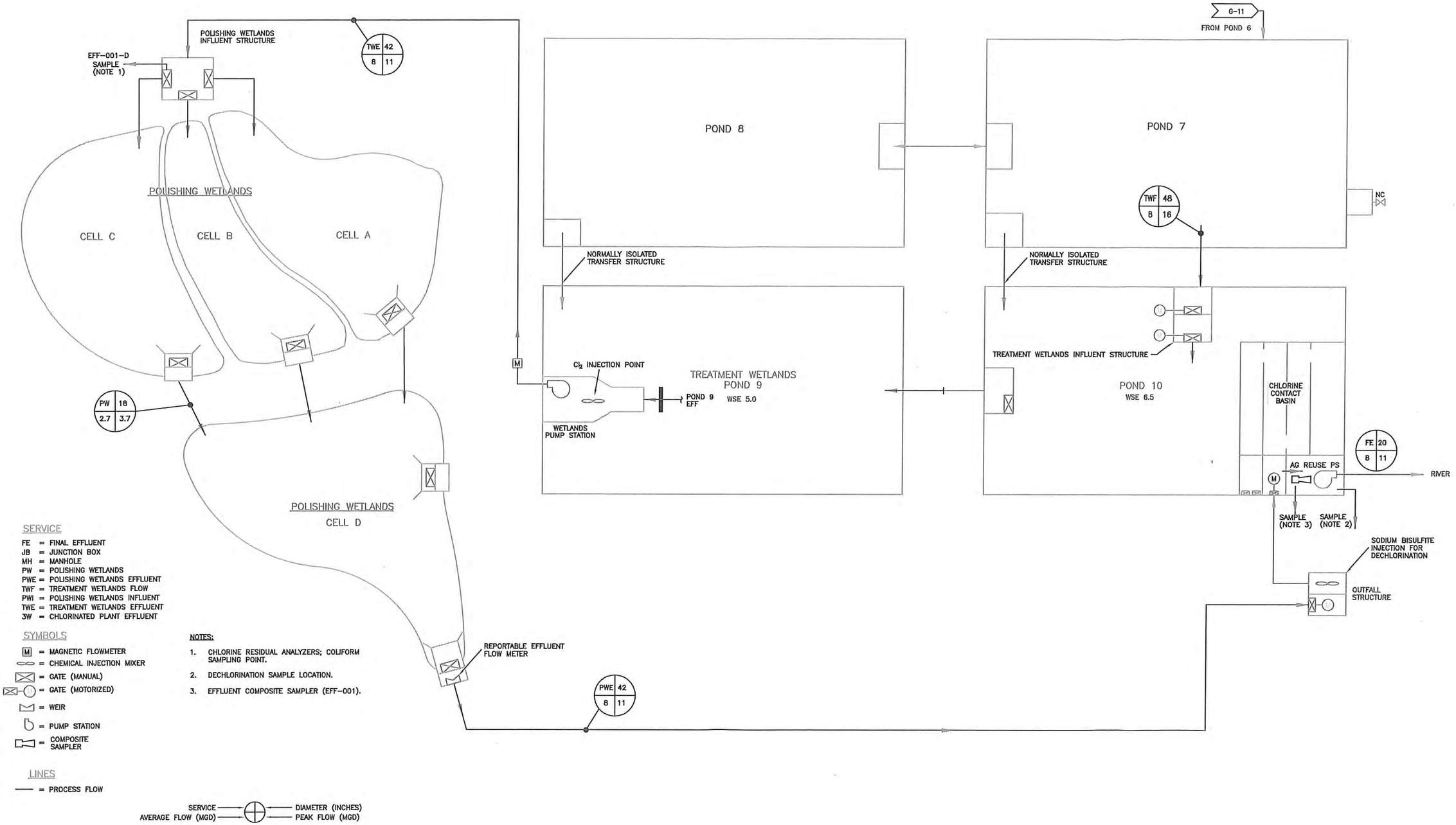
Required Maximum Flow: 16 MGD

Pipeline Material: Fiberglass Reinforced Plastic Mortar Pipe (Techite)

Scheduled Date to Resume Discharge: October 10th, 2016

Temporary Discharge Pumping:

70 HP Vertical Turbine Pumps (X4) - Each Pump Capable of ~2,500 gpm



CITY OF PETALUMA

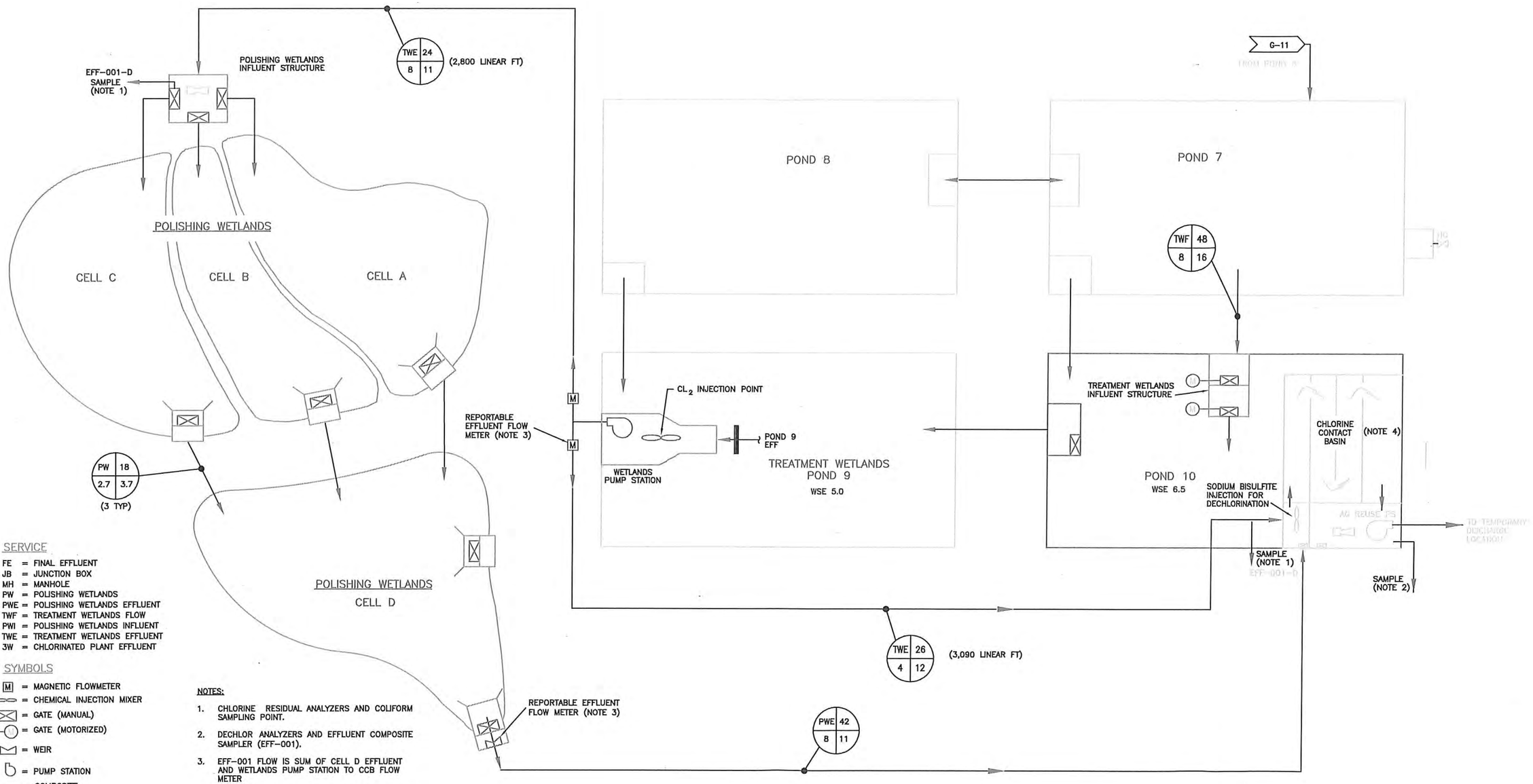
ELLIS CREEK WATER RECYCLING FACILITY

3890 CYPRESS DRIVE
PETALUMA, CA 94954

PROCESS FLOW SCHEMATIC: TEMPORARY DISCHARGE LOCATION

(WETLANDS MODE OF OPERATION)

G-12W



CITY OF PETALUMA ELLIS CREEK WATER RECYCLING FACILITY 3890 CYPRESS DRIVE PETALUMA, CA 94954	PROCESS FLOW SCHEMATIC: TEMPORARY DISCHARGE LOCATION (COMBINED MODE OF OPERATION)	G-12C

TO TERTIARY SYSTEM
G-11

SAMPLE (NOTE 1)

POLISHING WETLANDS INFLUENT STRUCTURE AND PUMP STATION

TWE 24 / 4 8

POLISHING WETLANDS

CELL C

CELL B

CELL A

PW 18 / 1.3 2.7
(3 TYP)

POLISHING WETLANDS
CELL D

PWE 18 / 4 8

POND 8

POND 7

G-11
FROM POND 6

TO AG REUSE

TWF 48 / 8 16

NC

TWE 26 / 4 12

PWE 42 / 4 8

M

CL_2 INJECTION POINT

POND 9 EFF

WETLANDS PUMP STATION

TREATMENT WETLANDS POND 9
WSE 5.0

TREATMENT WETLANDS INFLUENT STRUCTURE

TREATMENT WETLANDS POND 10
WSE 6.5

CHLORINE CONTACT BASIN

TO AREA 3W

AG REUSE PS

SAMPLE (NOTE 1)

JB 1

OUTFALL STRUCTURE

FE 42 / 8 16

SAMPLE (NOTE 2)

MH

SAMPLE (NOTE 3)

JB 2

TO PETALUMA RIVER

ABBREVIATIONS

FE	FINAL EFFLUENT
JB	JUNCTION BOX
MH	MANHOLE
PW	POLISHING WETLANDS
PWE	POLISHING WETLANDS EFFLUENT
TWF	TREATMENT WETLANDS FLOW
PWI	POLISHING WETLANDS INFLUENT
TWE	TREATMENT WETLANDS EFFLUENT
3W	CHLORINATED PLANT EFFLUENT

SYMBOLS

- MAGNETIC FLOWMETER
- CHEMICAL INJECTION MIXER
- GATE (MANUAL)
- GATE (MOTORIZED)
- WEIR
- PUMP STATION
- COMPOSITE SAMPLER

LINES

PROCESS FLOW

LEGEND

SERVICE — DIAMETER

AVERAGE FLOW (MGD) — PEAK FLOW (MGD)

NOTES:

1. POLISHING WETLANDS INFLUENT COMPOSITE SAMPLER, CL_2 RESIDUAL ANALYZERS AND COLIFORM SAMPLING POINT.
2. DECHLOR ANALYZERS.
3. EFFLUENT COMPOSITE SAMPLER AND DECHLOR ANALYZERS.

CITY OF PETALUMA
WATER RECYCLING FACILITY AND WILDLIFE SANCTUARY
WATER RESOURCES AND CONSERVATION
UTILITY ENGINEERING DIVISION
3890 CYPRESS DRIVE TEL. 707-776-3777
PETALUMA, CALIFORNIA 94954 FAX. 707-776-3746

WR&C

PLANT FLOW SCHEMATIC CHLORINE CONTACT BASIN AND WETLANDS

G-12

S:\Drawings\Ellis creek\Drawings\As Built\G-12 WQB 5-25-10 03:46pm lvelasqu

ATTACHMENT 2: BIOLOGICAL AVOIDANCE MEASURES

The area where the temporary bypass pipeline and diffuser would be located is within and/or near habitat for a number of special-status wildlife species, including salt marsh harvest mouse (*Reithrodontomys raviventris*), Ridgway's rail (*Rallus obsoletus*), and black rail (*Laterallus jamaicensis*) according to the Ellis Creek Water Recycling Facility EIR (Petaluma 2002). The City intends to conduct the installation of the temporary emergency pipeline and diffuser in a manner which would avoid adverse impacts to any special-status species and their habitat, as described below. Please refer to the permit application and figures for a complete project description.

1. During Installation:

At the request of the City, Lorie Hamerli, Environmental Scientist with the California Department of Fish and Wildlife, conducted a site visit on August 25, 2016, of the existing discharge pipeline. At that time, the City was anticipating repairing the existing outfall pipeline by sliplining or replacing a short section of the existing pipeline, rather than installing a temporary outfall bypass. The area of the August site visit is very similar to and approximately 200 feet away from the area of the proposed emergency outfall bypass. The relocated temporary outfall bypass would have substantially fewer impacts than the project that was presented to Lorie at her site visit, as the current emergency project requires no ground disturbance within habitat areas.

Lorie recommended that the following practices during installation of the pipeline be undertaken to avoid impacts to special-status species in the area:

- Conduct a survey for bird nests 10 feet on both sides of the project area as Ridgway's rail will sometime utilize nests during the non-breeding season. If occupied bird nests are found, installation activities will be halted.
- Do not conduct work within +/- two hours of a San Francisco Bay extreme high tide.
- Scare wildlife away from the project site daily during installation starting in the center of the site and radiating out.
- Place the filter fabric under the diffuser on top of the vegetation; do not remove vegetation.
- Notify Lorie Hammerli at CDFW instantly in regards to an incident with a protected species. She requested that we call her at (707) 338-1656.

2. During temporary operation:

The temporary pipeline and diffuser would have no impacts to special-status species during operation because discharge through the emergency pipeline and diffuser would not cause ongoing noise or dust or additional human activity in the area. The above-ground pipeline would be supported on piers which would allow mice and other small wildlife to cross underneath the pipeline. Operations may be needed for up to two discharge seasons.

3. At completion of the emergency project when the existing outfall pipeline has been repaired

When the existing outfall pipeline has been repaired, the contingency outfall bypass would be removed. The temporary above-ground pipeline, diffuser, helical piers, and filter fabric would be removed at the completion of the emergency project. As no vegetation underneath the pipeline and filter fabric would be removed or dug up during the initial installation, the vegetation/habitat in the area is expected to recover quickly.

ATTACHMENT H

Print Form

Notice of Exemption

Appendix E

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

County Clerk
County of: Sonoma

From: (Public Agency): City of Petaluma, Ellis Creek WRF
3890 Cypress Drive, Petaluma, CA 94954

(Address)

Project Title: Ellis Creek Water Recycling Facility - Contingency Outfall Bypass

Project Applicant: City of Petaluma

Project Location - Specific:

Ellis Creek Water Recycling Facility - 3890 Cypress Drive, Petaluma, CA 94954

Project Location - City: Petaluma Project Location - County: Sonoma

Description of Nature, Purpose and Beneficiaries of Project:
During 2016 inspections, the City of Petaluma discovered significant deterioration in the structural integrity of their outfall pipeline and will install a temporary contingency outfall bypass with a short above-ground pipeline and diffuser.

Name of Public Agency Approving Project: City of Petaluma

Name of Person or Agency Carrying Out Project: Jason Beatty, Senior Civil Engineer, 707-778-4514

Exempt Status: **(check one):**

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☒ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☐ Categorical Exemption. State type and section number:
- ☐ Statutory Exemptions. State code number:

Reasons why project is exempt:
Project qualifies under (c): actions to prevent an emergency. The contingency outfall bypass must be in place to prevent an emergency in case the existing outfall pipeline fails. If the existing outfall fails without the bypass in place, it would violate the City's NPDES discharge permit as well as cause water quality degradation, erosion, and wetlands and habitat damage, as well as interfere with services essential to the public health.

Lead Agency Contact Person: Jason Beatty, Sr Civil Engineer Area Code/Telephone/Extension: 707-778-4514

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☐ Yes ☐ No

Signature: Date: 9/SW2017 Title: SR. CIVIL ENGINEER

☒ Signed by Lead Agency ☐ Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR:

This notice was posted on 1-9-17
and will remain posted for a period of thirty days
through 2-10-17

WILLIAM F. ROUSSEAU, Co. Clerk

Darrell Light

BY: _____
DEPUTY CLERK

Revised 2011

ATTACHMENT H

CITY OF PETALUMA

POST OFFICE BOX 61
PETALUMA, CA 94953-0061

January 11, 2017 Reference No. 8411271.20

San Francisco Bay Conservation and Development Commission
Attn: Jaime Michaels, Chief of Permits
455 Golden Gate Avenue, Suite 10600
San Francisco, CA 94102

Dear Ms. Michaels:

Re: BCDC Emergency Permit for the City of Petaluma's Ellis Creek Water Recycling Facility Contingency Outfall Bypass

The City of Petaluma respectfully submits the following BCDC Emergency Permit pursuant to Public Resources Code Section 14 C.C.R. 10120 for the Ellis Creek Water Recycling Facility Contingency Outfall Bypass project.

1. Name, Address and Phone Number of Property Owner

City of Petaluma Ellis Creek Water Recycling Facility
Attention: Matthew Pierce
3890 Cypress Drive
Petaluma, CA 94954
(707) 776-3726

2. Name, Address and Phone Number of Owners' Representative

GHD
Attention: Pat Collins, Senior Project Manager
2235 Mercury Way, Suite 150
Santa Rosa, CA 95407
(707) 523-1010; (707) 236-1540 direct

3. Location/Address of Emergency Work

City of Petaluma Ellis Creek Water Recycling Facility
3890 Cypress Drive
Petaluma, CA 94954
(parcel with the oxidation ponds is 4400 Lakeville Highway, and the ECWRF site is located on both 3890 Cypress Drive and 4400 Lakeville Highway)

Public Works & Utilities

City Engineer
11 English Street
Petaluma, CA 94952
Phone (707) 778-4303

Environmental Services
Ellis Creek Water Recycling Facility
3890 Cypress Drive
Petaluma, CA 94954
Phone (707) 776-3777
Fax: (707) 656-4067

Parks & Facility Maintenance
840 Hopper St. Ext.
Petaluma, CA 94952
Phone (707) 778-4303
Fax (707) 206-6065

Transit Division
555 N. McDowell Blvd.
Petaluma, CA 94954
Phone (707) 778-4421

Utilities & Field Operations
202 N. McDowell Blvd.
Petaluma, CA 94954
Phone (707) 778-4546
Fax (707) 206-6034

E-Mail: publicworks@ci.petaluma.ca.us

From Highway 116 (Lakeville Highway) in south Petaluma, turn right on Pine View Way and left right on Cypress Drive until you get to the Ellis Creek Water Recycling Facility gate. Go through the gate and follow the signs to the Administration Building. The project location is on the far side of the Plant and requires an escort.

4. Assessor's Parcel Number

APN = 068010024

5. Nature and Cause of Emergency

On September 14, 2016, the City of Petaluma discovered significant deterioration in the structural integrity of their outfall pipeline as compared to the inspection conducted in 2015. During the 2016 inspection, City staff discovered longitudinal cracks along the top and bottom of the pipe, joints of the pipe were separating, and sections of the pipe were significantly flattened into an oval shape. Based on the inspection it appears that the pipe is constructed out of a composite material called Techite, a pipe material used in the 70's. Techite is brittle and has been the cause of many catastrophic pipeline failures nationwide. It is the concern of the City that the pipeline could fail during the discharge season leaving the City without the ability to discharge during wet weather.

6. Proposed Emergency Work and Method

The project includes a temporary outfall bypass in the event the existing outfall pipeline can no longer remain in service. The proposed alternative discharge location is in a tidal slough near the facility's old chlorine contact basin (see Attachment 1). The alternative discharge location is denoted by the letter "B."

The project will include reconfiguring four existing pumps at the chlorine contact basin to pump dechlorinated effluent to the temporary discharge location. A new section of 24" diameter pipe will be connected to existing piping at a location outside of jurisdictional wetlands. A flow diffuser and diffusion mats will be used to minimize erosion within the slough. Approximately 80 feet of this new 245-foot length of pipe and the diffuser would be installed on grade or above-ground on piers above wetlands. The helical piles used to support/stabilize the pipe have a shaft of approximately 2.5 inches.

This contingency plan would remain in place until the existing outfall piping is repaired. Currently, the expectation is to have this contingency piping in place for two discharge seasons, as the outfall repair project is funded, permitted and executed.

7. Timing of Emergency Work

The work is to commence as soon as possible after permitting and contracting actions are finalized.

8. Contractor

Overaa Construction, who is currently under contract and on site completing a construction project at the Ellis Creek Water Recycling Facility.

9. Name and Phone Number of Local Government Contact

See Section 1.

10. Any Known Existing BCDC Permits or Authorizations for the Site

Petaluma obtained BCDC Regionwide Permit NO RWP-2 and Notice of Intent to Proceed NO. NOI-06-6 for repair of the existing diffuser in the Petaluma River.

Thank you for taking the time to review this emergency permit. If you have any questions please contact me at (707) 778-4514 or by email at JBeatty@ci.petaluma.ca.us.

Sincerely,

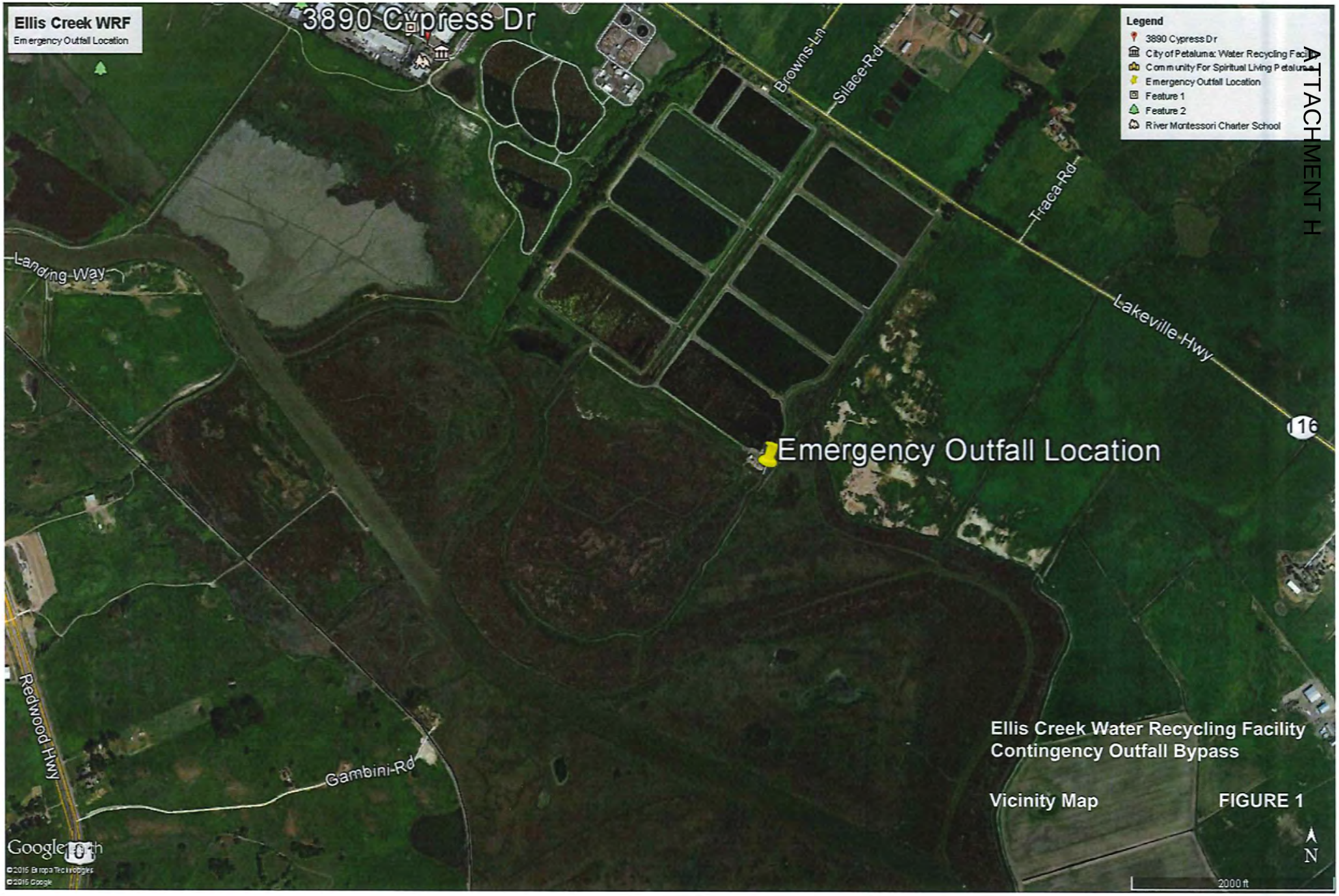
City of Petaluma

Jason Beatty, P.E.
Sr Civil Engineer

Attachments:

Figure 1. Vicinity Map
Figure 2. Verified Wetlands Delineation
Figure 3. Temporary Pipeline and Discharge Location
Figure 4. Temporary Pipeline and Diffuser Layout
Figure 5. Diffuser Type
Figure 6A and B. Photographs of Existing Outfall Pipeline Damage

Attachment 1: Consent for Outfall Bypass from Regional Board
Attachment 2: Biological Avoidance Measures
Attachment 3: Notice of Exemption

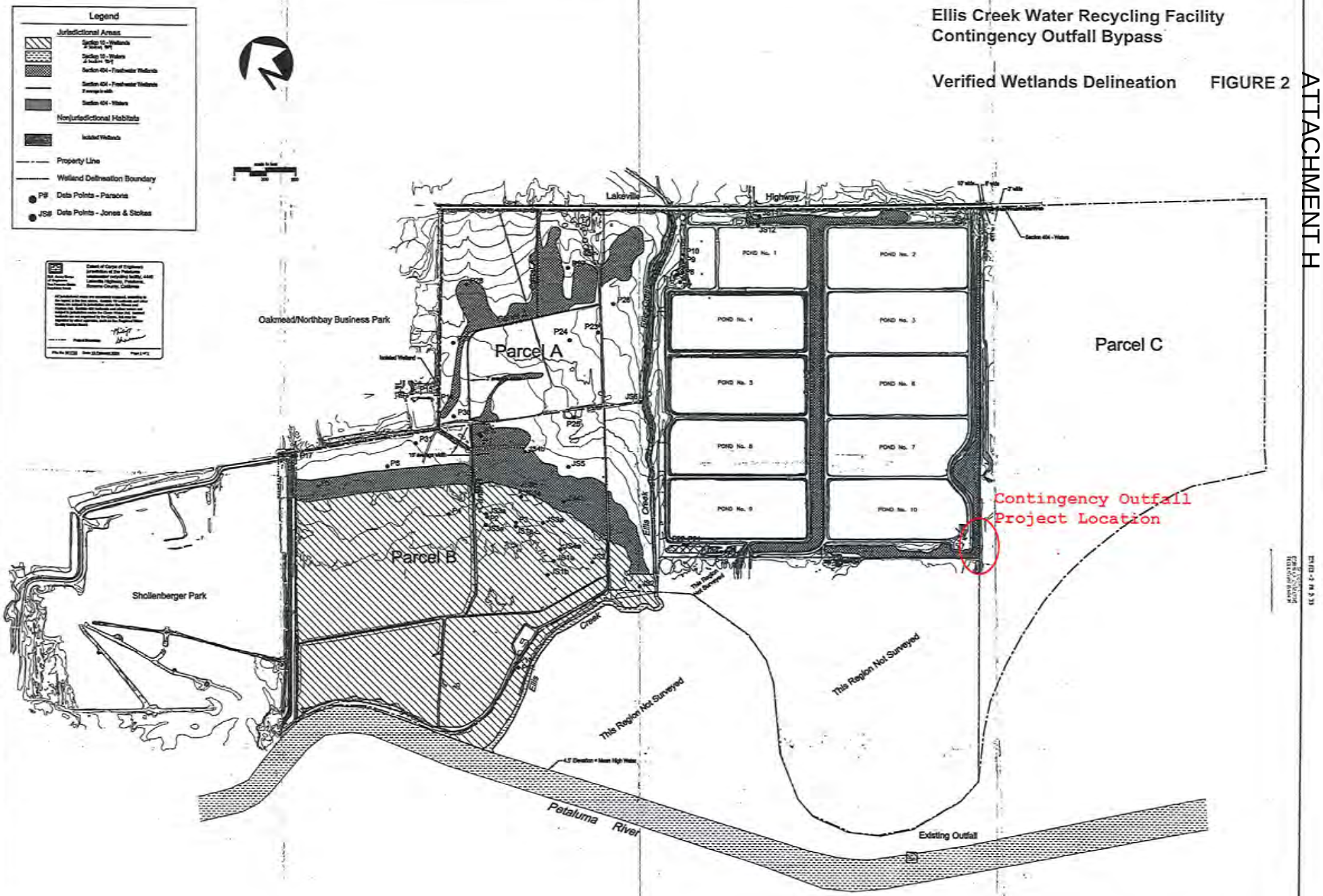


ATTACHMENT H

ATTACHMENT H

Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

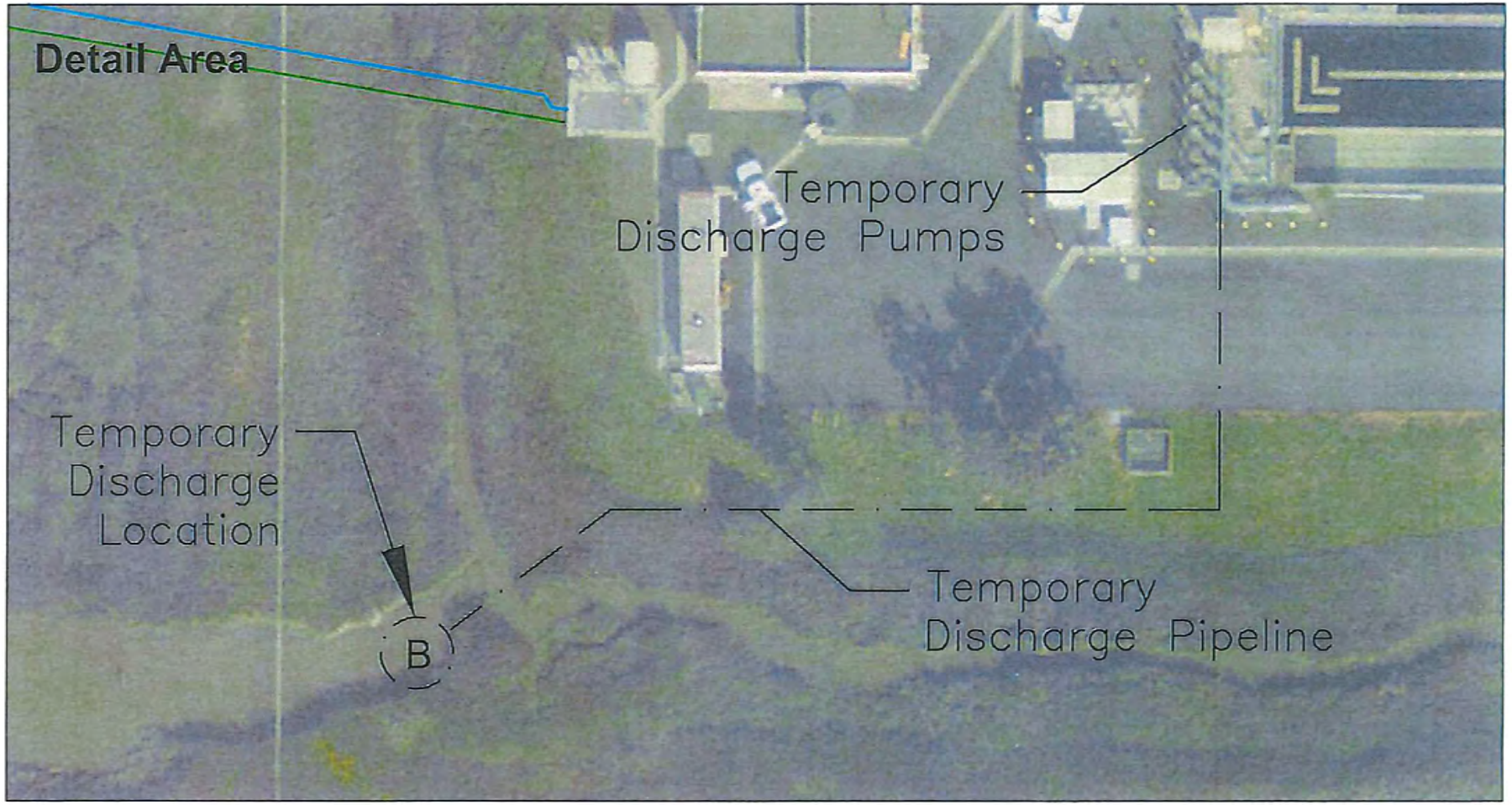
Verified Wetlands Delineation FIGURE 2



PREPARED FOR
carollo engineers
January 2004

U. S. ARMY CORPS of ENGINEERS PRELIMINARY DELINEATION of WATERS of the UNITED STATES			
City of Petaluma Water Recycling Facility	Prepared by: Jones & Stokes Environmental Consulting May 2003	PARSONS	Figure 1

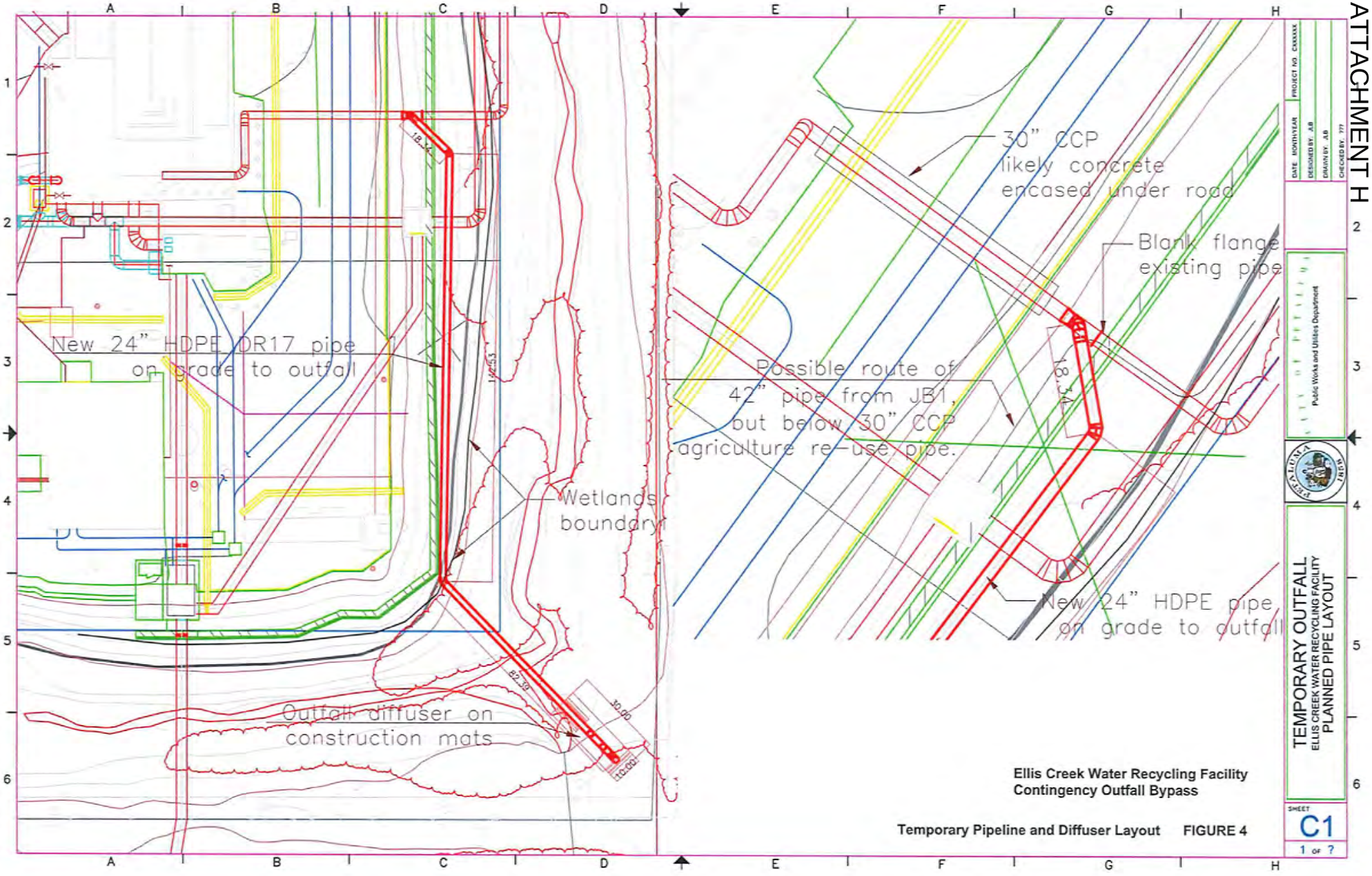
ATTACHMENT H



Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Temporary Pipeline and Discharge Location FIGURE 3

ATTACHMENT H

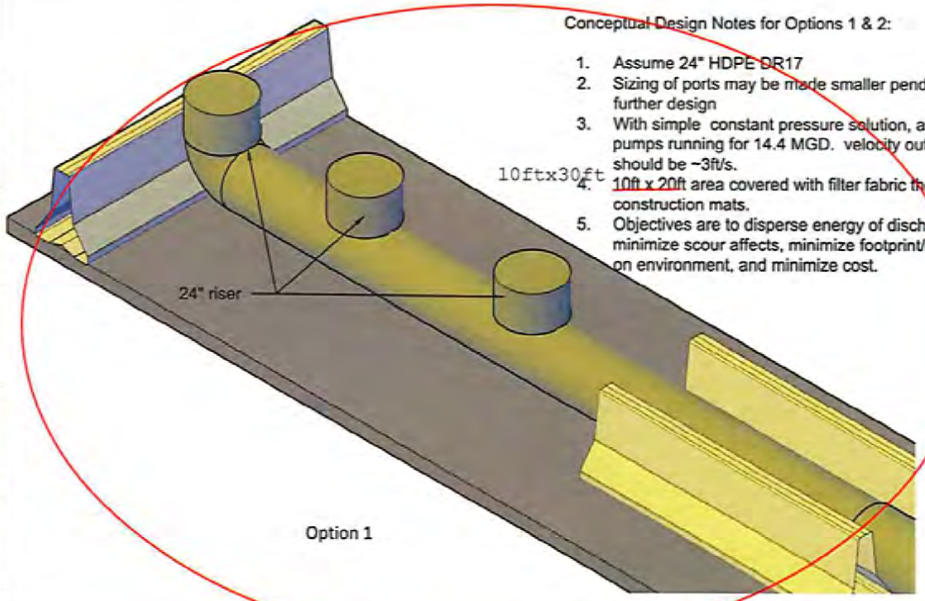


ATTACHMENT H

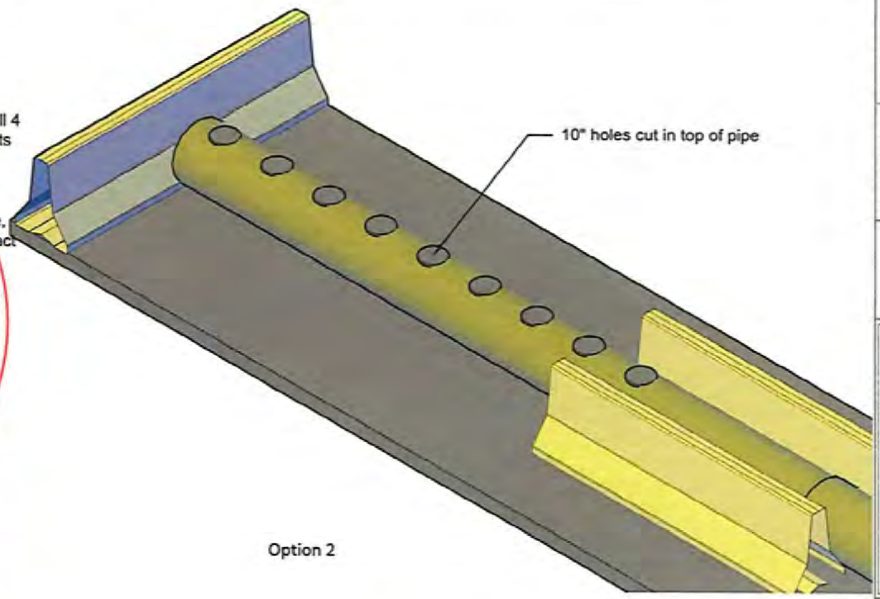
Conceptual Design Notes for Options 1 & 2:

1. Assume 24" HDPE DR17
2. Sizing of ports may be made smaller pending further design
3. With simple constant pressure solution, and all 4 pumps running for 14.4 MGD. velocity out ports should be ~3ft/s.
4. 10ft x 20ft area covered with filter fabric then construction mats.
5. Objectives are to disperse energy of discharge, minimize scour affects, minimize footprint/impact on environment, and minimize cost.

10ftx30ft



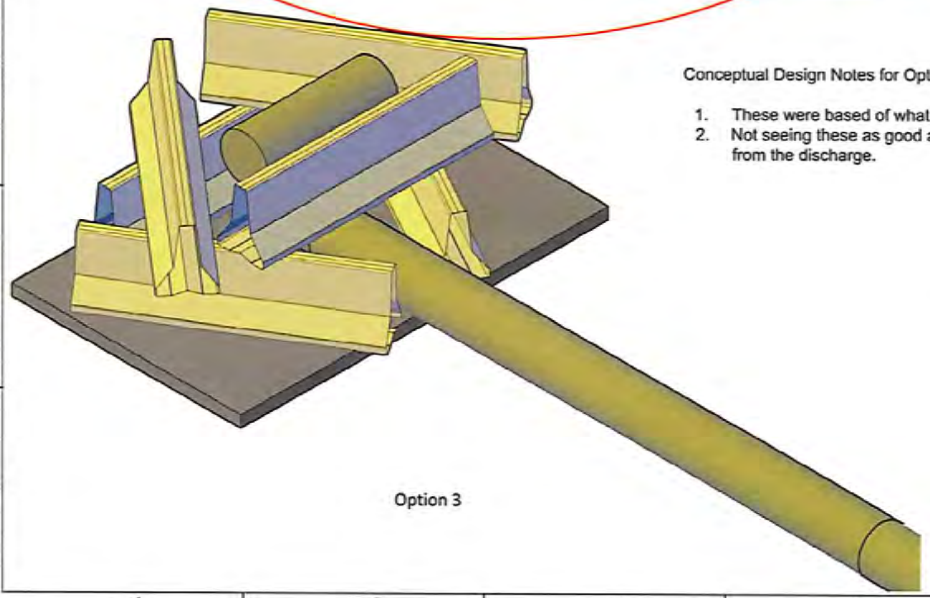
Option 1



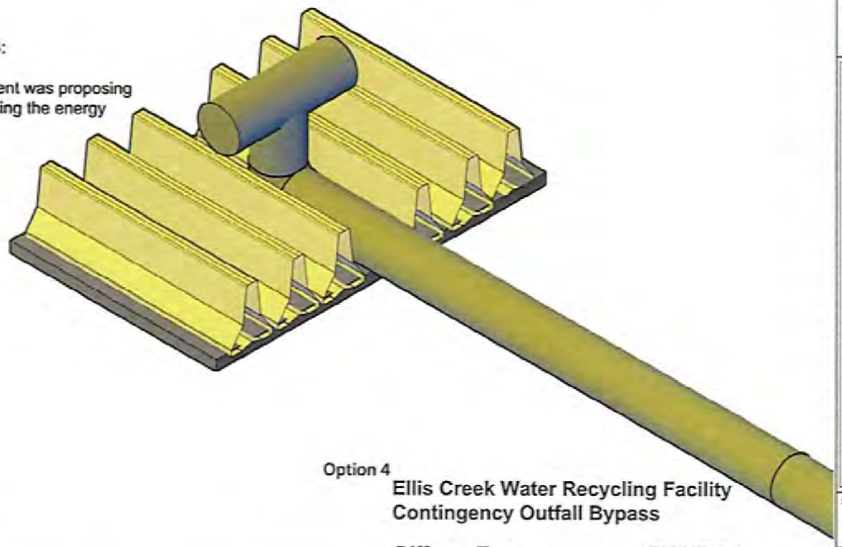
Option 2

Conceptual Design Notes for Options 3 & 4:

1. These were based of what Rain 4 Rent was proposing
2. Not seeing these as good as dispersing the energy from the discharge.



Option 3



Option 4

Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Diffuser Type FIGURE 5

DATE MONTH/YEAR | PROJECT NO. CXXXXX
DESIGNED BY JLB
DRAWN BY JLB
CHECKED BY ???

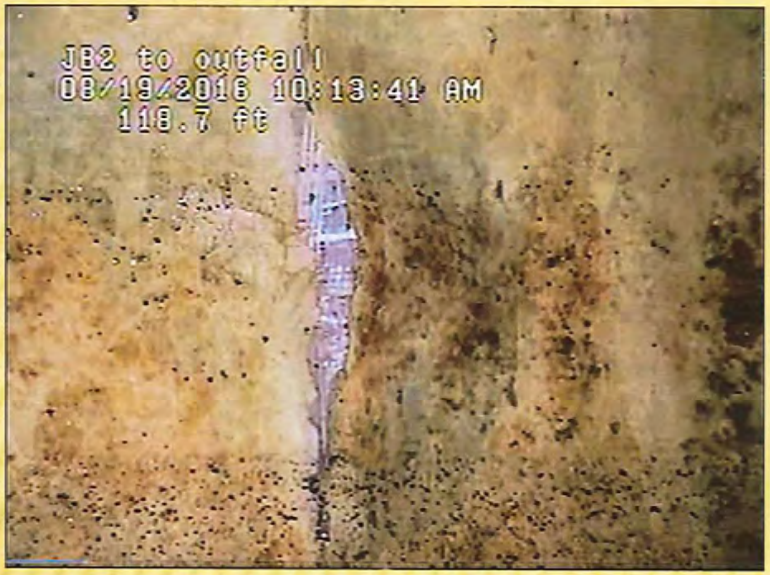
Public Works and Utilities Department

WR&C

TEMPORARY OUTFALL DIFFUSER
Ellis Creek Water Recycling Facility
Conceptual designs of diffusers

SHEET C2
1 OF ?

2016 VIDEO AND VISUAL INSPECTION



- Fiberglass pipe (Techite?)
- Transverse and longitudinal cracks on bottom at ~110-120ft

Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Photographs of Existing Outfall Pipeline Damage **FIGURE 6A**

2016 VIDEO AND VISUAL INSPECTION

220' pipe is collapsing. Hinge cracks visible at 12, 3 and 9 o'clock

From 210'-225' compression damage at top of pipe. Pipe is collapsing.

- Pipe is collapsing at 210'-225' out.
- At 220' : Height-32"; width - 51"
- Inspection stopped at 230ft due to water level covering camera
- Working to schedule inspection of remainder of pipe.

Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Photographs of Existing Outfall Pipeline Damage FIGURE 6B

ATTACHMENT H

Pat Collins

From: Pierce, Matthew <MPIERCE@ci.petaluma.ca.us>
Sent: Wednesday, November 02, 2016 5:02 PM
To: Beatty. Jason
Cc: Wilson, Robert; Walker, Leah
Subject: FW: Ellis Creek WRF CA0037810

Hi Jason,

Per the email below, the RWQCB will allow the City to use the temporary discharge location if needed.

-Matt

From: Christian, Vince@Waterboards [mailto:Vince.Christian@waterboards.ca.gov]
Sent: Wednesday, November 02, 2016 3:03 PM
To: Pierce, Matthew
Subject: RE: Ellis Creek WRF CA0037810

Hi Matt,

I consider this a bypass (see Attachment D, section I.G), which is allowed by your permit and doesn't require approval. Thank you for the notification.

Vince
510-622-2336

From: Pierce, Matthew [mailto:MPIERCE@ci.petaluma.ca.us]
Sent: Tuesday, November 01, 2016 4:06 PM
To: Christian, Vince@Waterboards
Subject: RE: Ellis Creek WRF CA0037810

Good Afternoon Vince,

Just checking on the status of our request for approval of a temporary discharge location should the existing discharge pipeline fail. We are waiting to hear back from the Water Board before finalizing contingency plans.

Regards,
Matt

Matthew Pierce
Operations Supervisor
City of Petaluma, Ellis Creek Water Recycling Facility
3890 Cypress Drive, Petaluma, CA 94954
mpierce@ci.petaluma.ca.us
Phone (707) 776-3726

From: Christian, Vince@Waterboards [mailto:Vince.Christian@waterboards.ca.gov]
Sent: Wednesday, October 05, 2016 5:29 PM

ATTACHMENT H

To: Pierce, Matthew
Subject: RE: Ellis Creek WRF CA0037810

Thanks, Matt. In the future, please don't send the paper. Our office is paperless. We have no way to store or manage paper files.

Vince
510-622-2336

From: Pierce, Matthew [mailto:MPIERCE@ci.petaluma.ca.us]
Sent: Wednesday, September 28, 2016 10:39 AM
To: Christian, Vince@Waterboards
Cc: Walker, Leah; Wilson, Robert
Subject: Ellis Creek WRF CA0037810

Dear Mr. Christian

As we discussed during our phone conversation on September 14, 2016, the City has discovered the condition of the outfall pipeline has significantly deteriorated since 2015, and we are concerned the pipeline could fail during the discharge season leaving the City without the ability to discharge effluent to the Petaluma River during the winter. The City is requesting pre-approval for an anticipated bypass of the effluent outfall location in the event the existing outfall pipeline can no longer remain in service.

The City is developing contingency plans in the event the pipeline fails, but any repairs or replacement is anticipated to take a considerable amount of time; therefore in the attached letter the City is requesting approval of an alternate discharge location from October 2016 through April 2018.

If you have any questions or would like to discuss please feel free to contact me at (707) 776-3726 or by email. A hard copy of the letter will be mailed.

Sincerely,
Matt

Matthew Pierce
Operations Supervisor
City of Petaluma, Ellis Creek Water Recycling Facility
3890 Cypress Drive, Petaluma, CA 94954
mpierce@ci.petaluma.ca.us
Phone (707) 776-3726

ATTACHMENT H

CITY OF PETALUMA

POST OFFICE BOX 61
PETALUMA, CA 94953-0061

September 28, 2016

Regional Water Quality Control Board
Attention: Vince Christian, Engineer
1515 Clay Street, Suite 1400
Oakland, CA 94612

Re: Outfall Pipeline Anticipated Bypass

Order #R2-2016-0014
NPDES Permit #CA0037810

Mr. Christian:

As we discussed during our phone meeting on September 14, 2016, the City of Petaluma has discovered significant deterioration in the structural integrity of our outfall pipeline as compared to the inspection conducted in 2015. During the 2016 inspection, City staff discovered longitudinal cracks along the top and bottom of the pipe, joints of the pipe were separating, and sections of the pipe were significantly flattened into an oval shape. Based on the inspection it appears that the pipe is constructed out of a composite material called Techite, a common pipe material used in the 1970s. Techite is brittle and has been the cause of many catastrophic pipeline failures nationwide. It is the concern of the City that the pipeline could fail during our discharge season leaving the City without the ability to discharge during wet weather.

Based on the above information the City of Petaluma is preparing a contingency plan, and is requesting pre-approval for an anticipated bypass of the effluent outfall location in the event the existing outfall pipeline can no longer remain in service. The proposed alternative discharge location is in a tidal slough near the facility's old chlorine contact basin (see attached map). In addition, the City is proposing to temporarily relocate two of the Receiving Water monitoring locations when the alternative discharge location is used (see table below).

Monitoring Location Type	Monitoring Location Name	Monitoring Location Description	Monitoring Location GPS Coordinates
Receiving Water	RSW-001	In the Petaluma River at the confluence of tidal slough	38°12'29.8439" N 122°34'51.5223" W
Receiving Water	RSW-002A	In the Petaluma River 500 feet downstream of the confluence of tidal slough	38°12'27.2159" N 122°34'45.8663" W

Public Works & Utilities

City Engineer
11 English Street
Petaluma, CA 94952
Phone (707) 778-4303

Environmental Services
Ellis Creek Water Recycling Facility
3890 Cypress Drive
Petaluma, CA 94954
Phone (707) 776-3777
Fax: (707) 776-3746

Parks & Facility Maintenance
840 Hopper St. Ext.
Petaluma, CA 94952
Phone (707) 778-4303
Fax (707) 778-4437

Transportation Services
555 N. McDowell Blvd.
Petaluma, CA 94954
Phone (707) 778-4421
Fax (707) 776-3799

Utilities & Field Operations
202 N. McDowell Blvd.
Petaluma, CA 94954
Phone (707) 778-4546
Fax (707) 206-6034

E-Mail: publicworks@ci.petaluma.ca.us

ATTACHMENT H

If granted pre-approval for the alternative discharge location, the City will notify the Water Board should the need arise to implement the contingency plan. During the anticipated bypass the effluent quality will remain unchanged, and all treatment processes will remain in service. The wetlands mode of discharge which utilizes the polishing wetlands to naturally dechlorinate the effluent will remain the primary mode of operation, and the combined mode of discharge which utilizes parallel disinfection processes will be available when the facility needs to increase effluent flows to greater than allowed by the wetlands mode. These operations modes are shown in the attached flow schematics.

The contingency plan includes reconfiguring four existing pumps at the chlorine contact basin to pump dechlorinated effluent to the temporary discharge location. A flow diffuser and diffusion mats will be used to minimize erosion within the slough. Implementation of the contingency plan involves the relocation of the final effluent composite sampler, and depending on mode of discharge may involve reconfiguring chemical injection locations and sample pump locations for the chlorine and bisulfite analyzers. The facility is expected to remain compliant with all effluent limits and sampling requirements while discharging at the temporary discharge location.

The pipeline replacement project is anticipated to take a considerable amount of time and the City is requesting approval of an alternate discharge location from October, 2016 through April, 2018.

If there are any questions concerning this report, please feel free to contact me at (707) 776-3777.

Sincerely,

Matthew Pierce
Water Recycling Plant Operations Supervisor

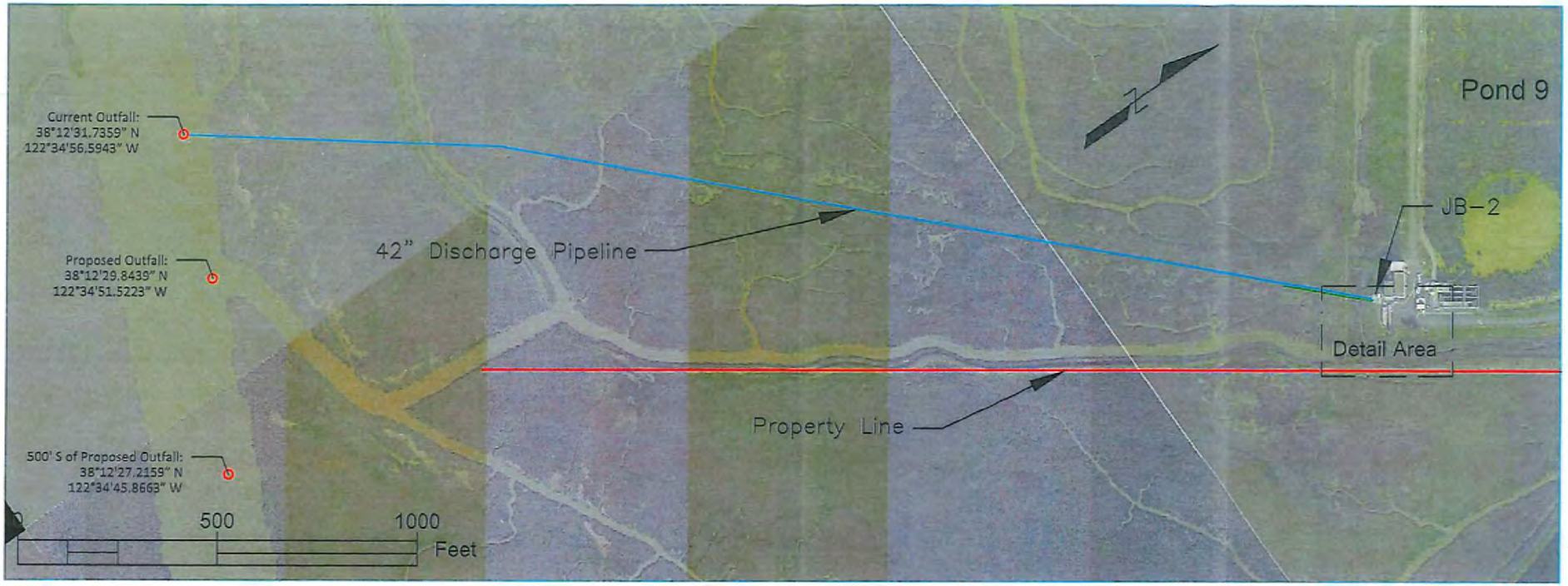
Attachments

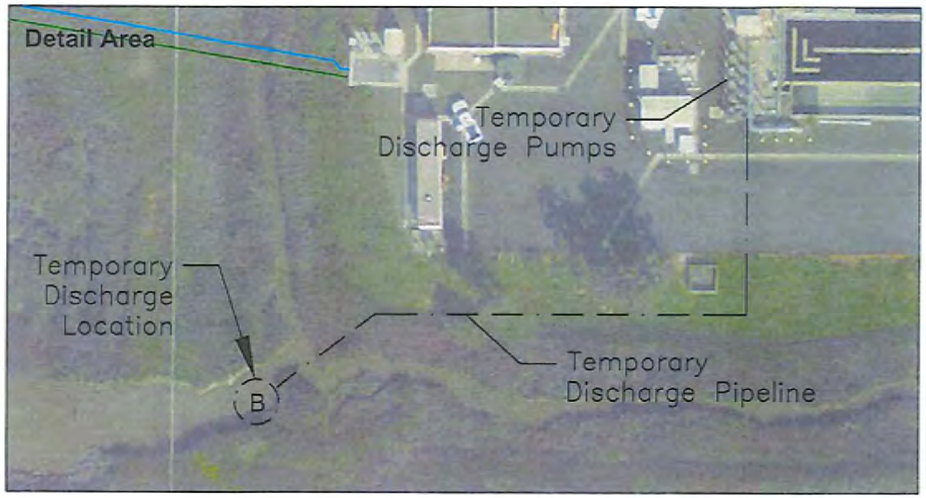
1. Map of Proposed Alternate Discharge Location
2. Process Flow Schematic: Wetlands Mode of Operation Using Temporary Discharge Location
3. Process Flow Schematic: Combined Mode of Operation Using Temporary Discharge Location
4. Process Flow Schematic: Standard Flow Schematic

C: Dan St. John, F.ASCE, Director of Public Works & Utilities
Leah Walker P.E., Environmental Services Manager

Attachment 1

ATTACHMENT H





Ellis Creek Water Recycling Facility- Discharge Pipeline Failure/Contingency Plan

Existing Discharge Conditions::

Existing Pipeline Length: 3130'

Existing Pipeline Diameter: 42"

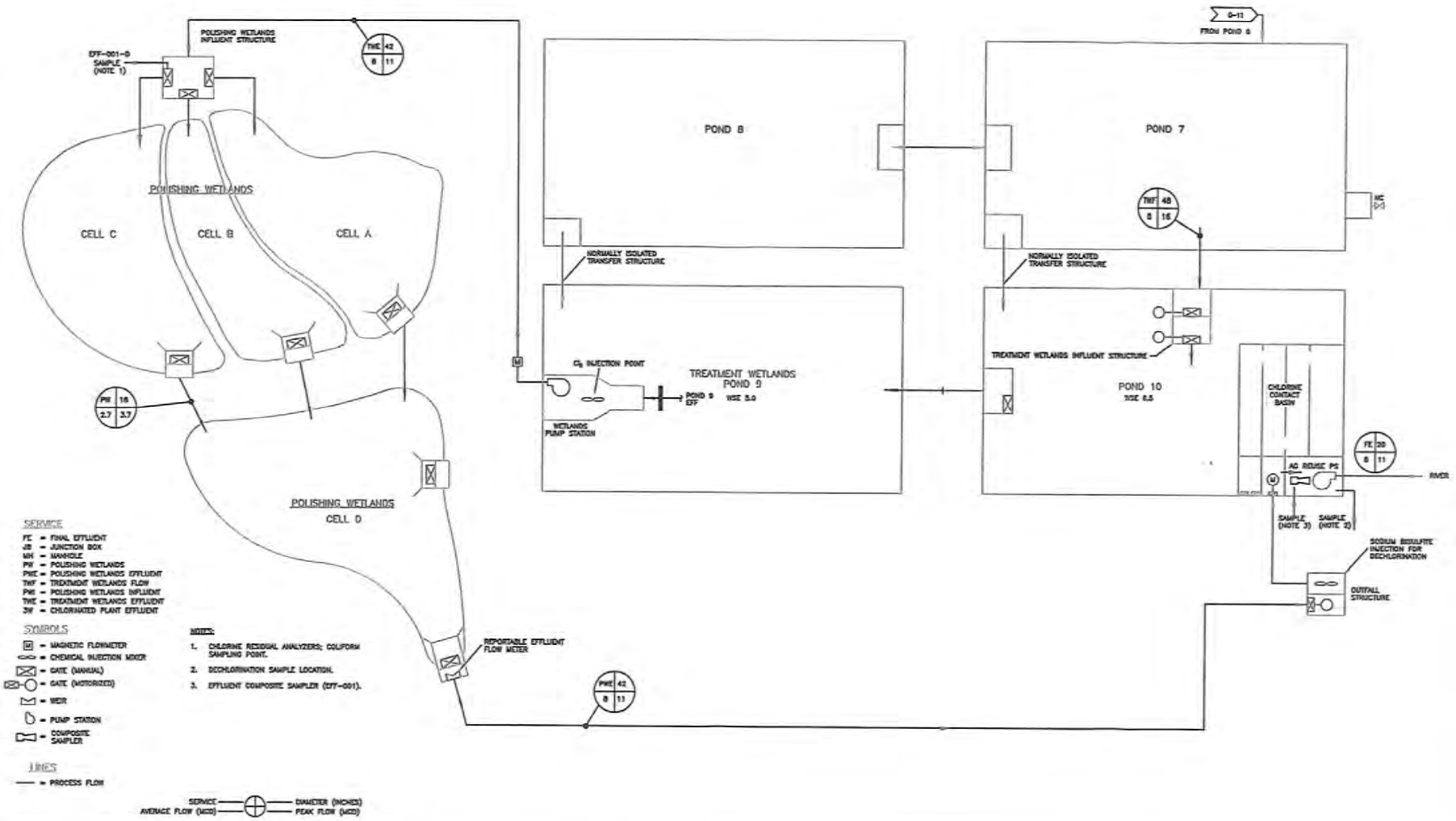
Required Maximum Flow: 16 MGD

Pipeline Material: Fiberglass Reinforced Plastic Mortar Pipe (Techite)

Scheduled Date to Resume Discharge: October 10th, 2016

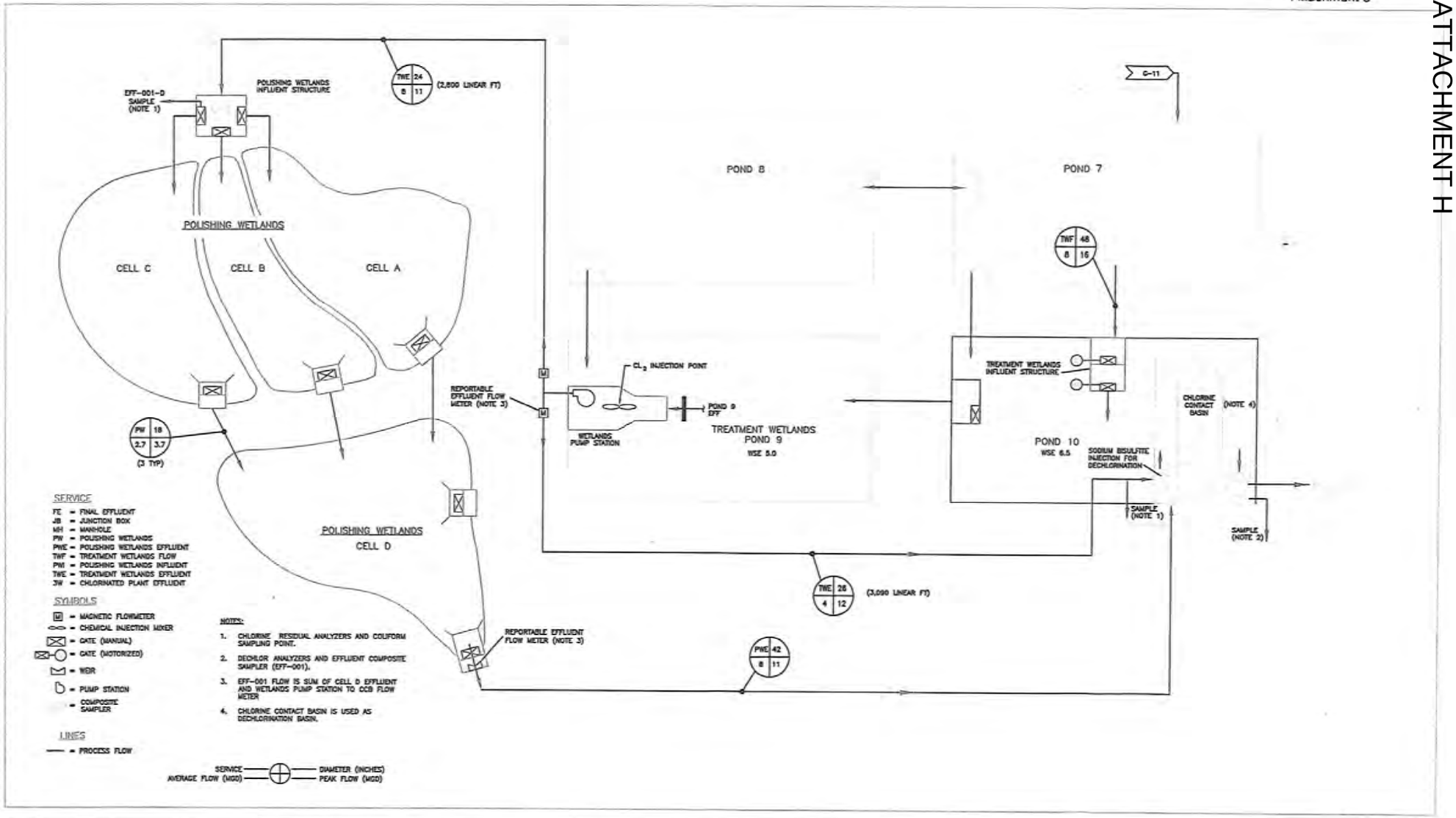
Temporary Discharge Pumping:
70 HP Vertical Turbine Pumps (X4) - Each Pump Capable of ~2,500 gpm

ATTACHMENT H



CITY OF PETALUMA ELLIS CREEK WATER RECYCLING FACILITY 3890 CYPRESS DRIVE PETALUMA, CA 94954	PROCESS FLOW SCHEMATIC: TEMPORARY DISCHARGE LOCATION (WETLANDS MODE OF OPERATION)	G–12W

ATTACHMENT H

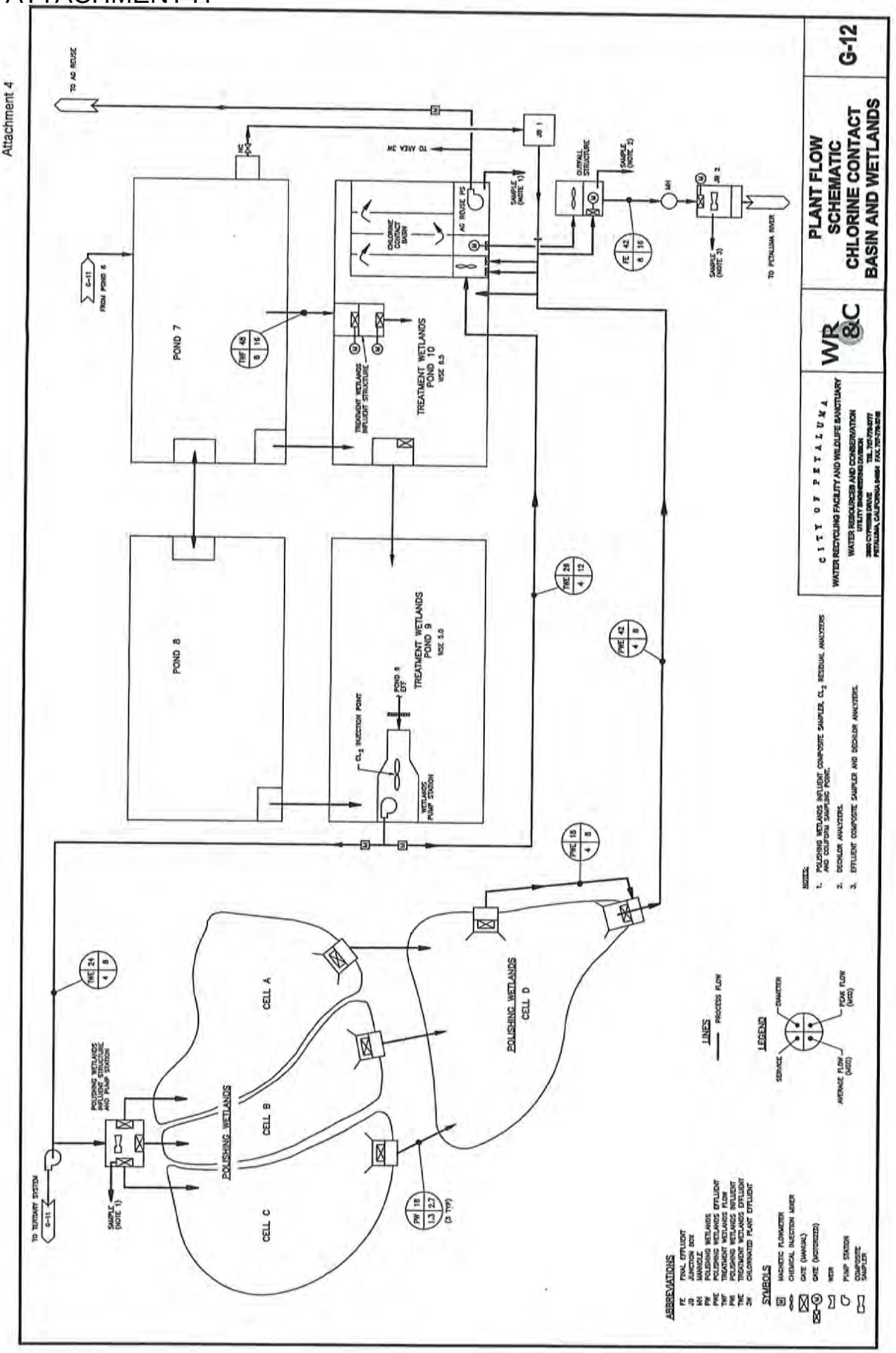


CITY OF PETALUMA ELLIS CREEK WATER RECYCLING FACILITY 3890 CYPRESS DRIVE PETALUMA, CA 94954	PROCESS FLOW SCHEMATIC: TEMPORARY DISCHARGE LOCATION (COMBINED MODE OF OPERATION)	G-12C

C:\Users\pbenedet\Desktop\Drawings\G12 Combined- Outfall Contingency 9-27-16 01:05pm PBENEDET

ATTACHMENT H

Attachment 4



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ATTACHMENT H

ATTACHMENT 2: BIOLOGICAL AVOIDANCE MEASURES

The area where the temporary bypass pipeline and diffuser would be located is within and/or near habitat for a number of special-status wildlife species, including salt marsh harvest mouse (*Reithrodontomys raviventris*), Ridgway's rail (*Rallus obsoletus*), and black rail (*Laterallus jamaicensis*) according to the Ellis Creek Water Recycling Facility EIR (Petaluma 2002). The City intends to conduct the installation of the temporary emergency pipeline and diffuser in a manner which would avoid adverse impacts to any special-status species and their habitat, as described below. Please refer to the permit application and figures for a complete project description.

1. During Installation:

At the request of the City, Lorie Hamerli, Environmental Scientist with the California Department of Fish and Wildlife, conducted a site visit on August 25, 2016, of the existing discharge pipeline. At that time, the City was anticipating repairing the existing outfall pipeline by sliplining or replacing a short section of the existing pipeline, rather than installing a temporary outfall bypass. The area of the August site visit is very similar to and approximately 200 feet away from the area of the proposed emergency outfall bypass. The relocated temporary outfall bypass would have substantially fewer impacts than the project that was presented to Lorie at her site visit, as the current emergency project requires no ground disturbance within habitat areas.

Lorie recommended that the following practices during installation of the pipeline be undertaken to avoid impacts to special-status species in the area:

- Conduct a survey for bird nests 10 feet on both sides of the project area as Ridgway's rail will sometime utilize nests during the non-breeding season. If occupied bird nests are found, installation activities will be halted.
- Do not conduct work within +/- two hours of a San Francisco Bay extreme high tide.
- Scare wildlife away from the project site daily during installation starting in the center of the site and radiating out.
- Place the filter fabric under the diffuser on top of the vegetation; do not remove vegetation.
- Notify Lorie Hammerli at CDFW instantly in regards to an incident with a protected species. She requested that we call her at (707) 338-1656.

2. During temporary operation:

The temporary pipeline and diffuser would have no impacts to special-status species during operation because discharge through the emergency pipeline and diffuser would not cause ongoing noise or dust or additional human activity in the area. The above-ground pipeline would be supported on piers which would allow mice and other small wildlife to cross underneath the pipeline. Operations may be needed for up to two discharge seasons.

3. At completion of the emergency project when the existing outfall pipeline has been repaired

When the existing outfall pipeline has been repaired, the contingency outfall bypass would be removed. The temporary above-ground pipeline, diffuser, helical piers, and filter fabric would be removed at the completion of the emergency project. As no vegetation underneath the pipeline and filter fabric would be removed or dug up during the initial installation, the vegetation/habitat in the area is expected to recover quickly.

ATTACHMENT H

Print Form

Notice of Exemption

Appendix E

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

County Clerk
County of: Sonoma

From: (Public Agency): City of Petaluma, Ellis Creek WRF
3890 Cypress Drive, Petaluma, CA 94954

(Address)

Project Title: Ellis Creek Water Recycling Facility - Contingency Outfall Bypass

Project Applicant: City of Petaluma

Project Location - Specific:

Ellis Creek Water Recycling Facility - 3890 Cypress Drive, Petaluma, CA 94954

Project Location - City: Petaluma Project Location - County: Sonoma

Description of Nature, Purpose and Beneficiaries of Project:
During 2016 inspections, the City of Petaluma discovered significant deterioration in the structural integrity of their outfall pipeline and will install a temporary contingency outfall bypass with a short above-ground pipeline and diffuser.

Name of Public Agency Approving Project: City of Petaluma

Name of Person or Agency Carrying Out Project: Jason Beatty, Senior Civil Engineer, 707-778-4514

Exempt Status: (check one):

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☒ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☐ Categorical Exemption. State type and section number: _____
- ☐ Statutory Exemptions. State code number: _____

Reasons why project is exempt:
Project qualifies under (c): actions to prevent an emergency. The contingency outfall bypass must be in place to prevent an emergency in case the existing outfall pipeline fails. If the existing outfall fails without the bypass in place; it would violate the City's NPDES discharge permit as well as cause water quality degradation, erosion, and wetlands and habitat damage, as well as interfere with services essential to the public health.

Lead Agency Contact Person: Jason Beatty, Sr Civil Engineer Area Code/Telephone/Extension: 707-778-4514

If filed by applicant:
1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☐ Yes ☐ No

Signature: _____ Date: 9/JAN/2017 Title: SR. CIVIL ENGINEER

☒ Signed by Lead Agency ☐ Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR: _____

This notice was posted on 1-9-17
and will remain posted for a period of thirty days
through 2-10-17

WILLIAM F. ROUSSEAU, Co. Clerk
Darrell Light
BY: _____
DEPUTY CLERK

Revised 2011

ATTACHMENT H

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

JANUARY 19, 2017

Regulatory Division

Subject: File Number 2012-00319N

Pat Collins
GHD
2235 Mercury Way, Suite 150
Santa Rosa, California 95407

Dear Ms. Collins:

This correspondence is in reference to your submittal of January 11, 2017, on behalf of The City of Petaluma, concerning Department of the Army (DA) authorization to install a contingency outfall bypass and diffuser located at the Ellis Creek Water Recycling Facility, 3890 Cypress Drive (APN 068010024), in the City of Petaluma, in Sonoma County, California (38.214764°N, 122.574771°W).

Work within U.S. Army Corps of Engineers' (Corps) jurisdiction will include the placement of approximately 20 helical piles, 2.5" in diameter, supporting 85 feet of 24" pipeline, and placement of filter fabric and diffuser mats within waters tributary to Petaluma River subject to tidal influence. Work will require placement of five cubic yards of fill within 0.001 acre of waters tributary to the Petaluma River. All work shall be completed in accordance with the plans and drawings titled "USACE File ID 2012-00319N, Ellis Creek Water Recycling Facility Contingency Outfall Bypass," dated January 18, 2017, in 4 sheets provided as enclosure 1.

Based on a review of the information you submitted and an inspection of the project site conducted by Corps personnel on date, your project qualifies for authorization under Department of the Army Regional Permit (RGP) No. 5 Repair and Protection Activities in Emergency Situations, pursuant Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403) and Section 404 of the Clean Water Act (33 U.S.C. Section 1344).
(http://www.spn.usace.army.mil/Missions/Regulatory/EmergencyPermits.aspx).

The project must be in compliance with the General and Special Conditions cited in the RGP for the authorization to remain valid. Non-compliance with any condition could result in the suspension, modification or revocation of the authorization for your project, thereby requiring you to obtain a Nationwide or Individual Permit from the Corps. State Water Quality Certification (WQC) has been issued for work performed under the provisions of the RGP. In order for this authorization to remain valid, you must follow the limitations and conditions stated in the WQC attached to the RGP. This RGP authorization does not obviate the need to obtain other State or local approvals required by law.

This authorization will remain valid until March 1, 2017, unless the RGP is suspended, modified or revoked. All work must be completed by this date and the associated reports forwarded within 45 days of project completion.

In order to ensure compliance with this NWP authorization, the following special conditions shall be implemented:

1. All standard Best Management Practices shall be implemented to prevent the movement of sediment downstream. No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products, or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into the waterways.

Should you have any questions regarding this matter, please call William M. Connor of our Regulatory Division at 415-503-6631. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at http://www.spn.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,

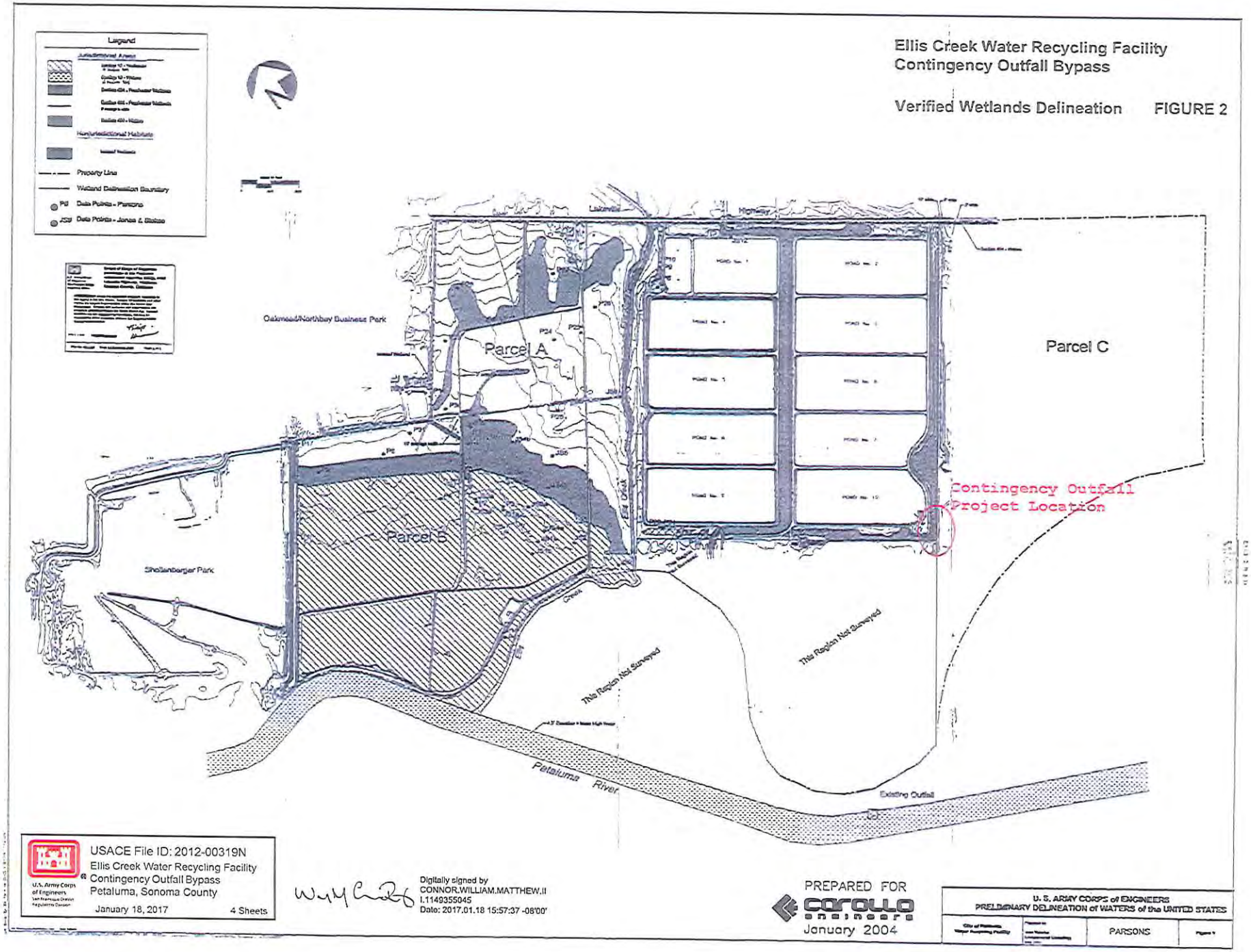
Digitally signed by CONNOR.WILLIAM.MATTHEW.III.1149355045
Date: 2017.01.19 15:58:48 -08'00'

Rick Bottoms, Ph.D.
Chief, Regulatory Division

Enclosures

CA RWQCB, Oakland, CA, Fred Hetzel, fred.hetzel@waterboards.ca.gov
CA DFW, Napa, CA, Lorie Hammerli, lorie.hammerli@wildlife.ca.gov

ATTACHMENT H



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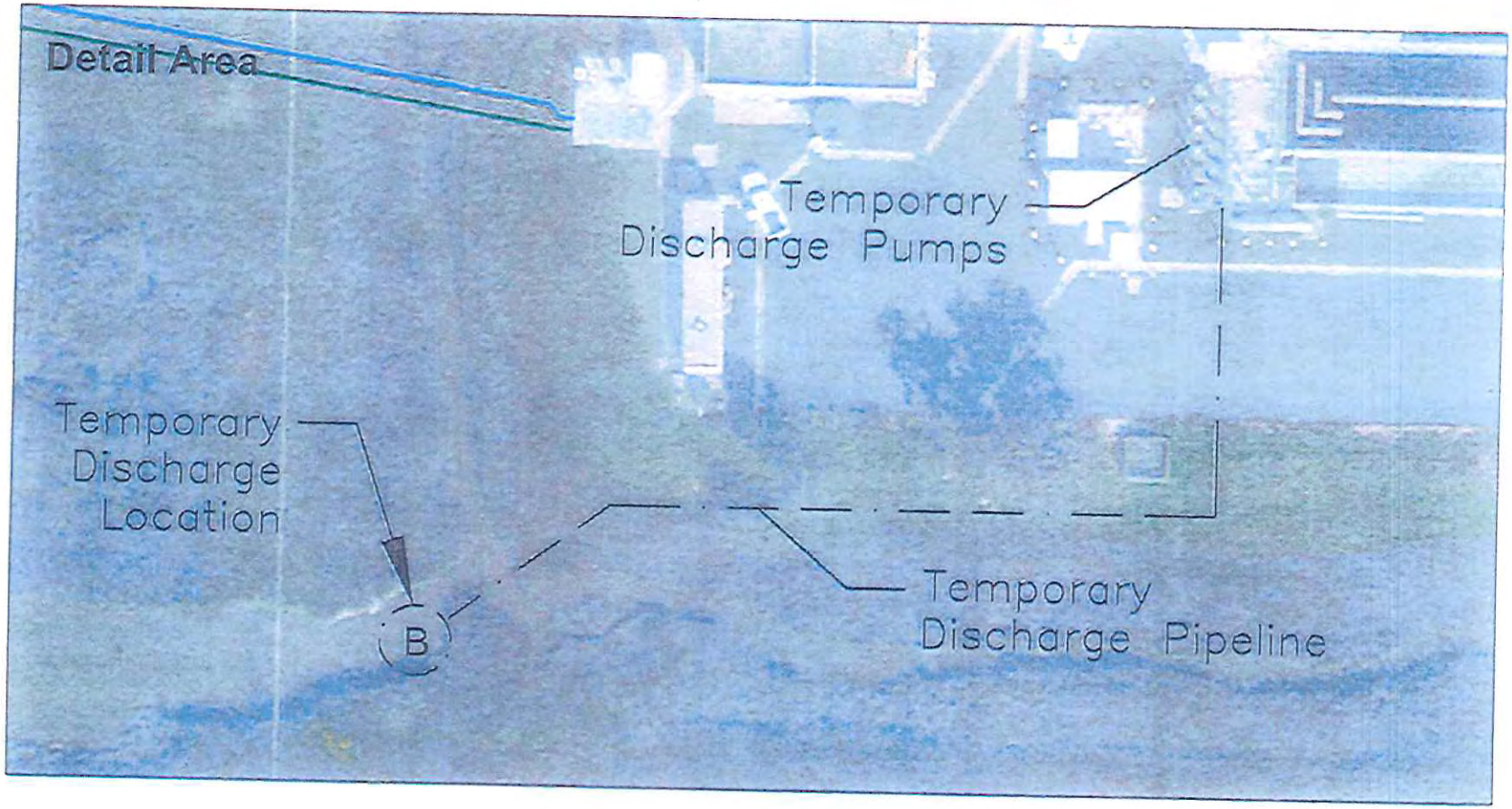
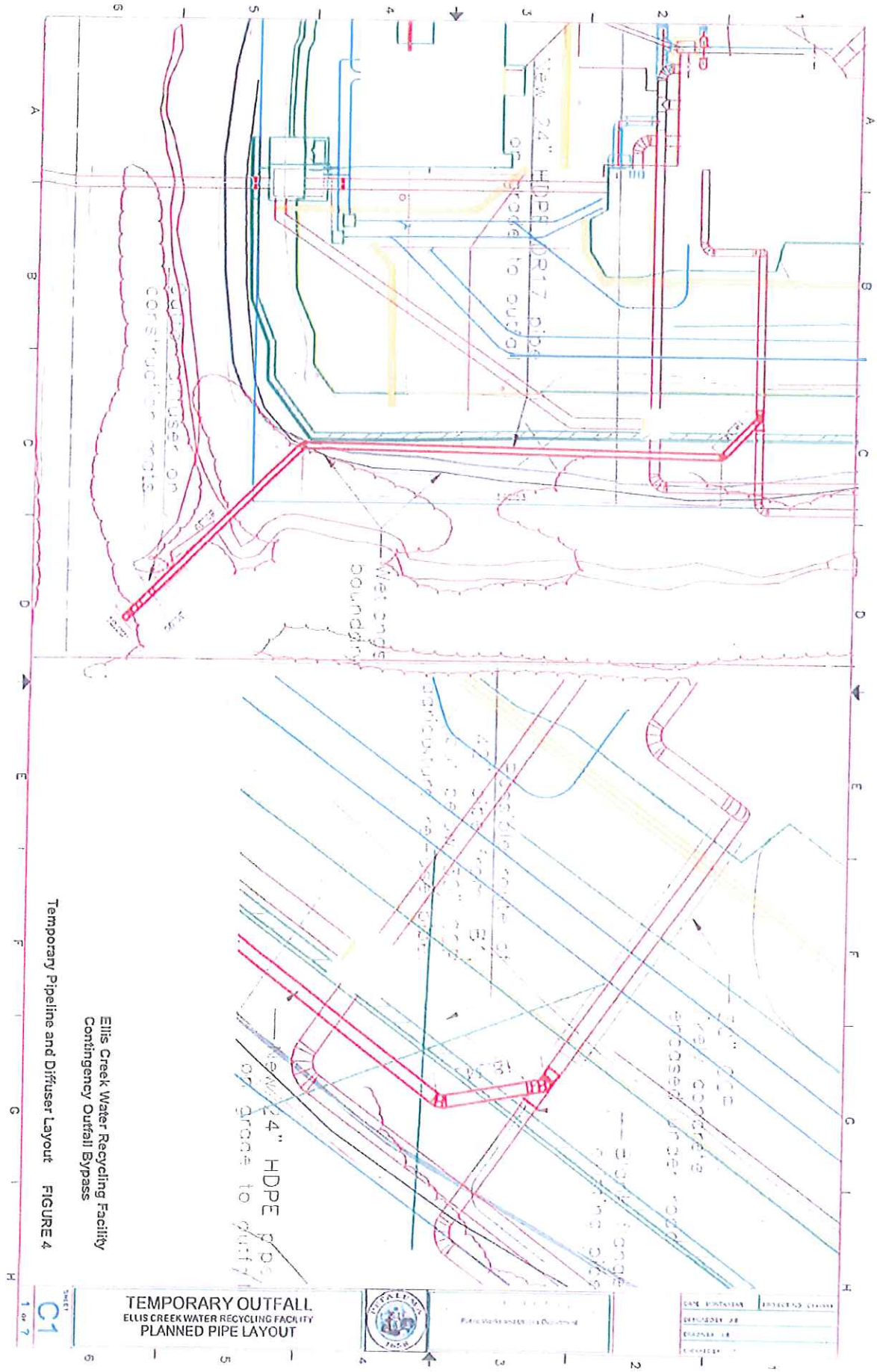


Ellis Creek Water Recycling Facility
Contingency Outfall Bypass

Temporary Pipeline and Discharge Location FIGURE 3

ATTACHMENT H



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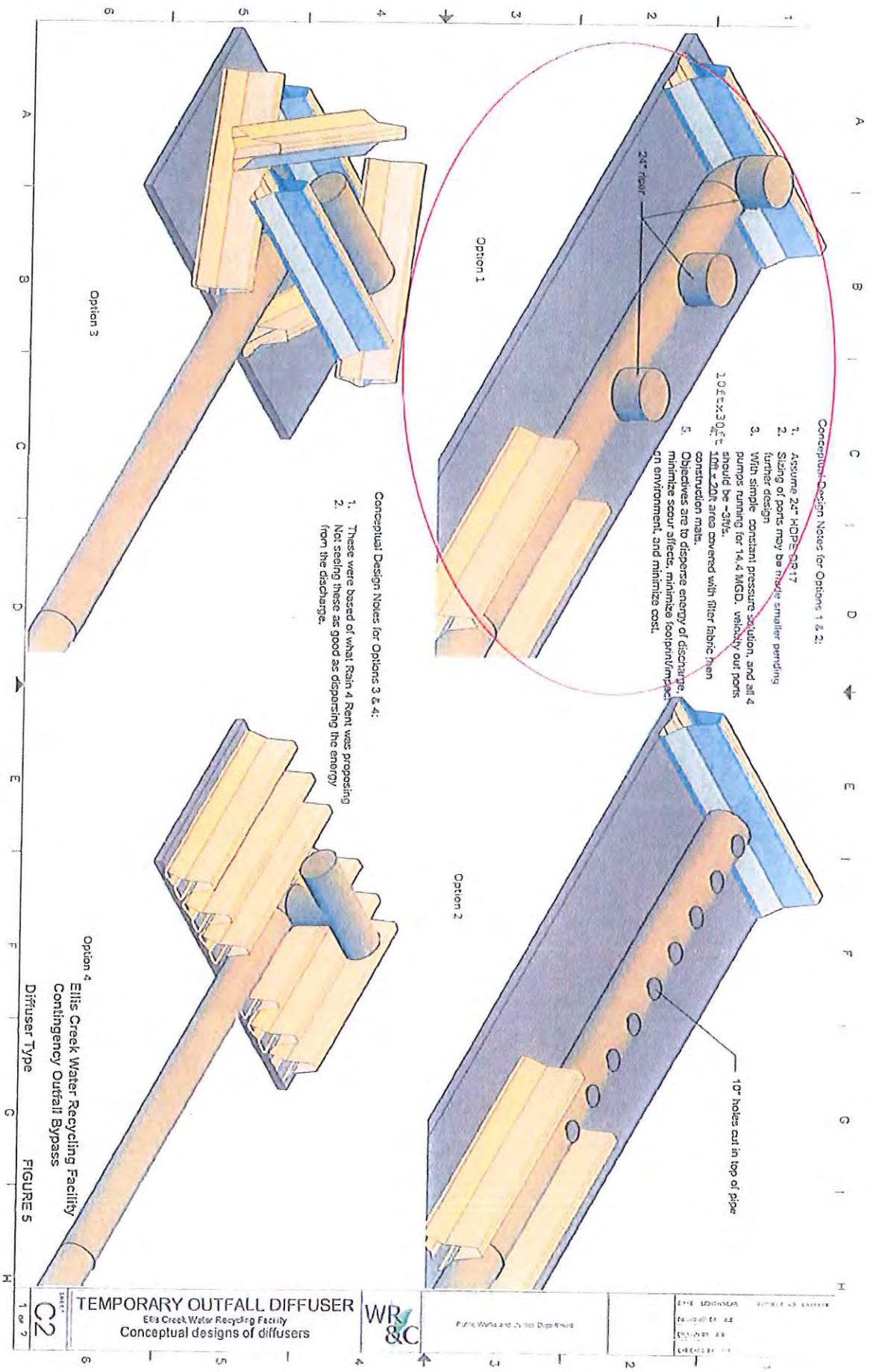


ATTACHMENT H

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
1515 Clay Street, Suite 1400, Oakland, California 94612
waterboards.ca.gov/sanfranciscobay

ORDER R2-2021-0008
NPDES PERMIT CA0037810

The following Discharger is subject to the waste discharge requirements (WDRs) set forth in this Order:

Discharger	**City of Petaluma**
Name of Facility	**Ellis Creek Water Recycling Facility and its collection system**
Facility Address	**3890 Cypress Drive** **Petaluma, California 94954** **Sonoma County**

Table 1. Discharge Locations

Discharge Points	Effluent Description	Discharge Point Latitude (North-South)	Discharge Point Longitude (East-West)	Receiving Water
001	Secondary-Treated Municipal Wastewater	38.2088º	-122.5820º	Petaluma River
002 [1]	Secondary-Treated Municipal Wastewater	38.2145º	-122.5747º	Petaluma River

Footnote:

[1] Discharge Point 002 is the planned relocation point of Discharge Point 001. The latitude and longitude may change slightly from what is indicated above. See Provision 6.3.5.4.

This Order was adopted on:	**May 12, 2021**
This Order shall become effective on:	**July 1, 2021**
This Order shall expire on:	**June 30, 2026**
CIWQS regulatory measure number:	**443296**

The Discharger shall file a Report of Waste Discharge as an application for updated WDRs in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than **October 1, 2025.** The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board) have classified this discharge as "**major**."

I hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the Regional Water Board on the date indicated above.

Michael Montgomery, Executive Officer

CONTENTS

TABLES

ATTACHMENTS

1. FACILITY INFORMATION

Information describing the City of Petaluma Ellis Creek Water Recycling Facility and its wastewater collection system (collectively, Facility) is summarized on the cover page and in Fact Sheet (Attachment F) sections 1 and 2. Fact Sheet section 1 also includes information regarding the permit application.

2. FINDINGS

The Regional Water Board finds the following:

2.1. Legal Authorities. This Order serves as WDRs pursuant to California Water Code article 4, chapter 4, division 7 (commencing with § 13260). This Order is also issued pursuant to federal Clean Water Act (CWA) section 402 and implementing regulations adopted by U.S. EPA and Water Code chapter 5.5, division 7 (commencing with § 13370). It shall serve as an NPDES permit authorizing the Discharger to discharge into waters of the United States as described in Table 1 subject to the WDRs in this Order.

2.2. Background and Rationale for Requirements. The Regional Water developed the requirements in this Order based on information the Discharger submitted as part of its application, information obtained through monitoring and reporting programs, and other available information. The Fact Sheet contains background information and rationale for the requirements in this Order and is hereby incorporated into and constitutes findings for this Order. Attachments A through E, G, and H are also incorporated into this Order.

2.3. Notification of Interested Parties. The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe these WDRs and has provided an opportunity to submit written comments and recommendations. Fact Sheet section 8.1 provides details regarding the notification.

2.4. Consideration of Public Comment. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Fact Sheet section 8.3 provides details regarding the public hearing.

THEREFORE, IT IS HEREBY ORDERED that Order R2-2016-0014 (previous order) is rescinded upon the effective date of this Order, except for enforcement purposes, and, in order to meet the provisions contained in Water Code division 7 (commencing with § 13000) and regulations adopted thereunder and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Regional Water Board from taking enforcement action for violations of the previous order.

3. DISCHARGE PROHIBITIONS

3.1. Discharge of treated or partially-treated wastewater at a location or in a manner different from that described in this Order is prohibited.

3.2. Bypass of untreated or partially-treated wastewater to waters of the United States is prohibited, except as provided for in Attachment D section 1.7 of this Order. Routing flow after grit removal directly to the oxidation ponds during wet weather is not considered a bypass and is not a violation of this Order.

3.3. Average dry weather influent flow in excess of 6.7 MGD is prohibited. Average dry weather influent flow shall be determined from three consecutive dry weather months each year, with compliance measured at Monitoring Location INF-001 as described in the Monitoring and Reporting Program (MRP, Attachment E).

3.4. Any sanitary sewer overflow that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.

3.5. Discharge to the Petaluma River at either Discharge Point 001 or 002 is prohibited during the dry season each year, from May 1 through October 20, except when Facility effluent flow will exceed the capacity of the recycled water distribution and storage system (described in Fact Sheet section 2) to meet recycled water demand. Discharge shall not arise as a result of the Discharger's failure to produce, use, or supply demand for recycled water. The discharge shall be monitored and meet limitations and shall consist of fully treated effluent.

If there is discharge during the dry season, the Discharger shall describe the reasons for the discharge in the transmittal letter of its next self-monitoring report, with supporting information, and include a table that describes the volume and duration of the discharge to the receiving water. In accordance with the MRP, all discharge volume and quality data shall be reported in the appropriate monthly self-monitoring report.

4. EFFLUENT LIMITATIONS

4.1. Effluent Limitations. The discharge at Discharge Points 001 and 002 shall meet the following effluent limitations, with compliance measured at Monitoring Location EFF-001 as described in the MRP:

Table 2. Effluent Limitations

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	30	45	-	-	-
Total Suspended Solids	mg/L	30	45	-	-	-
Ammonia, Total	mg/L as N	3.0	-	8.0	-	-

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Copper, Total Recoverable	µg/L	7.0	-	12	-	-
Cyanide, Total	µg/L	5.3	-	9.5	-	-
Dioxin-TEQ	µg/L	1.4×10^{-8}	-	2.8×10^{-8}	-	-
Oil and Grease	mg/L	10	-	20	-	-
Chlorine, Total Residual	mg/L	-	-	-	-	0.0
pH [1]	standard units	-	-	-	6.5	8.5

Footnote:

[1] If the Discharger monitors pH continuously, pursuant to 40 C.F.R. section 401.17 the Discharger shall be in compliance with this pH limitation provided that both of the following conditions are satisfied: (i) the total time during which the pH is outside the required range shall not exceed 7 hours and 26 minutes in any calendar month; and (ii) no individual excursion from the required pH range shall exceed 60 minutes.

4.2. Percent Removal. The average monthly percent removal of biochemical oxygen demand (BOD) and total suspended solids (TSS) at Discharge Points 001 and 002 shall not be less than 85 percent (i.e., in each calendar month, the arithmetic mean of BOD and TSS, by concentration, of effluent samples collected at Monitoring Location EFF-001 as described in the MRP, shall not exceed 15 percent of the arithmetic mean of BOD and TSS, by concentration, of influent samples collected at Monitoring Location INF-001 as described in the MRP, at approximately the same times during the same periods).

4.3. *Enterococcus* Bacteria. The discharge at Discharge Points 001 and 002 shall meet the following *Enterococcus* effluent limitations, with compliance measured at Monitoring Location EFF-001-D as described in the MRP:

4.3.1. The six-week rolling geometric mean of *Enterococcus* bacteria shall not exceed 30 colony forming units per 100 milliliters (CFU/100 mL). Compliance with this limit shall be determined weekly by calculating the geometric mean of all *Enterococcus* sample results from the past six weeks.

4.3.2. No more than 10 percent of all *Enterococcus* bacteria samples collected in a calendar month shall exceed 110 CFU/100 mL. Compliance with this limit shall be determined based on measured sample results. The Discharger shall not report interpolated results. If the Discharger has 9 or fewer sample results in a calendar month, compliance shall be based on the highest result. If the Discharger has 10 to 19 sample results, compliance shall be based on the second highest result, and so on.

4.4. Acute Toxicity. The discharge at Discharge Points 001 and 002 shall meet the following acute toxicity effluent limitations, with compliance measured at Monitoring Location EFF-001, as described in the MRP. If the Discharger can demonstrate that toxicity exceeding these acute toxicity limits is caused solely by ammonia and that the ammonia in the discharge complies with the ammonia

effluent limits in Table 2 of this Order, then such toxicity shall not constitute a violation of these acute toxicity limits.

4.5.1. The 11-sample median shall not exhibit less than 90 percent survival (i.e., a bioassay test showing survival of less than 90 percent shall represent a violation of this effluent limit if five or more of the past ten or fewer bioassay tests show less than 90 percent survival).

4.5.2. The 11-sample 90th percentile shall not exhibit less than 70 percent survival (i.e., a bioassay test showing survival of less than 70 percent shall represent a violation of this effluent limit if one or more of the past ten or fewer bioassay tests also show less than 70 percent survival).

5. RECEIVING WATER LIMITATIONS

5.1. The discharge shall not cause the following conditions at any place in receiving waters:

5.1.1. Floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses;

5.1.2. Alteration of suspended sediment in such a manner as to cause nuisance or adversely affect beneficial uses or detrimental increase in the concentrations of toxic pollutants in sediments or aquatic life;

5.1.3. Suspended material in concentrations that cause nuisance or adversely affect beneficial uses;

5.1.4. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;

5.1.5. Alteration of temperature beyond present natural background levels unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses;

5.1.6. Changes in turbidity that cause nuisance or adversely affect beneficial uses, or increases from normal background light penetration or turbidity greater than 10 percent in areas where natural turbidity is greater than 50 nephelometric turbidity units, or above 55 nephelometric turbidity units in areas where natural turbidity is less than or equal to 50 nephelometric turbidity units;

5.1.7. Coloration that causes nuisance or adversely affects beneficial uses;

5.1.8. Visible, floating, suspended, or deposited oil or other products of petroleum origin; or

5.1.9. Toxic or other deleterious substances in concentrations or quantities that cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or render any of

these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.

5.2. The discharge shall not cause the following limits to be exceeded at any place in receiving waters within one foot of the water surface:

5.2.1.	Dissolved Oxygen	5.0 mg/L, minimum The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, the discharge shall not cause further reduction in ambient dissolved oxygen concentrations
5.2.2.	Dissolved Sulfide	Natural background levels
5.2.3.	pH	The pH shall not be depressed below 6.5 nor raised above 8.5. The discharge shall not cause changes greater than 0.5 pH units in normal ambient pH levels.
5.2.4.	Nutrients	Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

5.3. The discharge shall not cause a violation of any water quality standard for receiving waters adopted by the Regional Water Board or State Water Resources Control Board (State Water Board) as required by the CWA and regulations adopted thereunder beyond any mixing zone established through this Order. If more stringent water quality standards are promulgated or approved pursuant to CWA section 303, or amendments thereto, the Regional Water Board may revise or modify this Order in accordance with the more stringent standards.

6. PROVISIONS

6.1. Standard Provisions

6.1.1. The Discharger shall comply with all “Standard Provisions” in Attachment D.

6.1.2. The Discharger shall comply with all applicable provisions of the “Regional Standard Provisions, and Monitoring and Reporting Requirements for NPDES Wastewater Discharge Permits” in Attachment G.

6.1.3. If there is any conflict, duplication, or overlap between provisions in this Order, the more stringent provision shall apply.

6.2. Monitoring and Reporting Provisions

The Discharger shall comply with the Monitoring and Reporting Program (MRP, Attachment E) and future revisions thereto, and applicable monitoring and reporting requirements in Attachments D and G.

6.3. Special Provisions

6.3.1. Reopener Provisions

The Regional Water Board may modify or reopen this Order prior to its expiration date in any of the following circumstances as allowed by law or as otherwise authorized by law. The Discharger may request a permit modification based on any of these circumstances. With any such request, the Discharger shall include antidegradation and anti-backsliding analyses as necessary.

6.3.1.1. If present or future investigations demonstrate that the discharges governed by this Order have or will have a reasonable potential to cause or contribute to adverse impacts on water quality or beneficial uses of the receiving waters;

6.3.1.2. If new or revised water quality objectives or total maximum daily loads (TMDLs) come into effect for San Francisco Bay or contiguous water bodies (whether statewide, regional, or site-specific). In such cases, effluent limitations in this Order may be modified as necessary to reflect the updated water quality objectives or wasteload allocations. Adoption of the effluent limitations in this Order is not intended to restrict in any way future modifications based on legally-adopted water quality objectives or TMDLs or as otherwise permitted under federal regulations governing NPDES permit modifications;

6.3.1.3. If translator, dilution, or other water quality studies provide a basis for determining that a permit condition should be modified;

6.3.1.4. If a State Water Board precedential decision, new policy, new law, or new regulation is adopted;

6.3.1.5. If an administrative or judicial decision on a separate NPDES permit or WDRs addresses requirements similar to this discharge; or

6.3.1.6. If the Discharger requests adjustments in effluent limits due to the implementation of stormwater diversion for redirecting dry weather and first flush discharges from a storm drain system to the sanitary sewer system as a stormwater pollutant control strategy.

6.3.2. Effluent Characterization Study and Report

6.3.2.1. **Study Elements.** The Discharger shall characterize and evaluate the discharge from Discharge Points 001 or 002 as required by the MRP to verify that the reasonable potential analysis conclusions of this Order remain valid

and to inform the next permit reissuance. The Discharger shall evaluate on an annual basis if concentrations of any of the priority pollutants listed in Attachment G, Table B, significantly increase over past performance. The Discharger shall investigate the cause of any such increase. The investigation may include, but need not be limited to, an increase in monitoring frequency, monitoring of internal process streams, and monitoring of influent sources. The Discharger shall establish remedial measures addressing any increase resulting in reasonable potential to cause or contribute to an exceedance of applicable water quality objectives. This requirement may be satisfied through identification of the constituent as a "pollutant of concern" in the Discharger's Pollutant Minimization Program, described in Provision 6.3.3.

6.3.2.2. **Reporting Requirements**

6.3.2.2.1. **Routine Reporting.** The Discharger shall report the pollutants detected at or above applicable water quality objectives (see Fact Sheet Table F-6 for the objectives) in the transmittal letter for the self-monitoring report associated with the month in which samples were collected. This requirement does not apply to pollutants with effluent limitations (see Table 2 of this Order).

6.3.2.2.2. **Annual Reporting.** The Discharger shall summarize the annual data evaluation and source investigation in the annual self-monitoring report.

6.3.3. **Pollutant Minimization Program**

6.3.3.1. The Discharger shall continue to improve its existing Pollutant Minimization Program to promote minimization of pollutant loadings to the treatment plant and therefore to the receiving waters.

6.3.3.2. The Discharger shall submit an annual report no later than February 28 of each calendar year. Each annual report shall include at least the following information:

6.3.3.2.1. **Brief description of treatment plant.** The description shall include the service area and treatment plant processes.

6.3.3.2.2. **Discussion of current pollutants of concern.** Periodically, the Discharger shall analyze its circumstances to determine which pollutants are currently a problem and which pollutants may be potential future problems. This discussion shall include the reasons for choosing the pollutants.

6.3.3.2.3. **Identification of sources for pollutants of concern.** This discussion shall include how the Discharger intends to estimate and identify pollutant sources. The Discharger shall include sources or potential sources not

directly within the ability or authority of the Discharger to control, such as pollutants in the potable water supply and air deposition.

6.3.3.2.4. **Identification of tasks to reduce the sources of pollutants of concern.** This discussion shall identify and prioritize tasks to address the Discharger's pollutants of concern. The Discharger may implement the tasks by itself or participate in group, regional, or national tasks that address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that address its pollutants of concern whenever it is efficient and appropriate to do so. An implementation timeline shall be included for each task.

6.3.3.2.5. **Outreach to employees.** The Discharger shall inform employees about the pollutants of concern, potential sources, and how they might be able to help reduce the discharge of these pollutants of concern into the Facility. The Discharger may provide a forum for employees to provide input.

6.3.3.2.6. **Continuation of Public Outreach Program.** The Discharger shall prepare a pollution prevention public outreach program for its service area. Outreach may include participation in existing community events, such as county fairs; initiating new community events, such as displays and contests during Pollution Prevention Week; conducting school outreach programs; conducting plant tours; and providing public information in newspaper articles or advertisements, radio or television stories or spots, newsletters, utility bill inserts, or web sites. Information shall be specific to target audiences. The Discharger shall coordinate with other agencies as appropriate.

6.3.3.2.7. **Discussion of criteria used to measure Pollutant Minimization Program and task effectiveness.** The Discharger shall establish criteria to evaluate the effectiveness of its Pollutant Minimization Program. This discussion shall identify the specific criteria used to measure the effectiveness of each task in Provisions 6.3.3.2.3, 6.3.3.2.4, 6.3.3.2.5, and 6.3.3.2.6.

6.3.3.2.8. **Documentation of efforts and progress.** This discussion shall detail all of the Discharger's Pollutant Minimization Program activities during the reporting year.

6.3.3.2.9. **Evaluation of Pollutant Minimization Program and task effectiveness.** The Discharger shall use the criteria established in Provision 6.3.3.2.7 to evaluate the program and task effectiveness.

6.3.3.2.10. **Identification of specific tasks and timelines for future efforts.** Based on the evaluation, the Discharger shall explain how it intends to continue or change its tasks to more effectively reduce the amount of pollutants flowing to the treatment plant, and subsequently in its effluent.

6.3.3.3. The Discharger shall develop and conduct a Pollutant Minimization Program as described below when there is evidence that a priority pollutant is present in the effluent above an effluent limitation (e.g., sample results reported as detected but not quantified [DNQ] when the effluent limitation is less than the method detection limit [MDL], sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, or results of benthic or aquatic organism tissue sampling) and either:

6.3.3.3.1. A sample result is reported as DNQ and the effluent limitation is less than the Reporting Level (RL); or

6.3.3.3.2. A sample result is reported as not detected (ND) and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in the MRP.

6.3.3.4. If triggered for a reason set forth in Provision 6.3.3.3, above, the Discharger's Pollutant Minimization Program shall include, but not be limited to, the following actions and submittals:

6.3.3.4.1. An annual review and semi-annual monitoring of potential sources of the reportable priority pollutants, which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures when source monitoring is unlikely to produce useful analytical data;

6.3.3.4.2. Quarterly monitoring for the reportable priority pollutants in the influent to the wastewater treatment system. The Executive Officer may approve alternative measures when influent monitoring is unlikely to produce useful analytical data;

6.3.3.4.3. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutants in the effluent at or below the effluent limitation;

6.3.3.4.4. Implementation of appropriate cost-effective control measures for the reportable priority pollutants, consistent with the control strategy; and

6.3.3.4.5. Inclusion of the following specific items within the annual report required by Provision 6.3.3.2, above:

6.3.3.4.5.1. All Pollutant Minimization Program monitoring results for the previous year;

6.3.3.4.5.2. List of potential sources of the reportable priority pollutants;

6.3.3.4.5.3. Summary of all actions undertaken pursuant to the control strategy; and

6.3.3.4.5.4. Description of actions to be taken in the following year.

6.3.4. **Special Provisions for Publicly-Owned Treatment Works**

6.3.4.1. **Pretreatment Program.** The Discharger shall implement and enforce its approved pretreatment program in accordance with federal pretreatment regulations (40 C.F.R. part 403); pretreatment standards promulgated under CWA sections 307(b), 307(c), and 307(d); pretreatment requirements specified under 40 C.F.R. section 122.44(j); and the requirements in Attachment H, "Pretreatment Requirements." The Discharger's responsibilities include, but are not limited to, the following:

6.3.4.1.1. Enforcement of the National Pretreatment Standards of 40 C.F.R. sections 403.5 and 403.6;

6.3.4.1.2. Implementation of its pretreatment program in accordance with legal authorities, policies, procedures, and financial provisions described in the National Pretreatment Program (40 C.F.R. part 403);

6.3.4.1.3. Submission of reports to the State Water Board and the Regional Water Board as described in Attachment H; and

6.3.4.1.4. Evaluation of the need to revise local limits under 40 C.F.R. section 403.5(c)(1) and, by July 1, 2022, submission of a report describing the changes, with a plan and schedule for implementation.

6.3.4.2. **Sludge and Biosolids Management**

6.3.4.2.1. Sludge and biosolids treatment and storage shall not create a nuisance, such as objectionable odors or flies, or result in groundwater contamination.

6.3.4.2.2. Sludge and biosolids treatment and storage site shall have facilities adequate to divert surface runoff from adjacent areas, to protect site boundaries from erosion, and to prevent conditions that would cause drainage from the stored materials. Adequate protection is defined as protection from at least a 100-year storm and the highest possible tidal stage that may occur.

6.3.4.2.3. This Order does not authorize permanent onsite sludge or biosolids storage or disposal. The Discharger shall file a Report of Waste Discharge and bring the site into compliance with applicable regulations prior to commencement of any such activity.

6.3.4.3. **Collection System Management.** The Discharger shall properly operate and maintain its collection system (see Attachments D and G, section 1.4), report any noncompliance with respect to its collection system (see Attachment D, section 5.5.1, and Attachment G, sections 5.5.1 and 5.5.2), and mitigate any discharges in violation of this Order associated with its collection system (see Attachments D and G, section 1.3).

State Water Board Order 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, as amended by State Water Board Order WQ 2013-0058-EXEC (statewide WDRs), contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. The statewide WDRs clearly and specifically stipulate requirements for operation and maintenance and for reporting and mitigating sanitary sewer overflows. Implementing the requirements for operation and maintenance and mitigation of sanitary sewer overflows set forth in the statewide WDRs (and any subsequent order updating these requirements) shall satisfy the corresponding federal NPDES requirements specified in Attachments D and G of this Order for the collection systems. Following the reporting requirements set forth in the statewide WDRs (and any subsequent order updating those requirements) shall satisfy the NPDES reporting requirements for sanitary sewer overflows specified in Attachments D and G.

6.3.4.4. **Resource Recovery from Anaerobically Digestible Material.** If the Discharger receives hauled-in anaerobically-digestible material for injection into an anaerobic digester, the Discharger shall notify the Regional Water Board and develop and implement Standard Operating Procedures for this activity. The Standard Operating Procedures shall be developed prior to initiation of hauling. The Standard Operating Procedures shall address material handling, including unloading, screening, or other processing prior to anaerobic digestion; transportation; spill prevention; spill response; avoidance of the introduction of materials that could cause interference, pass through, or upset of the treatment processes; avoidance of prohibited material; vector control; odor control; operation and maintenance; and the disposition of any solid waste segregated from introduction to the digester. The Discharger shall train its staff on the Standard Operating Procedures and maintain records for a minimum of three years for each load received, describing the hauler, waste type, and quantity received. In addition, the Discharger shall maintain records for a minimum of three years for the disposition, location, and quantity of cumulative pre-digestion segregated solid waste hauled offsite.

6.3.5. **Other Special Provisions**

6.3.5.1. **Copper Action Plan.** The Discharger shall implement pretreatment, source control, and pollution prevention for copper in accordance with the following tasks and time schedule:

Table 3. Copper Action Plan

Task No.	Task	Deadline
1	**Implement Copper Control Program.** Continue implementing existing program to reduce identified copper sources, including, as applicable, taking the following actions: a. Providing education and outreach to the public (e.g., focusing on proper pool and spa maintenance and plumbers' roles in reducing corrosion); b. If corrosion is a significant copper source, working cooperatively with local water purveyors to reduce and control water corrosivity, as appropriate, and ensuring that local plumbing contractors implement best management practices to reduce corrosion in pipes; and c. Educating plumbers, designers, and maintenance contractors for pools and spas to encourage best management practices that minimize copper discharges.	Implementation shall be ongoing
2	**Implement Additional Actions.** If the Regional Water Board notifies the Discharger that the three-year rolling mean dissolved copper concentration in San Pablo Bay exceeds 3.0 µg/L, then within 90 days of the notification, evaluate the effluent copper concentration trend and, if it is increasing, develop and begin implementation of additional measures to control copper discharges. Report the conclusion of the trend analysis and provide a schedule for any new actions to be taken within the next 12 months.	With next annual pollution minimization program report due February 28 (at least 90 days following notification)
3	**Report Status.** Submit an annual report documenting copper control program implementation that evaluates the effectiveness of the actions taken, including any additional actions required by Task 2 above, and provides a schedule for actions to be taken within the next 12 months.	Annually, with annual pollution minimization program report due February 28 each year

6.3.5.2. **Cyanide Action Plan.** The Discharger shall implement monitoring and surveillance, pretreatment, source control, and pollution prevention for cyanide in accordance with the following tasks and time schedule:

Table 4. Cyanide Action Plan

Task No.	Task	Deadline
1	**Review Potential Cyanide Sources.** Submit an up-to-date inventory of potential cyanide sources. If no cyanide source is identified, Tasks 2 and 3, below, are not required unless the Discharger receives a request to discharge detectable levels of cyanide to the sewer. In such case, notify the Executive Officer and implement Tasks 2 and 3.	With annual pollution minimization program report due February 28, 2022
2	**Implement Cyanide Control Program.** Implement a control program to minimize cyanide discharges consisting, at a minimum, of the following elements: a. Inspect each potential source to assess the need to include that source in the control program. b. Inspect sources included in the control program annually. Inspection elements may be based on U.S. EPA guidance, such as	Implementation shall be ongoing following Executive Officer notification under Task 1

Task No.	Task	Deadline
	Industrial User Inspection and Sampling Manual for POTWs (EPA 831 B 94 01). c. Develop and distribute educational materials regarding the need to prevent cyanide discharges to sources included in the control program. d. Prepare an emergency monitoring and response plan to be implemented if a significant cyanide discharge occurs. If the plant influent cyanide concentration exceeds 13 µg/L, the Discharger shall collect a follow-up sample within 5 days of becoming aware of the laboratory results. If the results of the follow-up sample also exceed 13 µg/L, then a "significant cyanide discharge" is occurring.	
3	**Implement Additional Measures.** If the Regional Water Board notifies the Discharger that ambient monitoring shows cyanide concentrations are 1.0 µg/L or higher in the main body of San Francisco Bay, then within 90 days of the notification, commence actions to identify and abate cyanide sources responsible for the elevated ambient concentrations, report on the progress and effectiveness of the actions taken, and provide a schedule for actions to be taken within the next 12 months..	With next annual pollution minimization program report due February 28 (at least 90 days following notification)
4	**Report Status of Cyanide Control Program.** Submit an annual report documenting cyanide control program implementation and addressing the effectiveness of actions taken, including any additional cyanide controls required by Task 3, above, and provide a schedule for actions to be taken within the next 12 months.	Annually, with annual pollution minimization program report due February 28 each year

6.3.5.3. **Average Annual Selenium Load.** The Discharger shall report the average annual selenium load from Discharge Points 001 or 002 with its application for permit reissuance. The average annual load shall be the arithmetic mean of the annual mass discharges for the previous permit term. Annual mass emissions shall be computed as follows:

Annual Mass emission rate (kg/day) = $(3.785/N) \sum Q_i C_i$

Where:

N = number of samples in a year
Q_i = flow rate (MGD) associated with the i^{th} sample, valid until a new sample is collected
C_i = selenium concentration (mg/L) associated with the i^{th} sample, valid until a new sample is collected

When calculating selenium loads, the Discharger shall use estimated values and assume data reported below the method detection limit equal half of the detection limit.

6.3.5.4. **Discharge Relocation.** The Discharger shall submit the following documentation and wait for Executive Officer written concurrence prior to commencing discharge at Discharge Point No. 002:

6.3.5.4.1. Physical description of the relocated discharge pipeline and outfall structure, including as-built outfall latitude and longitude;

6.3.5.4.2. Certification by a licensed professional that the new outfall and pipeline have been constructed as designed, have been tested, and are ready for use;

6.3.5.4.3. Updates to the Operations and Maintenance Manual and Contingency Plan that include the new outfall;

6.3.5.4.4. Documentation of consultation with National Marine Fisheries Service (NMFS) and/or U.S. Fish and Wildlife Service (USFWS) to assess whether discharges from Discharge Point 002 are likely to adversely affect threatened or endangered species or critical habitat;

6.3.5.4.5. Written correspondence from NMFS and/or USFWS that either (a) includes a finding that discharges from Discharge Point 002 are unlikely to adversely affect threated or listed species and/or critical habitat; or (b) determines that discharges from Discharge Point 002 are likely to adversely affect threatened or endangered species;

6.3.5.4.6. If NMFS and/or USFWS determine that discharges from Discharge Point 002 are likely to adversely affect threatened or endangered species, documentation that any mitigation NMFS and/or USFWS identify as necessary has been implemented;

6.3.5.4.7. If NMFS and/or USFWS determine that discharges from Discharge Point 002 are likely to adversely affect threatened or endangered species and sufficient mitigation is impossible, documentation of NMFS and/or USFWS authorization for a potential take under section 7 of the Endangered Species Act (otherwise the Discharger shall not commence discharge at Discharge Point 002);

6.3.5.4.8. Demonstration of compliance with all applicable provisions of the California Environmental Quality Act (California Public Resources Code Division 13, Chapter 3, section 21100 et seq.); and

6.3.5.4.9. Notification, at least 30 days prior, of specific dates the Discharger proposes to cease discharging from Discharge Point 001 and to commence discharging from Discharge Point 002.

6.3.5.5. **Reliable Treatment.** The Discharger shall equalize treated wastewater, subsequent to secondary clarification, in the oxidation ponds or wetlands, for at least one week of mean hydraulic residence time. Compliance shall be determined by calculation with the calculation results reported when there is discharge as required in the MRP.

ATTACHMENT A – DEFINITIONS AND ABBREVIATIONS

DEFINITIONS

Arithmetic Mean (μ)
Also called the average, sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$

where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples

Average Monthly Effluent Limitation (AMEL)
Highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
Highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative
Taken up by an organism from its surrounding medium through gill membranes, through epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic
Known to cause cancer in living organisms.

Coefficient of Variation (CV)
Measure of data variability calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge
Either: (1) the total mass of a constituent discharged over a calendar day (12:00 a.m. through 11:59 p.m.) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit) for a constituent with limitations expressed in units of mass; or (2) the unweighted arithmetic mean measurement of a constituent over a day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period is considered the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ)
Sample results less than the RL, but greater than or equal to the laboratory's MDL. Sample results reported as DNQ are estimated concentrations.

Dilution Credit
Amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA)
Value derived from the water quality criterion or objective, dilution credit, and ambient background concentration that is used, in conjunction with the CV for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as wasteload allocation (WLA) as used in U.S. EPA guidance (*Technical Support Document for Water Quality-based Toxics Control*, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays
Indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration
Concentration that results from the confirmed detection of a substance below the ML by the analytical method.

Estuaries
Waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters are considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220; Suisun Bay; Carquinez Strait downstream to the Carquinez Bridge; and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters
All surface waters of the state that are not the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation
Highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
Lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL)
Highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median
Middle measurement in a data set. The median of a data set is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2+1)})/2$ (i.e., the midpoint between n/2 and n/2+1).

Method Detection Limit (MDL)
Minimum concentration of a substance that can be reported with 99 percent confidence that the measured concentration is distinguishable from method blank results, as defined in 40 C.F.R. part 136, Appendix B.

Minimum Level (ML)
Concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone
Limited volume of receiving water allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND)
Sample results less than the laboratory's MDL.

Persistent Pollutants
Substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program
Program of waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of a Pollutant Minimization Program is to reduce all potential sources of a priority pollutant through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. Cost effectiveness may be considered when establishing the requirements of a Pollutant Minimization Program. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), is considered to fulfill the Pollutant Minimization Program requirements.

Pollution Prevention
Any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State Water Resources Control Board or Regional Water Board.

Reporting Level (RL)
ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order, including an additional factor if applicable as discussed herein. For priority pollutants, the MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from State Implementation Plan (SIP) Appendix 4 in accordance with SIP section 2.4.2 or established in accordance with SIP section 2.4.3. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Source of Drinking Water
Any water designated as municipal or domestic supply (MUN) beneficial use.

Standard Deviation (σ)
Measure of variability calculated as follows:

$$\text{Standard deviation} = \sigma = (\Sigma[(x - \mu)^2]/(n - 1))^{0.5}$$

where: x is the observed value
μ is the arithmetic mean of the observed values
n is the number of samples

Toxicity Reduction Evaluation (TRE)
Study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. A TIE is a set of procedures to identify the specific chemicals responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.

ABBREVIATIONS

%	Percent
°C	degrees Celsius
°F	degrees Fahrenheit
µg/L	Micrograms per liter
1/Blending Event	Once per blending event
1/Day	Once per day
1/Month	Once per month
1/Quarter	Once per quarter
1/Week	Once per week
1/Year	Once per year
2/Month	Two times per month
2/Week	Twice per week
2/Year	Twice per year
3/Week	Three times per week
4/Week	Four times per week
5/Week	Five times per week
AMEL	Average monthly effluent limitation
AWEL	Average weekly effluent limitation
B	Background concentration
C	Water quality criterion or objective
C-24	24-hour composite

CFU/100 mL	Colony forming units per 100 milliliters
Continuous	Measured continuously
Continuous/D	Measured continuously, and recorded and reported daily
Continuous/H	Measured continuously, and recorded and reported hourly
CV	Coefficient of Variation
DNQ	Detected, but not quantified
DL	Detection level
ECA	Effluent Concentration Allowance
Grab	Grab sample
MDEL	Maximum Daily Effluent Limitation
MDL	Method detection limit
MEC	Maximum effluent concentration
MG	Million gallons
mg/L	Milligrams per liter
mg/L as N	Milligrams per liter as nitrogen
MGD	Million gallons per day
ML	Minimum level
MPN/100 mL	Most probable number per 100 milliliters
ND	Not detected
NTU	Nephelometric turbidity units
ppt	Parts per thousand
RL	Reporting level
RPA	Reasonable potential analysis
s.u.	Standard pH units
TIE	Toxicity identification evaluation
TRE	Toxicity reduction evaluation
TUa	Acute toxicity units
TUc	Chronic toxicity units

ATTACHMENT B – MAPS

Figure B-1. Satellite Image of Facility

Figure B-2. Topographic Map of Facility and Surroundings

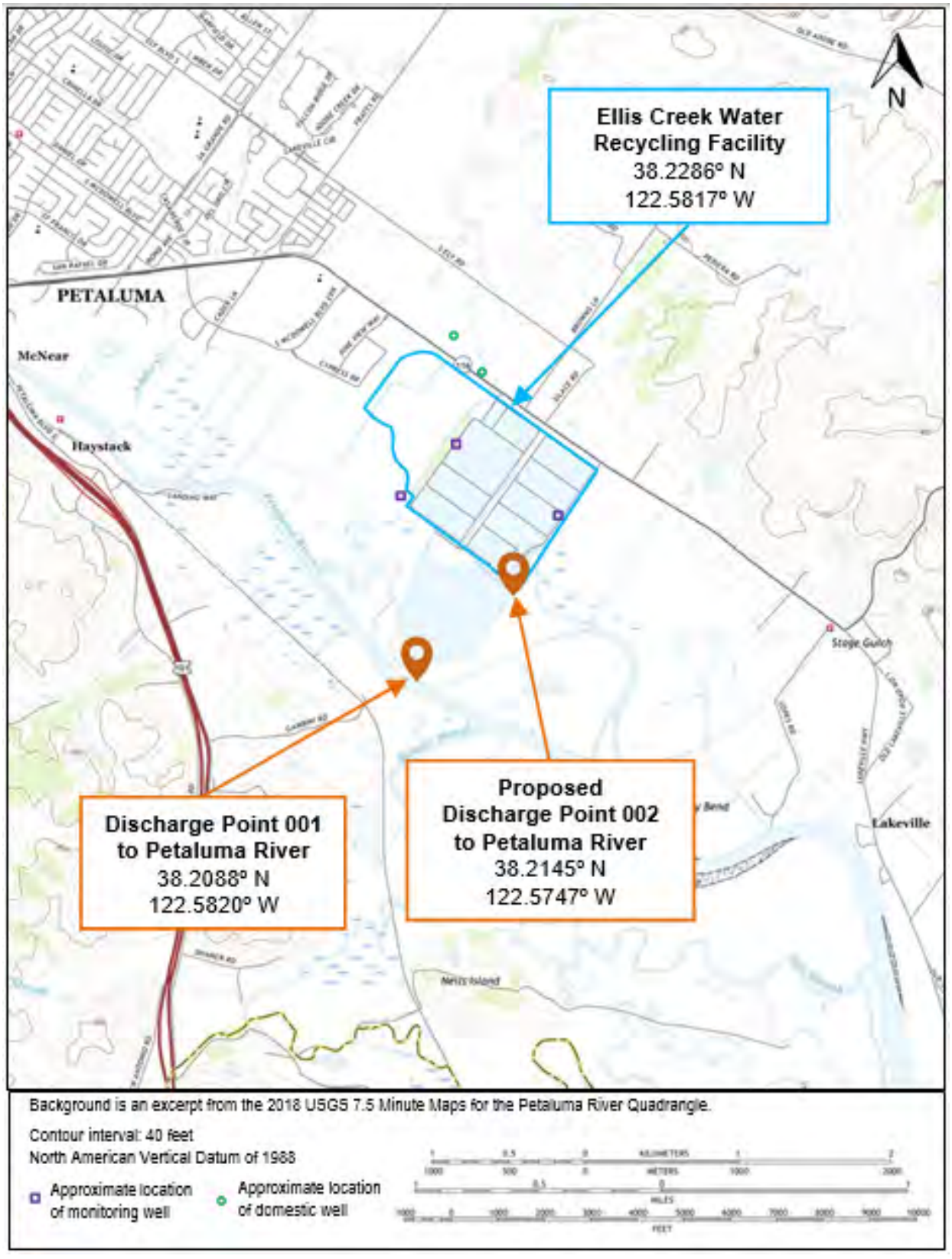
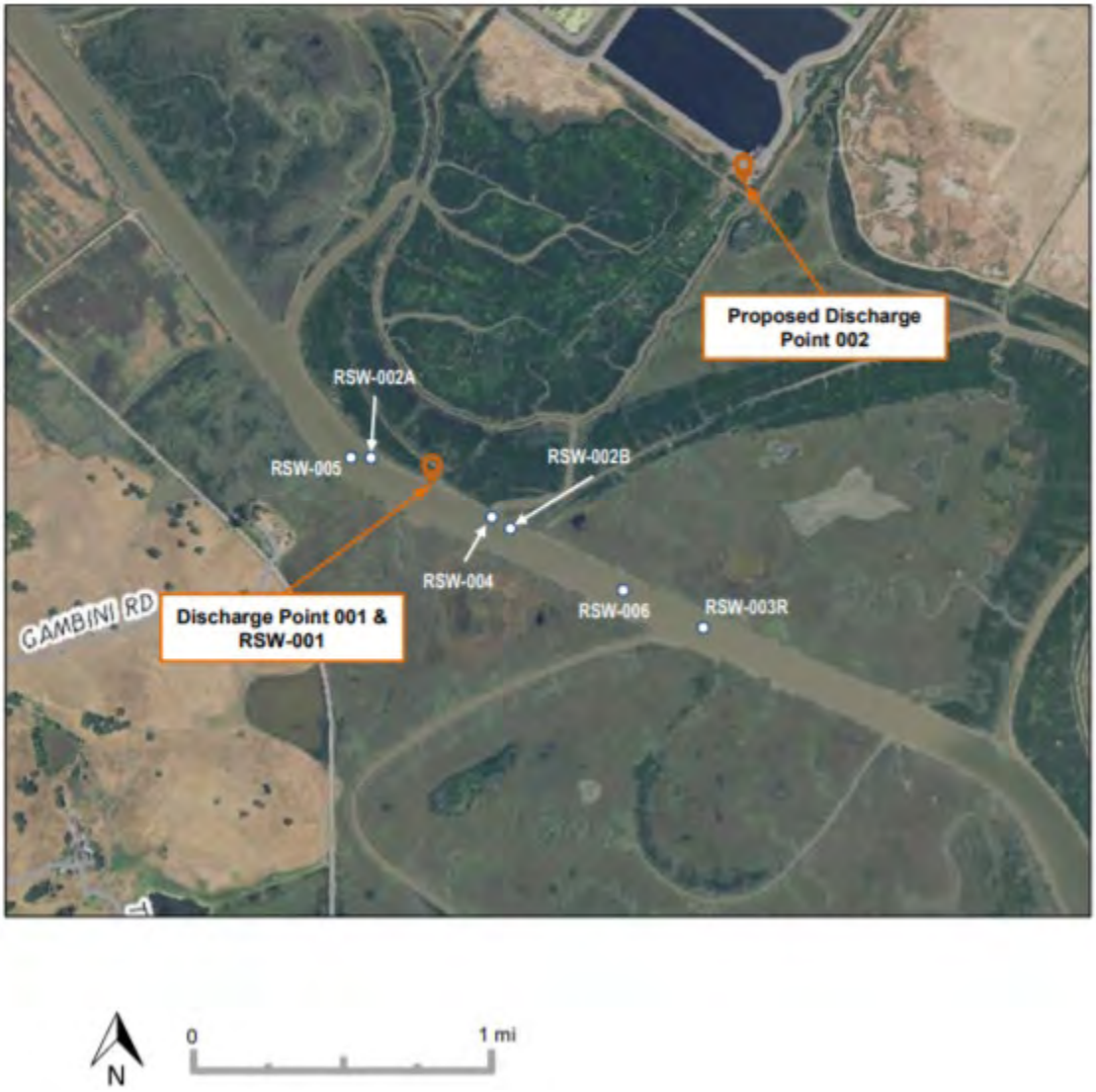


Figure B-3. Receiving Water Monitoring Locations



ATTACHMENT C – FLOW SCHEMATIC

Figure C-1: Plant flow schematic

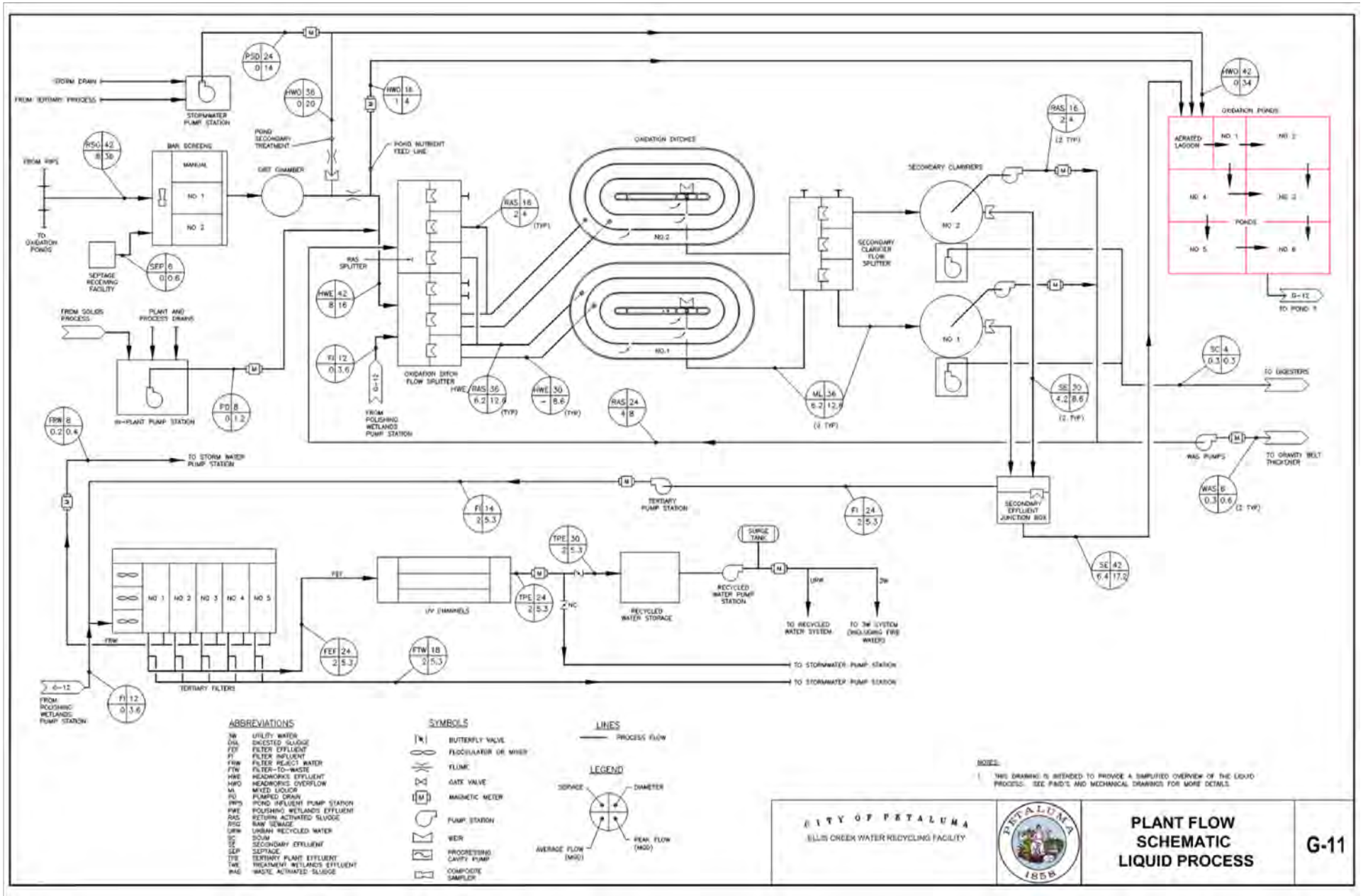
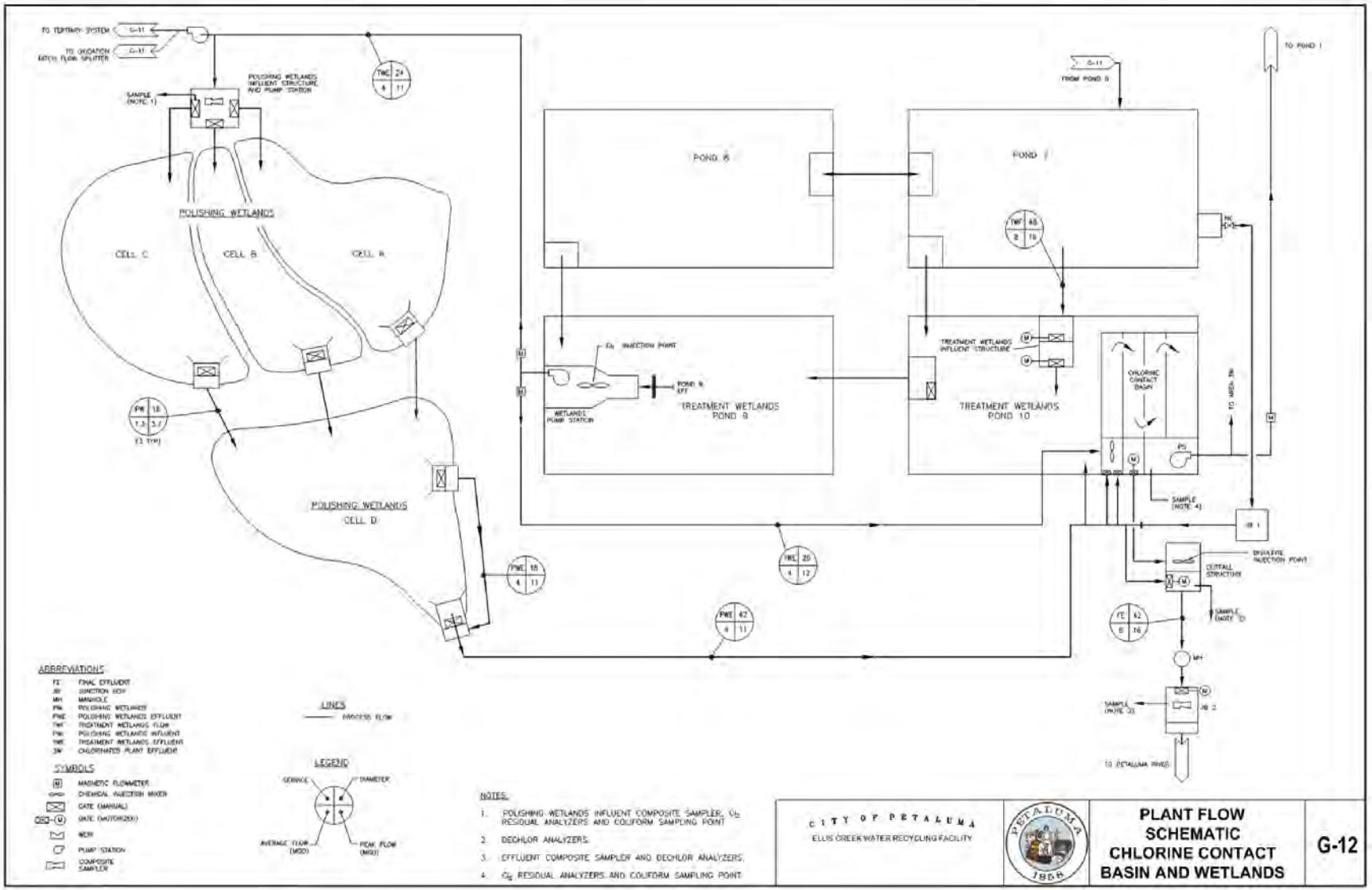


Figure C-2: Plant flow schematic for chlorine contact basin and wetlands



ATTACHMENT D – STANDARD PROVISIONS

CONTENTS

ATTACHMENT D – STANDARD PROVISIONS

1. STANDARD PROVISIONS – PERMIT COMPLIANCE

1.1. Duty to Comply

1.1.1. The Discharger must comply with all of the terms, requirements, and conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; denial of a permit renewal application; or a combination thereof. (40 C.F.R. § 122.41(a); Wat. Code, §§ 13261, 13263, 13265, 13268, 13000, 13001, 13304, 13350, 13385.)

1.1.2. The Discharger shall comply with effluent standards or prohibitions established under CWA section 307(a) for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

1.2. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 C.F.R. § 122.41(c).)

1.3. Duty to Mitigate. The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

1.4. Proper Operation and Maintenance. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 C.F.R. § 122.41(e).)

1.5. Property Rights

1.5.1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)

1.5.2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. § 122.5(c).)

1.6. Inspection and Entry. The Discharger shall allow the Regional Water Board, State Water Board, U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i); Wat. Code, §§ 13267, 13383):

1.6.1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(i); 40 C.F.R. § 122.41(i)(1); Wat. Code, §§ 13267, 13383);

1.6.2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(2); Wat. Code, §§ 13267, 13383);

1.6.3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(3); Wat. Code, §§ 13267, 13383); and

1.6.4. Sample or monitor, at reasonable times, for the purposes of ensuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i)(4); Wat. Code, §§ 13267, 13383.)

1.7. Bypass

1.7.1. **Definitions**

1.7.1.1. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)

1.7.1.2. “Severe property damage” means substantial physical damage to property; damage to the treatment facilities, which causes them to become inoperable; or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)

1.7.2. **Bypass not exceeding limitations.** The Discharger may allow any bypass to occur that does not cause exceedances of effluent limitations, but only if it is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance sections 1.7.3, 1.7.4, and 1.7.5 below. (40 C.F.R. § 122.41(m)(2).)

1.7.3. **Prohibition of bypass.** Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):

1.7.3.1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));

1.7.3.2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and

1.7.3.3. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance section 1.7.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)

1.7.4. **Approval.** The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance section 1.7.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)

1.7.5. **Notice**

1.7.5.1. **Anticipated bypass.** If the Discharger knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least 10 days before the date of the bypass. The notice shall be sent to the Regional Water Board. As of December 21, 2025, a notice shall also be submitted electronically to the initial recipient defined in Standard Provisions – Reporting section 5.10 below. Notices shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(m)(3)(i).)

1.7.5.2. **Unanticipated bypass.** The Discharger shall submit a notice of an unanticipated bypass as required in Standard Provisions – Reporting section 5.5 below (24-hour notice). The notice shall be sent to the Regional Water Board. As of December 21, 2025, a notice shall also be submitted electronically to the initial recipient defined in Standard Provisions – Reporting section 5.10 below. Notices shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(m)(3)(ii).)

1.8. Upset. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 C.F.R. § 122.41(n)(1).)

1.8.1. **Effect of an upset.** An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance section 1.8.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)

1.8.2. **Conditions necessary for a demonstration of upset.** A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):

1.8.2.1. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));

1.8.2.2. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));

1.8.2.3. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting section 5.5.2.2 below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and

1.8.2.4. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance section 1.3 above. (40 C.F.R. § 122.41(n)(3)(iv).)

1.8.3**. Burden of proof.** In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

2. STANDARD PROVISIONS – PERMIT ACTION

2.1. General. This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 C.F.R. § 122.41(f).)

2.2. Duty to Reapply. If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 C.F.R. § 122.41(b).)

2.3. Transfers. This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and Water Code. (40 C.F.R. §§ 122.41(l)(3), 122.61.)

3. STANDARD PROVISIONS – MONITORING

3.1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)

3.2. Monitoring must be conducted according to test procedures approved under 40 C.F.R. part 136 for the analyses of pollutants unless another method is required under 40 C.F.R. chapter 1, subchapter N. Monitoring must be conducted according to sufficiently sensitive test methods approved under 40 C.F.R. part 136 for the analysis of pollutants or pollutant parameters or as required under 40 C.F.R. chapter 1, subchapter N. For the purposes of this paragraph, a method is sufficiently sensitive when:

3.2.1. The method minimum level (ML) is at or below the level of the most stringent effluent limitation established in the permit for the measured pollutant or pollutant parameter, and either the method ML is at or below the level of the most stringent applicable water quality criterion for the measured pollutant or pollutant parameter or the method ML is above the applicable water quality criterion but the amount of the pollutant or pollutant parameter in the facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or

3.2.2. The method has the lowest ML of the analytical methods approved under 40 C.F.R. part 136 or required under 40 C.F.R. chapter 1, subchapter N, for the measured pollutant or pollutant parameter.

In the case of pollutants or pollutant parameters for which there are no approved methods under 40 C.F.R. part 136 or otherwise required under 40 C.F.R. chapter 1, subchapter N, monitoring must be conducted according to a test procedure specified in this Order for such pollutants or pollutant parameters. (40 C.F.R. §§ 122.21(e)(3), 122.41(j)(4), 122.44(i)(1)(iv).)

4. STANDARD PROVISIONS – RECORDS

4.1. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report, or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)

4.2. Records of monitoring information shall include:

4.2.1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));

4.2.2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));

4.2.3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));

4.2.4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));

4.2.5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and

4.2.6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)

4.3. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):

4.3.1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and

4.3.2. Permit applications and attachments, permits, and effluent data. (40 C.F.R. § 122.7(b)(2).)

5. STANDARD PROVISIONS – REPORTING

5.1. Duty to Provide Information. The Discharger shall furnish to the Regional Water Board, State Water Board, or U.S. EPA within a reasonable time, any information that the Regional Water Board, State Water Board, or U.S. EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or U.S. EPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, §§ 13267, 13383.)

5.2. Signatory and Certification Requirements

5.2.1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting sections 5.2.2, 5.2.3, 5.2.4, 5.2.5, and 5.2.6 below. (40 C.F.R. § 122.41(k).)

5.2.2. For a corporation, all permit applications shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (2) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to ensure long term environmental

compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (40 C.F.R. § 122.22(a)(1).)

For a partnership or sole proprietorship, all permit applications shall be signed by a general partner or the proprietor, respectively. (40 C.F.R. § 122.22(a)(2).)

For a municipal, state, federal, or other public agency, all permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA). (40 C.F.R. § 122.22(a)(3).).

5.2.3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or U.S. EPA shall be signed by a person described in Standard Provisions – Reporting section 5.2.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

5.2.3.1. The authorization is made in writing by a person described in Standard Provisions – Reporting section 5.2.2 above (40 C.F.R. § 122.22(b)(1));

5.2.3.2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and

5.2.3.3. The written authorization is submitted to the Regional Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)

5.2.4. If an authorization under Standard Provisions – Reporting section 5.2.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting section 5.2.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)

5.2.5. Any person signing a document under Standard Provisions – Reporting section 5.2.2 or 5.2.3 above shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 C.F.R. § 122.22(d).)

5.2.6. Any person providing the electronic signature for documents described in Standard Provisions – Reporting sections 5.2.1, 5.2.2, or 5.2.3 that are submitted electronically shall meet all relevant requirements of Standard Provisions – Reporting section 5.2, and shall ensure that all relevant requirements of 40 C.F.R. part 3 (Cross-Media Electronic Reporting) and 40 C.F.R. part 127 (NPDES Electronic Reporting Requirements) are met for that submission. (40 C.F.R § 122.22(e).)

5.3. Monitoring Reports

5.3.1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.41(l)(4).)

5.3.2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board. All reports and forms must be submitted electronically to the initial recipient defined in Standard Provisions – Reporting section 5.10 and comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(l)(4)(i).)

5.3.3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. chapter 1, subchapter N, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or reporting form specified by the Regional Water Board or State Water Board. (40 C.F.R. § 122.41(l)(4)(ii).)

5.3.4. Calculations for all limitations that require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii).)

5.4. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order shall be submitted no later than 14 days following each schedule date. (40 C.F.R. § 122.41(l)(5).)

5.5. Twenty-Four Hour Reporting

5.5.1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written report shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

For noncompliance related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (i.e., combined sewer overflow, sanitary sewer overflow, or bypass event), type of overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volume untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the event, and whether the noncompliance was related to wet weather.

As of December 21, 2025, all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events must be submitted to the Regional Water Board and must be submitted electronically to the initial recipient defined in Standard Provisions – Reporting section 5.10 The reports shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. The Regional Water Board may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (40 C.F.R. § 122.41(l)(6)(i).)

5.5.2. The following shall be included as information that must be reported within 24 hours:

5.5.2.1. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)

5.5.2.2. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)

5.5.3. The Regional Water Board may waive the above required written report on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(ii)(B).)

5.6. Planned Changes. The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. § 122.41(l)(1)):

5.6.1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i)); or

5.6.2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order unless the discharge is an existing manufacturing, commercial, mining, or silvicultural discharge as referenced in 40 C.F.R. section 122.42(a). (40 C.F.R. § 122.41(l)(1)(ii).) If the discharge is an existing manufacturing, commercial, mining, or silvicultural discharge as referenced in 40 C.F.R. section 122.42(a), this notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under 40 C.F.R. section 122.42(a)(1) (see Additional Provisions – Notification Levels section 7.1.1). (40 C.F.R. § 122.41(l)(1)(ii).)

5.7. Anticipated Noncompliance. The Discharger shall give advance notice to the Regional Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order's requirements. (40 C.F.R. § 122.41(l)(2).)

5.8. Other Noncompliance. The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting sections 5.3, 5.4, and 5.5 above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting section 5.5 above. For noncompliance related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in Standard Provision – Reporting section 5.5 and the applicable required data in appendix A to 40 C.F.R. part 127. The Regional Water Board may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (40 C.F.R. § 122.41(l)(7).)

5.9. Other Information. When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or U.S. EPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)

5.10. Initial Recipient for Electronic Reporting Data. The owner, operator, or duly authorized representative is required to electronically submit NPDES information specified in appendix A to 40 C.F.R. part 127 to the initial recipient defined in 40 C.F.R. section 127.2(b). U.S. EPA will identify and publish the list of initial recipients on its website and in the Federal Register, by state and by NPDES data group [see 40 C.F.R. section 127.2(c)]. U.S. EPA will update and maintain this list. (40 C.F.R. § 122.41(l)(9).)

6. STANDARD PROVISIONS – ENFORCEMENT

6.1. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, Water Code sections 13268, 13385, 13386, and 13387.

7. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

7.1. Non-Municipal Facilities. Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the Regional Water Board as soon as they know or have reason to believe (40 C.F.R. § 122.42(a)):

7.1.1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following “notification levels” (40 C.F.R. § 122.42(a)(1)):

7.1.1.1. 100 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(1)(i));

7.1.1.2. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4 dinitrophenol and 2-methyl 4,6 dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(1)(ii));

7.1.1.3. Five (5) times the maximum concentration reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(1)(iii)); or

7.1.1.4. The level established by the Regional Water Board in accordance with 40 C.F.R. section 122.44(f). (40 C.F.R. § 122.42(a)(1)(iv).)

7.1.2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following “notification levels" (40 C.F.R. § 122.42(a)(2)):

7.1.2.1. 500 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(2)(i));

7.1.2.2. 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(2)(ii));

7.1.2.3. Ten (10) times the maximum concentration reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(2)(iii)); or

7.1.2.4. The level established by the Regional Water Board in accordance with 40 C.F.R. section 122.44(f). (40 C.F.R. § 122.42(a)(2)(iv).)

7.2 Publicly Owned Treatment Works (POTWs)

7.2.1. All POTWs shall provide adequate notice to the Regional Water Board of any new introduction of pollutants into the POTW from an indirect discharger that

would be subject to CWA sections 301 or 306 if it were directly discharging those pollutants (40 C.F.R. § 122.42(b)(1)).

7.2.2. All POTWs shall provide adequate notice to the Regional Water Board of any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of this Order. (40 C.F.R. § 122.42(b)(2).)

7.2.3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 C.F.R. § 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

CONTENTS

TABLES

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Clean Water Act (CWA) section 308 and 40 C.F.R. sections 122.41(h), (j)-(l), 122.44(i), and 122.48 require that all NPDES permits specify monitoring and reporting requirements. Water Code section 13383 also authorizes the Regional Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. This MRP establishes monitoring, reporting, and recordkeeping requirements that implement the federal and State laws and regulations.

1. GENERAL MONITORING PROVISIONS

1.1. The Discharger shall comply with this MRP. The Executive Officer may amend this MRP pursuant to 40 C.F.R. section 122.63. If any discrepancies exist between this MRP and the “Regional Standard Provisions, and Monitoring and Reporting Requirements (Supplement to Attachment D) for NPDES Wastewater Discharge Permits” (Attachment G), this MRP shall prevail.

1.2. The Discharger shall conduct all monitoring in accordance with Attachment D section 3, as supplemented by Attachment G. Equivalent test methods must be more sensitive than those specified in 40 C.F.R. section 136 and must be specified in this permit.

1.3. For the analysis of monitoring samples, the Discharger shall use laboratories certified by the State Water Resources Control Board (State Water Board) in accordance with Water Code section 13176 and shall obtain quality assurance/quality control data with laboratory reports. For any onsite field tests (e.g., turbidity, pH, temperature, dissolved oxygen, conductivity, disinfectant residual) analyzed by a noncertified laboratory, the Discharger shall implement a Quality Assurance-Quality Control Program. The Discharger shall keep a manual onsite containing the steps followed in this program and shall demonstrate sufficient capability to adequately perform these field tests (e.g., qualified and trained employees, properly calibrated and maintained field instruments). The program shall conform to U.S. EPA guidelines or other approved procedures.

1.4. The Discharger shall ensure that the results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or most recent Water Pollution Performance Evaluation Study are submitted annually to the State Water Board electronically to the DMR-QA Officer via email.

2. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements of this Order:

Table E-1. Monitoring Locations

Discharge Point	Monitoring Location	Monitoring Location Description
Influent	INF-001	Any point in the plant at which all waste tributary to the treatment system is present and preceding any phase of treatment that may alter the influent character.
Effluent	EFF-001	Any point in the outfall pipe between the point of discharge to the Petaluma River or tidal slough and a point after final treatment at which all flow contributing to the outfall is present. May be the same as Monitoring Location EFF-001-D.
Effluent	EFF-001-D	Any point in the disinfection facility where adequate contact with the disinfectant is ensured.
Effluent	REC-001	Any point after full treatment, including disinfection, that represents all wastewater directed offsite for tertiary recycled water distribution and thus not discharged to the Petaluma River.
Receiving Water	RSW-001	A point in the Petaluma River directly above Discharge Point 001.
Receiving Water	RSW-002A	A point in the Petaluma River 500 feet northwest (upstream) of Discharge Point 001.
Receiving Water	RSW-002B	A point in the Petaluma River 500 feet southeast (downstream) of Discharge Point 001.
Receiving Water	RSW-003R	A point in the Petaluma River 2,000 feet southeast (downstream) of Discharge Point 001.
Receiving Water	RSW-004	A point in the Petaluma River at its confluence with the tidal slough connecting to Discharge Point 002
Receiving Water	RSW-005	A point in the Petaluma River 1,000 feet northwest (upstream) of its confluence with the tidal slough connecting to Discharge Point 002.
Receiving Water	RSW-006	A point in the Petaluma River 1,000 feet southeast (downstream) of its confluence with the tidal slough connecting to Discharge Point 002.
Biosolids	BIO-001	Any point following onsite biosolids processing.

3. INFLUENT MONITORING

3.1. The Discharger shall monitor plant influent at Monitoring Location INF-001 as follows:

Table E-2. Influent Monitoring

Parameter	Unit	Sample Type	Minimum Sampling Frequency
Flow [1]	MG/MGD	Continuous	Continuous/D
Biochemical Oxygen Demand (5-day @ 20°C) (BOD) [2]	mg/L	C-24	1/Week
Total Suspended Solids (TSS) [2]	mg/L	C-24	1/Week
Cyanide [3]	µg/L	Grab	1/Month

Footnotes:

[1] Flow shall be monitored continuously and the following flow information shall be reported in monthly self-monitoring reports:

- Daily average flow rate (MGD)
- Total monthly flow volume (MG)

[2] The Discharger shall collect influent samples on the same days as effluent samples. The monitoring frequency may be decreased to once per quarter when not discharging to Discharge Points 001 or 002.

[3] The Discharger may, at its option, analyze for cyanide as weak acid dissociable cyanide using protocols specified in 40 C.F.R. Part 136, or an equivalent method in the latest Standard Method edition.

4. EFFLUENT MONITORING

4.1. When discharging at Discharge Points 001 or 002, the Discharger shall monitor plant effluent at Monitoring Location EFF-001 as follows:

Table E-3. Effluent Monitoring

Parameter	Unit	Sample Type	Minimum Sampling Frequency
Flow [1]	MG/MGD	Continuous	Continuous/D
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	C-24	1/Week
Total Suspended Solids	mg/L	C-24	1/Week
Oil and Grease	mg/L	Grab	1/Quarter
Enterococcus Bacteria [2]	CFU/100 mL [3]	Grab	1/Week
Ammonia, Total	mg/L as N	C-24	1/Month [4]
pH	s.u.	Grab	1/Day [4, 5]
Temperature	ºC	Grab	1/Day [4]
Acute Toxicity [6]	% survival	Continuous or C-24	1/Month
Chronic Toxicity [7]	TU_c	C-24	1/Quarter
Chlorine, Total Residual [8]	mg/L	Continuous or Grab	Continuous/1H
Copper, Total Recoverable	µg/L	C-24	1/Month
Cyanide [9]	µg/L	Grab	1/Month
Dioxin-TEQ	µg/L	Grab	1/Year
Secondary Treated Effluent Equalization Time	days	Calculation	1/Week
Selenium	µg/L	C-24	1/Month
Priority Pollutants [10]	µg/L	Grab [11]	Once

Footnotes:

[1] The following flow information shall be reported in monthly self-monitoring reports:

- Daily average flow rate (MGD)
- Total monthly flow volume (MG)

[2] U.S. EPA Method 1600 or an equivalent method is suggested to measure culturable enterococci. The Discharger shall monitor for *Enterococcus* bacteria at Monitoring Location EFF-001-D.

[3] Results may be reported as either Most Probable Number (MPN)/100 mL if the laboratory method used provides results in MPN/100 mL or Colony Forming Units (CFU)/100 mL if the laboratory method used provides results in CFU/100 mL.

[4] Ammonia monitoring shall be performed on the same day as pH and temperature monitoring.

[5] If pH is monitored continuously, the minimum and maximum for each day shall be reported in self-monitoring reports.

[6] Acute toxicity tests shall be performed in accordance with MRP section 5.1. Samples may be collected prior to disinfection.

[7] Chronic toxicity tests shall be performed in accordance with MRP section 5.2. Samples may be collected prior to disinfection.

[8] During times when at least a portion of the effluent has been routed through the chlorine contact chamber, effluent chlorine concentrations shall be measured continuously. Otherwise, when dechlorinating naturally through the polishing wetlands, effluent chlorine concentrations shall be measured by collection of grab samples twice daily at least four hours apart. Chlorine residual concentrations shall be monitored and reported for sampling points both before and after dechlorination. The

Discharger shall report the maximum residual chlorine concentration observed following dechlorination on a daily basis. Total chlorine dosage (kg/day) shall be recorded on a daily basis.

Alternatively, effluent residual chlorine concentrations may be monitored continuously, or by collecting grab samples every hour, immediately following dechlorination. The Discharger shall describe all excursions of the chlorine limit in the transmittal letter of self-monitoring reports as required by Attachment G section 5.3.1.1. If monitoring continuously, the Discharger shall report through data upload to CIWQS, from discrete readings of the continuous monitoring every hour on the hour, the maximum for each day and any other discrete hourly reading that exceed the effluent limit, and, for the purpose of mandatory minimum penalties required by Water Code section 13385(i), compliance shall be based only on these discrete readings. The Discharger shall retain continuous monitoring readings for at least three years. The Regional Water Board reserves the right to use all continuous monitoring data for discretionary enforcement.

The Discharger may elect to use a continuous on-line monitoring system for measuring or determining that residual dechlorinating agent is present. This monitoring system may be used to prove that anomalous residual chlorine exceedances measured by on-line chlorine analyzers are false positives and are not valid total residual chlorine detections because it is chemically improbable to have chlorine present in the presence of sodium bisulfite. If Regional Water Board staff finds convincing evidence that chlorine residual exceedances are false positives, the exceedances are not violations of this Order's total residual chlorine limit.

[9] The Discharger may, at its option, analyze for cyanide as weak acid dissociable cyanide using protocols specified in 40 C.F.R. Part 136, or an equivalent method in the latest Standard Method edition.

[10] The Discharger shall monitor for the pollutants listed in Attachment G, Table B.

[11] The Discharger shall collect C-24 samples for metals.

4.2. Discharges Reused Offsite. The Discharger shall monitor plant effluent flow at Monitoring Location REC-001 continuously and shall report daily average flow (MGD) and total monthly flow volume (MG) in self-monitoring reports.

5. TOXICITY MONITORING

5.1. Acute Toxicity

5.1.1. Compliance with the acute toxicity effluent limitations shall be evaluated at Monitoring Location EFF-001 by measuring survival of test organisms exposed to 96-hour static renewal bioassays. Effluent samples may be before disinfection for toxicity tests.

5.1.2. Test organisms shall be fathead minnow (*Pimephales promelas*). Alternatively, the Executive Officer may specify a more sensitive organism or, if testing a particular organism proves unworkable, the most sensitive organism available.

5.1.3. All bioassays shall be performed according to the most up-to-date protocols in 40 C.F.R. part 136, currently *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms*, 5th Edition (EPA-821-R-02-012). If these protocols prove unworkable, the Executive Officer and the Environmental Laboratory Accreditation Program may grant exceptions in writing upon the Discharger's request with justification.

5.1.4. If the Discharger demonstrates that specific identifiable substances in the discharge are rapidly rendered harmless upon discharge to the receiving water, compliance with the acute toxicity limit may be determined after test samples are adjusted to remove the influence of those substances. Written acknowledgement that the Executive Officer concurs with the Discharger's demonstration and that the adjustment will not remove the influence of other substances must be obtained prior to any such adjustment. The Discharger is authorized to adjust the effluent pH in order to suppress the level of un-ionized

(free) ammonia. This adjustment shall be achieved by continuously monitoring test tank pH and automatic addition of analytical grade acid as needed, using a combination of continuous pH-sensor/analyzer and pump.

5.1.5. Effluent used for fish bioassays must be dechlorinated prior to testing. If biological growth in the dechlorinated effluent sample line is a potential problem, chlorinated effluent that is dechlorinated separately from the plant dechlorination process may be used for the bioassay test. The sample may be taken from final secondary or advanced secondary effluent prior to disinfection. Bioassay monitoring shall include, on a daily basis, pH, dissolved oxygen, ammonia (if toxicity is observed), temperature, hardness, and alkalinity. These results shall be reported. If final or intermediate results of an acute bioassay test indicate a violation or threatened violation (e.g., the percentage of surviving test organisms is less than 70 percent), the Discharger shall initiate a new test as soon as practical and shall investigate the cause of the mortalities and report its findings in the next self-monitoring report. The Discharger shall repeat the test until a test fish survival rate of 90 percent or greater is observed. If the control fish survival rate is less than 90 percent, the bioassay test shall be restarted with new fish and shall continue as soon as practical until an acceptable test is completed (i.e., control fish survival rate is 90 percent or greater).

5.2. Chronic Toxicity

5.2.1. Monitoring Requirements

5.2.1.1. **Sampling.** The Discharger shall collect 24-hour composite effluent samples at Monitoring Location EFF-001 for critical life stage toxicity testing as indicated below. Effluent samples may be before disinfection for toxicity tests. For toxicity tests requiring renewals, the Discharger shall collect 24-hour composite samples on consecutive or alternating days.

5.2.1.2. **Test Species.** The test species shall be mysid shrimp (*Americamysis bahia*). The Discharger shall conduct a screening chronic toxicity test as described in Appendix E-1, or as described in applicable State Water Board plan provisions that become effective after adoption of this Order, following any significant change in the nature of the effluent. If there is no significant change in the nature of the effluent, the Discharger shall conduct a screening test and submit the results with its application for permit reissuance. Upon completion of the chronic toxicity screening, the Discharger shall use the most sensitive species to conduct subsequent monitoring.

5.2.1.3. **Frequency.** Chronic toxicity monitoring shall be as specified below:

5.2.1.3.1. The Discharger shall monitor routinely once per quarter when discharging at Discharge Point 001 or 002.

5.2.1.3.2. The Discharger shall accelerate monitoring to monthly after exceeding a three-sample median of 1 TUc or a single sample maximum of 2 TUc for discharges from Discharge Point 001 or 002. Based on the TUc results, the Executive Officer may specify a different frequency for accelerated monitoring to ensure that accelerated monitoring provides useful information.

5.2.1.3.3. The Discharger shall return to routine monitoring if accelerated monitoring does not exceed the trigger in section 5.2.1.3.2, above.

5.2.1.3.4. If accelerated monitoring confirms consistent toxicity in excess of the trigger in section 5.2.1.3.2, above, the Discharger shall continue accelerated monitoring and initiate toxicity reduction evaluation (TRE) procedures in accordance with section 5.2.3, below.

5.2.1.3.5. The Discharger shall return to routine monitoring after implementing appropriate elements of the TRE, and either the toxicity drops below the trigger in 5.2.1.3.2, above, or, based on the TRE results, the Executive Officer determines that accelerated monitoring would no longer provide useful information.

5.2.1.3.6. Monitoring conducted pursuant to a TRE shall satisfy the requirements for routine and accelerated monitoring while the TRE is underway.

5.2.1.4. **Methodology.** Sample collection, handling, and preservation shall be in accordance with U.S. EPA protocols. Bioassays shall be conducted in compliance with the most recently promulgated test methods, as shown in Appendix E-2. These are *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms*, currently 1st edition (EPA/600/R-95-136). If these protocols prove unworkable, the Executive Officer and the Environmental Laboratory Accreditation Program may grant exceptions in writing upon the Discharger's request with justification.

If the Discharger demonstrates that specific identifiable substances in the discharge are rapidly rendered harmless upon discharge to the receiving water, compliance with the chronic toxicity limit may be determined after test samples are adjusted to remove the influence of those substances. The adjustment shall not remove the influence of other substances. Written acknowledgement that the Executive Officer concurs with the Discharger's demonstration must be obtained prior to any such adjustment.

5.2.1.5. **Dilution Series.** The Discharger shall conduct tests with a control and five effluent concentrations (including 100% effluent). The "%" represents percent effluent as discharged. Test sample pH may be controlled to the level of the effluent sample as received prior to being salted up.

5.2.2. **Reporting Requirements**. The Discharger shall provide toxicity test results with self-monitoring reports and shall include the following, at a minimum, for each test:

5.2.2.1. Sample date;

5.2.2.2. Test initiation date;

5.2.2.3. Test species;

5.2.2.4. End point values for each dilution (e.g., number of young, growth rate, percent survival);

5.2.2.5. No Observable Effect Level (NOEL) values in percent effluent. The NOEL shall equal the IC25 or EC25 (see MRP Appendix E-1). If the IC25 or EC25 cannot be statistically determined, the NOEL shall equal the No Observable Effect Concentration (NOEC) derived using hypothesis testing. The NOEC is the maximum percent effluent concentration that causes no observable effect on test organisms based on a critical life stage toxicity test;

5.2.2.6. IC15, IC25, IC40, and IC50 values (or EC15, EC25, EC40, and EC50) as percent effluent;

5.2.2.7. TU values (100/NOEL and upper and lower confidence intervals, where NOEL = IC25, EC25, or NOEC);

5.2.2.8. Mean percent mortality (±standard deviation) after 96 hours in 100% effluent (if applicable);

5.2.2.9. IC50 or EC50 values for reference toxicant tests;

5.2.2.10. Available water quality measurements for each test (e.g., pH, dissolved oxygen, temperature, conductivity, hardness, salinity, ammonia); and

5.2.2.11. The results of the three most recent chronic toxicity tests and the three-sample median for these results.

5.2.3. **Toxicity Reduction Evaluation (TRE)**

5.2.3.1. The Discharger shall prepare a generic TRE work plan within 90 days of the effective date of this Order to be ready to respond to toxicity events. The Discharger shall review and update the work plan as necessary so that it remains current and applicable to the discharge and discharge facilities.

5.2.3.2. Within 30 days of exceeding the chronic toxicity trigger in section 5.2.1.3.2, above, the Discharger shall submit a TRE work plan, which shall be the generic work plan revised as appropriate for this toxicity event after consideration of available discharge data.

5.2.3.3. Within 30 days of completing an accelerated monitoring test observed to exceed the trigger in section 5.2.1.3.2, above, the Discharger shall initiate a TRE in accordance with a TRE work plan that incorporates any and all Executive Officer comments.

5.2.3.4. The TRE shall be specific to the discharge and be in accordance with current technical guidance and reference materials, including U.S. EPA guidance materials. The Discharger shall conduct the TRE as a tiered evaluation as summarized below:

5.2.3.4.1. Tier 1 shall consist of basic data collection (routine and accelerated monitoring).

5.2.3.4.2. Tier 2 shall consist of evaluation of treatment process, including operational practices and in-plant process chemicals.

5.2.3.4.3. Tier 3 shall consist of a toxicity identification evaluation (TIE).

5.2.3.4.4. Tier 4 shall consist of a toxicity source evaluation.

5.2.3.4.5. Tier 5 shall consist of a toxicity control evaluation, including options for modifications of in-plant treatment processes.

5.2.3.4.6. Tier 6 shall consist of implementation of selected toxicity control measures, and follow-up monitoring and confirmation of implementation success.

5.2.3.5. The Discharger may end the TRE at any stage if monitoring finds there is no longer consistent toxicity (i.e., compliance with the trigger in section 5.2.1.3.2, above).

5.2.3.6. The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity. The Discharger shall employ all reasonable efforts using currently available TIE methodologies.

5.2.3.7. As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the sources and evaluating alternative strategies for reducing or eliminating the toxic substances from the discharge. The Discharger shall take all reasonable steps to reduce toxicity to levels below the chronic toxicity trigger.

5.2.3.8. Many recommended TRE elements parallel required or recommended efforts related to source control, pollution prevention, and stormwater control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of complying with requirements or recommended efforts of such programs may be acceptable to demonstrate compliance with TRE requirements.

6. RECEIVING WATER MONITORING

The Discharger shall continue to participate in the Regional Monitoring Program, which collects data on pollutants and toxicity in San Francisco Bay water, sediment, and biota. When discharging at Discharge Point 001 or 002, the Discharger shall also monitor receiving waters at Monitoring Locations RSW-001, RSW-002A, RSW-002B, RSW-003R, RSW-004, RSW-005, and RSW-006 as follows:

Table E-4. Receiving Water Monitoring

Parameter	Unit	Sample Type	Minimum Sampling Frequency [2]
pH [1]	MG/MGD	Grab	1/Month
Temperature [1]	ºC	Grab	1/Month
Conductivity	mhos/cm	Grab	1/Month
Salinity	ppt	Grab	1/Month
Ammonia, Total [1]	mg/L as N	Grab	1/Month
Turbidity	NTU	Grab	1/Month
Dissolved Oxygen	mg/L	Grab	1/Month
Hardness	mg/L as $CaCO_3$	Grab	1/Month
Priority Pollutants [3]	µg/L	Grab	Once
Standard Observations [4]	-	-	1/Month

Footnotes:

[1] Ammonia monitoring shall be performed on the same day as pH and temperature monitoring.

[2] While discharging from Discharge Point 001, monitoring is not required at Monitoring Locations RSW-004, RSW-005, and RSW-006. While discharging from Discharge Point 002, monitoring is not required at Monitoring Locations RSW-001, RSW-002A, RSW-002B, and RSW-003R.

[3] The Discharger shall monitor at Monitoring Location RSW-002A while discharging from Discharge Point 001 and at Monitoring Location RSW-005 while discharging from Discharge Point 002 for the pollutants listed in Attachment G, Table B.

[4] Standard Observations are specified in Attachment G section 3.2.1.

7. PRETREATMENT AND BIOSOLIDS MONITORING

The Discharger shall comply with the following pretreatment monitoring requirements for influent at Monitoring Location INF-001, effluent at Monitoring Location EFF-001, and biosolids at Monitoring Location BIO-001. The Discharger shall report summaries of analytical results in pretreatment reports in accordance with Attachment H. At its option, the Discharger may also report biosolids analytical results in its electronic self-monitoring reports by manual entry, by Electronic Data Format or CIWQS Data Format (EDF/CDF), or as an attached file.

Table E-5. Pretreatment and Biosolids Monitoring

Parameters	Influent (INF-001) Sampling Frequency [1]	Effluent (EFF-001) Sampling Frequency [1]	Biosolids (BIO-001) Sampling Frequency	Influent and Effluent Sample Type	Biosolids Sample Type [2]
VOC [3]	2/Year	2/Year	2/Year	Grab	Grab
BNA [4]	2/Year	2/Year	2/Year	Grab	Grab
Metals [5]	1/Month	1/Month	1/Quarter	C-24 [6]	Grab

Parameters	Influent (INF-001) Sampling Frequency [1]	Effluent (EFF-001) Sampling Frequency [1]	Biosolids (BIO-001) Sampling Frequency	Influent and Effluent Sample Type	Biosolids Sample Type [2]
Cyanide, Total [7]	1/Month	1/Month	2/Year	Grab	Grab
Mercury	1/Month	1/Month [8]	1/Quarter	Grab	Grab

Footnotes:

[1] Influent and effluent monitoring conducted in accordance with MRP Tables E-2 and E-3 may be used to satisfy these pretreatment monitoring requirements.

[2] The biosolids sample shall be a composite of the biosolids to be disposed. Biosolids collection and monitoring shall comply with the requirements specified in Attachment H, Appendix H-4.

[3] VOC: volatile organic compounds.

[4] BNA: base/neutrals and acid extractable organic compounds.

[5] The metals are arsenic, cadmium, hexavalent chromium, copper, lead, nickel, selenium, silver, and zinc. The Discharger may choose to monitor and report total chromium instead of hexavalent chromium. Samples collected for hexavalent chromium measurements may be grab samples.

[6] If an automatic compositor is used, the Discharger shall obtain 24-hour composite samples through flow-proportioned composite sampling. Alternatively, 24-hour composite samples may consist of discrete grab samples combined (volumetrically flow-weighted) prior to analysis or mathematically flow-weighted.

[7] The Discharger may, at its option, analyze for cyanide as weak acid dissociable cyanide using protocols specified in 40 C.F.R. part 136 or an equivalent method in the latest Standard Method edition.

[8] The Discharger shall use ultra-clean sampling (U.S. EPA 1669) and ultra-clean analytical method (U.S. EPA 1631) for mercury monitoring.

8. RECYCLED WATER MONITORING

The Discharger shall comply with the following recycled water monitoring requirements. The Executive Officer may modify these requirements to reflect any changes made to the requirements of State Water Board Order WQ 2019-0037 EXEC (Amending Monitoring and Reporting Programs for Waste Discharge Requirements, National Pollutant Discharge Elimination System Permits, Water Reclamation Requirements, Master Recycling Permits, and General Waste Discharge Requirements).

8.1. Influent Monitoring. The Discharger shall monitor the monthly volume of influent to the treatment plant.

8.2. Production Monitoring. The Discharger shall monitor the monthly volume for each level of treated effluent (e.g., secondary or tertiary) from the treatment plant at Monitoring Location REC-001.

8.3. Discharge Monitoring. The Discharger shall monitor the monthly volumes discharged to each of the following, for each level of treated effluent (e.g., secondary or tertiary) from the treatment plant:

8.3.1. Inland surface waters, specifying volumes required to maintain minimum instream flow;

8.3.2. Enclosed bays, estuaries and coastal lagoons, and ocean waters;

8.3.3. Natural systems, such as wetlands, wildlife habitats, and duck clubs, where augmentation or restoration has occurred, and that are not part of a wastewater treatment or water recycling treatment plant;

8.3.4. Underground injection wells, such as those classified by U.S. EPA's Underground Injection Control Program, excluding groundwater recharge via subsurface application intended to reduce seawater intrusion into a coastal aquifer with a seawater interface; and

8.3.5. Land, where beneficial use is not taking place, including evaporation or percolation ponds, overland flow, or spray irrigation disposal, excluding pastures or fields with harvested crops.

8.4. Reuse Monitoring. The Discharger shall monitor the following in compliance with California Code of Regulations, title 22:

8.4.1. Monthly volume of recycled water distributed; and

8.4.2. Annual volumes of treated wastewater distributed for use in each of the use categories listed below:

8.4.2.1. Agricultural irrigation: pasture or crop irrigation;

8.4.2.2. Landscape irrigation: irrigation of parks, greenbelts, and playgrounds; school yards; athletic fields; cemeteries; residential landscaping, common areas; commercial landscaping; industrial landscaping; and freeway, highway, and street landscaping;

8.4.2.3. Golf course irrigation: irrigation of golf courses, including water used to maintain aesthetic impoundments within golf courses;

8.4.2.4. Commercial application: commercial facilities, business use (such as laundries and office buildings), car washes, retail nurseries, and appurtenant landscaping that is not separately metered;

8.4.2.5. Industrial application: manufacturing facilities, cooling towers, process water, and appurtenant landscaping that is not separately metered;

8.4.2.6. Geothermal energy production: augmentation of geothermal fields;

8.4.2.7. Other non-potable uses: including but not limited to dust control, flushing sewers, fire protection, fill stations, snow making, and recreational impoundments;

8.4.2.8. Groundwater recharge: the planned use of recycled water for replenishment of a groundwater basin or an aquifer that has been designated as a source of water supply for a public water system. Includes surface or subsurface application, except for seawater intrusion barrier use;

8.4.2.9. Seawater intrusion barrier: groundwater recharge via subsurface application intended to reduce seawater intrusion into a coastal aquifer with a seawater interface;

8.4.2.10. Reservoir water augmentation: the planned placement of recycled water into a raw surface water reservoir used as a source of domestic drinking water supply for a public water system, as defined in Health and Safety Code section 116275, or into a constructed system conveying water to such a reservoir (Water Code § 13561);

8.4.2.11. Raw water augmentation: the planned placement of recycled water into a system of pipelines or aqueducts that delivers raw water to a drinking water treatment plant that provides water to a public water system as defined in Health and Safety Code section 116275 (Water Code § 13561); and

8.4.2.12. Other potable uses: both indirect and direct potable reuse other than for groundwater recharge, seawater intrusion barrier, reservoir water augmentation, or raw water augmentation.

9. REPORTING REQUIREMENTS

9.1. General Monitoring and Reporting Requirements. The Discharger shall comply with all Standard Provisions (Attachments D and G) related to monitoring, reporting, and recordkeeping.

9.2. Self-Monitoring Reports (SMRs)

9.2.1. **SMR Format.** The Discharger shall electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program website (waterboards.ca.gov/water_issues/programs/ciwqs). The CIWQS website will provide additional information for SMR submittal in the event of a planned service interruption for electronic submittal.

9.2.2. **SMR Due Dates and Contents.** The Discharger shall submit SMRs by the due dates, and with the contents, specified below:

9.2.2.1. **Monthly SMRs** — Monthly SMRs shall be due 30 days after the end of each calendar month, covering that calendar month. Each SMR shall contain the applicable items described in Provision 6.3.2 (Effluent Characterization Study and Report) of the Order, Attachment D section 5.2, and Attachment G section 5.3. Each SMR shall include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the Discharger shall include the results of such monitoring in the calculations and reporting for the SMR.

9.2.2.2. **Annual SMR** — Annual SMRs shall be due February 1 each year, covering the previous calendar year. The annual SMR shall contain the applicable items described in Provisions 6.3.2 (Effluent Characterization Study and

Report) and 6.3.5.4 (Anaerobically-Digestible Material) of the Order, and Attachment G section 5.3.1.6.

9.2.3. **Specifications for Submitting SMRs to CIWQS.** The Discharger shall submit analytical results and other information using one of the following methods:

Table E-6. CIWQS Reporting

Parameter	Method of Reporting: EDF/CDF data upload	Parameter
All parameters identified in influent, effluent, and receiving water monitoring tables (except Dissolved Oxygen and Temperature)	Required for all results	-
Dissolved Oxygen, Temperature	Required for monthly maximum and minimum results only [1]	Discharger may use this method for all results or keep records
Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc, Dioxins & Furans (by U.S. EPA Method 1613), Other Pollutants (by U.S. EPA Methods 601, 602, 608, 610, 614, 624, and 625)	Required for all results [2]	-
Volume and Duration of Blended Discharge [3]	Required for all blended effluent discharges	-
Analytical Method	Not required (Discharger may select “data unavailable”) [1]	-
Collection Time, Analysis Time	Not required	-

Footnotes:

[1] The Discharger shall continue to monitor at the minimum frequency specified in this MRP, keep records of the measurements, and make the records available upon request.

[2] These parameters require EDF/CDF data upload or manual entry regardless of whether monitoring is required by this MRP or other provisions of this Order (except for biosolids, sludge, or ash provisions).

[3] The requirement for volume and duration of blended discharge applies only if this Order authorizes the Discharger to discharge blended effluent.

The Discharger shall arrange all reported data in a tabular format and summarize data to clearly illustrate whether the Facility is operating in compliance with effluent limitations. The Discharger is not required to duplicate the submittal of data entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format, the Discharger shall electronically submit the data in a tabular format as an attachment.

9.2.4. **Monitoring Periods.** Monitoring periods for all required monitoring shall be as set forth below unless otherwise specified:

Table E-7. Monitoring Periods

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period
Continuous/D	Order effective date	All times

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period
Continuous/1H	Order effective date	Measured continuously or, if infeasible, at least every hour
1/Hour	Order effective date	Every hour on the hour
1/Day	Order effective date	Any 24-hour period that reasonably represents a calendar day for sampling purposes (e.g., beginning at midnight and continuing through 11:59 p.m.)
1/Week 2/Week	First Sunday following or on Order effective date	Sunday through Saturday
1/Month	First day of calendar month following or on Order effective date	First day of calendar month through last day of calendar month
1/Quarter	Closest January 1, April 1, July 1, or October 1 before or after Order effective date [1]	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31
1/Year	Closest January 1 before or after Order effective date [1]	January 1 through December 31
2/Year	Closest January 1 or July 1 before or after Order effective date [1]	January 1 through June 30 July 1 through December 31
Once	Order effective date	Once during the term of the Order within 12 months prior to applying for permit reissuance

Footnote:

[1] Monitoring performed during the previous order term may be used to satisfy monitoring required by this Order.

9.2.5. **RL and MDL Reporting.** The Discharger shall report with each sample result the Reporting Level (RL) and Method Detection Limit (MDL) as determined by the procedure in 40 C.F.R. part 136. The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

9.2.5.1. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

9.2.5.2. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For purposes of data collection, the Discharger shall require the laboratory to write the estimated chemical concentration next to DNQ. The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means the laboratory considers appropriate.

9.2.5.3. Sample results less than the laboratory's MDL shall be reported as "Not Detected", or ND.

9.2.5.4. The Discharger shall instruct laboratories to establish calibration standards so that the minimum level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

9.2.6. **Compliance Determination.** Compliance with effluent limitations shall be determined using sample reporting protocols defined above, in the Fact Sheet, and in Attachments A, D, and G. For purposes of reporting and administrative enforcement by the Regional Water Board and State Water Board, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the pollutant in the monitoring sample is greater than the effluent limitation and, if applicable, greater than or equal to the RL.

9.3. Discharge Monitoring Reports (DMRs). DMRs are U.S. EPA reporting requirements. The Discharger shall electronically certify and submit DMRs together with SMRs using Electronic Self-Monitoring Reports module eSMR 2.5 or the latest upgraded version. Electronic DMR submittal shall be in addition to electronic SMR submittal. Information about electronic DMR submittal is available at the DMR website (waterboards.ca.gov/water_issues/programs/discharge_monitoring).

9.4. Recycled Water Reports. The Discharger shall electronically submit annual reports to the State Water Board by April 30 each year covering the previous calendar year using the State Water Board's GeoTracker website (geotracker.waterboards.ca.gov) under a site-specific global identification number. For the 2021 calendar year, the Discharger shall submit a report by April 30, 2022, covering January through December 2021. The annual report shall include the elements specified in section 7, above.

Information for setting up and using the GeoTracker system can be found in the *ESI Guide for Responsible Parties* document on the State Water Board's website (waterboards.ca.gov/ust/electronic_submittal/index.html).

APPENDIX E-1

CHRONIC TOXICITY
DEFINITION OF TERMS AND SCREENING PHASE REQUIREMENTS

1. Definition of Terms

1.1. No observed effect level (NOEL). For compliance determination, the NOEL is equal to IC25 or EC25. If the IC25 or EC25 cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.

1.2. Effective concentration (EC). The EC is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, “all or nothing,” response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Karber. EC25 is the concentration of toxicant (in percent effluent) that causes a response in 25 percent of the test organisms.

1.3. Inhibition concentration (IC). The IC is a point estimate of the toxicant concentration that would cause a given percent reduction in a nonlethal, nonquantal biological measurement, such as growth. For example, an IC25 is the estimated concentration of toxicant that would cause a 25 percent reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as U.S. EPA's Bootstrap Procedure.

1.4. No observed effect concentration (NOEC). The NOEC is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

2. Chronic Toxicity Screening Phase Requirements

2.1. The Discharger shall perform screening phase monitoring:

2.1.1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts, or

2.1.2. Prior to permit reissuance. Screening phase monitoring data shall be included in the NPDES permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.

2.2 Design of the screening phase shall, at a minimum, consist of the following elements:

2.2.1. Use of test species specified in Appendix E-2, attached, and use of the protocols referenced in those tables.

2.2.2. Two stages:

2.2.2.1. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Appendix E-2 (attached).

2.2.2.2. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results.

2.2.3. Appropriate controls.

2.2.4. Concurrent reference toxicant tests.

2.2.5. Dilution series of 100%, 50%, 25%, 12.5%, 6.25%, and 0.0%, where “%” is percent effluent as discharged, or as otherwise approved by the Executive Officer if different dilution ratios are needed to reflect discharge conditions.

2.3. The Discharger shall submit a screening phase proposal. The proposal shall address each of the elements listed above. If within 30 days, the Executive Officer does not comment, the Discharger shall commence with screening phase monitoring.

APPENDIX E-2
SUMMARY OF TOXICITY TEST SPECIES REQUIREMENTS

Table AE-1. Critical Life Stage Toxicity Tests for Estuarine Waters

Species	Scientific Name	Effect	Test Duration	Reference
Alga	*Skeletonema costatum, Thalassiosira pseudonana*	Growth rate	4 days	1
Red alga	*Champia parvula*	Number of cystocarps	7–9 days	3
Giant kelp	*Macrocystis pyrifera*	Percent germination; germ tube length	48 hours	2
Abalone	*Haliotis rufescens*	Abnormal shell development	48 hours	2
Oyster Mussel	*Crassostrea gigas, Mytilus edulis*	Abnormal shell development; percent survival	48 hours	2
Echinoderms Urchins Sand dollar	*Strongylocentrotus purpuratus, S. franciscanus, Dendraster excentricus*	Percent fertilization or larval development	1 hour or 72 hours	2
Shrimp	*Americamysis bahia*	Percent survival; growth	7 days	3
Shrimp	*Holmesimysis costata*	Percent survival; growth	7 days	2
Topsmelt	*Atherinops affinis*	Percent survival; growth	7 days	2
Silverside	*Menidia beryllina*	Larval growth rate; percent survival	7 days	3

Toxicity Test References:

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for Conducting Static 96-Hour Toxicity Tests with Microalgae. Procedure E 1218-90. ASTM, Philadelphia, PA.
2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. August 1995.
3. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms. EPA/821/R-02/014. October 2002.

Table AE-2. Critical Life Stage Toxicity Tests for Fresh Waters

Species	Scientific Name	Effect	Test Duration	Reference
Fathead minnow	*Pimephales promelas*	Survival; growth rate	7 days	4
Water flea	*Ceriodaphnia dubia*	Survival; number of young	7 days	4
Alga	*Selenastrum capricornutum*	Final cell density	4 days	4

Toxicity Test Reference:

1. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, fourth Edition Chronic manual (EPA-821-R-02-013, October 2002).

Table AE-3. Toxicity Test Requirements for Stage One Screening Phase

Requirements	Receiving Water Characteristics: Discharges to Ocean	Receiving Water Characteristics: Discharges to Marine/ Estuarine Waters [1]	Receiving Water Characteristics: Discharges to Freshwater
Taxonomic diversity	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish
Number of tests of each salinity type: Freshwater [2] Marine/Estuarine	 0 4	 1 or 2 3 or 4	 3 0
Total number of tests	4	5	3

Footnotes:

[1] (a) Marine refers to receiving water salinities greater than 10 parts per thousand (ppt) at least 95 percent of the time during a normal water year.

(b) Freshwater refers to receiving water with salinities less than 1 ppt at least 95 percent of the time during a normal water year.

(c) Estuarine refers to receiving water salinities that fall between those of marine and freshwater, as described above.

[2] The freshwater species may be substituted with marine species if:

(a) The salinity of the effluent is above 1 ppt greater than 95 percent of the time, or

(b) The ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

ATTACHMENT F – FACT SHEET

CONTENTS

TABLES

ATTACHMENT F – FACT SHEET

This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order. As described in section 2.2 of the Order, the Regional Water Board incorporates this Fact Sheet as findings supporting the issuance of the Order.

1. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	2 494006001
CIWQS Place ID	248087
Discharger	City of Petaluma
Facility Name	Ellis Creek Water Recycling Facility and its wastewater collection system
Facility Address	3890 Cypress Drive Petaluma, CA 94954 Sonoma County
Facility Contact, Title, and Phone	Matthew Pierce, Operations Supervisor, (707) 776-3777
Authorized Person to Sign and Submit Reports	Same as Facility Contact
Mailing Address	P.O. Box 61, Petaluma, CA 94953
Billing Address	Same as Mailing Address
Facility Type	Publicly-Owned Treatment Works (POTW)
Major or Minor Facility	Major
Water Quality Threat	2
Complexity	A
Pretreatment Program	Yes
Recycling Requirements	State Water Board Order WQ 2016-0068-DDW
Mercury and PCBs Requirements	NPDES Permit CA0038849
Nutrients Requirements	NPDES Permit CA0038873
Facility Permitted Flow	6.7 MGD – average daily dry weather design flow
Facility Design Flow	36 MGD – peak wet weather design capacity
Watershed	San Pablo Bay
Receiving Water	Petaluma River
Receiving Water Type	Estuarine

1.1. The City of Petaluma (Discharger) owns and operates the Ellis Creek Water Recycling Facility (plant) and its associated wastewater collection system (collectively, Facility). The plant provides secondary treatment of wastewater collected from its service area and discharges treated effluent to the Petaluma River when flows exceed the capacity of the recycled water distribution and storage system. The Petaluma River is a water of the United States within the San Pablo Bay watershed.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and State laws, regulations, plans, and policies are held to be equivalent to references to the Discharger herein.

1.2. The Discharger is regulated pursuant to National Pollutant Discharge Elimination System (NPDES) Permit CA0037810. The Discharger was previously subject to Order R2-2016-0014 (previous order). The Discharger filed a Report of Waste Discharge and submitted an application for reissuance of its Waste Discharge Requirements (WDRs) and NPDES permit on September 1, 2020.

1.3. The Discharger is authorized to discharge subject to the WDRs in this Order at the discharge locations described in Table 1 of this Order. Regulations in 40 C.F.R. section 122.46 limit the duration of NPDES permits to a fixed term not to exceed five years. Accordingly, this Order limits the effective period for the discharge authorization. Pursuant to 40 C.F.R. section 122.6(d) and California Code of Regulations, title 23, section 2235.4, the terms and conditions of an expired permit are automatically continued pending reissuance of the permit if the Discharger complies with all requirements for continuation of expired permits.

1.4. Order R2-2016-0008 amended the previous order to provide for an alternate monitoring program and remains in effect with this Order. The discharge is also regulated under NPDES Permits CA0038849 and CA0038873, which establish requirements on mercury, polychlorinated biphenyls (PCBs), and nutrients from wastewater discharges to San Francisco Bay. This Order does not affect those permits.

1.5. When applicable, State law requires dischargers to file a petition with the State Water Resources Control Board (State Water Board), Division of Water Rights, and receive approval for any change in the point of discharge, place of use, or purpose of use of treated wastewater that decreases the flow in any portion of a watercourse. The State Water Board retains separate jurisdictional authority to enforce such requirements under Water Code section 1211. This is not an NPDES permit requirement.

2. FACILITY DESCRIPTION

2.1. Wastewater and Biosolids Treatment

2.1.1. **Service Area and Collection System**. The plant provides secondary treatment for wastewater from the City of Petaluma and adjacent areas. Its estimated service area population is approximately 65,000 people. The wastewater is primarily residential, although six industrial facilities discharge to the Facility.

The City owns and operates approximately 193 miles of gravity sewer main, 4 miles of pressure sewer force mains, and 9 pump stations. The Discharger provides wastewater treatment for the unincorporated community of Penngrove but does not provide sewer collection services in that area.

2.1.2. **Wastewater Treatment**. The permitted average dry weather design treatment capacity of the plant is 6.7 MGD. The treatment process consists of three bar screens, grit removal, two activated sludge treatment units that use the Siemens Orbal Process, and two secondary clarifiers. After secondary clarification, some of the treated wastewater receives tertiary treatment by flocculation, filtration, and ultraviolet light disinfection. The tertiary-treated wastewater is recycled offsite as described below in section 2.1.5. The remaining wastewater receives additional biological treatment through a series of oxidation ponds (covering 146 acres) and constructed wetlands (covering 16 acres). After the constructed (treatment) wetlands, treated wastewater is chlorinated and then flows to either polishing wetlands (covering 31 acres) or a chlorine contact chamber. Treated wastewater from the chlorine contact chamber and polishing wetlands is dechlorinated and discharged to the Petaluma River.

The Siemens Orbal Process, a circular multichannel activated sludge treatment unit that provides nitrification and denitrification, has a treatment capacity of 16 MGD. During wet weather, when influent flows exceed 16 MGD, the Discharger routes a portion of wastewater after grit removal directly to the oxidation ponds for treatment as described above. The capacity of the outfall pipeline to Discharge Point 001 is approximately 14 MGD. The average daily flow from Discharge Point 001 was 7.0 MGD from June 2016 to April 2020 during the wet season. The average dry weather flow through the Facility was 4.4 MGD from 2016 to 2019.

2.1.3. **Sludge and Biosolids Management**. Sludge is thickened in a gravity belt thickener, anaerobically digested, and dewatered before being transported offsite for land application or use as alternative daily cover at a landfill.

2.1.4. **Stormwater Management**. The Discharger is not required to be covered under the statewide NPDES permit for stormwater discharges associated with industrial activities (NPDES General Permit No. CAS000001) because all stormwater at the plant is collected and directed to the plant's aerated lagoon and oxidation ponds for secondary treatment.

2.1.5. **Recycled Water**. Recycled water is regulated by State Water Board Order WQ 2019-0037-EXEC. Over the last four years, the Discharger recycled about 700 million gallons of wastewater each year or about 30 percent of its wastewater. The Discharger provided recycled water to over 1,000 acres of pasture, vineyards, golf courses, schools, and other landscaped areas.

The Ellis Creek Water Recycling Facility produces filtered and disinfected ("tertiary") treated wastewater to meet unrestricted reuse requirements. The Discharger's existing tertiary treatment system can produce up to 5.2 MGD. To meet increasing demand for landscape and agricultural irrigation, the Discharger plans to add a second set of tertiary filters and a third ultraviolet light disinfection system to expand its tertiary capacity to 6.8 MGD. The Discharger

also plans to continue expanding its recycled water distribution system to reach additional parks and schools.

2.2. Discharge Points and Receiving Waters. The plant discharges treated wastewater into the Petaluma River through a shallow water outfall (Discharge Point 001) during wet weather when irrigation fields are saturated. Normally, during dry weather, treated wastewater is recycled at nearby pastures, golf courses, and vineyards.

The Discharger proposes to move its shallow water outfall approximately 3,000 feet northeast of Discharge Point 001 to Discharge Point 002, an emergency outfall located on a tidal slough of the Petaluma River. The relocation is necessary because the pipeline that conveys treated wastewater to Discharge Point 001 has degraded and needs to be replaced. Replacement, however, would require construction through 3,000 linear feet of tidal wetlands. Constructing a pipeline to Discharge Point 002 will avoid most impacts to the tidal wetlands because Discharge Point 002 is located adjacent to the plant. The same beneficial uses apply to both discharge points because they both discharge to the Petaluma River.

2.3. Previous Requirements and Monitoring Data. The table below presents the previous order's effluent limitations and representative monitoring data from the previous order term (October 2016 – April 2020):

Table F-2. Previous Effluent Limitations and Monitoring Data

Parameter	Unit	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Other Limit	Long-Term Average	Highest Daily Value
Biochemical Oxygen Demand (5 day @ 20°C) (BOD)	mg/L	30	45	-	-	3.1	13
Total Suspended Solids (TSS)	mg/L	30	45	-	-	8.3	32
BOD percent removal	%	85 (minimum)	-	-	-	99	99 [1]
TSS percent removal	%	85 (minimum)	-	-	-	96	91 [1]
Oil and Grease	mg/L	10	-	20	-	2.5	7.8
pH	s.u.	-	-	-	6.5 – 8.5 [2]	-	7.0 – 8.3 [3]
Chlorine, Total Residual	mg/L	-	-	-	0.0 [4]	-	0.6
Ammonia, Total	mg/L as N	3.0	-	8.0	-	0.29	0.59
Copper, Total Recoverable	µg/L	7.0	-	12	-	3.3	5.3
Cyanide, Total	µg/L	5.3	-	13	-	2.4	3.9
Bis (2-ethyl-hexyl) phthalate	µg/L	5.9	-	12	-	<2.0	<3.0

Parameter	Unit	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Other Limit	Long-Term Average	Highest Daily Value
Enterococcus Bacteria	MPN/ 100 mL	-	-	-	35 (monthly geometric mean)	-	130 [5]
Acute Toxicity	% survival	-	-	-	Not less than 70% (Single-Sample Maximum)	99	95 [6]

Footnotes:

[1] Lowest percent removal value on a monthly basis.

[2] Instantaneous minimum and instantaneous maximum.

[3] Range of lowest to highest pH values.

[4] Instantaneous maximum.

[5] This was not a violation because the monthly geometric mean was below 35 MPN/100mL.

[6] Lowest percent survival.

2.4. Compliance Summary

2.4.1. **Treatment Plant.** The Discharger violated its numeric effluent limitations once during the previous order term. In April 2017, the plant's total residual chlorine was 0.6 mg/L, exceeding the limit of 0.0 mg/L. The Discharger attributed the violation to a loss in utility power because of a vehicle accident on Lakeville Hwy. The emergency generator failed to fully transfer power to the chlorine contact basin and chemical dosing pumps. The Discharger has since installed an additional portable emergency generator and updated its standard operating procedures.

2.4.2. **Collection System.** The table below summarizes the Discharger's Category 1 sanitary sewer overflow (SSO) rates for the last five years, along with the primary causes of these discharges. Category 1 SSOs are those that reach waters of the United States and thus may violate Prohibition 3.6 of this Order.

Table F-3. Collection System and Category 1 SSO Rates (SSO per 100 miles)

(Values based on CIWQS data analysis completed in July 2020) [1]

	Length (miles)	Average Pipe Age (years)	2015	2016	2017	2018	2019
Discharger	193 [2]	41	0	1.0	2.1	0.52	6.2
San Francisco Bay Region	17,700 [3]	46	0.68	1.2	1.7	0.71	1.4
State of California	10,300 [3]	44	0.39	0.48	0.69	0.40	0.58

Footnotes:

[1] The State Water Board's *Enrollees's Guide to the SSO Database* defines "Total number of SSOs per 100 miles of Sewer" as "…the number of SSOs, for which the reporting enrollee is responsible, for every 100 miles of pipe or sewer lines in an enrollee's sanitary sewer system. Due to the large variation in facility specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of enrollees and their sanitary sewer systems."

[2] Lengths shown are based on 2020 data.

[3] The average pipe age for the State of California is estimated based on the percentages of piping constructed during each decade as reported by enrollees under State Water Board Order 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, as amended by State Water Board Order WQ 2013-0058-EXEC.

The Discharger's SSO rates were similar to those for the San Francisco Bay Region and State with the exception of 2017 and 2019. In 2017, the Discharger agreed to a settlement of $235,200 for SSO reporting violations and unauthorized discharges. In 2019, its rate per 100 miles was significantly higher than the regional average due to nine capacity-related issues during heavy rain. In summer 2019, the Discharger completed a sewer main replacement project that targeted capacity-related SSOs. During the previous order term, the Discharger also performed the following activities as part of its Sewer System Master Plan:

- Sewer rehabilitation and replacement at a rate of one to two miles per year;
- Sewer pipe inspections using closed-circuit TV (17 miles per year);
- Sewer cleaning and root control (47 miles per year); and
- Public outreach to reduce fats, oils, and grease.

2.5. Sea Level Rise. Sea level rise is projected to affect Discharge Point 001, which discharges by gravity. The planned Discharge Point 002 would lower head loss somewhat and delay or negate the need for an effluent pump station because of the higher elevation of the discharge.

2.6. Planned Changes. The Discharger plans to relocate its shallow water discharge from Discharge Point 001 to an existing emergency outfall, Discharge Point 002, located in the tidal marsh on the southwest corner of the plant site. The Discharger also plans to expand its tertiary filter capacity from 5.2 MGD to 6.8 MGD.

These changes are not requirements of this Order, except to the extent that they pertain to ensuring Facility reliability.

3. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

3.1. Legal Authorities. This Order serves as WDRs pursuant to California Water Code article 4, chapter 4, division 7 (commencing with § 13260). This Order is also issued pursuant to federal Clean Water Act (CWA) section 402 and implementing regulations adopted by the U.S. EPA, and Water Code chapter 5.5, division 7 (commencing with § 13370). It serves as an NPDES permit authorizing the Discharger to discharge into waters of the United States at the discharge locations described in Table 1 subject to the WDRs in this Order.

3.2. California Environmental Quality Act (CEQA). Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resources Code division 13, chapter 3 (commencing with § 21100).

3.3. State and Federal Laws, Regulations, Policies, and Plans

3.3.1. **Water Quality Control Plan.** The Regional Water Board adopted the *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan), which designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. Beneficial uses applicable to the Petaluma River are listed below:

Table F-4. Beneficial Uses

Discharge Points	Receiving Water	Beneficial Uses
001 and 002	Petaluma River	Cold Freshwater Habitat (COLD) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Fish Spawning (SPWN) Warm Freshwater Habitat (WARM) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2) Navigation (NAV)

State Water Board Resolution No. 88-63 establishes as State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply (MUN). Because of the marine influence in San Pablo Bay, total dissolved solids in this section of the Petaluma River sometimes exceed 3,000 mg/L and thereby meet an exception to State Water Board Resolution No. 88-63. The MUN designation therefore does not apply to this section of the Petaluma River.

3.3.2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** The NTR and CTR contain federal water quality criteria for priority pollutants. U.S. EPA adopted the NTR on December 22, 1992, and amended it on May 4, 1995, and November 9, 1999. About 40 NTR criteria apply in California. U.S. EPA adopted the CTR on May 18, 2000. The CTR promulgated new toxics criteria for California and incorporated the NTR criteria that applied in the State. U.S. EPA amended the CTR on February 13, 2001.

3.3.3. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP establishes implementation provisions for priority pollutant criteria and objectives, and provisions for chronic toxicity control. The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria U.S. EPA promulgated for California through the NTR and the priority pollutant objectives the Regional Water Board established through the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority

pollutant criteria U.S. EPA promulgated through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005, that became effective on July 13, 2005. Requirements of this Order implement the SIP.

3.3.4. **Bacteria Objectives.** The State Water Board adopted the *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Part 3, Bacteria Provisions and a Water Quality Standards Variance Policy* on August 7, 2018, and it became effective on March 22, 2019. This plan establishes *Enterococcus* bacteria water quality objectives and related implementation provisions for discharges to marine and estuarine waters that support the water contact recreation beneficial use.

3.3.5. **Sediment Quality.** The State Water Board adopted the *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality* on September 16, 2008, and it became effective on August 25, 2009. The State Water Board adopted amendments to the plan on June 5, 2018, that became effective on March 11, 2019. This plan establishes sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries.

3.3.6. **Antidegradation Policy.** Federal regulations at 40 C.F.R. section 131.12 require that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy through State Water Board Resolution 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*, which incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. Permitted discharges must be consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16.

3.3.7. **Anti-Backsliding Requirements.** CWA sections 402(o) and 303(d)(4) and 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

3.3.8. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code §§ 2050 to 2097) or Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the State, including

protecting rare, threatened, or endangered species. The Discharger is responsible for meeting all applicable Endangered Species Act requirements.

3.3.9. **Sewage Sludge and Biosolids.** U.S. EPA administers 40 C.F.R. part 503, Standards for the Use or Disposal of Sewage Sludge, which regulates the final use or disposal of sewage sludge generated during the treatment of domestic sewage in a municipal wastewater treatment facility. The Discharger is responsible for complying with the requirements of 40 C.F.R. part 503. This Order does not authorize any act that violates those requirements.

3.4. Impaired Water Bodies on CWA section 303(d) List. On April 6, 2018, U.S. EPA approved a revised list of impaired waters pursuant to CWA section 303(d), which requires identification of specific water bodies where it is expected that water quality standards will not be met after implementation of technology-based effluent limitations on point sources. Where it has not done so already, the Regional Water Board plans to adopt total maximum daily loads (TMDLs) for pollutants on the 303(d) list. TMDLs establish wasteload allocations for point sources and load allocations for nonpoint sources and are established to achieve water quality standards.

The tidally-influenced portion of the Petaluma River is 303(d)-listed as impaired by diazinon, nickel, nutrients, and pathogens. San Pablo Bay is 303(d)-listed as impaired by chlordane, DDT, dieldrin, dioxin compounds, furan compounds, mercury, PCBs, dioxin-like PCBs, selenium, and exotic species. On February 12, 2008, U.S. EPA approved a TMDL for mercury in San Francisco Bay. On March 29, 2010, U.S. EPA approved a TMDL for PCBs in San Francisco Bay. The TMDLs for mercury and PCBs apply to this discharge but are implemented through NPDES Permit CA0038849. On August 23, 2016, U.S. EPA approved a TMDL for selenium in North San Francisco Bay, which includes San Pablo Bay. The selenium TMDL does not require effluent limits for municipal wastewater dischargers because these discharges have an insignificant impact on North San Francisco Bay water quality. The Regional Water Board, State Water Board, and California Office of Administrative Law approved a TMDL for bacteria in the Petaluma River, which is pending EPA approval. The bacteria effluent limits in this order are consistent with the TMDL.

The discharge is a source of nutrients to the Petaluma River and is currently regulated by the Regional Water Board through the Nutrient Watershed Permit (NPDES CA0038873, Order R2-2019-0017). However, the effect of wastewater discharges on the overall nutrient impairment in the Petaluma River is relatively small compared to discharges from agricultural runoff and septic systems (San Francisco Bay Regional Water Quality Control Board, Water Management Initiative, Section 3.10, November 2011). In addition, the dry season discharge prohibition, which the Regional Water Board has implemented since the 1980s, serves to mitigate the Facility's contribution to the Petaluma River's nutrient impairment. The effect of the prohibition is most significant during the dry season, when flows are naturally low and demand for recycled water is high. Nutrient

concentrations in the discharge have also decreased as a result of upgrades to the plant's infrastructure and treatment processes put in place since the 303(d) listing. This Order will continue to prohibit discharges to the Petaluma River from May 1 through October 20 of each year, and if additional nutrient control measures are necessary for the Discharger, the Regional Water Board will implement such measures through the Nutrient Watershed Permit (NPDES Permit CA0038873).

As shown in Fact Sheet section 4.3.3, the discharge is not a significant source of chlordane, DDT, or dieldrin because these pollutants have not been detected in the discharge. The discharge is not a source of invasive species because it is disinfected. The discharge is an insignificant source of dioxins and furans or nickel because discharge concentrations of these pollutants are consistently below water quality objectives.

4. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants discharged into waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards, and 40 C.F.R. section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of receiving waters.

4.1. Discharge Prohibitions

4.1.1. Prohibitions in this Order

4.1.1.1. **Discharge Prohibition 3.1 (No discharge other than as described):** This prohibition is based on 40 C.F.R. section 122.21(a) and Water Code section 13260, which require filing an application and Report of Waste Discharge before a discharge can occur. Discharges not described in the application and Report of Waste Discharge, and subsequently in this Order, are prohibited.

4.1.1.2. **Discharge Prohibition 3.2 (No bypass to waters of the United States):** This prohibition is based on 40 C.F.R. section 122.41(m) (see Attachment D section I.G). It does not apply to wastewater that is routed from the grit chambers to the oxidation ponds when influent flows exceed the capacity of the Siemens Orbal Process. During short-term wet weather events, biological treatment in the oxidation ponds and constructed wetlands is adequate because influent wastewater is significantly diluted.

4.1.1.3. **Discharge Prohibition 3.3 (No average dry weather flow above design capacity):** This Order prohibits average dry weather influent flows greater than the plant's average dry weather flow design treatment capacity (i.e., its

historical and tested treatment reliability) of 6.7 MGD. Exceeding this flow could result in lower treatment reliability and greater potential to violate water quality requirements.

4.1.1.4. **Discharge Prohibition 3.4 (No sanitary sewer overflows to waters of the United States):** Basin Plan Table 4-1, Discharge Prohibition 15, and the CWA prohibit the discharge of wastewater to surface waters, except as authorized under an NPDES permit. Publicly-owned treatment works must achieve secondary treatment at a minimum and any more stringent limitations necessary to meet water quality standards. A sanitary sewer overflow that results in the discharge to waters of the United States of raw sewage or wastewater not meeting this Order's effluent limitations is therefore prohibited under the Basin Plan and CWA.

4.1.1.5. **Discharge Prohibition 3.5 (Discharge to Petaluma River is prohibited during dry season):** This prohibition, applicable when it is feasible to recycle all wastewater flow, is based on Basin Plan Discharge Prohibition 1, which prohibits discharge that does not receive an initial dilution of at least 10:1. It is feasible to eliminate the discharge when there is demand for recycled water. The Discharger has demonstrated that discharges to the Petaluma River are unnecessary except when the plant flow exceeds the demand of the recycled water and storage system.

4.1.2 Basin Plan Discharge Prohibition 1. Basin Plan Table 4-1 Prohibition 1 prohibits discharges not receiving a minimum of 10:1 initial dilution, and discharges into shallow water or dead-end sloughs. Basin Plan section 4.2 provides for exceptions to Basin Plan Discharge Prohibition 1 under certain circumstances:

- An inordinate burden would be placed on the Discharger relative to the beneficial uses protected, and an equivalent level of environmental protection can be achieved by alternate means;
- A discharge is approved as part of a reclamation project;
- Net environmental benefits will be derived as a result of the discharge; or
- A discharge is approved as part of a groundwater cleanup project.

The Basin Plan further states:

> In reviewing requests for exceptions, the Water Board will consider the reliability of the discharger's system in preventing inadequately treated wastewater from being discharged to the receiving water and the environmental consequence of such discharges.

This Order grants an exception to Basin Plan Discharge Prohibition 1 for the following reasons:

- Prohibiting all discharges from Discharge Points 001 and 002 would place an inordinate burden on the Discharger because there is no feasible alternative to discharge when there is low demand for recycled water during wet weather months. The volume of treated wastewater discharged during this time can far exceed the capacity of the recycled water distribution and storage system, which consists of 190 MG of storage within the plant's oxidation ponds.

- An equivalent level of environmental protection is provided because the Discharger provides enhanced treatment reliability by routing secondary-treated effluent through oxidations ponds, treatment wetlands, and polishing wetlands. The pond system, used for both treatment and storage of wastewater, provides a significant volume of storage capacity that can be used for containment of peak wet weather flows or for emergency storage in the event of a plant upset. To reflect the enhanced treatment reliability, section 6.3.5.5 of this Order requires the Discharger to provide equalization of secondary-treated effluent in its oxidation ponds or wetlands for at least one week.

4.2. Technology-Based Effluent Limitations

4.2.1. Scope and Authority

CWA section 301(b) and 40 C.F.R. section 122.44 require that permits include conditions meeting technology-based requirements, at a minimum, and any more stringent effluent limitations necessary to meet water quality standards. The discharges authorized by this Order must meet minimum federal technology-based requirements based on the Secondary Treatment Standards at 40 C.F.R. section 133 as summarized below. Basin Plan Table 4-2 contains additional requirements for certain pollutants.

Table F-5. Secondary Treatment Standards

Parameter	Monthly Average	Weekly Average
Biochemical Oxygen Demand (BOD) [1,2]	30 mg/L	45 mg/L
Carbonaceous Biochemical Oxygen Demand (CBOD) [1,2]	25 mg/L	40 mg/L
Total Suspended Solids TSS [2]	30 mg/L	45 mg/L
pH	6.0 – 9.0 standard units (instantaneous)	

Footnotes:

[1] CBOD effluent limitations may be substituted for BOD limitations.

[2] The monthly average percent removal, by concentration, is not to be less than 85 percent.

4.2.2. Technology-Based Effluent Limitations

4.2.2.1. **BOD and TSS.** The BOD and TSS effluent limitations, including the 85 percent removal requirement, are based on the Secondary Treatment Standards and Basin Plan Table 4-2.

4.2.2.2. **Oil and Grease.** The oil and grease effluent limitations are based on Basin Plan Table 4-2.

4.2.2.3. **pH.** The pH effluent limitations are based on the Secondary Treatment Standards and Basin Plan Table 4-2.

4.2.2.4. **Total Residual Chlorine.** The total residual chlorine effluent limitation is based on Basin Plan Table 4-2. The Monitoring and Reporting Program (MRP, Attachment E) provides an allowance for determining false positives when using continuous devices because continuous instruments occasionally have anomalous spikes, and it is chemically improbable to have free chlorine in the presence of sodium bisulfite. The allowance for using only on-the-hour measurements for mandatory minimum penalty assessment purposes under Water Code section 13385.1 is based on a 2004 strategy developed between the Regional Water Board and the Bay Area Clean Water Agencies.

4.3. Water Quality-Based Effluent Limitations

4.3.1. Scope and Authority

CWA section 301(b) and 40 C.F.R. section 122.44(d) require permits to include limitations more stringent than federal technology-based requirements where necessary to achieve water quality standards. According to 40 C.F.R. section 122.44(d)(1)(i), permits must include effluent limitations for all pollutants that are or may be discharged at levels that have a reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective, water quality-based effluent limitations (WQBELs) must be established using (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting a narrative criterion, supplemented with relevant information. The process for determining reasonable potential and calculating WQBELs when necessary is intended to achieve applicable water quality objectives and criteria, and thereby protect designated beneficial uses of receiving waters.

4.3.2. Beneficial Uses and Water Quality Criteria and Objectives

Discharge Points 001 and 002 discharge to the Petaluma River. Fact Sheet section 3.3.1 identifies the beneficial uses of the Petaluma River. Water quality criteria and objectives to protect these beneficial uses are described below.

4.3.2.1. **Basin Plan Objectives.** The Basin Plan specifies numerous water quality objectives, including numeric objectives for 10 priority pollutants, un-ionized ammonia, and temperature, and narrative objectives for bioaccumulation and toxicity.

4.3.2.1.1. **Un-ionized Ammonia.** Basin Plan section 3.3.20 contains water quality objectives for un-ionized ammonia of 0.025 mg/L (as nitrogen) as an annual median and 0.16 mg/L (as nitrogen) as a maximum for Central San Francisco Bay and upstream waters. To determine the unionized ammonia fraction, pH, salinity, and temperature data were used from local receiving water stations and from effluent. The un-ionized fraction of total ammonia was calculated as follows:

$$\text{Fraction of un-ionized ammonia} = (1 + 10^{[pK - pH]})^{-1}$$

Where, for salinity less than 1 ppt:

pK = 0.09018 + 2729.92/T
T = temperature in Kelvin

Where, for salinity greater than 10 ppt:

pK = 9.245 + 0.116*(I) + 0.0324*(298-T) + 0.0415*(P)/T
I = molal ionic strength of saltwater = 19.9273*(S)/(1000-1.005109*S)
S = salinity (parts per thousand)
T = temperature in Kelvin
P = pressure (one atmosphere)

4.3.2.1.2. **Temperature.** The Petaluma River supports warm water and cold water habitat beneficial uses; therefore, the temperature water quality objectives in Basin Plan section 3.3.17 apply:

- The natural receiving water temperature of inland surface waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses.

- The temperature of any cold or warm freshwater habitat shall not be increased by more than 5°F (2.8°C) above natural receiving water temperature.

4.3.2.1.3. **Dioxin-TEQ.** The narrative bioaccumulation objective (Basin Plan § 3.3.2) states, “Many pollutants can accumulate on particulates, in sediments, or bioaccumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered.” Because it is the consensus of the scientific community that dioxins and furans associate with particulates, accumulate in sediments, and bioaccumulate in the fatty tissue of fish and other organisms, the Basin Plan’s narrative bioaccumulation water quality objective applies to these pollutants. Elevated levels of dioxins and furans in San Francisco Bay fish tissue demonstrate that the narrative bioaccumulation water quality

objective is not being met. U.S. EPA has therefore placed San Pablo Bay on its 303(d) list of receiving waters where water quality objectives are not being met after imposition of applicable technology-based requirements.

When the CTR was promulgated, U.S. EPA stated its support for the regulation of dioxin and dioxin-like compounds through the use of toxicity equivalencies (TEQs). U.S. EPA stated, "For California waters, if the discharge of dioxin or dioxin-like compounds has reasonable potential to cause or contribute to a violation of a narrative criterion, numeric water quality-based effluent limits for dioxin or dioxin-like compounds should be included in NPDES permits and should be expressed using a TEQ scheme" (Fed. Reg. Vol. 65, No. 97, pages 31695-31696, May 18, 2000). This Order uses a TEQ scheme based on a set of toxicity equivalency factors (TEFs) the World Health Organization developed in 2005, and a set of bioaccumulation equivalency factors (BEFs) U.S. EPA developed for the Great Lakes region (40 C.F.R. § 132, Appendix F) to convert the concentration of any congener of dioxin or furan into an equivalent concentration of 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD). Although the 2005 World Health Organization scheme includes TEFs for dioxin-like PCBs, they are not included in this Order's TEQ scheme. The CTR has established a specific water quality criterion for PCBs, and dioxin-like PCBs are included in the analysis of total PCBs.

The CTR establishes a numeric water quality objective for 2,3,7,8-TCDD of 1.3×10^{-8} µg/L for the protection of human health when water and aquatic organisms are consumed. This CTR criterion is used as a criterion for dioxin-TEQ because dioxin-TEQ represents a toxicity-weighted concentration equivalent to 2,3,7,8 TCDD, thus translating the narrative bioaccumulation objective into a numeric criterion.

4.3.2.1.4. **Toxicity.** The narrative toxicity objective (Basin Plan § 3.3.18) states, "All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms… Attainment of this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, or toxicity tests… or other methods selected by the Water Board."

4.3.2.2. **CTR Criteria.** The CTR specifies numeric aquatic life and human health criteria for numerous priority pollutants. These criteria apply to inland surface waters and enclosed bays and estuaries. Some human health criteria are for consumption of "water and organisms" and others are for consumption of "organisms only." The criteria applicable to "organisms only" apply to the Petaluma River because it is not a source of drinking water.

4.3.2.3. **NTR Criteria.** The NTR establishes numeric aquatic life and human health criteria for a number of toxic pollutants for San Francisco Bay waters

upstream to and including Suisun Bay and the Sacramento-San Joaquin Delta. The NTR criteria apply to the Petaluma River.

4.3.2.4. **Bacteria Objectives.** The *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Part 3, Bacteria Provisions and a Water Quality Standards Variance Policy* establishes *Enterococcus* bacteria water quality objectives to limit cases of gastrointestinal illness from water contact recreation. The *Enterococcus* bacteria objectives apply to marine and estuarine waters.

4.3.2.5. **Sediment Quality Objectives.** The *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality* contains the following narrative water quality objectives:

4.3.2.5.1. "Pollutants in sediments shall not be present in quantities that, alone or in combination, are toxic to benthic communities in bays and estuaries of California." This objective is to be implemented by integrating three lines of evidence: sediment toxicity, benthic community condition, and sediment chemistry. The policy requires that if the Regional Water Board determines that a discharge has reasonable potential to cause or contribute to an exceedance of this objective, it is to impose the objective as a receiving water limit.

4.3.2.5.2. "Pollutants shall not be present in sediments at levels that will bioaccumulate in aquatic life to levels that are harmful to human health in bays and estuaries of California." This objective is to be implemented by a three-tiered procedure based on pollutant concentrations in sediment and fish tissue.

4.3.2.5.3. "Pollutants shall not be present in sediment at levels that alone or in combination are toxic to wildlife and resident finfish by direct exposure or bioaccumulate in aquatic life at levels that are harmful to wildlife or resident finfish by indirect exposure in bays and estuaries of California." This objective is to be implemented on a case-by-case basis, based upon an ecological risk assessment.

4.3.2.6. **Receiving Water Salinity.** Basin Plan section 4.6.2 (like the CTR and NTR) states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water are to be considered in determining the applicable water quality objectives. Freshwater criteria apply to discharges to waters with salinities equal to or less than one part per thousand (ppt) at least 95 percent of the time. Saltwater criteria apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to water with salinities in between these two categories, or tidally-influenced freshwaters that support estuarine beneficial uses, the water quality objectives are the lower of the salt or freshwater

criteria (the latter calculated based on ambient hardness) for each substance.

The Petaluma River is a tidally-influenced river in the vicinity of the discharge. Therefore, the more stringent of the freshwater or saltwater water quality objectives from the Basin Plan, NTR, and CTR apply to this discharge.

4.3.2.7. **Receiving Water Hardness.** Ambient hardness data were used to derive freshwater quality objectives that are hardness-dependent. The Discharger collected 102 samples for hardness in the Petaluma River from October 2016 to April 2020. To be conservative, the hardness data set was reduced to 38 data points to eliminate hardness values obtained when the receiving water salinity was detected above 1 part per thousand and set to a hardness value of 400 mg/L when hardness exceeded that threshold. Of these remaining data points, the adjusted geometric mean hardness of 215 mg/l was used to calculate the water quality objectives.

4.3.2.8. **Metals Translators.** Regulations at 40 C.F.R. section 122.45(c), require effluent limitations for metals to be expressed as total recoverable metal. Since the water quality objectives for metals are typically expressed as dissolved metal, translators must be used to convert metals concentrations from dissolved to total recoverable and vice versa. The CTR contains default translators; however, site-specific conditions, such as water temperature, pH, total suspended solids, and organic carbon may affect the form of metal (dissolved, non-filterable, or otherwise) present and therefore available to cause toxicity. In general, dissolved metals are more available and more toxic to aquatic life than other forms. Site-specific translators can account for site-specific conditions, thereby preventing overly stringent or under-protective water quality objectives. For copper, the Discharger developed site-specific translators, based on near field samples collected in the Petaluma River, of 0.67 for chronic and 0.8 for acute. The Discharger provided the rationale for these site-specific translators in a report, dated January 31, 2011, *Final Copper Translator Analysis for City of Petaluma's Ellis Creek Water Recycling Facility*. For nickel, this Order uses site-specific translators the Clean Estuary Partnership developed, as set forth in *North of Dumbarton Bridge Copper and Nickel Development and Selection of Final Translators* report (March 2005): 0.27 and 0.57 (chronic and acute).

4.3.3. Reasonable Potential Analysis

4.3.3.1. **Available Information.** The reasonable potential analysis for this Order is based on effluent data the Discharger collected from October 2016 through April 2020. The ambient monitoring data is the maximum of background data collected by the Discharger in 2002 and 2003 and receiving water sampling from 2020 for priority pollutants except for mercury, selenium, and asbestos.

Ambient selenium data are based on samples the Discharger collected in 2008 and 2009 and included with its application for permit reissuance.

This Order does not contain WQBELs for constituents that do not demonstrate reasonable potential; however, the MRP still requires monitoring for those pollutants. If concentrations are found to have increased significantly, Provision 6.3.2 of the Order requires the Discharger to investigate the sources of the increases and implement remedial measures if the increases pose a threat to receiving water quality.

4.3.3.2. **Priority Pollutants and Dioxin-TEQ.** SIP section 1.3 sets forth the methodology used to assess whether priority pollutants have reasonable potential to exceed CTR and NTR water quality objectives. Here, SIP section 1.3 is also used as guidance for dioxin-TEQ.

The analysis begins with identifying the maximum effluent concentration (MEC) observed for each pollutant based on available effluent concentration data and the ambient background concentration (B). SIP section 1.4.3 states that ambient background concentrations are either the maximum ambient concentration observed or, for water quality objectives intended to protect human health, the arithmetic mean of observed concentrations. There are three triggers in determining reasonable potential:

- **Trigger 1** is activated if the maximum effluent concentration is greater than or equal to the lowest applicable water quality objective (MEC ≥ water quality objective).

- **Trigger 2** is activated if the ambient background concentration observed in the receiving water is greater than the lowest applicable water quality objective (B > water quality objective) and the pollutant is detected in any effluent sample.

- **Trigger 3** is activated if a review of other information indicates that a WQBEL is needed to protect beneficial uses.

The maximum effluent concentrations, most stringent applicable water quality criteria and objectives, and ambient background concentrations used in the analysis are presented in the following table, along with the reasonable potential analysis results (yes, no, or unknown) for each pollutant. Based on this analysis, the only priority pollutants that demonstrates reasonable potential are copper, cyanide, and dioxin-TEQ.

Table F-6. Reasonable Potential Analysis for Priority Pollutants and Dioxin-TEQ

CTR No.	Pollutant	C or Governing Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) [1][2]	B or Minimum DL (µg/L) [1][2]	RPA Result [3]
1	Antimony	4,300	0.38	1.1	No
2	Arsenic	36	5.3	29	No
3	Beryllium	No Criterion	<0.09	<0.06	No
4	Cadmium	2.1	0.35	0.07	No
5a	Chromium (III) [4]	388	1.6	2.8	No
5b	Chromium (VI)	11	1.6	2.8	No
6	Copper	9.0	5.3	14.7	Yes
7	Lead	8.4	0.54	0.8	No
8	Mercury [5]	-	-	-	-
9	Nickel	30	8.1	19	No
10	Selenium [5]	-	-	-	-
11	Silver	2.2	0.084	<0.02	No
12	Thallium	6.3	<0.05	0.2	No
13	Zinc	86	30	20	No
14	Cyanide	2.9	3.9	1.0	Yes
15	Asbestos (fibers/L)	No Criterion	-	-	U
16	2,3,7,8-TCDD	1.4E-08	<4.6E-07	<6.4E-7	U
	Dioxin-TEQ	1.4E-08	<2.2E-09	2.5E-09	Yes [6]
17	Acrolein	780	<2.0	<0.81	No
18	Acrylonitrile	0.66	<0.4	<0.66	U
19	Benzene	71	<0.3	<0.18	No
20	Bromoform	360	<0.3	<0.15	No
21	Carbon Tetrachloride	4.4	<0.4	<0.16	No
22	Chlorobenzene	21,000	<0.3	<0.18	No
23	Chlorodibromomethane	34	3.6	<0.17	No
24	Chloroethane	No Criterion	<0.4	<0.15	U
25	2-Chloroethylvinyl ether	No Criterion	<0.7	<0.28	U
26	Chloroform	No Criterion	28	<0.19	U
27	Dichlorobromomethane	46	8.6	<0.16	No
28	1,1-Dichloroethane	No Criterion	<0.5	<0.19	No
29	1,2-Dichloroethane	99	<0.4	<0.18	No
30	1,1-Dichloroethylene	3.2	<0.3	<0.21	U
31	1,2-Dichloropropane	39	<0.4	<0.18	No
32	1,3-Dichloropropylene	1,700	<0.4	<0.29	No
33	Ethylbenzene	29,000	<0.4	<0.1	No
34	Methyl Bromide	4,000	<0.4	<0.27	No
35	Methyl Chloride	No Criterion	<0.4	<0.27	U
36	Methylene Chloride	1,600	<0.5	<0.18	No
37	1,1,2,2-Tetrachloroethane	11	<0.3	<0.15	No
38	Tetrachloroethylene	8.9	<0.4	<0.19	No

CTR No.	Pollutant	C or Governing Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) [1][2]	B or Minimum DL (µg/L) [1][2]	RPA Result [3]
39	Toluene	200,000	<0.3	<0.19	No
40	1,2-Trans-Dichloroethylene	140,000	<0.4	<0.22	No
41	1,1,1-Trichloroethane	No Criterion	<0.4	<0.19	No
42	1,1,2-Trichloroethane	42	<0.4	<0.16	No
43	Trichloroethylene	81	<0.4	<0.2	No
44	Vinyl Chloride	525	<0.4	<0.25	No
45	2-Chlorophenol	400	<1	<0.9	No
46	2,4-Dichlorophenol	790	<1	<0.9	No
47	2,4-Dimethylphenol	2,300	<1	<0.4	No
48	2-Methyl- 4,6-Dinitrophenol	765	<5.2	<0.9	No
49	2,4-Dinitrophenol	14,000	<5.2	<0.7	No
50	2-Nitrophenol	No Criterion	<5.2	<1	U
51	4-Nitrophenol	No Criterion	<5.2	<0.5	U
52	3-Methyl 4-Chlorophenol	No Criterion	<1	<0.5	U
53	Pentachlorophenol	7.9	<5.2	<0.4	U
54	Phenol	4,600,000	<1	<0.3	No
55	2,4,6-Trichlorophenol	6.5	<1	<0.5	No
56	Acenaphthene	2,700	<1	<0.02	No
57	Acenaphthylene	No Criterion	<1	<0.02	U
58	Anthracene	110,000	<1	<0.03	No
59	Benzidine	0.00054	<5.2	<4	U
60	Benzo(a)Anthracene	0.049	<1	<0.02	U
61	Benzo(a)Pyrene	0.049	<1	<0.02	U
62	Benzo(b)Fluoranthene	0.049	<1	<0.02	U
63	Benzo(ghi)Perylene	No Criterion	<1	<0.02	U
64	Benzo(k)Fluoranthene	0.049	<1	<0.02	U
65	Bis(2-Chloroethoxy)Methane	No Criterion	<1	<0.5	U
66	Bis(2-Chloroethyl)Ether	1.4	<1	<0.9	U
67	Bis(2-Chloroisopropyl)Ether	170,000	<1	<0.9	No
68	Bis(2-Ethylhexyl)Phthalate	5.9	<0.83	<0.5	No
69	4-Bromophenyl Phenyl Ether	No Criterion	<1	<0.5	U
70	Butylbenzyl Phthalate	5,200	<1	<0.5	No
71	2-Chloronaphthalene	4,300	<1	<1	No
72	4-Chlorophenyl Phenyl Ether	No Criterion	<1	<0.5	U
73	Chrysene	0.049	<1	<0.02	U
74	Dibenzo(a,h)Anthracene	0.049	<1	<0.02	U
75	1,2-Dichlorobenzene	17,000	<0.4	<0.27	No
76	1,3-Dichlorobenzene	2,600	<0.4	<0.18	No
77	1,4-Dichlorobenzene	2,600	<0.3	<0.18	No
78	3,3 Dichlorobenzidine	0.077	<2.1	<5	U
79	Diethyl Phthalate	120,000	<1	<0.5	No

CTR No.	Pollutant	C or Governing Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) [1][2]	B or Minimum DL (µg/L) [1][2]	RPA Result [3]
80	Dimethyl Phthalate	2,900,000	<1	<0.5	No
81	Di-n-Butyl Phthalate	12,000	<1	<0.4	No
82	2,4-Dinitrotoluene	9.1	<1	<0.9	U
83	2,6-Dinitrotoluene	No Criterion	<1	<0.4	U
84	Di-n-Octyl Phthalate	No Criterion	<2.1	<0.4	U
85	1,2-Diphenyhydrazine	0.54	<1	<0.5	U
86	Fluoranthene	370	<1	<0.02	No
87	Fluorene	14,000	<1	<0.01	No
88	Hexachlorobenzene	0.00077	<1	<0.4	U
89	Hexachlorobutadiene	50	<1	<0.4	U
90	Hexachlorocyclopentadiene	17,000	<5.2	<0.9	No
91	Hexachloroethane	8.9	<1	<0.9	No
92	Indeno(1,2,3-cd)Pyrene	0.049	<1	<0.02	U
93	Isophorone	600	<1	<0.5	No
94	Naphthalene	No Criterion	<1	<0.02	U
95	Nitrobenzene	1,900	<1	<0.5	No
96	N-Nitrosodimethylamine	8.1	<5.2	<0.7	U
97	N-Nitrosodi-n-Propylamine	1.4	<1	<0.5	U
98	N-Nitrosodiphenylamine	16	<1	<0.7	No
99	Phenanthrene	No Criterion	<1	<0.02	U
100	Pyrene	11,000	<1	<0.02	No
101	1,2,4-Trichlorobenzene	No Criterion	<1	<0.9	No
102	Aldrin	0.00014	<0.002	<0.003	U
103	Alpha-BHC	0.013	<0.004	<0.004	No
104	Beta-BHC	0.046	<0.002	<0.004	No
105	Gamma-BHC	0.063	<0.004	<0.002	No
106	Delta-BHC	No Criterion	<0.002	<0.004	U
107	Chlordane	0.00059	<0.04	<0.002	U
108	4,4'-DDT	0.00059	<0.003	<0.004	U
109	4,4'-DDE	0.00059	<0.004	<0.004	U
110	4,4'-DDD	0.00084	<0.02	<0.003	U
111	Dieldrin	0.00014	<0.005	<0.004	U
112	Alpha-Endosulfan	0.0087	<0.002	<0.004	No
113	beta-Endosulfan	0.0087	<0.004	<0.004	No
114	Endosulfan Sulfate	240	<0.02	<0.003	No
115	Endrin	0.0023	<0.002	<0.003	No
116	Endrin Aldehyde	0.81	<0.002	<0.004	No
117	Heptachlor	0.00021	<0.003	<0.004	U
118	Heptachlor Epoxide	0.00011	<0.009	<0.004	U
119-125	PCBs sum [5]	-	-	-	-
126	Toxaphene	0.00020	<0.2	<0.2	U

Footnotes:

[1] The MEC and ambient background concentration are the actual detected concentrations unless preceded by a "<" sign, in which case the value shown is the minimum detection level (MDL).

[2] The MEC or ambient background concentration is "Unavailable" when there are no monitoring data for the constituent.

[3] RPA Results = Yes, if MEC ≥ WQC, B > WQC and MEC is detected, or Trigger 3
= No, if MEC and B are < WQC or all effluent data are undetected
= Unknown (U) if no criteria have been promulgated or data are insufficient.

[4] The maximum effluent and ambient background concentrations are the total chromium concentration. The chromium (III) concentrations are unknown but less than these values.

[5] SIP section 1.3 excludes from its reasonable potential analysis procedure priority pollutants for which a TMDL has been developed. TMDLs have been developed for mercury and PCBs in San Francisco Bay. Mercury and PCBs from wastewater discharges are regulated by NPDES Permit No. CA0038849, which implements the San Francisco Bay Mercury and PCBs TMDLs. A TMDL has also been developed for selenium in North San Francisco Bay. Basin Plan section 7.2.4.5 finds that municipal wastewater dischargers have no reasonable potential to cause or contribute to the selenium impairment in San Francisco Bay segments and, therefore, are not required to have numeric effluent limitations.

[6] Reasonable potential is based on Trigger 3 because San Francisco Bay is 303(d)-listed for dioxin-TEQ and elevated levels of dioxin-TEQ are found in San Francisco Bay fish tissue.

4.3.3.3. **Ammonia**

4.3.3.3.1. **Methodology.** Ammonia is a toxic pollutant but not a priority pollutant as defined by the CTR; therefore, the procedure outlined in the Technical Support Document was used to determine if ammonia in the discharge has reasonable potential to cause a water quality objective to be exceeded in the receiving water. According to the Technical Support Document, the reasonable potential analyses can be performed based on the receiving water concentrations projected using effluent data or measured receiving water concentrations. Both values may be compared directly with the Basin Plan un-ionized ammonia objectives.

The following steps summarize the process for determining reasonable potential for a pollutant using the Technical Support Document method:

- **Step 1.** Determine the total number of samples (n) and the MEC.
- **Step 2.** Determine the coefficient of variation (CV). For a data set where n < 10, the CV is estimated to equal 0.6. For a dataset where n ≥ 10, the CV is calculated as the standard deviation divided by the mean.
- **Step 3.** Determine a ratio (R) for projecting the upper bound concentration based on a selected confidence interval (e.g., 95th or 99th percentile) and assuming a lognormal distribution as follows:

  Calculate the percentile (P_n) represented by the MEC in the data set of n samples based on the selected confidence level.

  $$P_n = (1 - \text{confidence interval})^{1/n}$$

Calculate the concentration multiplying factors (C) for the MEC percentile and the chosen upper bound percentile (typically the 99th) using the following equation:

$C_P = \exp(Z_P\sigma - 0.5\sigma^2)$

Where: $\sigma^2 = \ln(CV^2 + 1)$

P is the percentile (either P_n or the selected $P_{upper\ bound}$)

Z_p is the standard normal distribution value for the percentile P (available from statistical references)

Finally, calculate R as:

$R = C_{upper\ bound} / C_{Pn}$

- **Step 4.** Calculate the projected maximum receiving water concentration (RWC) as follows:

  RWC = (MEC x R) / dilution ratio

  The dilution ratio can be defined as:

  Dilution ratio = (D + [1 part effluent]) / (1 part effluent)

  Where D is the parts receiving water available to dilute 1 part effluent

  Therefore:

  RWC = (MEC x R) / (D + 1)

- **Step 5.** Compare the RWC to the most stringent water quality objective for the pollutant. There is reasonable potential if the RWC is greater than or equal to the lowest applicable water quality objective.

4.3.3.3.2. **Analysis Based on Effluent Data.** Effluent total ammonia, pH, and temperature data collected from October 2016 through April 2020 were used to evaluate reasonable potential for ammonia. Based on the data set of n > 10 with a calculated un-ionized ammonia MEC of 0.0098 mg/L, P_n at a 95% confidence interval is 0.90, indicating that the MEC represents the 90th percentile of all ammonia effluent data. With the upper bound set at the 99th percentile, R is 1.9 (C_{Pn} is 1.8 and $C_{upper\ bound}$ is 3.4), the projected RWC is 0.018 mg/L, which is less than the Basin Plan's acute un-ionized ammonia water quality objective of 0.16 mg/L. Therefore, there is no reasonable potential for ammonia based on effluent data as compared to the acute objective.

The median of the un-ionized ammonia effluent data was compared to the chronic objective, which is an annual median. The maximum annual median was 0.0031 mg/L in 2018, which is less than the Basin Plan's chronic un-ionized ammonia water quality objective of 0.025 mg/L. Therefore, there is no reasonable potential for ammonia based on effluent data as compared to the chronic objective.

4.3.3.3.3. **Analysis Based on Receiving Water Data.** Total ammonia, pH, salinity, and temperature data from Discharger's receiving water monitoring locations collected from January 2016 through April 2020 were used to evaluate reasonable potential for ammonia. The maximum calculated un-ionized ammonia concentration of 0.010 mg/L is less than the acute water quality objective of 0.16 mg/L and chronic water quality objective of 0.025 mg/L. Therefore, there is no reasonable potential for ammonia based on receiving water data as compared to the acute or chronic objectives.

4.3.3.3.4. **Conclusion.** While effluent and receiving water data for ammonia support finding no reasonable potential, there would be reasonable potential if the Discharger were to discontinue nitrifying its effluent. During the previous order term, the Discharger successfully operated the plant to treat ammonia below the Basin Plan objectives. However, without regulatory assurance that nitrification will continue, the un-ionized ammonia in the effluent could increase. Therefore, the total ammonia effluent limitations from the previous order are retained to ensure that the Discharger maintains its nitrification performance and to avoid backsliding.

4.3.3.4. **Temperature.** Basin Plan section 3.3.17 prohibits the alteration of natural receiving water temperatures such that beneficial uses are adversely affected and temperature increases greater than 2.8ºC above natural receiving water temperatures. Receiving water monitoring from February 2015 through May 2020 showed no significant difference in temperature between the four receiving water monitoring stations and the effluent. Therefore, the discharge will not significantly increase the river temperature, and there is no reasonable potential for temperature to exceed the Basin Plan water quality objective.

4.3.3.5. **Acute Toxicity.** Basin Plan section 4.5.5.3.1 requires acute toxicity monitoring and limitations, implying there is reasonable potential for the discharge to cause or contribute to exceedances of the acute toxicity water quality objective.

4.3.3.6. **Chronic Toxicity.** There is no reasonable potential for chronic toxicity in the receiving water, and no WQBEL is required. The Technical Support Document allows for a mixing zone and dilution credit to be considered when conducting a reasonable potential analysis. This Order establishes a chronic toxicity mixing zone corresponding to a dilution credit of 3.25:1 (D = 2.25) as

explained in Fact Sheet section 4.3.4.2. Basin Plan section 4.5.5.3.2 allows chronic toxicity dilution credits "comparable to those allowed for numeric chemical-specific objectives." Basin Plan Table 4-6 establishes a dilution credit of 3.25:1 for cyanide.

The Discharger conducted quarterly chronic toxicity tests during the previous order term. The maximum single-sample chronic toxicity result was 2.0 TUc. Applying the dilution credit of 3.25:1 to 2.0 TUc, the resulting toxicity is 0.57 TUc, which is less than the translated chronic toxicity objective (1.0 TUc).

4.3.3.7. ***Enterococcus* Bacteria.** The *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Part 3, Bacteria Provisions and a Water Quality Standards Variance Policy* requires *Enterococcus* bacteria effluent limitations for discharges to marine and estuarine receiving waters that support the water contact recreation (REC1) beneficial use.

4.3.3.8. **Sediment Quality.** Pollutants in some receiving water sediments may be present in quantities that alone or in combination are toxic to benthic communities. However, to date there is no evidence directly linking compromised sediment conditions to the discharges subject to this Order; therefore, the Regional Water Board cannot draw a conclusion about reasonable potential for these discharges to cause or contribute to exceedances of the sediment quality objectives. Nevertheless, the Discharger continues to participate in the Regional Monitoring Program, which routinely monitors San Francisco Bay sediment and seeks to identify stressors responsible for degraded sediment quality.

4.3.4. Water Quality-Based Effluent Limitations

WQBELs were developed for the pollutants determined to have reasonable potential to cause or contribute to exceedances of water quality objectives. With the exception of acute toxicity and *Enterococcus* bacteria (discussed below), the WQBEL calculations are based on the procedures in SIP section 1.4.

4.3.4.1. **WQBEL Expression.** NPDES regulations at 40 C.F.R. section 122.45(d) require that permit limits for publicly-owned treatment works be expressed as average weekly and average monthly limits, unless impracticable. This Order contains daily limits instead of weekly limits because daily limits better protect against acute water quality effects and are necessary to prevent fish kills or mortality to aquatic organisms. Weekly limits could allow acute and chronic toxicity to occur over shorter periods (acute and chronic aquatic life criteria are typically expressed as one-hour and four-day averages).

4.3.4.2. **Mixing Zones and Dilution Credits.** The Order provides a dilution credit for cyanide based on Basin Plan Table 4-6. The cyanide dilution credit is 3.25:1 (3.25 parts combined effluent and receiving water to 1 part effluent, or

D = 2.25). Basin Plan section 4.5.5.3.2 allows chronic toxicity dilution credits "comparable to those allowed for numeric chemical-specific objectives." Therefore, this Order establishes a chronic toxicity mixing zone also corresponding to a dilution of 3.25:1.

In September 2020, the Discharger submitted *Hydrodynamic and Water Quality Modeling for the City of Petaluma Ellis Creek Water Recycling Facility Discharge* as an attachment to its Report of Waste Discharge. This report concluded that 3.25:1 dilution is achieved within 10 acres of Discharge Point 001 and 56 acres of Discharge Point 002. In accordance with SIP section 1.4.2.2.A, the larger 56-acre mixing zones at Discharge Point 002 will not do any of the following:

4.3.4.2.1. **Compromise the integrity of the water body.** The mixing zones will not compromise the integrity of the receiving waters because they are small,1.0 percent of the Petaluma River, under the most conservative scenario. Moreover, this Order prohibits most dry season discharges, preserving the integrity of the entire water body during those periods.

4.3.4.2.2. **Cause acutely toxic conditions to aquatic life passing through the mixing zones.** Acutely toxic conditions will not exist inside the mixing zones because this Order contains acute toxicity effluent limits and requires acute toxicity testing to demonstrate compliance. The acute toxicity limits do not account for any dilution; therefore, compliance with them will protect areas within the mixing zones. Bioassay monitoring conducted on fathead minnows during the previous order term showed high survival rates, indicating that organisms passing through the mixing zones are unlikely to experience acute toxicity. Furthermore, the maximum cyanide concentration in effluent was 3.9 µg/L, which is below the acute cyanide water quality objective of 9.4 µg/L.

4.3.4.2.3. **Restrict the passage of aquatic life.** As described above, the discharge will not cause acutely toxic conditions to aquatic life, so it will not threaten aquatic life moving in and out of the mixing zones. The maximum time an organism might spend drifting through the mixing zones is less than one minute, a duration far shorter than the durations reflected in the applicable water quality criteria. Neither cyanide nor chronic toxicity creates a physical or visual barrier than could restrict the passage of aquatic life.

4.3.4.2.4. **Adversely impact biologically sensitive or critical habitats, including, but not limited to, habitats of species under federal or State endangered species laws.** The Petaluma River is part of the designated critical habitat for two federally threatened fish species: green sturgeon and Central California Coast DPS steelhead. Sacramento splittail and Chinook salmon also have been observed in the Petaluma River. Green sturgeon, steelhead, and Chinook salmon may take in pollutants through their gills as they pass through the mixing zones, but, because the mixing

zones extend over a small portion of the Petaluma River, these sensitive species are unlikely to reside within the mixing zones for any significant duration that could adversely affect them.

The adjacent tidal marsh provides habitat for salt-marsh harvest mouse, California black rail, Ridgway's rail, tricolored blackbird, short-eared owl, northern harrier, white-tailed kite, San Francisco common yellowthroat, Samuels song sparrow, and Bryant's Savannah Sparrow. Herons and egrets may have the potential to use the area for foraging and may nest nearby. These species do not live in water and will not be affected by the mixing zones.

4.3.4.2.5. **Produce undesirable or nuisance aquatic life.** Cyanide and chronic toxicity are not biostimulants or plant nutrients so they are not expected to cause growth of undesirable or nuisance aquatic species. Moreover, this Order imposes receiving water limitations that prohibit bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses.

4.3.4.2.6. **Result in floating debris, oil, or scum.** The mixing zones will not result in floating debris, oil, or scum because the plant is equipped with scum and debris collection devices to collect and dispose of oils, grease, debris, and scum so that the effluent is free of these materials. In addition, section 5.1.1 of this Order imposes receiving water limitations that prohibit floating debris, oil, or scum at any place and at any time.

4.3.4.2.7. **Produce objectionable color, odor, taste, or turbidity.** The mixing zones will not produce objectionable color, odor, taste, or turbidity because the effluent receives secondary treatment and is disinfected prior to discharge. Secondary treatment generally addresses objectionable odor, taste, and turbidity through the biological degradation of organic compounds and clarification. In addition, sections 5.1.6 and 5.1.7 of this Order prohibit alteration of color or turbidity beyond natural background levels.

4.3.4.2.8. **Cause objectionable bottom deposits.** The mixing zones will not cause objectionable bottom deposits because the effluent receives secondary treatment and is free of settleable solids. Moreover, section 5.1.4 of this Order prohibits bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses.

4.3.4.2.9. **Cause nuisance.** The mixing zones will not cause nuisance. Water Code section 13050(m) defines "nuisance" to mean anything that meets all three of the following criteria:

- Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property;

- Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and

- Occurs during, or as a result of, the treatment or disposal of wastes.

Section 5.1 of this Order prohibits discharges from causing a nuisance. Furthermore, the Discharger conducts receiving water monitoring that includes standard observations to confirm that nuisance conditions are not present.

4.3.4.2.10. **Dominate the receiving water body or overlap a mixing zone from a different outfall.**. The mixing zones will not overlap any other mixing zone because the Regional Water Board has not established any other mixing zone nearby.

4.3.4.2.11. **Be located at or near any drinking water intake.** There are no drinking water intakes near the mixing zones. Beneficial uses listed for the Petaluma River do not include municipal water supply (MUN).

4.3.4.3. **WQBEL Calculations.** The following table shows the copper, cyanide, and dioxin-TEQ WQBEL calculations in accordance with SIP section 1.4.

Table F-7. WQBEL Calculations

Pollutant	Copper	Cyanide	Dioxin-TEQ
Units	µg/L	µg/L	µg/L
Basis and Criteria type	Basin Plan and CTR Aquatic Life	Basin Plan and CTR Aquatic Life	Basin Plan Narrative
CTR Aquatic Life Criteria - Acute	3.9	-	-
CTR Aquatic Life Criteria - Chronic	2.5	-	-
CTR Human Health Criteria - Organisms Only	-	-	-
Site-Specific Objective Criteria - Acute	9.4	9.4	-
Site-Specific Objective Criteria - Chronic	6.0	2.9	-
Water Effects Ratio (WER)	2.4	1	1
Lowest WQO	6.0	2.9	1.4E-08
Site Specific Translator – MDEL	0.80	-	-
Site Specific Translator – AMEL	0.67	-	-
Dilution Factor (D)	-	2.25	-
No. of samples per month	4	4	4
Aquatic life criteria analysis required? (Y/N)	Y	Y	N
HH criteria analysis required? (Y/N)	N	Y	Y

Pollutant	Copper	Cyanide	Dioxin-TEQ
Applicable Acute WQO	12	9.4	-
Applicable Chronic WQO	9	2.9	-
HH Criteria	-	220,000	1.4E-08
Background (Maximum Conc. for Aquatic Life Calc.)	14.7	1.0	-
Background (Average Conc. for Human Health Calc.)	14.7	1.0	2.5E-09
Is the pollutant on the 303d list and/or bioaccumulative (Y/N)?	N	N	Y
ECA Acute	12	28	-
ECA Chronic	9	7	-
ECA HH	-	714,998	1.4E-08
No. of data points <10 or at least 80% of data reported non-detect? (Y/N)	N	N	Y
Avg of effluent data points	3.3	2.4	-
Std Dev of effluent data points	1.0	0.65	-
CV Calculated	0.30	0.27	-
CV (Selected) – Final	0.30	0.27	0.6
ECA Acute Mult99	0.53	0.55	-
ECA Chronic Mult99	0.64	0.74	-
LTA Acute	6.2	16	-
LTA Chronic	6.4	5.3	-
Minimum of LTAs	6.2	5.3	-
AMEL Mult95	1.3	1.2	1.6
MDEL Mult99	1.9	1.8	3.1
AMEL (Aquatic Life)	7.8	6.5	-
MDEL (Aquatic Life)	12	9.5	-
MDEL/AMEL Multiplier	-	1.5	2.0
AMEL (Human Health)	-	714,998	1.4E-08
MDEL (Human Health)	-	1,040,000	2.8E-08
Minimum of AMEL for Aq. Life vs HH	8.0	6.5	1.4E-08
Minimum of MDEL for Aq. Life vs HH	12	9.5	2.8E-08
Previous Order Limit – AMEL	7.0	5.3	1.4E-08
Previous Order Limit – MDEL	12	13	2.8E-08
Final Limit – AMEL	7.0	5.3	1.4E-08
Final Limit – MDEL	12	9.5	2.8E-08

4.3.4.4. **Acute Toxicity.** This Order includes acute toxicity effluent limitations based on Basin Plan Table 4-3. Based on Basin Plan section 3.3.20, if the Discharger can demonstrate that ammonia causes acute toxicity in excess of the acute toxicity limitations in this Order, and that the ammonia in the discharge complies with the ammonia effluent limitations in this Order, then such toxicity does not constitute a violation of the effluent limitations for whole effluent acute toxicity.

4.3.4.5. ***Enterococcus* Bacteria.** The *Enterococcus* effluent limitations are based on the *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Part 3, Bacteria Provisions and a Water Quality Standards Variance Policy*, which requires these limitations for discharges to receiving waters with the water contact recreation beneficial use.

4.4. Discharge Requirement Considerations

4.4.1. **Anti-backsliding.** This Order complies with the anti-backsliding provisions of CWA sections 402(o) and 303(d)(4), and 40 C.F.R. section 122.44(l), which generally require effluent limitations in a reissued permit to be as stringent as those in the previous order. The requirements of this Order are at least as stringent as those in the previous order.

This Order does not retain effluent limits bis (2-ethylhexyl) phthalate from the previous order because data no longer indicate reasonable potential for the pollutant to exceed water quality objectives. This is consistent with State Water Board Order WQ 2001-16.

The Order contains new *Enterococcus* bacteria effluent limits based on the *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Part 3, Bacteria Provisions and a Water Quality Standards Variance Policy*.

4.4.2. **Antidegradation.** This Order complies with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16. It does not authorize lowering water quality as compared to the level of discharge authorized in the previous order, which is the baseline by which to measure whether degradation will occur. This Order does not allow for an increased flow, a reduced level of treatment, or increased effluent limitations relative to the previous order.

This Order authorizes the relocation of the outfall from Discharge Point 001 to Discharge Point 002, which is 3,000 feet northeast of Discharge Point 001. The volume and quality of the discharge at Discharge Point 002 will be the same as Discharge Point No. 001. The Discharger submitted an antidegradation study, *Water Quality Studies for Relocation of Petaluma River Outfall for the Ellis Creek Water Recycling Facility* (August 2020) to demonstrate that the relocated outfall will comply with federal and State antidegradation policies. Both the

current outfall and the relocated outfall are expected to have comparable effects on Petaluma River water quality because of the proximity of the discharges to the same receiving water. Although relocating the outfall will increase the spatial extent of the cyanide and chronic toxicity mixing zones, the spatial extent of the mixing zones is insignificant when compared to the entire Petaluma River (see Fact Sheet section 4.3.4.2).

4.4.3. **Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based requirements implement minimum, applicable federal technology-based requirements. In addition, this Order contains more stringent effluent limitations as necessary to meet water quality standards. Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement CWA requirements.

This Order's WQBELs have been derived to implement water quality objectives that protect beneficial uses. The beneficial uses and water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating these WQBELs are based on the CTR, as implemented in accordance with the SIP, which U.S. EPA approved on May 18, 2000. U.S. EPA approved most Basin Plan beneficial uses and water quality objectives prior to May 30, 2000. Beneficial uses and water quality objectives submitted to U.S. EPA prior to May 30, 2000, but not approved by U.S. EPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 C.F.R. section 131.21(c)(1). U.S. EPA approved the remaining beneficial uses and water quality objectives, so they are also applicable water quality standards pursuant to 40 C.F.R. section 131.21(c)(2).

5. RATIONALE FOR RECEIVING WATER LIMITATIONS

The receiving water limitations in sections 5.1 and 5.2 of the Order are based on Basin Plan narrative and numeric water quality objectives. The receiving water limitation in section 5.3 of the Order requires compliance with federal and State water quality standards in accordance with the CWA and regulations adopted thereunder.

6. RATIONALE FOR PROVISIONS

6.1. Standard Provisions

Attachment D contains standard provisions that apply to all NPDES permits in accordance with 40 C.F.R. section 122.41 and additional conditions applicable to specific categories of permits in accordance with 40 C.F.R. section 122.42. The Discharger must comply with these provisions. The conditions set forth in 40 C.F.R. sections 122.41(a)(1) and (b) through (n) apply to all state-issued

NPDES permits and must be incorporated into permits either expressly or by reference.

In accordance with 40 C.F.R. section 123.25(a)(12), states may omit or modify conditions to impose more stringent requirements. Attachment G contains standard provisions that supplement the provisions in Attachment D. This Order omits the federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the State's enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates Water Code section 13387(e) by reference.

6.2. Monitoring and Reporting Provisions

CWA section 308 and 40 C.F.R. sections 122.41(h), 122.41(j)-(l), 122.44(i), and 122.48 require that NPDES permits specify monitoring and reporting requirements. Water Code section 13383 also authorizes the Regional Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The MRP establishes monitoring, reporting, and recordkeeping requirements that implement federal and State requirements. For more information, see Fact Sheet section 7. The Regional Water Board Order No. R2-2016-0008 allows the Discharger to opt into certain alternative monitoring requirements.

6.3. Special Provisions

6.3.1. Reopener Provisions

These provisions are based on 40 C.F.R. sections 122.62 and 122.63 and allow modification of this Order and its effluent limitations as necessary in response to updated water quality objectives, regulations, or other new and relevant information that may become available in the future, and other circumstances as allowed by law.

6.3.2. Effluent Characterization Study and Report

This Order does not include WQBELs for pollutants that do not demonstrate reasonable potential, but this provision requires the Discharger to evaluate monitoring data to verify that the reasonable potential analysis conclusions of this Order remain valid. This requirement is authorized pursuant to 40 C.F.R. section 122.41(h) and Water Code section 13383, and is necessary to inform the next permit reissuance and to ensure that the Discharger takes timely steps in response to any unanticipated change in effluent quality during the term of this Order.

6.3.3. Pollutant Minimization Program

This provision is based on Basin Plan section 4.13.2 and SIP section 2.4.5.

6.3.4. Special Provisions for Publicly-Owned Treatment Works

6.3.4.1. **Pretreatment Program.** This provision is based on 40 C.F.R. part 403. The Discharger implements a pretreatment program due to the nature and volume of influent to the treatment plant. This provision lists the Discharger's responsibilities regarding its pretreatment program and requires compliance with the provisions in Attachment H, Pretreatment Requirements.

6.3.4.2. **Sludge and Biosolids Management.** This provision is based on Basin Plan section 4.17. "Sludge" refers to the solid, semisolid, and liquid residue removed during primary, secondary, and advanced wastewater treatment processes. "Biosolids" refers to sludge that has been treated and may be beneficially reused.

6.3.4.3. **Collection System Management.** The Discharger's collection system is part of the Facility regulated through this Order. This provision requires compliance with Attachments D and G and states that these requirements may be satisfied by separately complying with State Water Board Order 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, as amended by State Water Board Order WQ 2013-0058-EXEC and any subsequent order updating these requirements. These statewide WDRs require public agencies that own or operate sanitary sewer systems with one or more miles of sewer lines to enroll for coverage and comply with requirements to develop sanitary sewer management plans and report sanitary sewer overflows, among other provisions and prohibitions. The statewide WDRs contain requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows that are more extensive and, therefore, more stringent than the standard provisions in Attachments D and G. Compliance with the statewide WDRs will satisfy the corresponding requirements in Attachments D and G.

6.3.4.4. **Resource Recovery from Anaerobically Digestible Material.** Standard Operating Procedures are required for publicly-owned treatment works that accept hauled waste food, fats, oil, and grease for injection into anaerobic digesters. The development and implementation of Standard Operating Procedures for management of these materials is intended to allow the California Department of Resources Recycling and Recovery to exempt this activity from separate and redundant permitting programs.

Some POTWs choose to accept organic material, such as waste food, fats, oils, and grease, into their anaerobic digesters to increase production of methane and other biogases for energy production and to prevent such materials from being discharged into the collection system and potentially causing sanitary sewer overflows. The California Department of Resources Recycling and Recovery has proposed to exempt publicly-owned treatment works from Process Facility/Transfer Station permit requirements when the

same activity is regulated under WDRs or NPDES permits. The proposed exemption is restricted to anaerobically digestible materials that have been prescreened, slurried, processed, and conveyed in a closed system for co-digestion with regular sewage sludge. The exemption requires that the publicly-owned treatment works develop Standard Operating Procedures for proper handling, processing, tracking, and management of anaerobically digestible material.

6.3.5. Other Special Provisions

6.3.5.1. **Copper Action Plan.** This provision is based on Basin Plan section 7.2.1.2 and is necessary to ensure that use of copper site-specific objectives is consistent with antidegradation policies. This Order requires the Discharger to implement pretreatment, source control, and pollution prevention for identified sources. Additional actions may be necessary depending on the three-year rolling mean copper concentration in Central San Francisco Bay. Data the San Francisco Estuary Institute compiled for 2011-2015 indicate no degradation of San Francisco Bay water quality with respect to copper (sfei.org/pages/copper-site-specific-objective-3-year-rolling-averages-0).

6.3.5.2. **Cyanide Action Plan.** This provision is based on Basin Plan section 4.7.2.2 and is necessary to ensure that use of cyanide site-specific objectives is consistent with antidegradation policies. The threshold for considering influent cyanide concentrations to indicate a possible “significant cyanide discharge” in the Discharger’s service area is set at 13 µg/L. This concentration is nearly twice the maximum cyanide concentration (7.1 µg/L) found in the treatment plant influent during the previous order term. Because the Discharger has observed no influent cyanide concentrations greater than 7.1 µg/L during the previous permit term, if influent concentrations twice this level were observed, there could be a significant cyanide source.

6.3.5.3. **Average Selenium Load.** This provision is based on Basin Plan section 7.2.4.5. The information will be used to confirm that selenium loads are consistent with wasteload allocations. The requirements regarding treatment of estimated and non-detect values are consistent with the load calculations performed for the North San Francisco Bay Selenium TMDL.

6.3.5.4. **Discharge Relocation.** This provision is based on 40 C.F.R. section 122.41(l). It specifies conditions that must be met before the Discharger begins discharging from the new outfall at Discharge Point 002. It is necessary so the Regional Water Board knows when discharges commence at Discharge Point 002 and to ensure that the new outfall is constructed appropriately and can operate in compliance with this Order. Some of the requirements that must be met to discharge at Discharge Point 002 are based on the California Endangered Species Act (Fish and Game Code §§ 2050 to 2097) and Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544).

6.3.5.5. **Reliable Treatment.** This provision is necessary to demonstrate the enhanced treatment reliability to meet the exception to Basin Plan Discharge Prohibition 1, as described in Fact Sheet section 4.1.2.

7. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

The following provides the rationale for the monitoring and reporting requirements in the MRP. Regional Water Board Order R2-2016-0008 allows the Discharger to opt into certain alternative monitoring requirements.

7.1 Monitoring Requirements Rationale

7.1.1. **Influent Monitoring.** Influent flow monitoring is necessary to understand Facility operations and to evaluate compliance with Discharge Prohibition 3.4, which prohibits dry weather influent flow greater than 6.7 MGD. Influent BOD and TSS monitoring is necessary to evaluate compliance with this Order's 85 percent removal requirements. Basin Plan section 4.7.2.2 requires cyanide monitoring because this Order is based on site-specific cyanide water quality objectives.

7.1.2. **Effluent Monitoring.** Effluent flow monitoring at Monitoring Location EFF-001 is necessary to distinguish flows discharged to the Petaluma River versus flows that go to land. Monitoring for other parameters at this location is necessary to evaluate compliance with this Order's effluent limitations and to conduct future reasonable potential analyses.

Effluent flow monitoring at Monitoring Location REC-001 is to understand Facility operations and to distinguish flows discharged to the Petaluma River versus flows that go to land.

7.1.3. **Toxicity Monitoring.** Acute whole effluent toxicity tests are necessary to evaluate compliance with acute toxicity effluent limitations. Chronic toxicity tests are necessary to evaluate whether chronic toxicity triggers the need for a TRE.

Because the Discharger elected to participate in the Alternate Monitoring and Reporting Requirements for Municipal Wastewater Discharges for the Purpose of Adding Support to the San Francisco Bay Regional Monitoring Program (Order R2-2016-0008) and there was no significant change in the nature of effluent, the Discharger did not conduct a chronic toxicity screening phase study for this permit reissuance. The MRP specifies that mysid shrimp (*Americamysis bahia*) is to be used for chronic toxicity testing unless a more sensitive species is identified.

7.1.4. **Receiving Water Monitoring.** Petaluma River monitoring is necessary to characterize the receiving water and the effects of the discharges this Order authorizes. Monitoring Locations RSW-004, RSW-005, and RSW-006 were added to provide upstream and downstream monitoring locations for Discharge Point 002. The tidal slough itself is too muddy and shallow for an accessible

monitoring station; therefore, the receiving water monitoring locations are established in the Petaluma River at its confluence with the tidal slough that connects to Discharge Point 002.

7.1.5. **Pretreatment and Biosolids Monitoring.** The pretreatment and biosolids monitoring requirements for influent, effluent, and biosolids are necessary to evaluate compliance with pretreatment requirements.

7.1.6. **Recycled Water Monitoring.** The recycled water monitoring and reporting requirements incorporate the existing requirements of State Water Board Order WQ 2019-0037-EXEC (Amending Monitoring and Reporting Programs for Waste Discharge Requirements, National Pollutant Discharge Elimination System Permits, Water Reclamation Requirements, Master Recycling Permits, and General Waste Discharge Requirements), issued on July 24, 2019, pursuant to Water Code sections 13267 and 13383. The Notice of Applicability issued on April 8, 2020, for enrollment under State Water Board Order WQ 2016-0068-DDW (Water Reclamation Requirements for Recycled Water Use) contains additional recycled water monitoring and reporting requirements not imposed through this Order.

7.1.7. **Other Monitoring Requirements.** Pursuant to CWA section 308, U.S. EPA requires some dischargers to participate in a Discharge Monitoring Report-Quality Assurance (DMR-QA) Study Program that evaluates the analytical abilities of laboratories that perform or support NPDES permit-required monitoring. The program applies to discharger laboratories and contract laboratories, and evaluates each laboratory's ability to analyze wastewater samples to produce quality data that ensure the integrity of the NPDES program. There are two options to comply: (1) the Discharger may obtain and analyze DMR-QA samples, or (2) pursuant to a waiver U.S. EPA issued to the State Water Board, the Discharger may submit results from the most recent Water Pollution Performance Evaluation Study. MRP section 1.4 requires the Discharger to ensure that the results of the DMR-QA Study or most recent Water Pollution Performance Evaluation Study are submitted to the State Water Board, which forwards the results to U.S. EPA.

7.2. Monitoring Requirements Summary. The table below summarizes routine monitoring requirements. This table is for informational purposes only. The actual requirements are specified in the MRP and elsewhere in this Order. In addition to undertaking the monitoring below, the Discharger must also conduct receiving water monitoring by continuing to participate in the Regional Monitoring Program.

Table F-8. Monitoring Requirements Summary

Parameter [1]	**Influent INF-001** [2]	**Effluent EFF-001** [2]	**Effluent REC-001** [2]	**Receiving Water RSW-001, RSW-002A, RSW-002B, RSW-003R** [2, 8]	**Biosolids BIO-001** [2]
Flow	Continuous/D	Continuous/D	Continuous/D	-	-

Parameter [1]	Influent INF-001 [2]	Effluent EFF-001 [2]	Effluent REC-001 [2]	Receiving Water RSW-001, RSW-002A, RSW-002B, RSW-003R [2, 8]	Biosolids BIO-001 [2]
BOD	1/Week	1/Week	-	-	-
TSS	1/Week	1/Week	-	-	-
Oil and Grease	-	1/Quarter	-	-	-
pH	-	1/Day	-	1/Month	-
Ammonia, Total	-	1/Month	-	1/Month	-
Temperature	-	1/Day	-	1/Month	-
Acute Toxicity	-	1/Month	-	-	-
Chronic Toxicity	-	1/Quarter	-	-	-
Chlorine, Total Residual	-	Continuous/1H [10]	-	-	-
Copper, Total Recoverable	-	1/Month	-	-	-
Cyanide	1/Month	1/Month	-	-	2/Year
Dioxin-TEQ	-	1/Year [9]	-	-	-
Secondary-Treated Effluent Equalization Time	-	1/Week	-	-	-
Enterococcus Bacteria	-	1/Week	-	-	-
Conductivity	-	-	-	1/Month	-
Hardness	-	-	-	1/Month	-
Salinity	-	-	-	1/Month	-
Turbidity	-	-	-	1/Month	-
Dissolved Oxygen	-	-	-	1/Month	-
VOC [3]	2/Year	2/Year [9]	-	-	2/Year
BNA [4]	2/Year	2/Year [9]	-	-	2/Year
Metals [5]	1/Month	1/Month	-	-	1/Quarter
Hexavalent Chromium (VI) [6]	1/Month	1/Month	-	-	1/Quarter
Mercury	1/Month	1/Month	-	-	1/Quarter
Priority Pollutants (except VOCs, BNAs, and chlorinated pesticides) [7]	-	Once	-	Once	-

Footnotes:

[1] The Discharger must also comply with the monitoring requirements in the Mercury and PCBs Watershed Permit (NPDES Permit CA0038849).

[2] The MRP defines these sampling frequencies.

[3] VOC: volatile organic compounds

[4] BNA: base/neutrals and acid extractable organic compounds.

[5] The metals are arsenic, cadmium, copper, lead, nickel, selenium, silver, and zinc.

[6] The Discharger may elect to analyze for total chromium instead of hexavalent chromium.

[7] Priority pollutant monitoring is only required at Monitoring Location RSW-002A while discharging from Discharge Point 001 and Monitoring Location RSW-005 while discharging from Discharge Point 002.

[8] While discharging from Discharge Point 001, monitoring is not required at Monitoring Locations RSW-004, RSW-005, and RSW-006. While discharging from Discharge Point 002, monitoring is not required at Monitoring Locations RSW-001, RSW-002A, RSW-002B, and RSW-003R.

[9] The monitoring frequency is “once” if and when the Discharger elects to participate in the Alternate MRP pursuant to Regional Water Board Order R2-2016-0008.

[10] When dechlorinating naturally through the polishing wetlands, effluent chlorine concentrations are to be measured by collecting grab samples twice daily at least four hours apart.

8. PUBLIC PARTICIPATION

The Regional Water Board considered the issuance of WDRs that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, Regional Water Board staff developed tentative WDRs and encouraged public participation in the WDR adoption process.

8.1. Notification of Interested Parties. The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge, and provided an opportunity to submit written comments and recommendations. The public had access to the agenda and any changes in dates and locations through the Regional Water Board's website (waterboards.ca.gov/sanfranciscobay).

8.2. Written Comments. Interested persons were invited to submit written comments concerning the tentative WDRs as explained through the notification process. Comments were to be submitted either in person or by mail to the Executive Office at the Regional Water Board at 1515 Clay Street, Suite 1400, Oakland, California 94612, to the attention of Gaurav Mittal.

For full staff response and Regional Water Board consideration, written comments were due at the Regional Water Board office by 5:00 p.m. on April 15, 2021.

8.3. Public Hearing. The Regional Water Board held a public hearing on the tentative WDRs during its meeting at the following date and time:

Date: May 12, 2021
Time: 9:00 a.m.

Contact: Gaurav Mittal, (510) 622-2407, Gaurav.mittal@waterboards.ca.gov

Interested persons were provided notice of the hearing and information on how to participate. At the public hearing, the Regional Water Board heard testimony pertinent to the discharge, WDRs, and permit. For accuracy of the record, important testimony was requested to be in writing.

Dates and venues can change. The Regional Water Board's website is (waterboards.ca.gov/sanfranciscobay), where one can access the current agenda for changes.

8.4. Reconsideration of Waste Discharge Requirements. Any person aggrieved by this Regional Water Board action may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050. The State Water Board must receive the petition at the following address within 30 calendar days of the date of Regional Water Board action:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

A petition may also be filed by email at waterqualitypetitions@waterboards.ca.gov.

For instructions on how to file a water quality petition for review, see the Water Board's petition instructions (waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml).

8.5. Information and Copying. The Report of Waste Discharge, related supporting documents, and comments received are on file and may be inspected at the Regional Water Board address above at any time online or by making an appointment with the Regional Water Board's custodian of records. Document copying may be arranged by calling (510) 622-2300.

8.6. Register of Interested Persons. Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference the Facility, and provide a name, address, and phone number.

8.7. Additional Information. Requests for additional information or questions regarding this Order should be directed to Gaurav Mittal, (510) 622-2407, gaurav.mittal@waterboards.ca.gov.

ATTACHMENT G – REGIONAL STANDARD PROVISIONS, AND MONITORING AND REPORTING REQUIREMENTS (SUPPLEMENT TO ATTACHMENT D)

Contents

ATTACHMENT G – REGIONAL STANDARD PROVISIONS, AND MONITORING AND REPORTING REQUIREMENTS (SUPPLEMENT TO ATTACHMENT D)

APPLICABILITY

This document supplements the requirements of Federal Standard Provisions (Attachment D). For clarity, these provisions are arranged using to the same headings as those used in Attachment D.

1. STANDARD PROVISIONS – PERMIT COMPLIANCE

1.1. Duty to Comply – Not Supplemented

1.2. Need to Halt or Reduce Activity Not a Defense – Not Supplemented

1.3. Duty to Mitigate – Supplement to Attachment D, Provision 1.3.

1.3.1. **Contingency Plan.** The Discharger shall maintain a Contingency Plan as prudent in accordance with current facility emergency planning. The Contingency Plan shall describe procedures to ensure that existing facilities remain in, or are rapidly returned to, operation in the event of a process failure or emergency incident, such as employee strike, strike by suppliers of chemicals or maintenance services, power outage, vandalism, earthquake, or fire. The Discharger may combine the Contingency Plan and Spill Prevention Plan (see Provision 1.3.2, below) into one document. In accordance with Regional Water Board Resolution No. 74-10, discharge in violation of the permit where the Discharger has failed to develop and implement a Contingency Plan as described below may be the basis for considering the discharge a willful and negligent violation of the permit pursuant to California Water Code section 13387. The Contingency Plan shall, at a minimum, provide for the following:

1.3.1.1. Sufficient personnel for continued facility operation and maintenance during employee strikes or strikes against contractors providing services;

1.3.1.2. Maintenance of adequate chemicals or other supplies, and spare parts necessary for continued facility operations;

1.3.1.3. Emergency standby power;

1.3.1.4. Protection against vandalism;

1.3.1.5. Expeditious action to repair failures of, or damage to, equipment, including any sewer lines;

1.3.1.6. Reporting of spills and discharges of untreated or inadequately treated wastes, including measures taken to clean up the effects of such discharges; and

1.3.1.7. Maintenance, replacement, and surveillance of physical condition of equipment and facilities, including any sewer lines.

1.3.2. **Spill Prevention Plan.** The Discharger shall maintain a Spill Prevention Plan to prevent accidental discharges and to minimize the effects of any such discharges. The Spill Prevention Plan shall do the following:

1.3.2.1. Identify the possible sources of accidental discharge, untreated or partially-treated waste bypass, and polluted drainage;

1.3.2.2. State when current facilities and procedures became operational and evaluate their effectiveness; and

1.3.2.3. Predict the effectiveness of any proposed facilities and procedures and provide an implementation schedule with interim and final dates when the proposed facilities and procedures will be constructed, implemented, or operational.

1.4. Proper Operation and Maintenance – Supplement to Attachment D, Provision 1.4

1.4.1. **Operation and Maintenance Manual.** The Discharger shall maintain an Operation and Maintenance Manual to provide the plant and regulatory personnel with a source of information describing all equipment, recommended operational strategies, process control monitoring, and maintenance activities. To remain a useful and relevant document, the Operation and Maintenance Manual shall be kept updated to reflect significant changes in treatment facility equipment and operational practices. The Operation and Maintenance Manual shall be maintained in usable condition and be available for reference and use by all relevant personnel and Regional Water Board staff.

1.4.2. **Wastewater Facilities Status Report.** The Discharger shall maintain a Wastewater Facilities Status Report and regularly review, revise, or update it, as necessary. This report shall document how the Discharger operates and maintains its wastewater collection, treatment, and disposal facilities to ensure that all facilities are adequately staffed, supervised, financed, operated, maintained, repaired, and upgraded as necessary to provide adequate and reliable transport, treatment, and disposal of all wastewater from both existing and planned future wastewater sources under the Discharger's service responsibilities.

1.4.3. **Proper Supervision and Operation of Publicly-Owned Treatment Works (POTWs).** POTWs shall be supervised and operated by persons possessing

certificates of appropriate grade pursuant to Title 23, section 3680, of the California Code of Regulations.

1.5. Property Rights – Not Supplemented

1.6. Inspection and Entry – Not Supplemented

1.7. Bypass – Not Supplemented

1.8. Upset – Not Supplemented

1.9. Other – Addition to Attachment D

1.9.1. Neither the treatment nor the discharge of pollutants shall create pollution, contamination, or nuisance as defined by California Water Code section 13050.

1.9.2. Collection, treatment, storage, and disposal systems shall be operated in a manner that precludes public contact with wastewater. If public contact with wastewater could reasonably occur on public property, warning signs shall be posted.

1.9.3. If the Discharger submits a timely and complete Report of Waste Discharge for permit reissuance, this permit shall continue in force and effect until the permit is reissued or the Regional Water Board rescinds the permit.

2. STANDARD PROVISIONS – PERMIT ACTION – NOT SUPPLEMENTED

3. STANDARD PROVISIONS – MONITORING

3.1. Sampling and Analyses – Supplement to Attachment D, Provisions 3.1 and 3.2

3.1.1. **Certified Laboratories.** Water and waste analyses shall be performed by a laboratory certified for these analyses in accordance with California Water Code section 13176.

3.1.2. **Minimum Levels.** For the 126 priority pollutants, the Discharger should use the analytical methods listed in Table B unless the Monitoring and Reporting Program (MRP, Attachment E) requires a particular method or minimum level (ML). All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

3.1.3. **Monitoring Frequency.** The MRP specifies the minimum sampling and analysis schedule.

3.1.3.1. **Sample Collection Timing**

3.1.3.1.1. The Discharger shall collect influent samples on varying days selected at random and shall not include any plant recirculation or other sidestream wastes, unless otherwise stipulated in the MRP. The Executive Officer

may approve an alternative influent sampling plan if it is representative of plant influent and complies with all other permit requirements.

3.1.3.1.2. The Discharger shall collect effluent samples on days coincident with influent sampling, unless otherwise stipulated by the MRP. If influent sampling is not required, the Discharger shall collect effluent samples on varying days selected at random, unless otherwise stipulated in the MRP. The Executive Officer may approve an alternative effluent sampling plan if it is representative of plant discharge and in compliance with all other permit requirements.

3.1.3.1.3. The Discharger shall collect effluent grab samples during periods of daytime maximum peak flows (or peak flows through secondary treatment units for facilities that recycle effluent).

3.1.3.1.4. Effluent sampling for conventional pollutants shall occur on at least one day of any multiple-day bioassay the MRP requires. During the course of the bioassay, on at least one day, the Discharger shall collect and retain samples of the discharge. In the event that a bioassay result does not comply with effluent limitations, the Discharger shall analyze the retained samples for pollutants that could be toxic to aquatic life and for which it has effluent limitations.

3.1.3.1.4.1. The Discharger shall perform bioassays on final effluent samples; when chlorine is used for disinfection, bioassays shall be performed on effluent after chlorination and dechlorination; and

3.1.3.1.4.2. The Discharger shall analyze for total ammonia nitrogen and calculate the amount of un ionized ammonia whenever test results fail to meet effluent limitations.

3.1.3.2. **Conditions Triggering Accelerated Monitoring**

3.1.3.2.1. **Average Monthly Effluent Limitation Exceedance.** If the results from two consecutive samples of a constituent monitored in a particular month exceed the average monthly effluent limitation for any parameter (or if the required sampling frequency is once per month or less and the monthly sample exceeds the average monthly effluent limitation), the Discharger shall, within 24 hours after the results are received, increase its sampling frequency to daily until the results from the additional sampling show that the parameter complies with the average monthly effluent limitation.

3.1.3.2.2. **Maximum Daily Effluent Limitation Exceedance.** If a sample result exceeds a maximum daily effluent limitation, the Discharger shall, within 24 hours after the result is received, increase its sampling frequency to daily until the results from two samples collected on consecutive days show compliance with the maximum daily effluent limitation.

3.1.3.2.3. **Acute Toxicity.** If final or intermediate results of an acute bioassay indicate a violation or threatened violation (e.g., the percentage of surviving test organisms of any single acute bioassay is less than 70 percent), the Discharger shall initiate a new test as soon as practical or as described in applicable State Water Board plan provisions that become effective after adoption of these Regional Standard Provisions. The Discharger shall investigate the cause of the mortalities and report its findings in the next self-monitoring report.

3.1.3.2.4. **Chlorine.** The Discharger shall calibrate chlorine residual analyzers against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, the Discharger shall collect grab samples at least every 30 minutes until compliance with the limitation is achieved, unless the Discharger monitors chlorine residual continuously. In such cases, the Discharger shall continue to conduct continuous monitoring.

3.1.3.2.5. **Bypass.** Except as indicated below, if a Discharger bypasses any portion of its treatment facility, it shall monitor flows and collect samples at affected discharge points and analyze samples for all constituents with effluent limitations on a daily basis for the duration of the bypass. The Discharger need not accelerate chronic toxicity monitoring. The Discharger also need not collect and analyze samples for mercury, dioxin-TEQ, and PCBs after the first day of the bypass. The Discharger may satisfy the accelerated acute toxicity monitoring requirement by conducting a flow-through test or static renewal test that captures the duration of the bypass (regardless of the method specified in the MRP). If bypassing disinfection units only, the Discharger shall only monitor bacteria indicators daily.

3.1.3.2.5.1. **Bypass for Essential Maintenance.** If a Discharger bypasses a treatment unit for essential maintenance pursuant to Attachment D section 1.7.2, the Executive Officer may reduce the accelerated monitoring requirements above if the Discharger (i) monitors effluent at affected discharge points on the first day of the bypass for all constituents with effluent limitations, except chronic toxicity; and (ii) identifies and implements measures to ensure that the bypass will continue to comply with effluent limitations.

3.1.3.2.5.2. **Approved Wet Weather Bypasses.** If a Discharger bypasses a treatment unit or permitted outfall during wet weather with Executive Officer approval pursuant to Attachment D section 1.7.4, the Discharger shall monitor flows and collect and retain samples for affected discharge points on a daily basis for the duration of the bypass. The Discharger shall analyze daily for TSS using 24 hour composites (or more frequent increments) and for bacteria indicators with effluent limitations using grab samples. If TSS exceeds 45 mg/L in any

composite sample, the Discharger shall also analyze daily the retained samples for all other constituents with effluent limitations, except oil and grease, mercury, PCBs, dioxin-TEQ, and acute and chronic toxicity. Additionally, at least once each year, the Discharger shall analyze the retained samples for one approved bypass for all other constituents with effluent limitations, except oil and grease, mercury, PCBs, dioxin-TEQ, and acute and chronic toxicity. This monitoring shall be in addition to the minimum monitoring specified in the MRP.

3.2. Standard Observations – Addition to Attachment D

3.2.1. **Receiving Water Observations.** The following requirements only apply when the MRP requires standard observations of receiving waters. Standard observations shall include the following:

3.2.1.1. **Floating and Suspended Materials (e.g., oil, grease, algae, and other macroscopic particulate matter) —** presence or absence, source, and size of affected area.

3.2.1.2. **Discoloration and Turbidity** — color, source, and size of affected area.

3.2.1.3. **Odor** — presence or absence, characterization, source, and distance of travel.

3.2.1.4. **Beneficial Water Use** — estimated number of water-associated waterfowl or wildlife, fisherpeople, and other recreational activities.

3.2.1.5. **Hydrographic Condition** — time and height of high and low tides (corrected to nearest National Oceanic and Atmospheric Administration location for the sampling date and time).

3.2.1.6. **Weather Conditions** — wind direction, air temperature, and total precipitation during five days prior to observation.

3.2.2. **Wastewater Effluent Observations.** The following requirements only apply when the MRP requires standard observations of wastewater effluent. Standard observations shall include the following:

3.2.2.1. **Floating and Suspended Material of Wastewater Origin** (e.g., oil, grease, algae, and other macroscopic particulate matter) — presence or absence.

3.2.2.2. **Odor** — presence or absence, characterization, source, distance of travel, and wind direction.

3.2.3. **Beach and Shoreline Observations.** The following requirements only apply when the MRP requires standard observations of beaches or shorelines. Standard observations shall include the following:

3.2.3.1. **Material of Wastewater Origin —** presence or absence, description of material, estimated size of affected area, and source.

3.2.3.2. **Beneficial Use —** estimate of number of people participating in recreational water contact, non-water contact, and fishing activities.

3.2.4. **Waste Treatment and/or Disposal Facility Periphery Observations.** The following requirements only apply when the MRP requires standard observations of the periphery of waste treatment or disposal facilities. Standard observations shall include the following:

3.2.4.1. **Odor** — presence or absence, characterization, source, and distance of travel.

3.2.4.2. **Weather Conditions** — wind direction and estimated velocity.

4. STANDARD PROVISIONS – RECORDS

4.1. Records to be Maintained – Supplement to Attachment D, Provision 4.1

The Discharger shall maintain records in a manner and at a location (e.g., the wastewater treatment plant or the Discharger's offices) such that the records are accessible to Regional Water Board staff. The minimum retention period specified in Attachment D, Provision IV, shall be extended during the course of any unresolved litigation regarding permit-related discharges, or when requested by Regional Water Board or U.S. EPA, Region IX, staff.

A copy of the permit shall be maintained at the discharge facility and be available at all times to operating personnel.

4.2. Records of Monitoring – Supplement to Attachment D, Provision 4.2

Monitoring records shall include the following:

4.2.1. **Analytical Information.** Records shall include analytical method detection limits, minimum levels, reporting levels, and related quantification parameters.

4.2.2. **Disinfection Process.** For the disinfection process, records shall include the following:

4.2.2.1. For bacteriological analyses:

4.2.2.1.1. Wastewater flow rate at the time of sample collection; and

4.2.2.1.2. Required statistical parameters for cumulative bacterial values (e.g., moving median or geometric mean for the number of samples or sampling period identified in the MRP).

4.2.2.2. For the chlorination process (when chlorine is used for disinfection), at least daily average values for the following:

4.2.2.2.1. Chlorine residual of treated wastewater as it enters the chlorine contact basin (mg/L);

4.2.2.2.2. Chlorine dosage (kg/day); and

4.2.2.2.3. Dechlorination chemical dosage (kg/day).

4.2.3. **Wastewater Treatment Process Solids.** For each treatment unit process that involves solids removal from the wastewater stream, records shall include the following:

4.2.3.1. Total volume or mass of solids removed from each collection unit (e.g., grit, skimmings, undigested biosolids, or combination) for each calendar month or other time period as appropriate, but not to exceed annually; and

4.2.3.2. Final disposition of such solids (e.g., landfill, other subsequent treatment unit).

4.2.4. **Treatment Process Bypasses.** For all treatment process bypasses, including wet weather blending, records shall include the following:

4.2.4.1. Chronological log of treatment process bypasses;

4.2.4.2. Identification of treatment processes bypassed;

4.2.4.3. Beginning and ending dates and times of bypasses;

4.2.4.4. Bypass durations;

4.2.4.5. Estimated bypass volumes; and

4.2.4.6. Description of, or reference to other reports describing, the bypasses, their cause, the corrective actions taken (except for wet weather blending explicitly approved within the permit and in compliance with any related permit conditions), and any additional monitoring conducted.

4.2.5. **Treatment Plant Overflows.** The Discharger shall retain a chronological log of overflows at the treatment plant, including the headworks and all units and appurtenances downstream, and records supporting the information provided in accordance with Provision 5.5.2, below.

4.3. Claims of Confidentiality – Not Supplemented

5. STANDARD PROVISIONS – REPORTING

5.1. Duty to Provide Information – Not Supplemented

5.2. Signatory and Certification Requirements – Not Supplemented

5.3. Monitoring Reports – Supplement to Attachment D, Provision 5.3

5.3.1. **Self-Monitoring Reports.** For each reporting period established in the MRP, the Discharger shall submit a self-monitoring report to the Regional Water Board in accordance with the requirements listed in the MRP and below:

5.3.1.1. **Transmittal Letter.** Each self-monitoring report shall be submitted with a transmittal letter that includes the following:

5.3.1.1.1. Identification of all violations of effluent limitations or other waste discharge requirements found during the reporting period;

5.3.1.1.2. Details regarding the violations, such as parameters, magnitude, test results, frequency, and dates;

5.3.1.1.3. Causes of the violations;

5.3.1.1.4. Corrective actions taken or planned to resolve violations and prevent recurrences, and dates or time schedules for implementation (the Discharger may refer to previously submitted reports that address the corrective actions);

5.3.1.1.5. Explanation for any data invalidation. Data should not be submitted in a self-monitoring report if it does not meet quality assurance/quality control standards. However, if the Discharger wishes to invalidate a measurement after submitting it in a self-monitoring report, the Discharger shall identify the measurement suspected to be invalid and state the Discharger's intent to submit, within 60 days, a formal request to invalidate the measurement. The formal request shall include the original measurement in question, the reason for invalidating the measurement, all relevant documentation that supports invalidation (e.g., laboratory sheet, log entry, test results), and a discussion of the corrective actions taken or planned (with a time schedule for completion) to prevent recurrence of the sampling or measurement problem;

5.3.1.1.6. Description of blending, if any. If the Discharger blends, it shall describe the duration of blending events and certify whether the blending complied with all conditions for blending;

5.3.1.1.7. Description of other bypasses, if any. If the Discharger bypasses any treatment units (other than blending), it shall describe the duration of the bypasses and effluent quality during those times; and

5.3.1.1.8. Signature. The transmittal letter shall be signed in accordance with Attachment D, Provision 5.2.

5.3.1.2. **Compliance Evaluation Summary.** Each self-monitoring report shall include a compliance evaluation summary that addresses each parameter for which the permit specifies effluent limitations, the number of samples taken during the monitoring period, and the number of samples that exceed the effluent limitations.

5.3.1.3. **More Frequent Monitoring.** If the Discharger monitors any pollutant more frequently than required by the MRP, the Discharger shall include the results of such monitoring in the calculation and reporting of the data submitted in the self-monitoring report.

5.3.1.4. **Analysis Results**

5.3.1.4.1. **Tabulation.** Each self-monitoring report shall include tabulations of all required analyses and observations, including parameters, dates, times, sample stations, types of samples, test results, method detection limits, method minimum levels, and method reporting levels (if applicable), signed by the laboratory director or other responsible official.

5.3.1.4.2. **Multiple Samples.** Unless the MRP specifies otherwise, when determining compliance with effluent limitations (other than instantaneous effluent limitations) and more than one sample result is available, the Discharger shall compute the arithmetic mean. If the data set contains one or more results that are “Detected, but Not Quantified (DNQ) or “Not Detected” (ND), the Discharger shall instead compute the median in accordance with the following procedure:

5.3.1.4.2.1. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

5.3.1.4.2.2. The median of the data set shall be determined. If the data set has an odd number of data points, the median is the middle value. If the data set has an even number of data points, the median is the average of the two values around the middle, unless one or both of these values is ND or DNQ, in which case the median shall be the lower of the two results (where DNQ is lower than a quantified value and ND is lower than DNQ).

5.3.1.4.3. **Duplicate Samples.** The Discharger shall report the average of duplicate sample analyses when reporting for a single sample result (or the median if one or more of the duplicates is DNQ or ND [see Provision 5.3.1.4.2, above]). For bacteria indicators, the Discharger shall report the geometric mean of the duplicate analyses.

5.3.1.4.4. **Dioxin-TEQ.** The Discharger shall report for each dioxin and furan congener the analytical results of effluent monitoring, including the reporting level, the method detection limit, and the measured concentration. The Discharger shall report all measured values of individual congeners, including data qualifiers. When calculating dioxin-TEQ, the Discharger shall set congener concentrations below the minimum levels (MLs) to zero. The Discharger shall calculate and report dioxin-TEQ using the following formula, where the MLs, toxicity equivalency factors (TEFs), and bioaccumulation equivalency factors (BEFs) are as provided in Table A:

$$\text{Dioxin-TEQ} = \Sigma (C_x \times TEF_x \times BEF_x)$$

where: C_x = measured or estimated concentration of congener x
TEF_x = toxicity equivalency factor for congener x
BEF_x = bioaccumulation equivalency factor for congener x

Table A
Minimum Levels, Toxicity Equivalency Factors, and Bioaccumulation Equivalency Factors

Dioxin or Furan Congener	Minimum Level (pg/L)	2005 Toxicity Equivalency Factor (TEF)	Bioaccumulation Equivalency Factor (BEF)
2,3,7,8-TCDD	10	1.0	1.0
1,2,3,7,8-PeCDD	50	1.0	0.9
1,2,3,4,7,8-HxCDD	50	0.1	0.3
1,2,3,6,7,8-HxCDD	50	0.1	0.1
1,2,3,7,8,9-HxCDD	50	0.1	0.1
1,2,3,4,6,7,8-HpCDD	50	0.01	0.05
OCDD	100	0.0003	0.01
2,3,7,8-TCDF	10	0.1	0.8
1,2,3,7,8-PeCDF	50	0.03	0.2
2,3,4,7,8-PeCDF	50	0.3	1.6
1,2,3,4,7,8-HxCDF	50	0.1	0.08
1,2,3,6,7,8-HxCDF	50	0.1	0.2
1,2,3,7,8,9-HxCDF	50	0.1	0.6
2,3,4,6,7,8-HxCDF	50	0.1	0.7
1,2,3,4,6,7,8-HpCDF	50	0.01	0.01
1,2,3,4,7,8,9-HpCDF	50	0.01	0.4
OCDF	100	0.0003	0.02

5.3.1.5. **Results Not Yet Available.** The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in a timely manner. Certain analyses may require additional time to complete analytical processes and report results. In these cases, the Discharger shall describe the circumstances in the self-monitoring report and include the data for these parameters and relevant discussions of any violations in the next self-monitoring report due after the results are available.

5.3.1.6. **Annual Self-Monitoring Reports.** By the date specified in the MRP, the Discharger shall submit an annual self-monitoring report covering the previous calendar year. The report shall contain the following:

5.3.1.6.1. Comprehensive discussion of treatment plant performance, including documentation of any blending or other bypass events, and compliance with the permit. This discussion shall include any corrective actions taken or planned, such as changes to facility equipment or operation practices that may be needed to achieve compliance, and any other actions taken or planned that are intended to improve the performance and reliability of wastewater collection, treatment, or disposal practices;

5.3.1.6.2. List of approved analyses, including the following:

5.3.1.6.2.1. List of analyses for which the Discharger is certified;

5.3.1.6.2.2. List of analyses performed for the Discharger by a separate certified laboratory (copies of reports signed by the laboratory director of that laboratory need not be submitted but shall be retained onsite); and

5.3.1.6.2.3. List of “waived” analyses, as approved;

5.3.1.6.3. Plan view drawing or map showing the Discharger’s facility, flow routing, and sampling and observation station locations; and

5.3.1.6.4. Results of facility report reviews. The Discharger shall regularly review, revise, and update, as necessary, the Operation and Maintenance Manual, Contingency Plan, Spill Prevention Plan, and Wastewater Facilities Status Report so these documents remain useful and relevant to current practices. At a minimum, reviews shall be conducted annually. The Discharger shall describe or summarize its review and evaluation procedures, recommended or planned actions, and estimated time schedule for implementing these actions. The Discharger shall complete changes to these documents to ensure that they remain up-to-date.

5.4. Compliance Schedules – Not supplemented

5.5. Twenty-Four Hour Reporting – Supplement to Attachment D, Provision 5.5

5.5.1. **Oil or Other Hazardous Material Spills**

5.5.1.1. Within 24 hours of becoming aware of a spill of oil or other hazardous material not contained onsite and completely cleaned up, the Discharger shall report as follows:

5.5.1.1.1. If the spill exceeds reportable quantities for hazardous materials listed in 40 C.F.R. part 302. The Discharger shall call the California Office of Emergency Services (800 852-7550).

5.5.1.1.2. If the spill does not exceed reportable quantities for hazardous materials listed in 40 C.F.R., part 302, the Discharger shall call the Regional Water Board (510-622-2369).

5.5.1.2. The Discharger shall submit a written report to the Regional Water Board within five working days following either of the above telephone notifications unless directed otherwise by Regional Water Board staff. A report submitted electronically is acceptable. The written report shall include the following:

5.5.1.2.1. Date and time of spill, and duration if known;

5.5.1.2.2. Location of spill (street address or description of location);

5.5.1.2.3. Nature of material spilled;

5.5.1.2.4. Quantity of material spilled;

5.5.1.2.5. Receiving water body affected, if any;

5.5.1.2.6. Cause of spill;

5.5.1.2.7. Estimated size of affected area;

5.5.1.2.8. Observed impacts to receiving waters (e.g., oil sheen, fish kill, water discoloration);

5.5.1.2.9. Corrective actions taken to contain, minimize, or clean up the spill;

5.5.1.2.10. Future corrective actions planned to prevent recurrence, and implementation schedule; and

5.5.1.2.11. Persons or agencies notified.

5.5.2. **Unauthorized Municipal Wastewater Treatment Plant Discharges**[1]

5.5.2.1. **Two-Hour Notification.** For any unauthorized discharge that enters a drainage channel or surface water, the Discharger shall, as soon as possible, but not later than two hours after becoming aware of the discharge, notify the California Office of Emergency Services (800-852-7550) and the local health officer or director of environmental health with jurisdiction over the affected water body. Notification shall include the following:

5.5.2.1.1. Incident description and cause;

5.5.2.1.2. Location of threatened or involved waterways or storm drains;

5.5.2.1.3. Date and time that the unauthorized discharge started;

5.5.2.1.4. Estimated quantity and duration of the unauthorized discharge (to the extent known), and estimated amount recovered;

5.5.2.1.5. Level of treatment prior to discharge (e.g., raw wastewater, primary-treated wastewater, or undisinfected secondary-treated wastewater); and

5.5.2.1.6. Identity of person reporting the unauthorized discharge.

5.5.2.2. **Five-Day Written Report.** Within five business days following the two-hour notification, the Discharger shall submit a written report that includes, in addition to the information listed in Provision 5.5.2.1, above, the following:

5.5.2.2.1. Methods used to delineate the geographical extent of the unauthorized discharge within receiving waters;

5.5.2.2.2. Efforts implemented to minimize public exposure to the unauthorized discharge;

5.5.2.2.3. Visual observations of the impacts (if any) noted in the receiving waters (e.g., fish kill, discoloration of receiving water) and extent of sampling if conducted;

5.5.2.2.4. Corrective measures taken to minimize the impact of the unauthorized discharge;

[1] California Code of Regulations, Title 23, section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially-treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment, or disposal system.

5.5.2.2.5. Measures to be taken to minimize the potential for a similar unauthorized discharge in the future;

5.5.2.2.6. Summary of Spill Prevention Plan or Operation and Maintenance Manual modifications to be made, if necessary, to minimize the potential for future unauthorized discharges; and

5.5.2.2.7. Quantity and duration of the unauthorized discharge, and the amount recovered.

5.6. Planned Changes – Not supplemented

5.7. Anticipated Noncompliance – Not supplemented

5.8. Other Noncompliance – Not supplemented

5.9. Other Information – Not supplemented

6. STANDARD PROVISIONS – ENFORCEMENT – NOT SUPPLEMENTED

7. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS – NOT SUPPLEMENTED

8. DEFINITIONS – ADDITION TO ATTACHMENT D

More definitions can be found in Attachment A of this NPDES Permit.

8.1. Arithmetic Calculations

8.1.1. **Geometric Mean.** The antilog of the log mean or the back-transformed mean of the logarithmically transformed variables, which is equivalent to the multiplication of the antilogarithms. The geometric mean can be calculated with either of the following equations:

Geometric Mean = Anti log ($1/N \sum \text{Log } C_i$)

or

Geometric Mean = $(C_1 \times C_2 \times \ldots \times C_N)^{1/N}$

Where “N” is the number of data points for the period analyzed and “C” is the concentration for each of the “N” data points.

8.1.2. **Mass Emission Rate.** The rate of discharge expressed in mass. The mass emission rate is obtained from the following calculation for any calendar day:

$$\text{Mass emission rate (lb/day)} = \frac{8.345}{N} \sum_{i=1}^{N} Q_i C_i$$

$$\text{Mass emission rate (kg/day)} = \frac{3.785}{N}\sum_{i=1}^{N} Q_i C_i$$

In which "N" is the number of samples analyzed in any calendar day and "Q_i" and "C_i" are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the "N" grab samples that may be taken in any calendar day. If a composite sample is taken, "C_i" is the concentration measured in the composite sample and "Q_i" is the average flow rate occurring during the period over which the samples are composited. The daily concentration of a constituent measured over any calendar day shall be determined from the flow weighted average of the same constituent in the combined waste streams as follows:

$$C_d = \text{Average daily concentration} = \frac{1}{Q_i}\sum_{i=1}^{N} Q_i C_i$$

In which "N" is the number of component waste streams and "Q" and "C" are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the "N" waste streams. "Q_t" is the total flow rate of the combined waste streams.

8.1.3. **Removal Efficiency.** The ratio of pollutants removed by the treatment facilities to pollutants entering the treatment facilities (expressed as a percentage). The Discharger shall determine removal efficiencies using monthly averages (by calendar month unless otherwise specified) of pollutant concentration of influent and effluent samples collected at about the same time and using the following equation (or its equivalent):

Removal Efficiency (%) =
100 x [1 - (Effluent Concentration / Influent Concentration)]

8.2. Blending – the practice of bypassing biological treatment units and recombining the bypass wastewater with biologically-treated wastewater.

8.3. Composite Sample – a sample composed of individual grab samples collected manually or by an automatic sampling device on the basis of time or flow as specified in the MRP. For flow-based composites, the proportion of each grab sample included in the composite sample shall be within plus or minus five percent (+/-5%) of the representative flow of the waste stream being measured at the time of grab sample collection. Alternatively, equal volume grab samples may be individually analyzed with the flow-weighted average calculated by averaging flow-weighted ratios of each grab sample analytical result. Grab samples comprising time-based composite samples shall be collected at intervals not greater than those specified in the MRP. The quantity of each grab sample comprising a time-based composite sample shall be a set of flow proportional volumes as specified in

the MRP. If a particular time-based or flow-based composite sampling protocol is not specified in the MRP, the Discharger shall determine and implement the most representative protocol.

8.4. Duplicate Sample – a second sample taken from the same source and at the same time as an initial sample (such samples are typically analyzed identically to measure analytical variability).

8.5. Grab Sample – an individual sample collected during a short period not exceeding 15 minutes. Grab samples represent only the condition that exists at the time the sample is collected.

8.6. Overflow – the intentional or unintentional spilling or forcing out of untreated or partially-treated waste from a transport system (e.g., through manholes, at pump stations, or at collection points) upstream of the treatment plant headworks or from any part of a treatment plant.

8.7. Priority Pollutants – those constituents referred to in 40 C.F.R. part 122 as promulgated in the Federal Register, Vol. 65, No. 97, Thursday, May 18, 2000, also known as the California Toxics Rule.

8.8. Untreated waste – raw wastewater.

Table B
List of Monitoring Parameters, Analytical Methods, and Minimum Levels (µg/L)[1]

CTR No.	Pollutant / Parameter	Analytical Method[2]	GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGF AA	HYD RIDE	CVAA	DCP
1	Antimony	204.2	-	-	-	-	10	5	50	0.5	5	0.5	-	1000
2	Arsenic	206.3	-	-	-	20	-	2	10	2	2	1	-	1000
3	Beryllium	-	-	-	-	-	20	0.5	2	0.5	1	-	-	1000
4	Cadmium	200 or 213	-	-	-	-	10	0.5	10	0.25	0.5	-	-	1000
5a	Chromium (III)	SM 3500	-	-	-	-	-	-	-	-	-	-	-	-
5b	Chromium (VI)	SM 3500	-	-	-	10	5	-	-	-	-	-	-	1000
	Chromium (total)[3]	SM 3500	-	-	-	-	50	2	10	0.5	1	-	-	1000
6	Copper	200.9	-	-	-	-	25	5	10	0.5	2	-	-	1000
7	Lead	200.9	-	-	-	-	20	5	5	0.5	2	-	-	10,000
8	Mercury	1631[4]	-	-	-	-	-	-	-	-	-	-	-	-
9	Nickel	249.2	-	-	-	-	50	5	20	1	5	-	-	1000
10	Selenium	200.8 or SM 3114B or C	-	-	-	-	-	5	10	2	5	1	-	1000
11	Silver	272.2	-	-	-	-	10	1	10	0.25	2	-	-	1000
12	Thallium	279.2	-	-	-	-	10	2	10	1	5	-	-	1000
13	Zinc	200 or 289	-	-	-	-	20	-	20	1	10	-	-	-
14	Cyanide	SM 4500 CN^- C or I	-	-	-	5	-	-	-	-	-	-	-	-
15	Asbestos (only required for dischargers to MUN waters)[5]	0100.2[6]	-	-	-	-	-	-	-	-	-	-	-	-
16	2,3,7,8-TCDD and 17 congeners (Dioxin)	1613	-	-	-	-	-	-	-	-	-	-	-	-
17	Acrolein	603	2.0	5	-	-	-	-	-	-	-	-	-	-
18	Acrylonitrile	603	2.0	2	-	-	-	-	-	-	-	-	-	-
19	Benzene	602	0.5	2	-	-	-	-	-	-	-	-	-	-
33	Ethylbenzene	602	0.5	2	-	-	-	-	-	-	-	-	-	-
39	Toluene	602	0.5	2	-	-	-	-	-	-	-	-	-	-
20	Bromoform	601	0.5	2	-	-	-	-	-	-	-	-	-	-
21	Carbon Tetrachloride	601	0.5	2	-	-	-	-	-	-	-	-	-	-

CTR No.	Pollutant / Parameter	Analytical Method[2]	GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
22	Chlorobenzene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
23	Chlorodibromomethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
24	Chloroethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
25	2-Chloroethylvinyl Ether	601	1	1	-	-	-	-	-	-	-	-	-	-
26	Chloroform	601	0.5	2	-	-	-	-	-	-	-	-	-	-
75	1,2-Dichlorobenzene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
76	1,3-Dichlorobenzene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
77	1,4-Dichlorobenzene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
27	Dichlorobromomethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
28	1,1-Dichloroethane	601	0.5	1	-	-	-	-	-	-	-	-	-	-
29	1,2-Dichloroethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
30	1,1-Dichloroethylene or 1,1-Dichloroethene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
31	1,2-Dichloropropane	601	0.5	1	-	-	-	-	-	-	-	-	-	-
32	1,3-Dichloropropylene or 1,3-Dichloropropene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
34	Methyl Bromide or Bromomethane	601	1.0	2	-	-	-	-	-	-	-	-	-	-
35	Methyl Chloride or Chloromethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
36	Methylene Chloride or Dichloromethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
37	1,1,2,2-Tetrachloroethane	601	0.5	1	-	-	-	-	-	-	-	-	-	-
38	Tetrachloroethylene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
40	1,2-Trans-Dichloroethylene	601	0.5	1	-	-	-	-	-	-	-	-	-	-
41	1,1,1-Trichloroethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
42	1,1,2-Trichloroethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
43	Trichloroethene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
44	Vinyl Chloride	601	0.5	2	-	-	-	-	-	-	-	-	-	-
45	2-Chlorophenol	604	2	5	-	-	-	-	-	-	-	-	-	-
46	2,4-Dichlorophenol	604	1	5	-	-	-	-	-	-	-	-	-	-
47	2,4-Dimethylphenol	604	1	2	-	-	-	-	-	-	-	-	-	-

CTR No.	Pollutant / Parameter	Analytical Method[2]	GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGF AA	HYD RIDE	CVAA	DCP
48	2-Methyl-4,6-Dinitrophenol or Dinitro-2-methylphenol	604	10	5	-	-	-	-	-	-	-	-	-	-
49	2,4-Dinitrophenol	604	5	5	-	-	-	-	-	-	-	-	-	-
50	2-Nitrophenol	604	-	10	-	-	-	-	-	-	-	-	-	-
51	4-Nitrophenol	604	5	10	-	-	-	-	-	-	-	-	-	-
52	3-Methyl-4-Chlorophenol	604	5	1	-	-	-	-	-	-	-	-	-	-
53	Pentachlorophenol	604	1	5	-	-	-	-	-	-	-	-	-	-
54	Phenol	604	1	1	-	50	-	-	-	-	-	-	-	-
55	2,4,6-Trichlorophenol	604	10	10	-	-	-	-	-	-	-	-	-	-
56	Acenaphthene	610 HPLC	1	1	0.5	-	-	-	-	-	-	-	-	-
57	Acenaphthylene	610 HPLC	-	10	0.2	-	-	-	-	-	-	-	-	-
58	Anthracene	610 HPLC	-	10	2	-	-	-	-	-	-	-	-	-
60	Benzo(a)Anthracene or 1,2 Benzanthracene	610 HPLC	10	5	-	-	-	-	-	-	-	-	-	-
61	Benzo(a)Pyrene	610 HPLC	-	10	2	-	-	-	-	-	-	-	-	-
62	Benzo(b) Fluoranthene or 3,4 Benzofluoranthene	610 HPLC	-	10	10	-	-	-	-	-	-	-	-	-
63	Benzo(ghi)Perylene	610 HPLC	-	5	0.1	-	-	-	-	-	-	-	-	-
64	Benzo(k)Fluoranthene	610 HPLC	-	10	2	-	-	-	-	-	-	-	-	-
74	Dibenzo(a,h)Anthracene	610 HPLC	-	10	0.1	-	-	-	-	-	-	-	-	-
86	Fluoranthene	610 HPLC	10	1	0.05	-	-	-	-	-	-	-	-	-
87	Fluorene	610 HPLC	-	10	0.1	-	-	-	-	-	-	-	-	-
92	Indeno(1,2,3-cd)Pyrene	610 HPLC	-	10	0.05	-	-	-	-	-	-	-	-	-
100	Pyrene	610 HPLC	-	10	0.05	-	-	-	-	-	-	-	-	-
68	Bis(2-Ethylhexyl)Phthalate	606 or 625	10	5	-	-	-	-	-	-	-	-	-	-
70	Butylbenzyl Phthalate	606 or 625	10	10	-	-	-	-	-	-	-	-	-	-
79	Diethyl Phthalate	606 or 625	10	2	-	-	-	-	-	-	-	-	-	-
80	Dimethyl Phthalate	606 or 625	10	2	-	-	-	-	-	-	-	-	-	-
81	Di-n-Butyl Phthalate	606 or 625	-	10	-	-	-	-	-	-	-	-	-	-
84	Di-n-Octyl Phthalate	606 or 625	-	10	-	-	-	-	-	-	-	-	-	-
59	Benzidine	625	-	5	-	-	-	-	-	-	-	-	-	-
65	Bis(2-Chloroethoxy)Methane	625	-	5	-	-	-	-	-	-	-	-	-	-

CTR No.	Pollutant / Parameter	Analytical Method[2]	GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
66	Bis(2-Chloroethyl)Ether	625	10	1	-	-	-	-	-	-	-	-	-	-
67	Bis(2-Chloroisopropyl) Ether	625	10	2	-	-	-	-	-	-	-	-	-	-
69	4-Bromophenyl Phenyl Ether	625	10	5	-	-	-	-	-	-	-	-	-	-
71	2-Chloronaphthalene	625	-	10	-	-	-	-	-	-	-	-	-	-
72	4-Chlorophenyl Phenyl Ether	625	-	5	-	-	-	-	-	-	-	-	-	-
73	Chrysene	625	-	10	5	-	-	-	-	-	-	-	-	-
78	3,3'-Dichlorobenzidine	625	-	5	-	-	-	-	-	-	-	-	-	-
82	2,4-Dinitrotoluene	625	10	5	-	-	-	-	-	-	-	-	-	-
83	2,6-Dinitrotoluene	625	-	5	-	-	-	-	-	-	-	-	-	-
85	1,2-Diphenylhydrazine[7]	625	-	1	-	-	-	-	-	-	-	-	-	-
88	Hexachlorobenzene	625	5	1	-	-	-	-	-	-	-	-	-	-
89	Hexachlorobutadiene	625	5	1	-	-	-	-	-	-	-	-	-	-
90	Hexachlorocyclopentadiene	625	5	5	-	-	-	-	-	-	-	-	-	-
91	Hexachloroethane	625	5	1	-	-	-	-	-	-	-	-	-	-
93	Isophorone	625	10	1	-	-	-	-	-	-	-	-	-	-
94	Naphthalene	625	10	1	0.2	-	-	-	-	-	-	-	-	-
95	Nitrobenzene	625	10	1	-	-	-	-	-	-	-	-	-	-
96	N-Nitrosodimethylamine	625	10	5	-	-	-	-	-	-	-	-	-	-
97	N-Nitrosodi-n-Propylamine	625	10	5	-	-	-	-	-	-	-	-	-	-
98	N-Nitrosodiphenylamine	625	10	1	-	-	-	-	-	-	-	-	-	-
99	Phenanthrene	625	-	5	0.05	-	-	-	-	-	-	-	-	-
101	1,2,4-Trichlorobenzene	625	1	5	-	-	-	-	-	-	-	-	-	-
102	Aldrin	608	0.005	-	-	-	-	-	-	-	-	-	-	-
103	α-BHC	608	0.01	-	-	-	-	-	-	-	-	-	-	-
104	β-BHC	608	0.005	-	-	-	-	-	-	-	-	-	-	-
105	γ-BHC (Lindane)	608	0.02	-	-	-	-	-	-	-	-	-	-	-
106	δ-BHC	608	0.005	-	-	-	-	-	-	-	-	-	-	-
107	Chlordane	608	0.1	-	-	-	-	-	-	-	-	-	-	-
108	4,4'-DDT	608	0.01	-	-	-	-	-	-	-	-	-	-	-
109	4,4'-DDE	608	0.05	-	-	-	-	-	-	-	-	-	-	-
110	4,4'-DDD	608	0.05	-	-	-	-	-	-	-	-	-	-	-

CTR No.	Pollutant / Parameter	Analytical Method[2]	GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGF AA	HYD RIDE	CVAA	DCP
111	Dieldrin	608	0.01	-	-	-	-	-	-	-	-	-	-	-
112	Endosulfan (alpha)	608	0.02	-	-	-	-	-	-	-	-	-	-	-
113	Endosulfan (beta)	608	0.01	-	-	-	-	-	-	-	-	-	-	-
114	Endosulfan Sulfate	608	0.05	-	-	-	-	-	-	-	-	-	-	-
115	Endrin	608	0.01	-	-	-	-	-	-	-	-	-	-	-
116	Endrin Aldehyde	608	0.01	-	-	-	-	-	-	-	-	-	-	-
117	Heptachlor	608	0.01	-	-	-	-	-	-	-	-	-	-	-
118	Heptachlor Epoxide	608	0.01	-	-	-	-	-	-	-	-	-	-	-
119-125	PCBs: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260	608	0.5	-	-	-	-	-	-	-	-	-	-	-
126	Toxaphene	608	0.5	-	-	-	-	-	-	-	-	-	-	-

Footnotes:

[1] Minimum levels are from the *State Implementation Policy*. They are the concentration of the lowest calibration standard for that technique based on a survey of contract laboratories. Laboratory techniques are defined as follows: GC = Gas Chromatography; GCMS = Gas Chromatography/Mass Spectrometry; LC = High Pressure Liquid Chromatography; Color = Colorimetric; FAA = Flame Atomic Absorption; GFAA = Graphite Furnace Atomic Absorption; ICP = Inductively Coupled Plasma; ICPMS = Inductively Coupled Plasma/Mass Spectrometry; SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e., U.S. EPA 200.9); Hydride = Gaseous Hydride Atomic Absorption; CVAA = Cold Vapor Atomic Absorption; DCP = Direct Current Plasma.

[2] The suggested method is the U.S. EPA Method unless otherwise specified (SM = Standard Methods). The Discharger may use another U.S. EPA-approved or recognized method if that method has a level of quantification below the applicable water quality objective. Where no method is suggested, the Discharger has the discretion to use any standard method.

[3] Analysis for total chromium may be substituted for analysis of chromium (III) and chromium (VI) if the concentration measured is below the lowest hexavalent chromium criterion (11 ug/l).

[4] The Discharger shall use ultra-clean sampling (U.S. EPA Method 1669) and ultra-clean analytical methods (U.S. EPA Method 1631) for mercury monitoring. The minimum level for mercury is 2 ng/l (or 0.002 ug/l).

[5] MUN = Municipal and Domestic Supply. This designation, if applicable, is in the Findings of the permit.

[6] Determination of Asbestos Structures over 10 [micrometers] in Length in Drinking Water Using MCE Filters, U.S. EPA 600/R-94-134, June 1994.

[7] Detected as azobenzene.

ATTACHMENT H – PRETREATMENT REQUIREMENTS

Contents

ATTACHMENT H – PRETREATMENT REQUIREMENTS

1. The Discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 C.F.R. 403, including any regulatory revisions to Part 403. Where a Part 403 revision is promulgated after the effective date of the Discharger's permit and places mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within six months from the issuance date of this permit or six months from the effective date of the Part 403 revisions, whichever comes later.

(If the Discharger cannot complete the required actions within the above six-month period due to the need to process local adoption of sewer use ordinance modifications or other substantial pretreatment program modifications, the Discharger shall notify the Executive Officer in writing at least 60 days prior to the six-month deadline. The written notification shall include a summary of completed required actions, an explanation for why the six month deadline cannot be met, and a proposed timeframe to complete the rest of the required actions as soon as practical but not later than within twelve months of the issuance date of this permit or twelve months of the effective date of the Part 403 revisions, whichever comes later. The Executive Officer will notify the Discharger in writing within 30 days of receiving the request if the extension is not approved.)

The United States Environmental Protection Agency (U.S. EPA), the State and/or other appropriate parties may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the Clean Water Act (Act).

2. The Discharger shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d) and 402(b) of the Act with timely, appropriate and effective enforcement actions. The Discharger shall cause nondomestic users subject to Federal Categorical Standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.

3. The Discharger shall perform the pretreatment functions as required in 40 C.F.R. 403 and amendments or modifications thereto including, but not limited to:

3.1. Implement the necessary legal authorities to fully implement the pretreatment regulations as provided in 40 C.F.R. 403.8(f)(1);

3.2. Implement the programmatic functions as provided in 40 C.F.R. 403.8(f)(2);

3.3. Publish an annual list of nondomestic users in significant noncompliance as provided per 40 C.F.R. 403.8(f)(2)(viii);

3.4. Provide for the requisite funding and personnel to implement the pretreatment program as provided in 40 C.F.R. 403.8(f)(3); and

3.5. Enforce the national pretreatment standards for prohibited discharges and categorical standards as provided in 40 C.F.R. 403.5 and 403.6, respectively.

4. The Discharger shall submit annually a report to U.S. EPA Region 9, the State Water Board and the Regional Water Board describing its pretreatment program activities over the previous calendar year. In the event that the Discharger is not in compliance with any conditions or requirements of the Pretreatment Program, the Discharger shall also include the reasons for noncompliance and a plan and schedule for achieving compliance. The report shall contain, but is not limited to, the information specified in Appendix H-1 entitled, "Requirements for Pretreatment Annual Reports." The annual report is due each year on February 28.

5. The Discharger shall submit a pretreatment semiannual report to U.S. EPA Region 9, the State Water Board and the Regional Water Board describing the status of its significant industrial users (SIUs). The report shall contain, but is not limited to, information specified in Appendix H-2 entitled, "Requirements for Pretreatment Semiannual Reports." The semiannual report is due July 31 for the period January through June. The information for the period July through December of each year shall be included in the Annual Report identified in Appendix H-1. The Executive Officer may exempt the Discharger from the semiannual reporting requirements on a case by case basis subject to State Water Board and U.S. EPA's comment and approval.

6. The Discharger shall conduct the monitoring of its treatment plant's influent, effluent, and sludge (biosolids) as described in Appendix H-4 entitled, "Requirements for Influent, Effluent and Sludge (Biosolids) Monitoring." (The term "biosolids," as used in this Attachment, shall have the same meaning as wastewater treatment plant "sludge" and will be used from this point forward.) The Discharger shall evaluate the results of the sampling and analysis during the preparation of the semiannual and annual reports to identify any trends. Signing the certification statement used to transmit the reports shall be deemed to certify the Discharger has completed this data evaluation. A tabulation of the data shall be included in the pretreatment annual report as specified in Appendix H 4. The Executive Officer may require more or less frequent monitoring on a case by case basis.

APPENDIX H-1:
REQUIREMENTS FOR PRETREATMENT ANNUAL REPORTS

The Pretreatment Annual Report is due each year on February 28 and shall contain activities conducted during the previous calendar year. The purpose of the Annual Report is to:

- Describe the status of the Discharger's pretreatment program; and
- Report on the effectiveness of the program, as determined by comparing the results of the preceding year's program implementation.

The report shall contain, at a minimum, the following information:

1. Cover Sheet

The cover sheet shall include:

1.1. The name(s) and National Pollutant Discharge Elimination Discharge System (NPDES) permit number(s) of the Discharger(s) that is part of the Pretreatment Program;

1.2. The name, address and telephone number of a pretreatment contact person;

1.3. The period covered in the report;

1.4. A statement of truthfulness; and

1.5. The dated signature of a principal executive officer, ranking elected official, or other duly authorized employee who is responsible for overall operation of the publicly-owned treatment works (POTW) (40 C.F.R. 403.12(m)).

2. Introduction

This section shall include:

2.1. Any pertinent background information related to the Discharger and/or the nondomestic user base of the area;

2.2. List of applicable interagency agreements used to implement the Discharger's pretreatment program (e.g., Memoranda of Understanding (MOU) with satellite sanitary sewer collection systems); and

2.3. A status summary of the tasks required by a Pretreatment Compliance Inspection (PCI), Pretreatment Compliance Audit (PCA), Cleanup and Abatement Order (CAO), or other pretreatment-related enforcement actions required by the Regional Water Board or the U.S. EPA. A more detailed discussion can be referenced and included in the section entitled, "Program Changes," if needed.

3. Definitions

This section shall include a list of key terms and their definitions that the Discharger uses to describe or characterize elements of its pretreatment program, or the Discharger may provide a reference to its website if the applicable definitions are available on-line.

4. Discussion of Upset, Interference and Pass Through

This section shall include a discussion of Upset, Interference or Pass Through incidents, if any, at the Discharger's treatment plant(s) that the Discharger knows of or suspects were caused by nondomestic user discharges. Each incident shall be described, at a minimum, consisting of the following information:

4.1. A description of what occurred;

4.2. A description of what was done to identify the source;

4.3. The name and address of the nondomestic user responsible;

4.4. The reason(s) why the incident occurred;

4.5. A description of the corrective actions taken; and

4.6. An examination of the local and federal discharge limits and requirements for the purposes of determining whether any additional limits or changes to existing requirements may be necessary to prevent other Upset, Interference or Pass Through incidents.

5. Influent, Effluent and Biosolids Monitoring Results

The Discharger shall evaluate the influent, effluent and biosolids monitoring results as specified in Appendix H-4 in preparation of this report. The Discharger shall retain the analytical laboratory reports with the Quality Assurance and Quality Control (QA/QC) data validation and make these reports available upon request.

This section shall include:

5.1. Description of the sampling procedures and an analysis of the results (see Appendix H-4 for specific requirements);

5.2. Tabular summary of the compounds detected (compounds measured above the detection limit for the analytical method used) for the monitoring data generated during the reporting year as specified in Appendix H-4;

5.3. Discussion of the investigation findings into any contributing sources of the compounds that exceed NPDES limits; and

5.4. Graphical representation of the influent and effluent metal monitoring data for the past five years with a discussion of any trends.

6. Inspection, Sampling and Enforcement Programs

This section shall include at a minimum the following information:

6.1. Inspections: Summary of the inspection program (e.g., criteria for determining the frequency of inspections and inspection procedures);

6.2. Sampling Events: Summary of the sampling program (e.g., criteria for determining the frequency of sampling and chain of custody procedures); and

6.3. Enforcement: Summary of Enforcement Response Plan (ERP) implementation including dates for adoption, last revision and submission to the Regional Water Board.

7. Updated List of Regulated SIUs

This section shall contain a list of all of the federal categories that apply to SIUs regulated by the Discharger. The specific categories shall be listed including the applicable 40 C.F.R. subpart and section, and pretreatment standards (both maximum and average limits). Local limits developed by the Discharger shall be presented in a table including the applicability of the local limits to SIUs. If local limits do not apply uniformly to SIUs, specify the applicability in the tables listing the categorical industrial users (CIUs) and non-categorical SIUs. Tables developed in Sections 7A and 7B can be used to present or reference this information.

7.1. CIUs - Include a table that alphabetically lists the CIUs regulated by the Discharger as of the end of the reporting period. This list shall include:

7.1.1. Name;

7.1.2. Address;

7.1.3. Applicable federal category(ies);

7.1.4. Reference to the location where the applicable Federal Categorical Standards are presented in the report;

7.1.5. Identify all deletions and additions keyed to the list submitted in the previous annual report. All deletions shall be briefly explained (e.g., closure, name change, ownership change, reclassification, declassification); and

7.1.6. Information, calculations and data used to determine the limits for those CIUs for which a combined waste stream formula is applied.

7.2. Non-categorical SIUs - Include a table that alphabetically lists the SIUs not subject to any federal categorical standards that were regulated by the Discharger as of the end of the reporting period. This list shall include:

7.2.1. Name;

7.2.2. Address;

7.2.3. A brief description of the type of business;

7.2.4. Identify all deletions and additions keyed to the list submitted in the previous annual report. All deletions shall be briefly explained (e.g., closure, name change, ownership change, reclassification, declassification); and

7.2.5. Indicate the applicable discharge limits (e.g., different from local limits) to which the SIUs are subject and reference to the location where the applicable limits (e.g., local discharge limits) are presented in the report.

8. SIU (categorical and non-categorical) Compliance Activities

The information required in this section may be combined in the table developed in Section 7 above.

8.1. Inspection and Sampling Summary: This section shall contain a summary of all the SIU inspections and sampling activities conducted by the Discharger and sampling activities conducted by the SIU over the reporting year to gather information and data regarding SIU compliance. The summary shall include:

8.1.1. The number of inspections and sampling events conducted for each SIU by the Discharger;

8.1.2. The number of sampling events conducted by the SIU. Identify SIUs that are operating under an approved Total Toxic Organic Management Plan;

8.1.3. The quarters in which the above activities were conducted; and

8.1.4. The compliance status of each SIU, delineated by quarter, and characterized using all applicable descriptions as given below:

8.1.4.1. Consistent compliance;

8.1.4.2. Inconsistent compliance;

8.1.4.3. Significant noncompliance;

8.1.4.4. On a compliance schedule to achieve compliance (include the date final compliance is required);

8.1.4.5. Not in compliance and not on a compliance schedule; and

8.1.4.6. Compliance status unknown, and why not.

8.2. Enforcement Summary: This section shall contain a summary of SIU compliance and enforcement activities during the reporting year. The summary may be included in the summary table developed in section 8A and shall include the names and addresses of all SIUs affected by the actions identified below. For each notice specified in enforcement action 8.2.1 through 8.2.4, indicate whether it was for an infraction of a federal or local standard/limit or requirement.

8.2.1. Warning letters or notices of violations regarding SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

8.2.2. Administrative Orders regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

8.2.3. Civil actions regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

8.2.4. Criminal actions regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements;

8.2.5. Assessment of monetary penalties. Identify the amount of penalty in each case and reason for assessing the penalty;

8.2.6. Order to restrict/suspend discharge to the Discharger; and

8.2.7. Order to disconnect the discharge from entering the Discharger.

8.3. July-December Semiannual Data: For SIU violations/noncompliance during the semiannual reporting period from July 1 through December 31, provide the following information:

8.3.1. Name and facility address of the SIU;

8.3.2. Indicate if the SIU is subject to Federal Categorical Standards; if so, specify the category including the subpart that applies;

8.3.3. For SIUs subject to Federal Categorical Standards, indicate if the violation is of a categorical or local standard;

8.3.4. Indicate the compliance status of the SIU for the two quarters of the reporting period; and

8.3.5. For violations/noncompliance identified in the reporting period, provide:

8.3.5.1. The date(s) of violation(s);

8.3.5.2. The parameters and corresponding concentrations exceeding the limits and the discharge limits for these parameters; and

8.3.5.3. A brief summary of the noncompliant event(s) and the steps that are being taken to achieve compliance.

9. Baseline Monitoring Report Update

This section shall provide a list of CIUs added to the pretreatment program since the last annual report. This list of new CIUs shall summarize the status of the respective Baseline Monitoring Reports (BMR). The BMR must contain the information specified in 40 C.F.R. 403.12(b). For each new CIU, the summary shall indicate when the BMR was due; when the CIU was notified by the Discharger of this requirement; when the CIU submitted the report; and/or when the report is due.

10. Pretreatment Program Changes

This section shall contain a description of any significant changes in the Pretreatment Program during the past year including, but not limited to:

10.1. Legal authority;

10.2. Local limits;

10.3. Monitoring/ inspection program and frequency;

10.4. Enforcement protocol;

10.5. Program’s administrative structure;

10.6. Staffing level;

10.7. Resource requirements;

10.8. Funding mechanism;

10.9. If the manager of the Discharger’s pretreatment program changed, a revised organizational chart shall be included; and

10.10. If any element(s) of the program is in the process of being modified, this intention shall also be indicated.

11. Pretreatment Program Budget

This section shall present the budget spent on the Pretreatment Program. The budget, either by the calendar or fiscal year, shall show the total expenses required to implement the pretreatment program. A brief discussion of the source(s) of

funding shall be provided. In addition, the Discharger shall make available upon request specific details on its pretreatment program expense amounts such as for personnel, equipment, and chemical analyses.

12. Public Participation Summary

This section shall include a copy of the public notice as required in 40 C.F.R. 403.8(f)(2)(viii). If a notice was not published, the reason shall be stated.

13. Biosolids Storage and Disposal Practice

This section shall describe how treated biosolids are stored and ultimately disposed. If a biosolids storage area is used, it shall be described in detail including its location, containment features and biosolids handling procedures.

14. Other Pollutant Reduction Activities

This section shall include a brief description of any programs the Discharger implements to reduce pollutants from nondomestic users that are not classified as SIUs. If the Discharger submits any of this program information in an Annual Pollution Prevention Report, reference to this other report shall satisfy this reporting requirement.

15. Other Subjects

Other information related to the Pretreatment Program that does not fit into any of the above categories should be included in this section.

16. Permit Compliance System (PCS) Data Entry Form

The annual report shall include the PCS Data Entry Form. This form shall summarize the enforcement actions taken against SIUs in the past year. This form shall include the following information:

16.1. Discharger’s name,

16.2. NPDES Permit number,

16.3. Period covered by the report,

16.4. Number of SIUs in significant noncompliance (SNC) that are on a pretreatment compliance schedule,

16.5. Number of notices of violation and administrative Orders issued against SIUs,

16.6. Number of civil and criminal judicial actions against SIUs,

16.7. Number of SIUs that have been published as a result of being in SNC, and

16.8. Number of SIUs from which penalties have been collected.

APPENDIX H-2:
REQUIREMENTS FOR JANUARY-JUNE PRETREATMENT SEMIANNUAL REPORT

The pretreatment semiannual report is due on July 31 for pretreatment program activities conducted from January through June unless an exception has been granted by the Regional Water Board's Executive Officer (e.g., pretreatment programs without any SIUs may qualify for an exception to the pretreatment semiannual report). Pretreatment activities conducted from July through December of each year shall be included in the Pretreatment Annual Report as specified in Appendix H-1. The pretreatment semiannual report shall contain, at a minimum the following information:

1. Influent, Effluent and Biosolids Monitoring

The influent, effluent and biosolids monitoring results shall be evaluated in preparation of this report. The Discharger shall retain analytical laboratory reports with the QA/QC data validation and make these reports available upon request. The Discharger shall also make available upon request a description of its influent, effluent and biosolids sampling procedures. Violations of any parameter that exceed NPDES limits shall be identified and reported. The contributing source(s) of the parameters that exceed NPDES limits shall be investigated and discussed.

2. Significant Industrial User (SIU) Compliance Status

This section shall contain a list of all SIUs that were not in consistent compliance with all pretreatment standards/limits or requirements for the reporting period. For the reported SIUs, the compliance status for the previous semiannual reporting period shall be included. Once the SIU has determined to be out of compliance, the SIU shall be included in subsequent reports until consistent compliance has been achieved. A brief description detailing the actions that the SIU undertook to come back into compliance shall be provided.

For each SIU on the list, the following information shall be provided:

2.1. Name and facility address of the SIU;

2.2. Indicate if the SIU is subject to Federal Categorical Standards; if so, specify the category including the subpart that applies;

2.3. For SIUs subject to Federal Categorical Standards, indicate if the violation is of a categorical or local standard;

2.4. Indicate the compliance status of the SIU for the two quarters of the reporting period; and

2.5. For violations/noncompliance identified in the reporting period, provide:

2.5.1. The date(s) of violation(s);

2.5.2. The parameters and corresponding concentrations exceeding the limits and the discharge limits for these parameters; and

2.5.3. A brief summary of the noncompliant event(s) and the steps that are being taken to achieve compliance.

3. Discharger's Compliance with Pretreatment Program Requirements

This section shall contain a discussion of the Discharger's compliance status with the Pretreatment Program Requirements as indicated in the latest Pretreatment Compliance Audit (PCA) Report or Pretreatment Compliance Inspection (PCI) Report. It shall contain a summary of the following information:

3.1. Date of latest PCA or PCI report;

3.2. Date of the Discharger's response;

3.3. List of unresolved issues; and

3.4. Plan(s) and schedule for resolving the remaining issues.

APPENDIX H-3:
SIGNATURE REQUIREMENTS
FOR PRETREATMENT ANNUAL AND SEMIANNUAL REPORTS

The pretreatment annual and semiannual reports shall be signed by a principal executive officer, ranking elected official, or other duly authorized employee who is responsible for the overall operation of the Discharger (POTW - 40 C.F.R. section 403.12[m]). Signed copies of the reports shall be submitted to the State Water Board and the Regional Water Board through the electronic self-monitoring report (eSMR) module of the California Integrated Water Quality System (CIWQS). Signed copies of the reports shall also be submitted electronically to U.S. EPA at R9Pretreatment@epa.gov or as instructed otherwise.

APPENDIX H-4: REQUIREMENTS FOR INFLUENT, EFFLUENT AND BIOSOLIDS MONITORING

The Discharger shall conduct sampling of its treatment plant's influent, effluent and biosolids at the frequency shown in the pretreatment requirements table of the Monitoring and Reporting Program (MRP, Attachment E). When sampling periods coincide, one set of test results, reported separately, may be used for those parameters that are required to be monitored by both the influent and effluent monitoring requirements of the MRP and the Pretreatment Program. The Pretreatment Program monitoring reports as required in Appendices H-1 and H-2 shall be transmitted to the Pretreatment Program Coordinator.

1. Reduction of Monitoring Frequency

The minimum frequency of Pretreatment Program influent, effluent, and biosolids monitoring shall be dependent on the number of SIUs identified in the Discharger's Pretreatment Program as indicated in Table H-1.

Table H-1. Minimum Frequency of Pretreatment Program Monitoring

Number of SIUs	Minimum Frequency
< 5	Once every five years
> 5 and < 50	Once every year
> 50	Twice per year

If the Discharger's required monitoring frequency is greater than the minimum specified in Table H-1, the Discharger may request a reduced monitoring frequency for that constituent(s) as part of its application for permit reissuance if it meets the following criteria:

The monitoring data for the constituent(s) consistently show non-detect (ND) levels for the effluent monitoring and very low (i.e., near ND) levels for influent and biosolids monitoring for a minimum of eight previous years' worth of data.

The Discharger's request shall include tabular summaries of the data and a description of the trends in the industrial, commercial, and residential customers in the Discharger's service area that demonstrate control over the sources of the constituent(s). The Regional Water Board may grant a reduced monitoring frequency in the reissued permit after considering the information provided by the Discharger and any other relevant information.

2. Influent and Effluent Monitoring

The Discharger shall monitor for the parameters using the required sampling and test methods listed in the pretreatment table of the MRP. Any test method substitutions must have received prior written Executive Officer approval. Influent and effluent sampling locations shall be the same as those sites specified in the MRP.

The influent and effluent samples should be taken at staggered times to account for treatment plant detention time. Appropriately staggered sampling is considered consistent with the requirement for collection of effluent samples coincident with influent samples in Section 3.1.3.1.2 of Attachment G. All samples must be representative of daily operations. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 C.F.R. 136 and amendments thereto. For effluent monitoring, the reporting limits for the individual parameters shall be at or below the minimum levels (MLs) as stated in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) [also known as the State Implementation Policy (SIP)]; any revisions to the MLs shall be adhered to. If a parameter does not have a stated ML, then the Discharger shall conduct the analysis using the lowest commercially available and reasonably achievable detection levels.

The following report elements should be used to submit the influent and effluent monitoring results. A similarly structured format may be used but will be subject to Regional Water Board approval. The monitoring reports shall be submitted with the Pretreatment Annual Report identified in Appendix H-1.

2.1. Sampling Procedures, Sample Dechlorination, Sample Compositing, and Data Validation (applicable quality assurance/quality control) shall be performed in accordance with the techniques prescribed in 40 C.F.R. 136 and amendments thereto. The Discharger shall make available upon request its sampling procedures including methods of dechlorination, compositing, and data validation.

2.2. A tabulation of the test results for the detected parameters shall be provided.

2.3. Discussion of Results – The report shall include a complete discussion of the test results for the detected parameters. If any pollutants are detected in sufficient concentration to upset, interfere or pass through plant operations, the type of pollutant(s) and potential source(s) shall be noted, along with a plan of action to control, eliminate, and/or monitor the pollutant(s). Any apparent generation and/or destruction of pollutants attributable to chlorination/dechlorination sampling and analysis practices shall be noted.

3. Biosolids Monitoring

Biosolids should be sampled in a manner that will be representative of the biosolids generated from the influent and effluent monitoring events except as noted in 3.3 below. The same parameters required for influent and effluent analysis shall be included in the biosolids analysis. The biosolids analyzed shall be a composite sample of the biosolids for final disposal consisting of:

3.1. Biosolids lagoons – 20 grab samples collected at representative equidistant intervals (grid pattern) and composited as a single grab, or

3.2. Dried stockpile – 20 grab samples collected at various representative locations and depths and composited as a single grab, or

3.3. Dewatered biosolids - daily composite of 4 representative grab samples each day for 5 days taken at equal intervals during the daily operating shift taken from (a) the dewatering units or (b) each truckload, and combined into a single 5-day composite.

The U.S. EPA manual, POTW Sludge Sampling and Analysis Guidance Document, August 1989, containing detailed sampling protocols specific to biosolids is recommended as a guidance for sampling procedures. The U.S. EPA manual Analytical Methods of the National Sewage Sludge Survey, September 1990, containing detailed analytical protocols specific to biosolids, is recommended as a guidance for analytical methods.

In determining if the biosolids are a hazardous waste, the Discharger shall adhere to Article 2, “Criteria for Identifying the Characteristics of Hazardous Waste,” and Article 3, “Characteristics of Hazardous Waste,” of Title 22, California Code of Regulations, sections 66261.10 to 66261.24 and all amendments thereto.

The following report elements should be used to submit the biosolids monitoring results. A similarly structured form may be used but will be subject to Regional Water Board approval. The results shall be submitted with the Pretreatment Annual Report identified in Appendix H-1.

- Sampling Procedures and Data Validation (applicable quality assurance/quality control) shall be performed in accordance with the techniques prescribed in 40 C.F.R. 136 and amendments thereto. The Discharger shall make available upon request its biosolids sampling procedures and data validation methods.

- Test Results – Tabulate the test results for the detected parameters and include the percent solids.

- Discussion of Results – Include a complete discussion of test results for the detected parameters. If the detected pollutant(s) is reasonably deemed to have an adverse effect on biosolids disposal, a plan of action to control, eliminate, and/or monitor the pollutant(s) and the known or potential source(s) shall be included. Any apparent generation and/or destruction of pollutants attributable to chlorination/dechlorination sampling and analysis practices shall be noted.

The Discharger shall also provide a summary table presenting any influent, effluent or biosolids monitoring data for non-priority pollutants that the Discharger believes may be causing or contributing to interference, pass through or adversely impacting biosolids quality.

Attachment 1

Section 404 Nationwide Permit Application

ATTACHMENT H

U.S. Army Corps of Engineers

South Pacific Division

Nationwide Permit Pre-Construction Notification (PCN)

This form integrates requirements of the U.S. Army Corps of Engineers (Corps) Nationwide Permit Program within the South Pacific Division (SPD). Boxes 1-10 must be completed to include all information required by General Condition 32. Box 11 (or other sufficient information to show compliance with all General Conditions) must be completed for activities in Arizona, California, Nevada, and Utah, and is recommended for activities in Colorado and New Mexico. If additional space is needed, please provide as a separate attachment. Please refer to the *Instructions for the South Pacific Division Nationwide Permit Pre-Construction Notification (PCN)* (Instructions) for instructions for completing the PCN, as well as additional information on the attachments and tables included with this PCN that may be used.

0. To be filled by the Corps

Application Number:	Date Received:	Date Complete:

1. Prospective Permittee and Agent Name and Addresses (see Instructions)

a. Prospective Permittee

First - Mr. Josh Middle - T Last - Minshall

Company - City of Petaluma Email Address - jminshall@cityofpetaluma.org

Address - 202 North McDowell Boulevard City - Petaluma State - CA Zip - 94954

Phone (Residence/Mobile) - _____ Phone (Business) - (707) 776-3785

b. Agent (if applicable)

First - Kristine Middle - _____ Last - Gaspar

Company - GHD, Inc. Email Address - Kristine.Gaspar@ghd.com

Address - 2235 Mercury Way, Suite 150 City - Santa Rosa State - CA Zip - 95407

Phone (Residence/Mobile) - _____ Phone (Business) - (707) 236-1539

c. Statement of Authorization: I hereby authorize Kristine Gaspar, to act in my behalf as my agent for the proposed activity. (Optional, see instructions)

_____ 06/10/2021

Signature of Applicant Date

ATTACHMENT H

2. Name and Location of the Proposed Activity (see Instructions)

☐ The proposed work would involve multiple-single and complete projects. See attachment for the information required in Boxes 2 through 10, and 11, if applicable.

a. Project Name or Title:	**b. County, State:**
Ellis Creek Water Recycling Facility Outfall Replacement Project	Sonoma County, California

c. Name of Waterbody: Petaluma River

d. Coordinates:

☐ Unknown (please provide other location descriptions below)

Latitude - 38.214707 Longitude - -122.57483

e. Other Location Description (optional, see instructions):

Located at 3890 Cypress Drive within the City of Petaluma. Outfall location is accessed from Lakeville Highway.

Assessor's Parcel Number: 068-010-024

f. Driving Directions to the site (optional, see instructions):

From San Francisco utilize Highway 101 North for approximately 12 miles. Then take Exit 460A for CA-37 toward Napa/Vallejo. Continue onto CA-37 East for approximately 5 miles. Then use the left two lanes to turn onto Lakeville Highway. Stay on Lakeville Highway for approximately 9.5 miles and then turn left onto S. McDowell Boulevard. Then turn left onto Cypress Drive. Continue straight until you reach the Administration Building.

3. Specific NWP(s) you want to use to authorize the proposed activity (see Instructions)

NWP 7 Outfall Structures and Associated Intake Structures

4. Description of the Proposed Activity (see Instructions)

a. Complete description of the Proposed Activity:

The City will divert all future wastewater effluent discharges to a tidal slough located adjacent to the southeast corner of the ECWR Facility via a new outfall pipeline and outfall structure. In addition, the existing Petaluma River outfall structure and a portion of the outfall pipeline, as well as an existing emergency pipeline and outfall, will be removed. Construction of the relocated outfall is expected to begin in 2021 and last approximately 3 months. Removal of the existing Petaluma River outfall structure would last 3 to 5 days and occur during the appropriate in-water work window from September 1st to October 15th. The construction staging area is expected to be located within the paved areas surrounding the Chlorine Contact Basin (See Attachment 2 Project Description).

b. Purpose of the Proposed Activity:

The purpose of the project is to provide the City with a working effluent pipeline and outfall at the Ellis Creek Water Recycling Facility (See Attachment 2 Project and Impact Information).

c. Direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands and other waters of the U.S. expected to result from the NWP(s) activity:

Installation of the outfall structure and rip rap will result in ~0.03 acre of permanent impacts below the mean high tide line of the unnamed slough and ~0.004 acre within wetlands. Removal of the existing outfall structure and pipelines would result in the removal of ~0.009 acre of fill from the Petaluma River and ~0.002 acre of fill within wetlands, resulting in a net increase of ~0.02 acre of fill within waters and ~0.003 acres within wetlands.

Installation and removal of the outfall structures could have indirect impacts as well, to the adjacent slough and Petaluma River such as increased turbidity and sedimentation. See Attachment 2 Project and Impact Information and Attachment 3 Avoidance and Minimization Measures for explanation of impacts and proposed minimization and avoidance measures to minimize impacts.

d. Description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity:

The small temporary impact to the wetland will be allowed to passively revegitate and be monitored as needed to ensure the area returns to pre-project conditions. Indirect impacts will be mitigated with implementation of avoidance measures to protect the water quality of the Petaluma River and unnamed slough during construction activities. Turbidity and erosion controls will implemented during construction. (See Attachment 3 Avoidance and Minimization Measures).

e. Any other NWP(s), Regional/Programmatic General Permit(s) or Individual Permit(s) used or intended to be used to authorize any part of the proposed activity or any related activity:

No other NWPs or Individual Permits would be used to authorize the proposed Project.

f. Have sketches been provided containing sufficient detail to provide an illustrative description of the proposed activity?

☒ Yes, Attached ☐ No

☐ N/A; The activity is located in the Los Angeles District boundaries of Arizona and California, See Attachment 1

☒ N/A, The activity is located in the San Francisco District boundaries of California, See Attachment 2

☐ N/A, The activity is located in the Sacramento District boundaries of California, Nevada, or Utah, See Attachment 3

5. Aquatic Resource Delineation (see Instructions)

a. Has a delineation of aquatic resources been conducted in accordance with the current method required by the Corps? ☒ Yes ☐ No

If yes, please attach a copy of the delineation

Note: If no, your PCN is not complete. In accordance with General Condition 32, you may request the Corps delineate the special aquatic sites and other waters on the project site, but there may be a delay. In addition, the PCN will not be considered complete until the delineation has either been submitted to or completed by the Corps, as appropriate.

b. If a delineation has been submitted, would you like the Corps to conduct a jurisdictional determination (preliminary or approved)? ☒ Yes ☐ No

If yes, please complete, sign and return the attached *Appendix 1 – Request for Corps Jurisdictional Determination (JD)* sheet or provide a separate attachment with the information identified in Appendix 1.

6. Compensatory Mitigation (see Instructions)

a. Will the proposed activity result in the loss of greater than 1/10-acre of wetlands? ☐ Yes ☒ No

If yes, describe how you propose to compensate for the loss of each type of wetland:

N/A

Note: for the loss of less than 1/10 acre of wetlands, or if no compensatory mitigation is proposed, the Corps may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

b. Will the proposed activity result in the loss of streams or other open waters of the U.S.? ☒ Yes ☐ No

If yes, provide a description of any proposed compensatory mitigation for the loss of each type of stream or other open water:

Two existing outfall structures will be removed.

Note: if no compensatory mitigation is proposed, the Corps may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in no more than minimal adverse environmental effects.

7. Endangered Species Act (ESA) Compliance (see Instructions)

a. For non-Federal permittees (if Federal permittee, check N/A and skip to 7(d))**:** ☐ N/A

(1) Is there any Federally-listed endangered or threatened species or critical habitat that might be affected or is in the vicinity of the activity? ☒ Yes ☐ No

(2) Is the activity located in designated critical habitat for Federally-listed endangered or threatened species? ☒ Yes ☐ No

If yes to either (1) or (2), include the name(s) of those endangered or threatened species that might be affected by the proposed activity or might utilize the designated critical habitat that might be affected by the proposed activity:

1. Ridgway's Rail
2. Green Sturgeon
3. CCC Steelhead
4. Salt Marsh Harvest Mouse
5.
6.

If no to both (1) and (2), proceed to Box 8.

Note: If yes to either (1) or (2), note per General Condition 18(c), you shall not begin work on the activity until notified by the Corps that the requirements of the ESA have been satisfied and that the activity is authorized.

b. Has information sufficient to initiate consultation with the U.S. Fish and Wildlife Service/National Marine Fisheries Service for compliance with Section 7 of the ESA been prepared? ☒ Yes ☐ No

If yes, please attach a copy of the information.

c. Additional information you wish to provide regarding compliance with the ESA, if applicable:

d. For Federal permittees, you must provide documentation demonstrating compliance with ESA as a separate attachment.

8. Historic Properties (see Instructions)

a. For non-Federal permittees (if Federal permittee, check N/A and skip to 7(d))**:** ☐ N/A

(1) Is there a known historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places that the NWP may have the potential to affect? ☐ Yes ☒ No

If yes to (1), state which historic property may have the potential to be affected by the proposed activity:

1. N/A
2.
3.
4.
5.
6.

OR

☐ A vicinity map indicating the location of the historic property is enclosed

(2) If no to (1), describe the potential for the proposed work to affect a previously unidentified historic property:

Although there is an eligible historic building within the Ellis Creek Facility property, there is no historic building located within or adjacent to the project footprint. The eligible building is approximately 5,000 to the northwest and is obscured by vegetation and facility infrastructure from the outfall location.

Note: If yes to (1), note per General Condition 20(c), you shall not begin the activity until notified by the Corps that the activity has no potential to cause effects or that consultation under Section 106 of the National Historic Preservation Act (NHPA) has been completed.

b. Has information sufficient to initiate consultation with the State Historic Preservation Officer/Tribal Preservation Officer for compliance with Section 106 of the National Historic Preservation Act (NHPA) been prepared?

☐ Yes ☐ No

If yes, please attach a copy of the information.

c. Additional information you wish to provide regarding compliance with the NHPA, if applicable:

We have attached the Cultural Resources Report and associated communications with the affiliated tribes.

d. For Federal permittees, you must provide documentation demonstrating compliance with NHPA in a separate attachment.

9. National Wild and Scenic Rivers (see Instructions)

a. Will the proposed activity(s) occur in a component of the National Wild and Scenic River System or a river officially designated by Congress as a "Study River" for possible inclusion in the system while the river is in an official study status?

☐ Yes, in a component of a National Wild and Scenic River System; ☐ Yes, in a "study" river ☒ No

If yes, identify the Wild and Scenic River or the "study river"

Note: per General Condition 16(b), you shall not begin the NWP activity until notified by the Corps that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status. If you have received written notification from the Federal agency, please attach the correspondence.

10. Section 408 Permissions (see Instructions)

a. Will the NWP also require permissions from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a Corps federally authorized Civil Works project? ☐ Yes ☒ No

If yes, have you received Section 408 permission to alter, occupy, or use the Corps project? ☐ Yes ☐ No

If yes, please attach the Section 408 permission

If yes, note per General Condition 31, an activity that requires Section 408 permission is not authorized by NWP until the Corps issues the Section 408 permission to alter, occupy, or use the Corps project, and the Corps issues a written NWP verification.

11. Compliance with NWP General Conditions (see Instructions)		
Check	**General Condition**	**Rationale for Compliance with General Condition**
☒	1. Navigation	City will comply with safety measures or instructions from the USACE per this condition.
☒	2. Aquatic Life Movements	Project will not impact aquatic life movements. Existing outfall will be removed from the Petaluma River.
☒	3. Spawning Areas	Project is not located within a known spawning area and BMPs will avoid impacts to shoreline and jurisdictional waters to the maximum extent practicable.
☒	4. Migratory Bird Breeding Areas	Pre-construction nest surveys will be performed during the breeding season.
☒	5. Shellfish Beds	Project is not located in an area with concentrated shellfish populations.
☒	6. Suitable Material	Materials will comply with the Water Quality Criteria and be free of toxic pollutants in toxic amounts.

☒	7. Water Supply Intakes	Project is not situated in proximity of a public water supply intake.
☒	8. Adverse Effects from Impoundments	Project does not include impoundment of water.
☒	9. Management of Water Flows	Condition, capacity, and location of open waters in Petaluma River will remain unchanged with removal of exisitng outfall. After installation of replacement outfall, tidal waters will be allowed back into the outfall location.
☒	10. Fills Within 100-Year Floodplains	Project complies with FEMA-approved floodplain management requirements. Project would not impede or redirect flood flows.
☒	11. Equipment	Measures to minimize soil disturbance will be employed when working near or within the adjacent Slough and Petaluma River.
☒	12. Soil Erosion and Sediment Controls	BMPs would be employed to control erosion. An Erosion and Sediment controls would be implemented during construction (See Attachment 3).

☒	13. Removal of Temporary Fills	Areas temporarily disturbed will be returned to their original state to the maximum extent possible.
☒	14. Proper Maintenance	Project area will be maintained by the City to ensure public safety and compliance with general and activity-specific conditions.
☒	15. Single and Complete Project	Described actions included herein comprise a single and complete project.
☒	16. Wild and Scenic Rivers	No project activity will occur within a component of the National Wild and Scenic River System or an officially designated 'study river.'
☒	17. Tribal Rights	Project will not impair reserved tribal rights.
☒	18. Endangered Species	See Box 7 above.
☒	19. Migratory Bird and Bald and Golden Eagle Permits	'Take' permits are not anticipated for this project. Pre-construction surveys for bird species will be conducted in the project area and any active nest located will be avoided. Listed species will be reported to the USFWS if found.

☒	20. Historic Properties	See Box 8 above.
☒	21. Discovery of Previously Unknown Remains and Artifacts	City will notify the district engineer immediately upon discovering any previously unknown historic or archaeological remains and avoid construction that may affect those remains until further advised.
☒	22. Designated Critical Resource Waters	Project will not impact designated critical resource waters or waters having particular significance to the State.
☒	23. Mitigation	See Boxes 4(d) and 6 above.
☒	24. Safety of Impoundment Structures	Project does not include impoundment.
☒	25. Water Quality, including status of Section 401 Water Quality Certification	Application for Section 401 Water Quality Certification with the San Francisco Regional Water Quality Control Board is currently being prepared and a pre-filing meeting as been conducted.
☒	26. Coastal Zone Management, including status of CZM Consistency Certification from the State of California (for projects in or affecting the Coastal Zone)	Application for a Minor Permit with the San Francisco Bay Conservation and Development Commission is currently being prepared.

☒	27. Regional and Case-by-Case Conditions	Project will comply with conditions stipulated by the 401 Water Quality Certification and other regulatory authorizations.
☒	28. Use of Multiple Nationwide Permits	Project will be authorized under NWP 7 only.
☒	29. Transfer of Nationwide Permit Verifications	Appropriate USACE documentation will be transferred and the district office notified if the property changes ownership.
☒	30. Compliance Certification	City will provide a signed certification document to USACE upon project completion, including any mitigation.
☒	31. Activities Affecting Structures or Works Built by the United States	See Box 10 above.
☒	32. Pre-Construction Notification	Complete with attachments.

ATTACHMENT H

U.S. Army Corps of Engineers

San Francisco District

Attachment 2: Additional PCN Requirements for San Francisco District

This attachment contains additional information required to be submitted with the PCN for proposed activities within the San Francisco District. You must submit the completed attachment, or other attachment containing the required information, for a complete PCN, per San Francisco District Regional Condition A(1). For multiple single and complete projects, provide the information identified below for each single and complete project. If additional space is needed, provide as an attachment to the form, and please reference each section accordingly.

1. Form of PCN (Regional Condition A(1))

Have you submitted a completed South Pacific Division PCN Checklist or an application form (ENG Form 4345) with an attachment providing information on compliance with all of the General and Regional Conditions?

☒ Yes, see attached ☐ No

Note: If you check no, your PCN will be considered incomplete.

2. Avoidance and Minimization (Regional Condition A(1)(a))

Written statement describing how the activity has been designed to avoid and minimize adverse effects, both temporary and permanent, to waters of the U.S.:

Please refer to Attachment 3 (Avoidance and Minimization Measures) for a comprehensive list of measures planned to be implemented to minimize and avoid impacts.

3. Drawings (Regional Condition A(1)(b))

The following drawings are enclosed:

☒ Plan-View drawing clearly depicting the location, size and dimensions of the proposed activity, as well as the location of delineated waters of the U.S. on the site

☒ Cross-Section view drawings clearly depicting the location, size and dimensions of the proposed activity, as well as the location of delineated waters of the U.S. on the Site

The plan-view and cross-section view drawings contain the following

Title block: ☒ Yes ☐ No

Legend and scale: ☒ Yes ☐ No

Amount (in cubic yards) of fill in Corps jurisdiction (including permanent and temporary fills/structures): ☐ Yes ☒ No

Area (in acres) of fill in Corps jurisdiction (including permanent and temporary fill structures): ☐ Yes ☒ No

The ordinary high water mark (non-tidal waters) or mean high water mark and high tide line (tidal waters) shown in feet based on National Geodetic Vertical Datum (NGVD) or other appropriate reference elevation: ☒ Yes ☐ No

Do all drawings follow the South Pacific Division February 2016, *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program*, or most recent update ☒ Yes ☐ No

If no, describe why this requirement is proposed to be waived):

4. Photographs (Regional Condition A(1)(c))

Have you enclosed numbered and dated pre-project color photographs showing a representative sample of waters proposed to be impacted on the site, and all waters of the U.S. proposed to be avoided on and immediately adjacent to the project site?

☒ Yes ☐ No

Is the compass angle and position of each photograph identified on the plan-view drawing(s) identified in Box 3?

☐ Yes ☒ No

5. Essential Fish Habitat (EFH) (Regional Condition A(2))

☐ **N/A. The proposed activity will not occur in areas designated as EFH.** (skip to Box 6)

☒ **The proposed activity will occur in areas designated as EFH and an EFH assessment and extent of proposed impacts to EFH is enclosed.**

6. Waiver of linear foot limitations (Regional Condition A(7))

(for NWPs 13, 21, 29, 39, 40, 42, 43, 44, 50, 51, 52, and 54)

☒ **The proposed activity would not require a waiver of the linear foot limitations for NWPs 13, 21, 29, 39, 40, 42, 43, 44, 50, 51, 52, or 54.** (skip to Box 7)

a. A narrative description of the stream (including known information on: volume and duration of flow; the approximate length, width, and depth of the waterbody and characteristics observed associated with an Ordinary High Water Mark (e.g. bed and bank, wrack line or scour marks); a description of the adjacent vegetation community and a statement regarding the wetland status of the adjacent areas (i.e. wetland, non-wetland); surrounding land use; water quality; issues related to cumulative impacts in the watershed, and; any other relevant information)**:**

N/A

b. Analysis of the proposed impacts to the waterbody, in accordance with General Condition 32 and Regional Condition B(1):

N/A

c. Measures taken to avoid and minimize losses to waters of the U.S., including other methods of constructing the proposed activity(s):

N/A

d. A compensatory mitigation plan describing how the unavoidable losses are proposed to be offset, in accordance with 33 CFR § 332:

N/A

7. Activities in the San Francisco Bay diked baylands (Regional Condition B(1))

☒ **The proposed activity would not take place in waters or wetlands of the U.S. that are within the San Francisco Bay diked baylands.** (skip to Box 8)

☐ **The proposed activity would take place in waters or wetlands of the U.S. that are within the San Francisco Bay diked baylands.**

Information on how avoidance and minimization of waters or wetlands are taken into consideration to the maximum extent practicable:

N/A

8. Activities in the Santa Rosa Plain (Regional Condition B(2))

☒ **The proposed activity would not take place in waters or wetlands of the U.S. that are within the Santa Rosa Plain.** (skip to Box 9)

☐ **The proposed activity would take place in waters or wetlands of the U.S. that are within the Santa Rosa Plain:**

Information on how avoidance and minimization of waters or wetlands are taken into consideration to the maximum extent practicable:

N/A

9. Activities in Eelgrass Beds (Regional Condition B(3))

☒ **The proposed activity would not take place within or adjacent to Eelgrass Beds.** (skip to Box 10)

☐ **The proposed activity would take place within in adjacent to Eelgrass Beds:**

Extent of the proposed impacts to Eelgrass Beds:

N/A

The following documents are enclosed:

☐ Compensatory Mitigation Plan

☐ Habitat Assessment

10. Nationwide Permit 3 Activities (Regional Conditions C(3))

☒ **The proposed activity would not involve maintenance activities under Nationwide Permit 3.** (skip to Box 11)

a. Excavation equipment in waters of the U.S.

☐ **All excavation equipment associated with the NWP 3 activity will occur from an upland site** (select and Skip to Box 11(b))

- ☐ The excavation equipment will work from the top of the bank
- ☐ The excavation equipment will work from road bed of a bridge or culverted crossing
- ☐ The excavation equipment will work from:

☐ **Excavation equipment will be used within waters of the U.S.**

Explanation as to the need to place excavation equipment in waters of the U.S.:

Statement of any additional necessary fill (e.g. cofferdams, access road, fill below the ordinary high water mark for a staging area, etc.):

b. Activities in special aquatic sites

☐ **The proposed maintenance activity would not occur in a special aquatic site.** (skip to Box 12)

☐ **The proposed maintenance activity would occur in a special aquatic site.**

Explanation of why the special aquatic site cannot be avoided:

Measures to be taken to minimize impacts to the special aquatic site:

11. Nationwide Permit 11 Activities (Regional Condition C(11))

☒ **The proposed activity would not involve temporary recreational structure(s) under NWP 11.** (skip to Box 12)

☐ **The proposed activity would not involve temporary structure(s) in wetlands or vegetated shallow water areas.** (Skip to Box 12)

☐ **The proposed activity would involve temporary structure(s) in wetlands or vegetated shallow areas:**

Type of habitat affected by the structure(s):

Areal extent of habitat affected by the structure(s):

12. Nationwide Permit 13 Activities (Regional Condition C(13))

☒ **The proposed activity would not involve bank stabilization activities under NWP 13.** (skip to Box 13)

a. Vegetation Removal

☐ **The proposed activity would not involve the removal of wetland vegetation or submerged, rooted, aquatic plants over a cumulative area greater than 1/10-acre or 300 linear feet.** (Skip to Box 13(b))

☐ **The proposed activity would involve the removal of wetland vegetation or submerged, rooted, aquatic plants over a cumulative area greater than 1/10-acre or 300 linear feet.**

Type of vegetation to be removed:

Extent of the proposed removal of vegetation (e.g., areal dimension or number of trees):

b. Effects of the bank stabilization activity:

Effects of the proposed bank stabilization activity on the stability of the opposite side of the streambank (if it is not part of the stabilization activity):

Effects of the proposed bank stabilization activity on adjacent properties upstream and downstream of the activity:

c. Disposal of excess material:

☐ **The proposed bank stabilization activity would not involve disposal of excess excavated material.** (Skip to Box 12(d))

☐ **The proposed bank stabilization activity would involve the disposal of excess excavated material.**

Location of the proposed disposal site:

d. Structure or modifications beneficial to fish and wildlife:

☐ **The proposed bank stabilization activity would incorporate structures or modification beneficial to fish and wildlife. See the project description.**

☐ **The proposed bank stabilization activity would not incorporate structure or modification beneficial to fish and wildlife. See the project description.**

Information to demonstrate why incorporation of structures or modifications beneficial to fish and wildlife were not considered practicable:

13. NWP 14 Activities (Regional Condition C(14))

☒ **The proposed activity would not involve linear transportation projects under NWP 14.** (skip to Box 14)

a. Bank stabilization activities

☐ **The proposed linear transportation project would not involve bank stabilization.** (skip to Box 13(b))

☐ **The proposed linear transportation project would involve less than 300 linear feet of bank stabilization.** (skip to Box 13(b))

☐ **The proposed linear transportation project would involve more than 300 linear feet of bank stabilization.**

Effects of the proposed bank stabilization activity on the stability of the opposite side of the streambank (if it is not part of the stabilization activity):

Effects of the proposed bank stabilization activity on adjacent properties upstream and downstream of the activity:

☐ **The proposed bank stabilization activity would incorporate structures or modification beneficial to fish and wildlife. See the project description.**

☐ **The proposed bank stabilization activity would not incorporate structures or modification beneficial to fish and wildlife. See the project description.**

Information to demonstrate why incorporation of structures or modifications beneficial to fish and wildlife were not considered practicable:

b. Previous segments within the same linear transportation project

☐ **NWP 14 has not been used to authorize previous project segments within the same linear transportation project.** (skip to Box 14)

☐ **NWP 14 has been used to authorize previous project segments within the same linear transportation project.**

Justification demonstrating that the cumulative impacts of the proposed and previously authorized segments do not result in more than minimal impacts to the aquatic system:

14. NWP 23 Activities (Regional Condition C(23))

☒ **The proposed activity would not involve approved categorical exclusions under NWP 23.** (skip to Box 15)

a. Required attachments

The following information is enclosed:

☐ A copy of the Federal Categorical Exclusion (Cat/Ex) document signed by the appropriate federal agency.

☐ A copy of the Categorical Exclusion (Cat/Ex) document signed by a state or local agency representative, as well of copies of all documentation authorizing alternative agency signature.

☐ A copy of the jurisdictional delineation performed by qualified specialists showing the project limits and the location (delineated boundaries) of Corps jurisdiction within the overall project limits.

☐ Maps showing the locations of potentially permanent and temporary project impacts to areas within Corps jurisdiction.

b. Corps authority:

c. Conditions described in the Cat/Ex and/or attachments outlining measures that must be taken prior to, during, or after project construction to minimize impacts to the aquatic environment: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

d. Clear and concise description of all project impacts: (if this information is provided as an attachment, identify and provide the date/name of the attachment):

Quantification and description of permanent project impacts to areas within Corps jurisdiction:

Quantification and description of temporary impacts to areas within Corps jurisdiction:

Linear extent of Corps jurisdiction affected by the project:

Other project impacts not described above:

ATTACHMENT H

e. General description of activities covered by the Cat/Ex that do not require Corps authorization but are connected or related to the activities in Corps jurisdiction: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

f. Complete description of any proposed mitigation and/or restoration, including, but not necessarily limited to, location of any proposed planting, short- and long-term maintenance, proposed monitoring, success criteria, and contingency plans: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

g. Justification of how the project complies with the NWP program, including less than minimal impact to the aquatic environment and compliance with the General Conditions: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

h. Federal Highway Administration (FHWA) Cat/Ex projects

☐ **N/A, The activity is not an FHWA Cat/Ex project. (skip to Box 14(h))**

Description of how the proposed project meets the description of the Cat/Ex activities published in 23 CFR § 771.117: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

ATTACHMENT H

i. Final agency determinations regarding compliance with Section 7 of the ESA, EFH under the Magnuson-Stevens Act, and Section 106 of the NHPA: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

Section 7 of the ESA:

EFH under the Magnuson-Stevens Act:

Section 106 of the NHPA:

15. NWP 27 Activities (Regional Condition C(27))

☒ **The proposed activity would not include aquatic habitat restoration, establishment, or enhancement activities under NWP 27.** (skip to Box 16)

a. Documentation of a review of project impacts to demonstrate that the project would result in a net increase in aquatic function: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

b. Review of project impacts on adjacent properties or structures: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

c. Cumulative impacts associated with the project: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

ATTACHMENT H

16. NWP 29 Activities (Regional Condition C(29))

☒ **The proposed activity would not include residential development under NWP 29.** (skip to Box 17)

Description of low impact development concepts proposed to be used: if this information is provided as an attachment, identify here and provide the date/name of the attachment)

17. NWP 39 Activities (Regional Condition C(35))

☒ **The proposed activity would not include commercial or institutional developments under NWP 39.** (skip to Box 18)

Description of low impact development concepts proposed to be used: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

18. NWP 41 Activities (Regional Condition C(41))

☒ **The proposed activity would not include reshaping existing drainage ditches under NWP 41.** (skip to Box 19)

Explanation of the project's benefit to water quality and a statement demonstrating the need for the project: (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

Projects benefit to water quality:

Need for the project:

19. NWP 42 Activities (Regional Condition C(42))

☒ **The proposed activity would not include recreational facilities under NWP 42.**

☐ **No buildings are proposed to be constructed in waters of the U.S., including wetlands associated with NWP 42.**

☐ **Buildings are proposed to be constructed in waters of the U.S., including wetlands associated with NWP 42.**

Information to demonstrate there is no on-site practicable alternative that is less environmentally damaging. (if this information is provided as an attachment, identify here and provide the date/name of the attachment)

ATTACHMENT H

Compliance with San Francisco Regional Conditions

This checklist is intended to assist prospective permittees with documenting compliance with all San Francisco District Regional Conditions, as required by Regional Condition B(1). This checklist does not include the full text of each regional condition. Please refer to the *San Francisco District Regional Conditions* (http://www.spn.usace.army.mil/Missions/Regulatory/RegulatoryOverview/Nationwide.aspx) when completing this checklist.

Please check the box to indicate you have read and have/will comply with the Regional Condition and provide a rationale on how you have/will comply with the Regional Condition.

Check	Regional Condition	Rationale for Compliance
☒	**A(1). Additional PCN Requirements:**	See Boxes 1 through 4
☐	**A(2). Designated EFH:** Permittee shall submit a PCN for activities in areas designated as EFH. The PCN shall include an EFH assessment and extent of proposed impacts	See Box 5
☒	**A(3). Tribal Lands:** Permittee shall submit a PCN for activities located on Tribal Lands.	Project site is not located on tribal lands.
☒	**A(4). Lead Federal Agency:** Must submit documentation for compliance with Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management Act, and National Historic Preservation Act if the Corps designates another Federal agency as the lead for compliance with these laws.	US Army Corps is the federal lead agency.
☒	**A(5). Linear Transportation Crossings.** For activities in waters of the U.S. that are suitable habitat for Federally-listed fish species, including designated critical habitat, permittee shall design new linear transportation crossings to ensure passage of all life stages and/or spawning of fish is not hindered. In these area, the permittee shall employ bridge designs that span the stream or river, or designs that use a bottomless arch culvert with a natural stream bed, unless determined to be impracticable by the Corps.	N/A
☒	**A(6). Compensatory Mitigation:** Permittee must complete the construction of compensatory mitigation before or concurrent with construction of authorized activity and submit proof of purchase of mitigation bank or in-lieu fee program credits prior to commencement of construction of the authorized activity.	See Attachment 3 Avoidance and Mitigation Measures.
☒	**A(7). Waiver of linear foot limit for NWPs 13, 21, 29, 39, 40,42, 43, 44, 50, 51, 52, and 54:** Request for waiver must contain ☐ Narrative description of the stream; ☐ Analysis of the proposed impacts to the waterbody; ☐ Measures taken to avoid and minimize losses to waters of the U.S. ☐ Compensatory mitigation plan describing how the unavoidable losses are proposed to be offset.	See Box 6.

Check	Regional Condition	Rationale for Compliance
☒	**B(1). <u>San Francisco Bay diked baylands:</u>** PCN is required for any activity permitted by NWP if it will take place in waters or wetlands of the U.S. within the San Francisco Bay diked baylands. The notification shall explain how avoidance and minimization of losses of waters or wetlands are taken into consideration to the maximum extent practicable (see Box 7).	Project site is not within San Francisco Bay diked baylands.
☒	**B(2). <u>Santa Rosa Plain:</u>** PCN is required for any activity permitted by NWP if it will take place in the Santa Rosa Plain. The notification will explain how avoidance and minimization of losses of waters or wetlands are taken into consideration to the maximum extent practicable (see Box 8).	Project site is not within the Santa Rosa Plain.
☒	**B(3). <u>Eelgrass Beds:</u>** PCN is required for any activity permitted by NWP if it will take place within or adjacent to Eelgrass Beds. The PCN must contain a compensatory mitigation plan, habitat assessment, and extent of proposed project impacts (see Box 9).	Project site is not within or adjacent to Eelgrass Beds.
☒	**C(3)(1). <u>NWP 3, Maintenance:</u>** To the extent practicable, excavation equipment shall work from an upland site. If it is not practicable to work from an upland site, or if working from the upland site would cause more environmental damage than working in the stream channel, the excavation equipment can be located within the stream channel but must minimize disturbance. Notification must contain (see Box 10(a)) ☐ Explanation as to the need to place excavation equipment in waters of the U.S. ☐ Statement of any additional necessary fill	N/A
☒	**C(3)(2). <u>NWP 3, Maintenance:</u>** If the activity is proposed in a special aquatic site, the notification shall contain (See Box 10(b)): ☐ Explanation of why the special aquatic site cannot be avoided ☐ Measures taken to minimize impacts to the special aquatic site.	N/A
☒	**C(11)(1). <u>NWP 11, Temporary Recreational Structures:</u>** Notification is required if any temporary structures proposed in wetlands or vegetated shallow water areas. The notification shall contain (see Box 11): ☐ Type of habitat. ☐ Areal extent affected by the structure(s).	N/A
☒	**C(12)(1). <u>NWP 12, Utility Line Activities:</u>** Excess material from a trench associated with utility line construction shall be disposed of at an upland site away from any wetlands or other waters of the U.S.	N/A
☒	**C(12)(2). <u>NWP 12, Utility Line Activities:</u>** NWP does not authorize the construction of substation facilities.	N/A

Check	Regional Condition	Rationale for Compliance
☒	**C(13)(1). <u>NWP 13, Bank Stabilization:</u>** Notification is required for all activities stabilizing greater than 300 linear feet of channel. Where the proposed removal of wetland vegetation or submerged, rooted, aquatic plants is over a cumulative area greater than 1/10-acre or 300 linear, the Corps shall be notified. The notification shall: ☐ Include the type of vegetation of the proposed removal (see Box 12(a)); ☐ Include the extent (e.g. areal dimension or number of trees) of the proposed removal (see Box 12(a)); ☐ Address the effect of the bank stabilization on the stability of the opposite side of the streambank (if it is not part of the stabilization activity) (see Box 12(b)); ☐ Address the effect of the bank stabilization on adjacent property upstream and downstream (see Box 12(b)).	N/A
☒	**C(13)(2). <u>NWP 13, Bank Stabilization:</u>** Permit allows excavating a toe trench in waters of the U.S., and, if necessary, to use the material for backfill behind the stabilizing structure. Excess material is to be disposed of in a manner that will have only minimal impacts to the aquatic environment. The notification shall include location of the disposal site (see Box 12(c)).	N/A
☒	**C(13)(3). <u>NWP 13, Bank Stabilization:</u>** For man-made banks, roads, or levees damage by storms or high flow, the one cubic yard per running foot limit is counted only for that additional fill which encroaches (extends) beyond the pre-flood or pre-storm shoreline condition of the waterway. It is not counted for the fill that would be placed to reconstruct the original dimensions of the eroded, man-made shoreline.	N/A
☒	**C(13)(4). <u>NWP 13, Bank Stabilization:</u>** For natural berms and banks, the one cubic yard per running foot limit applies to any added armoring.	N/A
☒	**C(13)(5). <u>NWP 13, Bank Stabilization:</u>** To the maximum extent practicable, new or additional bank stabilization must incorporate structures or modifications beneficial to fish and wildlife. Where these structures or modifications are not used, the applicant shall demonstrate why they were not considered practicable (see Box 12(d)).	N/A
☒	**C(14)(1). <u>NWP 14, Linear Transportation Projects:</u>** Notification is required for all projects filling greater than 300 linear feet of channel. For activities involving greater than 300 linear feet of bank stabilization, the project proponent shall (see Box 13(a)): ☐ Address the effect of the bank stabilization on the stability of the opposite side of the streambank (if it is not part of the stabilization activity) ☐ Address the effect of the bank stabilization on adjacent property upstream and downstream.	N/A

Check	Regional Condition	Rationale for Compliance
☒	**C(14)(2). <u>NWP 14, Linear Transportation Projects:</u>** This permit does not authorize construction of new airport runways and taxiways.	N/A
☒	**C(14)(3). <u>NWP 14, Linear Transportation Projects:</u>** If the NWP has been used to authorize previous project segments within the same linear transportation project, justification must be provided demonstrating that the cumulative impacts do not result in more than minimal impacts. (See Box 13(b))	See Box 13(b).
☒	**C(14)(4). <u>NWP 14, Linear Transportation Projects:</u>** To the maximum extent practicable, new or additional bank stabilization for the crossing must incorporate structure or modifications beneficial to fish. Where these structures are not used, applicant shall demonstrate why they were not considered practicable. (see Box 13(a))	N/A
☒	**C(23)(1). <u>NWP 23. Approved Categorical Exclusions:</u>** Use of this NWP requires notification. The notification shall include: ☐ A copy of the Cat/Ex document signed by the appropriate Federal agency. If the Cat/Ex is signed by a state and local agency, then copies of all documentation authorizing alternative agency signature shall be provided (see Box 14(a)); ☐ Written description of Corps authority (see Box 14(b)); ☐ List of conditions described in Cat/Ex and/or attachment outlining measures to minimize impacts (See Box 14(c)); ☐ Copy of the jurisdictional delineation showing project limits and location of Corps jurisdiction within the overall project limits (see Box 14(a)); ☐ Maps showing locations of permanent and temporary impacts (see Box 14(a)); ☐ Clear and concise description of all project impacts (see Box 14(d)); ☐ General description of activities covered by the Cat/Ex that do not require Corps authorization but are connected or related to the activities in Corps jurisdiction (see Box 14(e)); ☐ Complete description of any proposed mitigation and/or restoration (see Box 14(f)); ☐ Written justification of how the project complies with the NWP Program (see Box 14(g)); ☐ For Federal Highway Administration Cat/Ex project, the notification should describe how the proposed project meets the description of the Cat/Ex activities published in 23 CFR § 771.117 (see Box 14(h)).	N/A

Check	Regional Condition	Rationale for Compliance
☒	**C(23)(2). NWP 23. Approved Categorical Exclusions:** Only activities specifically identified in the Cat/Ex project description will be covered by NWP 23. If other activities not described in the Cat/Ex project description will be performed, these activities must receive separate NWP authorizations.	N/A
☒	**C(23)(3). NWP 23. Approved Categorical Exclusions:** Notification must include a copy of the signed Cat/Ex document and final agency determination regarding compliance with Section 7 ESA, EFH under the Magnuson-Stevens Act, and Section 106 NHPA (see Box 14(i)).	N/A
☒	**C(27)(1). NWP 27. Aquatic Habitat Restoration, Establishment, and Enhancement Activities.** Notification must include: ☐ Documentation of a review of project impacts to demonstrate that at the conclusion of the work that the project would result in a net increase in aquatic functions (see Box 15(a)); ☐ Review of project impacts on adjacent properties or structures (see Box 15(b)); ☐ Discussion of cumulative impacts associated with the project (see Box 15(c)).	N/A
☒	**C(29)(1). NWP 29. Residential Developments.** When discharge of fill results in the replacement of waters of the U.S. with impervious surfaces, the development shall incorporate low impact development concepts (LID) to the extent practicable. A description of LID concepts proposed shall be included with the permit application (see Box 16).	N/A
☒	**C(29)(2). NWP 29. Residential Developments.** Use of this NWP is prohibited within the San Francisco Bay diked baylands.	N/A
☒	**C(33)(1). NWP 33. Temporary Construction, Access, and Dewatering.** Access roads shall be the minimum width necessary and shall be designed to minimize changes to the hydraulic flow characteristics of the stream and degradation of water quality. The following Best Management Practices shall be followed to the maximum extent practicable: ☐ Road shall be property stabilized and maintained during and following construction to prevent erosion; ☐ Construction of the road fill shall occur in a manner that minimizes the encroachment of trucks, tractors, bulldozers, or other heavy equipment within waters of the United States (including adjacent wetlands) that lie outside the lateral boundaries of the fill itself.	N/A
☒	**C(33)(2). NWP 33. Temporary Construction, Access, and Dewatering.** Vegetative disturbance in waters of the U.S. shall be kept to a minimum.	N/A

Check	Regional Condition	Rationale for Compliance
☒	**C(33)(3). NWP 33. Temporary Construction, Access, and Dewatering.** Borrow material shall be taken from upland sources whenever feasible.	N/A
☒	**C(33)(4). NWP 33. Temporary Construction, Access, and Dewatering.** Stream channelization is not authorized.	N/A
☒	**C(35)(1). NWP 35. Maintenance Dredging of Existing Basins.** Use of this NWP will require notification to the Corps. The notification information should be provided on the Consolidated Dredging-Dredged Material Reuse/Disposal Application. This application and instructions for its completion can be found at: http://www.spn.usace.army.mil/Missions/Dredging-Work-Permits/Application/. The information must include the location of the proposed upland disposal site. A jurisdictional delineation of the proposed upland disposal site prepared in accordance with the current method required by the Corps may also be required.	N/A
☒	**C(35)(2). NWP 35. Maintenance Dredging of Existing Basins.** The U.S. Coast Guard will be notified by the permittee at least 14 days before dredging commences if the activity occurs in navigable waters of the U.S. (Section 10 waters).	N/A
☒	**C(35)(3). NWP 35. Maintenance Dredging of Existing Basins.** The permittee will be required to submit the following information to the Corps: ☐ Dredge operation plan for approval: no earlier than 60 calendar days and no later than 20 calendar days before proposed commencement of dredging: ☐ Pre-Dredge Survey: no earlier than 60 calendar days and no later than 20 calendar days before proposed commencement of dredging; ☐ Solid Debris Management Plan: no earlier than 60 calendar days and no later than 20 calendar days before proposed commencement of dredging ☐ Post-Dredge Survey: within 30-days of last disposal activity. A copy of the post-dredge survey should be sent to the National Ocean Service for chart updating. ☐ The permittee or dredge contractor shall inform the Corps when (1) a dredge episode commences, (2) dredging is suspended, (3) when dredging is restarted, and (4) when dredging is complete. Each notification should include the Corps file number.	N/A

Check	Regional Condition	Rationale for Compliance
☒	**C(39)(1). NWP 39. Commercial and Institutional Developments.** When discharge of fill results in the replacement of waters of the U.S. with impervious surfaces, the development shall incorporate low impact development concepts (LID) to the extent practicable. A description of LID concepts proposed shall be included with the permit application (see Box 17).	N/A
☒	**C(39)(2). NWP 39. Commercial and Institutional Developments.** Use of this NWP is prohibited within the San Francisco Bay diked baylands.	N/A
☒	**C(40)(1). NWP 40. Agricultural Activities.** This NWP does not authorize discharge of fill into the channel of a perennial or intermittent watercourse that could impede high flows. This limitation does not apply to watercourses that flow only when there is an irregular, extraordinary flood event.	N/A
☒	**C(41)(1). NWP 41. Reshaping Existing Drainage Ditches.** Compensatory mitigation may be required if the Corps determines there will be a detrimental impact to aquatic habitat.	N/A
☒	**C(41)(2). NWP 41. Reshaping Existing Drainage Ditches.** Notification to the Corps is required if the applicant proposes to re-grade, discharge, install channel lining, or redeposit fill material.	N/A
☒	**C(41)(3). NWP 41. Reshaping Existing Drainage Ditches.** The notification shall include an explanation of the projects benefit to water quality and a statement demonstrating the need for the project. (see Box 18)	See Box 18.
☒	**C(42). Recreational Facilities.** If buildings are proposed to be built in waters of the U.S., including wetlands, the applicant must demonstrate that there is no on-site practicable alternative that is less environmentally damaging. (see Box 19)	See Box 19.

Attachment 2

Project & Impact Information

Attachment 2 Project and Impact Information

The proposed Ellis Creek Water Recycling (ECWR) Facility Outfall Replacement Project (project) is applying for coverage under Nationwide Permit (NWP) 7-Outfall Structures and Associated Intake Structures. The project would remove the existing outfall structure, abandon the existing effluent pipeline in-place, and replace it with a new outfall structure located adjacent to the ECWR Facility. The project is described in more detail below.

Project Background

The City owns and operates the Ellis Creek Water Recycling Facility (ECWR Facility), located just south of the City (Figure 1, Project Vicinity). The ECWR Facility provides secondary treatment for wastewater from the City of Petaluma and adjacent unincorporated areas of Sonoma County. A portion of the secondary treated wastewater is pumped to the Facility's tertiary treatment system to produce recycled water. Flows not diverted for tertiary treatment are directed through a series of oxidation ponds and constructed wetlands for additional treatment. Then the water is chlorinated and flows to polishing wetlands or a chlorine contact chamber. Wastewater from the chlorine contact chamber and/or polishing wetlands is dechlorinated and discharged to the Petaluma River through a submerged outfall.

The existing outfall pipe extends approximately 3,100 linear feet through a tidal marsh, from the ECWR Facility to the Petaluma River. During an inspection in September 2016, the City discovered longitudinal cracks along the top and bottom of the pipe, separating pipe joints, and sections of pipe that have been flattened into an oval shape. To address this structural integrity issue, the City is proposing to construct a new outfall pipeline and outfall structure in the tidal slough within and adjacent to the southern corner of the existing Facility. An emergency contingency outfall bypass was installed at this location in 2017 but has not been used except for testing.

The City would divert all future wastewater effluent discharges to a tidal slough located adjacent to the southeast corner of the ECWR Facility via a new outfall pipeline and outfall structure. In addition, the existing Petaluma River outfall, as well as the emergency pipeline and outfall, would be removed. Refer to Figures 2 and 3 for the location of these improvements.

Project Description

The City would divert all future wastewater effluent discharges to a tidal slough located adjacent to the southeast corner of the ECWR Facility via a new outfall pipeline and outfall structure. In addition, the existing Petaluma River outfall, as well as the emergency pipeline and outfall, would be removed. Refer to Figures 2 and 3 for the location of these improvements.

Replacement Outfall

Pipeline and Outfall Structure

An approximately 180-foot-long outfall pipe would be installed from Junction Box 2, adjacent to the Chemical Storage Facility, to the tidal slough (refer to Figure 3 Plan and Profile). The first approximately 80 feet will be buried. At the point the pipeline reaches the bank of the slough, it would exit the bank, be installed on the bottom of the slough where it would make two 45-degree turns to become parallel with the slough, for the remaining 100 feet. At each 45-degree turn there would be a 60-square-foot support structure. The outfall pipeline would be between 42 and 46 inches in diameter, terminate with a duckbill or similar check valve, and include an outfall support structure rising above the anticipated 100-year flood elevation. The outfall support structure near the discharge point would be constructed within the bed of the tidal slough and have a footprint of approximately 80 square feet.

Slope Protection

Slope protection improvements, likely riprap, would be installed along the bed and banks of the slough beneath and immediately downstream of the proposed outfall structure to protect the slough from erosion during discharges. The slope protection would include approximately 138 cubic yards placed along

approximately 50 linear feet, and covering approximately 1,000 square feet, of the slough channel. Prior to placement of the riprap, the slough would be excavated to a depth of approximately 2 feet, removing approximately 75 cubic yards of material. Slope protection would be installed at low tide with a sediment curtain installed around the work area.

Dewatering Slough

The slough would require dewatering for the installation of the outfall structure. Coffer dams would be installed upstream and downstream of the work area, then water would be pumped out between the two dams. Depending on the quantity of water, it may be pumped to Pond 10 or below the downstream coffer dam. It is estimated approximately 70 linear feet, and 700 square feet, of the slough would be dewatered for approximately 6 weeks

Existing Pipeline and Outfall

The existing 42-inch outfall pipeline would be abandoned in place. The existing outfall structure in the Petaluma River would be removed and the pipeline capped. Both above and below water appurtenances would be removed. Approximately 65 feet of pipe along the bottom of the riverbed would be removed from the existing outfall structure to the edge of the marsh, removing that portion of the structure within the dredge footprint of the Petaluma River. The existing outfall pipeline from the ECWR Facility through the marsh would be abandoned in place, with the end of the pipe sealed or capped with a concrete plug or flexible plastic end cap.

Emergency Pipeline Outfall

The 42-inch emergency outfall pipeline and structure, installed in 2017, would be dismantled and removed. The emergency outfall lays on the ground except where it crosses beneath an ECWR Facility road, covered by road plates. Once the pipeline is removed, the road would be repaired.

Project Construction

The outfall pipe would be installed using an open-trench construction method. The outfall structure, including headwall and wing walls, would sit above ground and have an estimated footprint of 100 square feet.

Demolition and removal of the existing outfall would occur via a barge from the Petaluma River, and be performed by divers.

Construction Duration and Hours

Construction of the relocated outfall would occur in 2021 and last approximately three months. Construction within 250 feet of rail habitat will be limited to October 1 to January 31.

As allowed in Section 22-301 of the City of Petaluma's Zoning Ordinance, construction work hours would be 7:00 a.m. to 10:00 p.m. on weekdays and 9:00 a.m. to 10:00 p.m. on weekends and holidays.

Removal of the existing Petaluma River outfall would last 3 to 5 days and occur during the appropriate in-water work window from September 1st to October 15th.

Construction Equipment

A variety of equipment would be used to construct the project. This could include an excavator, backhoe, loader, dump truck, and paver.

Construction Staging Area and Access

Staging would occur in the paved areas surrounding the Chlorine Contact Basin. Access to the site would occur from Lakeville Highway at the gated drive in the far eastern corner of the ECWR Facility. Left-hand turns leaving the facility would not be allowed before 9 a.m. or after 4 p.m.

Impact Information

Demolition and Removal

Demolition of the emergency outfall would remove approximately 105 square feet (11 CY) of fill from within the wetland area and approximately 70 square feet (7.1 CY) within the slough. Removal of the existing Petaluma River outfall structure and approximately 65 linear feet of pipeline would result in removal of approximately 315.5 square feet (39 CY) of fill, with the breakdown of individual outfall components provided in Table 1 below.

Table 1 Demolition and Removal

Demolition and Removal								
	Wetlands (Below MHW)				Waters/Slough (Below MHW)			
	Square Feet	Acres	Cubic Yards	Linear Feet	Square Feet	Acres	Cubic Yards	Linear Feet
Emergency Outfall								
Pipeline (42-inch)	-105	-0.002	-11	30	-70	-0.002	-7.1	20
Petaluma River Outfall								
Creosote Wood Piles (7)	N/A	N/A	N/A	N/A	-5.5	-	-2.5	N/A
Outfall Structure	N/A	N/A	N/A	N/A	-82.5	-0.002	-7.1	20
Pipeline (42-inch)	N/A	N/A	N/A	N/A	-227.5	-0.005	-23.2	N/A
Total	**-105**	**-0.002**	**-11**	**30**	**-385.5**	**-0.009**	**-39.9**	**115**

*The linear footage of the pipeline is included in the outfall structure linear footage quantity.

Temporary & Permanent Impacts

The City would require temporary access into the slough in order to install the new outfall pipeline and associated structures. Approximately 300 square feet of the marsh area would be temporarily impacted during construction. Approximately 83 CY of soil would be temporarily removed to install the pipeline. Soil would then be used to rebury the pipeline. Approximately 700 square feet within the slough would be temporarily dewatered (see Table 2 below).

Table 2 Temporary Impacts

Temporary Impacts							
	Wetlands (Below MHW)			Waters (Below MHW)			
	Square Feet	Acres	Cubic Yards	Square Feet	Acres	Cubic Yards	Linear Feet
Dewatering Slough	N/A	N/A	N/A	700	0.016	194.4	70
Construction Access	300	0.007	83.3	N/A	N/A	N/A	N/A
Total	**300**	**0.007**	**83.3**	**700**	**0.016**	**194.4**	**70**

Approximately 140 square feet (16.3 CY) of the new pipeline would be within the wetland area and approximately 160 square feet (18.6 CY) would be within the slough for a distance of 40 linear feet. Three structures, consisting of two piles and a top cap each, would be installed to anchor the new pipeline. Two smaller support structures would anchor the pipeline at each bend. The first would be installed within the wetland area and the second in the slough, resulting in approximately 8 square feet of permanent fill from pile placement for each structure. The third support structure would anchor the outfall and result in approximately 16 square feet of fill from pile placement. Caps connecting the two piles at each support

would be above the mudline but below the MHW. Rock slope protection would also be installed at the discharge point, resulting in approximately 1,000 square feet (231.5 CY) of fill.

Table 3 Permanent Impacts

Permanent Impacts							
	Wetlands (Below MHW)			Waters (Below MHW)			
	Square Feet	*Acres*	*Cubic Yards*	*Square Feet*	*Acres*	*Cubic Yards*	*Linear Feet*
Outfall Pipeline (including discharge valve)	140	0.003	16.3	160	0.004	18.6	40
Support Structures (2)							
Piles (4)	8	-	1.2	8	-	1.2	N/A
Cap (2)	30	0.0005	4.5	30	0.0005	4.5	N/A
Outfall Support Structure							
Piles (2)	N/A	N/A	N/A	16	-	6.3	N/A
Cap (1)	N/A	N/A	N/A	80	0.002	11.9	N/A
Rip Rap	N/A	N/A	N/A	1,000	0.023	231.5	50
TOTAL	**178**	**0.004**	**22**	**1,294**	**0.03**	**274**	**90**

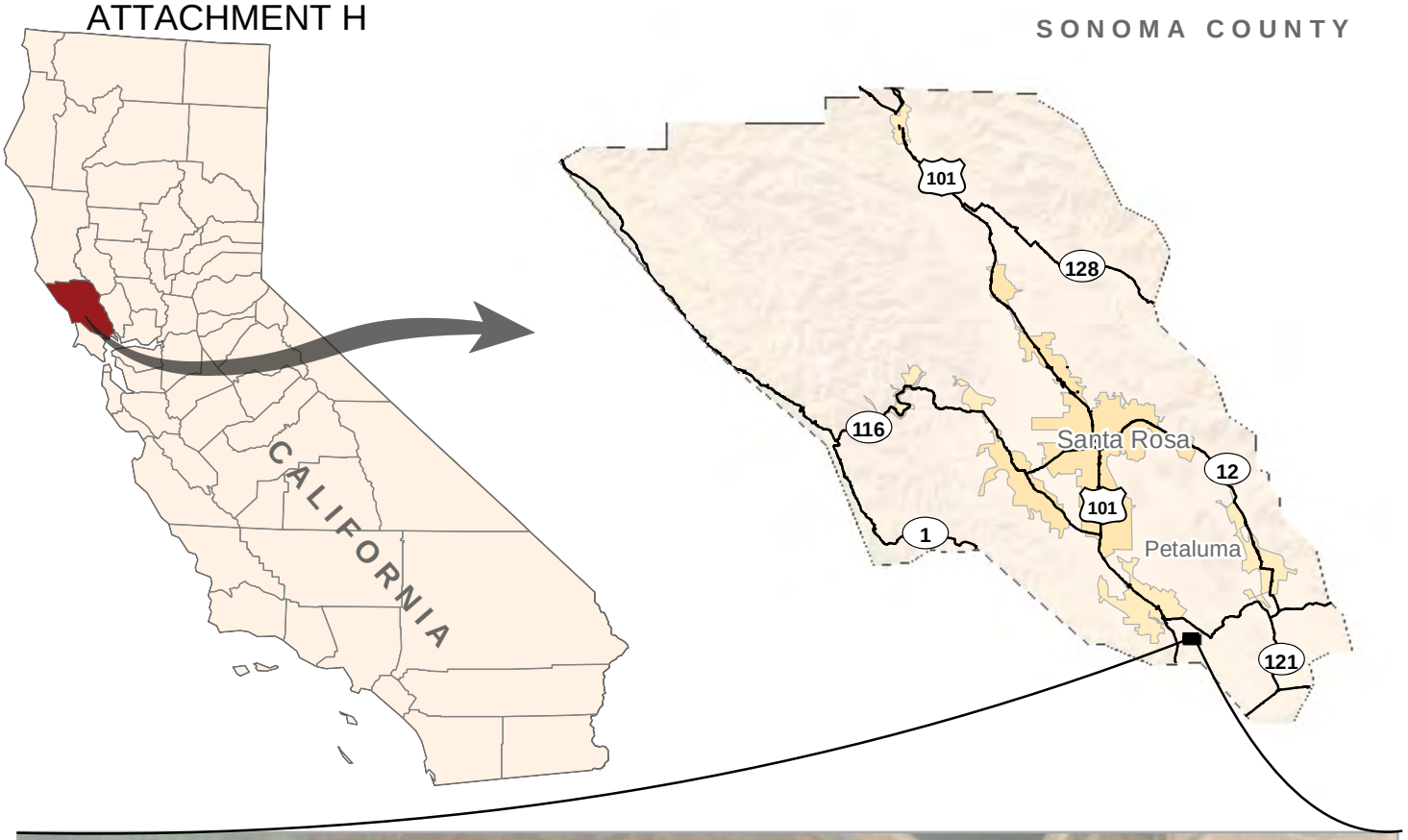
Table 4 Summary of Net Permanent Impact

	Wetlands			**Waters**		
	Square Feet	*Acres*	*Cubic Yards*	*Square Feet*	*Acres*	*Cubic Yards*
Existing Petaluma Outfall	N/A	N/A	N/A	-315.5	-0.007	-32.8
Emergency Outfall	-105	-0.002	-11	-70	-0.002	-7.1
New Outfall	178	0.004	22	1,294	0.03	274
NET TOTAL	**73**	**0.002**	**11**	**908.5**	**0.021**	**234.1**

Photo 1: View of existing emergency outfall and pipeline located in slough. Replacement outfall will be similarly located, upland portion of pipeline will be buried.

Photo 2: View of existing emergency outfall pipeline in uplands, looking west.

ATTACHMENT H



Paper Size ANSI A

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Miles

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

GHD

City of Petaluma
Ellis Creek Water Recycling Facility
Outfall Project

3890 Cypress Drive, Petaluma, CA
Vicinity

Project No. 11152197
Revision No. 1
Date 11/06/2018

FIGURE 1

C:\Users\jcurtis\Documents\01- Projects\Ellis Creek Wetland Figure\GIS\11152197_01EllisCreek_Vicinity.mxd
Print date: 05 Nov 2018 - 15:40

Created by: jcurtis

ATTACHMENT H

1 / - DETAIL
SCALE: 1"=60'

2 / - DETAIL
SCALE: 1"=60'

N

SHEET KEYNOTES

1. TREATMENT WETLANDS POND NO. 10
2. CHLORINE CONTACT BASIN
3. CHEMICAL STORAGE FACILITY
4. BISULFITE STORAGE BUILDING
5. STORAGE SHED
6. TRANSFORMER
7. JUNCTION BOX NO. 1
8. JUNCTION BOX NO. 2
9. 6' BARBED WIRE FENCE
11. DEMOLISH AND REMOVE EXISTING OUTFALL STRUCTURE, INCLUDING ALL ..... THE MUDLINE.
12. DEMOLISH AND REMOVE ALL EXISTING PIPING WITHIN THE PETALUMA RIVER AND ABOVE .....
13. ..... CONSTRUCTION.
14. SIDE CAST SEDIMENT BY SUCTION DREDGE, AS REQUIRED TO EXPOSE STRUCTURE.
15. EXISTING EMERGENCY HDPE OUTFALL. REMOVE PIPE AND OUTFALL STRUCTURE.

EX. OUTFALL STRUCTURE
SCALE: NTS

0 160' 320'

No.	Issue	Drawn	Approved	Date

Bar is one inch on original size sheet
0 1"

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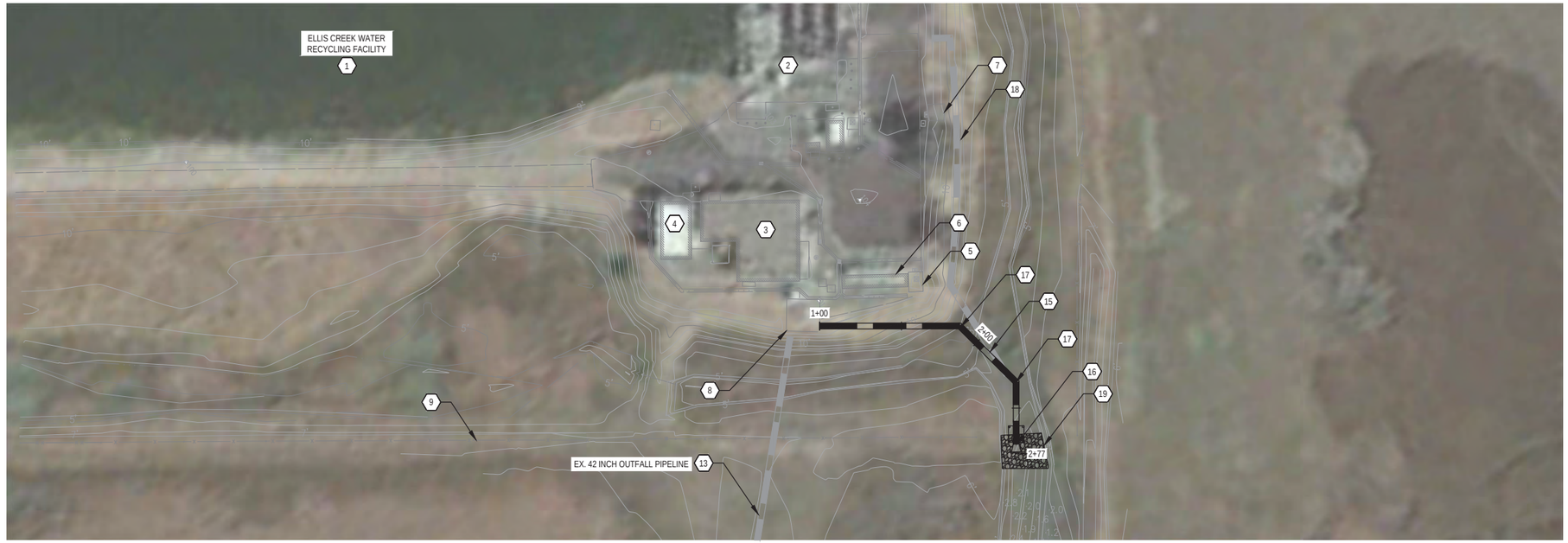
Drawn	PE	Designer	VF
Drafting Check	VF	Design Check	SD
Project Manager		Date	MARCH 2021
This document shall not be used for construction unless signed and sealed for construction.		Scale	AS SHOWN

Client CITY OF PETALUMA
Project Ellis Creek Water Recycling Facility Outfall Project
Title
Project No. 11152197
Original Size ANSI D

Figure 2 Project Location

Plot Date: 5 March 2021 - 6:05 PM Plotted By: Aaron Foscato Filename: \\ghdnet\ghd\US\Santa Rosa\Projects\11\11152197 Petaluma Environmental Support Services\06-CAD\Sheets\11152197-C101.dwg

ATTACHMENT H

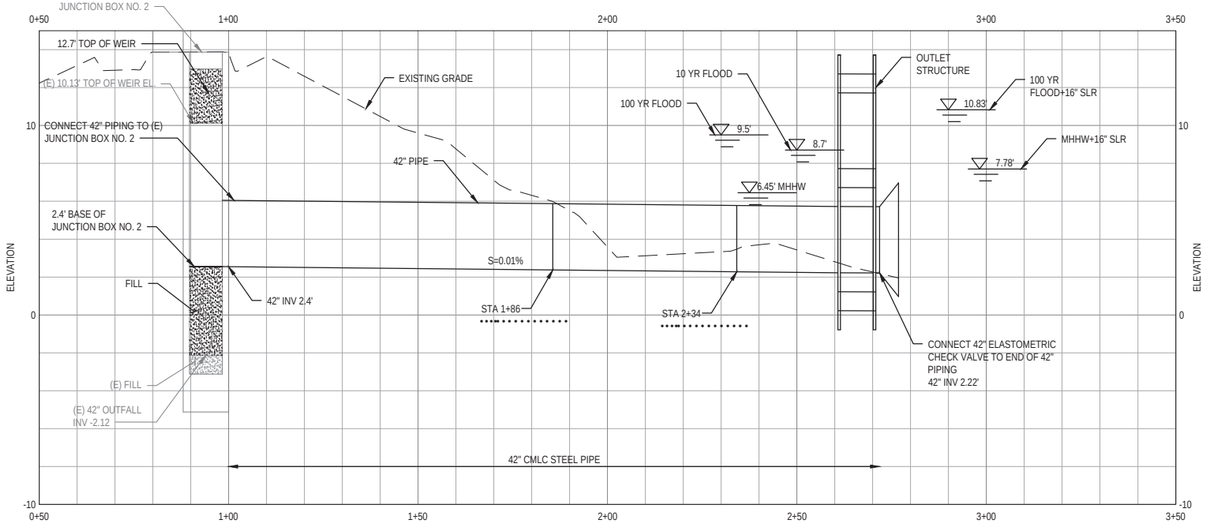


SITE PLAN

0 20' 40' 80'

SHEET KEYNOTES

1. TREATMENT WETLANDS POND NO. 10
2. CHLORINE CONTACT BASIN
3. CHEMICAL STORAGE FACILITY
4. BISULFITE STORAGE BUILDING
5. STORAGE SHED
6. TRANSFORMER
7. JUNCTION BOX NO. 1
8. JUNCTION BOX NO. 2
9. 6' BARBED WIRE FENCE
13. CONSTRUCTION.
15. 42" PIPE.
16. 42" ELASTOMETRIC CHECK VALVE.
17. 45 DEGREE BEND.
18. REMOVE (E) EMERGENCY OUTFALL PIPING AND STRUCTURE.
19. INSTALL RIP RAP.
20. TIMBER OUTLET STRUCTURE.



SITE PROFILE

0 20' 40' 80'
HORIZONTAL SCALE

0 4' 8'
VERTICAL SCALE

No.	Issue	Drawn	Approved	Date

Bar is one inch on original size sheet
0 1"

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Drawn PE	Designer VF	Client	CITY OF PETALUMA
Drafting Check VF	Design Check SD	Project	Ellis Creek Water Recycling Facility Outfall Project
Project Manager	Date MARCH 2021	Title	
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		Original Size	ANSI D

Figure 3 Preliminary Plan and Profile

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Attachment 3

Avoidance & Minimization Measures

ATTACHMENT H

Attachment 3-Avoidance and Minimization Measures

All construction-related activities performed and materials used will comply with the terms and conditions contained in the permits and approvals issued by the regulatory agencies. A City of Petaluma (City) project manager will coordinate with the contractor to ensure Project activities comply with the contract specifications, permits, and local, State, and Federal laws.

The following avoidance, minimization, and Mitigation Measures will be implemented to protect water quality, avoid indirect and direct impacts to jurisdictional waters, protect federally listed species. Although not a covered project, the criteria and work windows outlined in *Proposed Additional Procedures and Criteria for Permitting Projects under a Programmatic Determination of Not Likely to Adversely Affect Select Listed Species in California* for the 2018 NLAA Program are utilized for certain activities such as the removal of the navigation structure, including creosote piles, and working within the Petaluma River.

Measures to Avoid and Minimize Impacts to Water Quality

Pile Removal (Existing Petaluma River Outfall)

When removing piles the crane operator shall be experienced in pile removal. Piles will be removed slowly to minimize turbidity as well as sediment disturbance. The pulled pile shall be placed in a containment basin to capture any adhering sediment. This should be done immediately after the pile is initially removed from the water. The following pile removal methods may be utilized, depending on condition of the piles:

Vibratory Extraction (preferred option)

1. Extraction is the preferred method of pile removal. Vibratory extraction shall be employed first unless the pile is too decayed or short for the vibratory hammer to grip.
2. The vibratory hammer (a large mechanical device (5-16 tons)) is suspended from a crane by a cable and is activated to loosen the piling by vibrating as the piling is pulled up. The hammer is shut off when the end of the piling reaches the mudline. Vibratory extraction takes approximately 15 to 30 minutes per piling depending on piling length and sediment condition.
3. Operator will “Wake up” pile to break up bond with sediment. Vibrating breaks the skin friction bond between pile and soil and avoids pulling out a large block of soil – possibly breaking off the pile in the process. Pile shall then be removed slowly to allow sediment to slough off at, or near, the mudline.

Direct Pull (secondary option)

1. Piles would be wrapped with a choker cable or chain that is attached at the top to a crane. The crane pulls the piling directly upward, removing the piling from the sediment.
2. This method is optional if the contractor determines it to be appropriate for the substrate type, pile length, and structural integrity of the piling. Vibratory extractor must be attempted first unless there is risk of greater disturbance of sediments.

Cutting

1. Cutting is required if the pile breaks at or near the existing substrate and cannot be removed by other methods.

2. If a pile is broken or breaks during extraction, all of the methods listed below should be used to cut the pile.
    i. Piles located in intertidal and shallow subtidal areas that are less than -10 feet deep MLLW shall be cut at least 2 feet below the mudline.
    ii. In subtidal areas that are greater than -10 feet deep MLLW, piles shall be cut at least 1 foot below the mudline.
    iii. Piles shall be cut off at lowest practical tide condition and at slack water. This is intended to reduce turbidity due to reduced flow and short water column through which pile must be withdrawn.
    iv. No hydraulic jetting devices shall be used to move sediment away from piles.
    v. Excavation of sediment in subtidal areas to expose broken piles shall be accomplished by divers using hand tools.
    vi. Contractor shall provide the location of all the broken and cut piles using a GPS.

Disposal of Creosote Piles and Construction Residue

- Removed piles shall be placed in a barge or onshore such that all sediment and runoff is captured in a basin and not allowed to enter the water.
- If a piling breaks off above the mudline during removal, the loose piece of pile shall first be placed on a barge prior to removing the remaining pile.
- Piles shall be cut into short lengths to prevent re-use.
- Cut up piling, sediments, absorbent pads/boom, construction residue and plastic sheeting from containment basin shall be packed into a container and disposed at an approved upland facility.

Prevent Erosion and Sedimentation

The City shall prevent soil erosion and sedimentation during construction by developing and implementing an Erosion and Sediment Control Plan for the Project. The Plan will address how the Contractor will manage erosion and sediment control measures, general site and materials management, and inspection and maintenance. The Plan shall specifically address how all jurisdictional waters will be protected including the slough, marsh, and the Petaluma River. The following minimum measures shall be included in the Plan and incorporated into Project construction to reduce soil erosion and protect water quality.

- Erosion and sediment control measures will be in effect and maintained by the Contractor for the duration of construction.
- Fiber rolls or similar products will be utilized to reduce sediment runoff from disturbed soils.
- Storm drain inlets receiving storm water runoff will be equipped with inlet protection.

Prevent Increased Turbidity and Capture Debris

Demolition of Existing Outfall Structure

- A sediment curtain shall be installed and utilized around the navigation and outfall structure in the Petaluma River during demolition. The curtain shall be inspected daily and maintained to function for its intended purpose.
- A floating debris barrier (or the sediment curtain installed in the Petaluma River) shall be placed as needed around and beneath the work areas to capture any debris that could accidentally be released from the work area. The debris boom shall be deployed and maintained to prevent any floating debris from escaping the work area. At the end of each workday, any floating debris within the barrier shall be removed.

Dewatering in Slough

- If dewatering is required, cofferdams will be installed immediately upstream and downstream of the work area within the slough.
- Water shall be pumped downstream within the limits of a temporary sediment curtain. Flows shall be monitored during pumping. If dewatering related turbidity expands beyond the boundary of the silt curtain, flows shall be reduced until turbidity is contained. Ambient turbidity outside the silt curtain cannot increase by more than 10% per the Basin Plan.
- Prior to the start of dewatering within the slough, a qualified and permitted biologist shall salvage all aquatic life and relocate them to a suitable location within the marsh or slough.
- Immediately upon completion of in-water work, sediment curtains, cofferdams, and other in-water structures shall be removed in a manner that minimizes disturbance to sediments.
- Once construction within the slough is completed, water shall be released slowly back into the work area so as to prevent erosion and increased turbidity of more than 10%.

Prevent Contaminants from Entering Marsh and Slough Area

- No construction material, including asphalt, concrete, wood, chemicals, or fuels shall be discharged directly or drained indirectly to the marsh and slough from the construction or staging areas.
- Construction equipment shall be cleaned and inspected prior to use. Mechanized construction equipment that will be used on the banks and adjacent to the slough will be cleaned and inspected daily prior to use. Servicing and refueling of vehicles and equipment shall be conducted a minimum of 50 feet from the Mean High Water of the slough and/or the Petaluma River at designated staging areas to avoid contamination through accidental drips and spills. If refueling or servicing of equipment within 50 feet of San Leandro Bay is necessary, secondary containment and absorbent pads shall be used and spill response kits will be available to rapidly respond to accidental spills.
- Equipment shall be inspected daily by the operator for leaks or spills. If leaks or spills are encountered, they shall be cleaned up, and the cleaning materials shall be collected and shall be properly disposed. The source of the leak shall be identified prior to operating the equipment, and the project foreman shall document the resolution of the leak. Spills shall be cleaned up immediately using spill response equipment.
- Hazardous materials shall not be stored within 200 feet of the slough or Petaluma River.

Measures to Minimize Impacts to Wildlife

Measures to Minimize Impacts to Ridgeways Rail and Black Rail

Construction of the relocated outfall shall be confined to the period of September 1 to January 31st. If construction must occur during the breeding season, a rail biologist shall conduct pre-construction surveys to determine whether there are any nesting rails in the immediate vicinity of the planned construction activity. If nesting rails are found within 250 feet of the project footprint, construction cannot proceed until nesting is complete. An approved biological monitor shall be present onsite during construction activities, as needed, to ensure that no rails or their nests are harmed during construction activities.

Measures to Minimize and Avoid Impacts to Special-Status Fish Species

All in-water demolition within the Petaluma River shall occur within the work window of June 15 to November 30, in accordance with the 2018 Proposed Additional Procedures and Criteria for Permitting Projects under a Programmatic Determination of Not likely to Adversely Affect Select Listed Species in California.

Attachment 4

Delineation of Water of the U.S.

ATTACHMENT H

DELINEATION OF WATERS OF THE UNITED STATES, INCLUDING WETLANDS, FOR THE ELLIS CREEK WATER RECYCLING FACILITY OUTFALL PIPE REPLACEMENT PROJECT CITY OF PETALUMA, SONOMA COUNTY, CALIFORNIA

PREPARED FOR:

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PREPARED BY:

JANE VALERIUS ENVIRONMENTAL CONSULTING
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SEBASTOPOL, CA 95472
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NOVEMBER 2018

TABLE OF CONTENTS

SECTION 1 – INTRODUCTION AND BACKGROUND INFORMATION

This wetland delineation report was prepared on behalf of the City of Petaluma for the Ellis Creek Water Recycling Facility Outfall Replacement Project. Jane Valerius Environmental Consulting prepared this report under contract to GHD, Inc. The purpose of the project is to relocate the existing outfall pipeline, which has structural integrity issues.

The project is located south of Lakeville Highway in the southeast corner of the City's waste water recycling facility (Figures 1 and 2). The Petaluma River forms the southern boundary of the project area with the waste water treatment ponds to the north. The Assessor Parcel Number (APN) for the site is 068-010-024.

This delineation was conducted according to the 1987 U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (U.S. Army Corps of Engineers 2008), and U.S. Army Corps of Engineers, San Francisco District (2007) guidelines. Data sheets, soils map and site photographs from the delineation are provided in Appendices A, B and C respectively. The delineation should be considered preliminary until the U.S. Army Corps of Engineers, San Francisco District, issues a jurisdictional determination of the extent of jurisdictional waters, including wetlands, in the delineation/project study area. A total of 38.57 acres of tidal marsh wetlands and 5 acres of tidal waters were mapped for the delineation/project study area (Figure 3). Total project area is 44.48 acres.

The client contact for this report is:

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Email: lwalker@ci.petaluma.ca.us

SECTION 2 – DESCRIPTION OF SITE CHARACTERISTICS

General Description, Topography and Hydrology

The delineation study area is located in Section S1, Township T4N, Range R7W of the Petaluma River 7.5-minute topographic quadrangle (Figure 2). The project is north of the Petaluma River and south of Lakeville Highway and is surrounded by coastal salt marsh and tidal creeks and sloughs.

The site is mostly flat with a 0 to 2 percent slope. Water flows southerly towards the Petaluma River which is a navigable waters of the U.S.

Soils

Two soil types are mapped for this area by the Natural Resources Conservation Service (NRCS 2018). A soils map for the study area is provided as Appendix B. The main soil type is Reyes silty clay, 0 to 2 percent slopes. The other soil type in the study area is tidal marsh.

Reyes series soils consist of poorly drained silty clays that formed in mixed bay and stream alluvium. These soils occur in salt water marshes and are mainly in the southeastern part of Sonoma County. Within the project site the soils have a clay texture with a 10YR4/1 color and redox features of 10YR5/8 making this a depleted matrix or depleted dark surface.

Areas mapped as tidal marsh consist of nearly level marsh lands that are under water or extremely wet throughout the year. No data points were taken in this mapped unit.

Vegetation

The predominant vegetation within the delineation study area is coastal salt marsh with pickleweed (*Salicornia pacifica*) being the dominant species. In the more open water areas associated with the sloughs and drainages there is also some alkali bulrush (*Bolboschoenus maritimus*). Other marsh species noted included an invasive weed called perennial pepperweed (*Lepidium densiflorum*) along with native marsh species such as inland saltgrass (*Distichlis spicata)*, gumplant (*Grindelia* sp.), alkali heath (*Frankenia salina*), fat hen (*Atriplex prostrata*), and sickle grass (*Parapholis incurva*).

The upland area associated with the buildings in the study area is comprised of ruderal and weedy non-native grassland. Plants associated with this type include non-native grasses such ryegrass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordaeceus*), and wild oats (*Avena barbata*). Non-native and weedy forbs noted include yellow star thistle (*Centaurea solstitialis*), bristly ox-tongue (*Helminthotheca echioides*) and mustard (*Brassica* sp.).

SECTION 3 – METHODS

Literature Review

Prior to the delineation field survey, literature pertinent to identifying potential wetlands and other waters of the United States in the project area was reviewed, including the USGS 7.5 minute topographic quadrangle map for the area, the detailed topographic/aerial photograph base map prepared for the project area, the soil survey report, and the county hydric soils list.

Field Survey and Map Preparation

A formal delineation was conducted by Jane Valerius, botanist and wetland ecologist, on September 17, 2018. Areas in which the topography or vegetation suggested that wetlands could exist were sampled using the routine onsite determination method procedures described in the 1987 USACE *Wetlands Delineation Manual* (Environmental Laboratory 1987). The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* USACE (2008), USACE, San Francisco District (2000) delineation guidelines and the USACE San Francisco District November 2007 *Information Requested for Verification of Corps Jurisdiction* guidance was also used as part of the on-site wetlands analysis and report preparation.

The State of California 2016 Wetland Plant List (USACE 2016) was used to determine the wetland status for the plant species for the sample data points. A total of 6 (six) sample data points were recorded for the site and are provided in Appendix A. The sample points were established in representative wetlands and adjoining non-wetlands. In most cases an adjoining nonwetland sample point was established near the wetland data point to "bracket" the wetland data point, as a means to identify the wetland-nonwetland boundary.

The tidal sloughs, creeks/drainages and the Petaluma River have been mapped as waters of the United States. The width of the sloughs and the Petaluma River is based on aerial photo interpretation. Waters that are subject to the ebb and flow of the tide are, by definition, navigable waters of the U.S. and subject to USACE jurisdiction. Section 10 jurisdiction extends to the high tide line. The adjacent wetlands fall under Section 404 of the Clean Water Act as adjacent wetlands.

Wetlands and waters were mapped on aerial photos provided by GHD, Inc. Final graphics were also produced by GHD, Inc.

SECTION 4 – RESULTS

The total study area is 44.48 acres. A total of 38.57 acres of tidal marsh wetlands and 5 acres of tidal waters were mapped for the delineation/project study area (Figure 3). Vegetation and soils are consistent throughout the site with vegetation being predominately coastal salt marsh dominated by pickleweed. The open water areas in the study area include the Petaluma River to the south and associated tributary channels. The Petaluma River and the tributary channels are tidally influenced and the Petaluma River is a navigable waters of the U.S.

SECTION 5 – REFERENCES CITED

Soil Survey Staff. 2018. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey for Sonoma County, California. Available online at http://websoilsurvey.nrcs.usda.gov/

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Appendix A - Wetland Data Forms

ATTACHMENT H

WETLAND DETERMINATION DATA FORM

Project/Site: Ellis Creek Outfall Replacement City/County: Petaluma/Sonoma Sampling Date: September 17, 2018

Applicant/Owner: City of Petaluma State: CA Sampling Point: 1

Investigator(s): Valerius Section, Township, Range:

Landform (hillslope, terrace, etc.): marsh Local relief (concave, convex, none): planar Slope (%): 0-2

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: Reyes silty clay, 0-2% slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? (no) Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (no) (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the Sampled Area within a Wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓	No ___	
Wetland Hydrology Present?	Yes ✓	No ___	

Remarks:

VEGETATION

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. Salicornia pacifica	50	Y	OBL
2. Lepidium latifolium	20	Y	FAC
3. Atriplex prostrata	10	N	FACW
4. Bromus hordaceus	10	N	FACU
5. Polypogon maritimus	10	N	FACW
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ___	x 1 = ___	
FACW species ___	x 2 = ___	
FAC species ___	x 3 = ___	
FACU species ___	x 4 = ___	
UPL species ___	x 5 = ___	
Column Totals: ___	(A) ___	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

ATTACHMENT H

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/1	95	10YR 5/8	5	C	M	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ATTACHMENT H

WETLAND DETERMINATION DATA FORM

Project/Site: Ellis Creek Outfall Replacement City/County: Petaluma/Sonoma Sampling Date: September 17, 2018

Applicant/Owner: City of Petaluma State: CA Sampling Point: 2

Investigator(s): Valerius Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Marsh Local relief (concave, convex, none): planar Slope (%): 0-2

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Reyes Silty Clay, 0-2% Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? (no) Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (no) (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ___	**Is the Sampled Area within a Wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓ No ___	
Wetland Hydrology Present?	Yes ✓ No ___	

Remarks:

VEGETATION

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. Salicornia pacifica	85	Y	OBL
2. Lepidium latifolium	5	N	FAC
3. Grindelia sp.	5	N	FAC
4. ~~Bolb~~ Bolboschoenus maritimus	5	N	OBL
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

ATTACHMENT H

SOIL

Sampling Point: D2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/1	95	10YR 5/8	5	C	M	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR C**)
- __ 1 cm Muck (A9) (**LRR D**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR C**)
- __ 2 cm Muck (A10) (**LRR B**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1) (**Nonriverine**)
- __ Sediment Deposits (B2) (**Nonriverine**)
- __ Drift Deposits (B3) (**Nonriverine**)
- __ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Plowed Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) (**Riverine**)
- __ Sediment Deposits (B2) (**Riverine**)
- __ Drift Deposits (B3) (**Riverine**)
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Thin Muck Surface (C7)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ATTACHMENT H

WETLAND DETERMINATION DATA FORM

Project/Site: Ellis Creek Outfall Replacement City/County: Petaluma/Sonoma Sampling Date: September 17, 2018

Applicant/Owner: City of Petaluma State: CA Sampling Point: 3

Investigator(s): Valerius Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Marsh Local relief (concave, convex, none): planar Slope (%): 0-2

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Reyes Silty Clay, 0-2% Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? no Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? no (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the Sampled Area within a Wetland?** Yes ___ No ✓
Hydric Soil Present?	Yes ___	No ✓	
Wetland Hydrology Present?	Yes ___	No ✓	

Remarks:

Gravel fill placed to create crossing across slough w/ a 10-12" wide culvert

VEGETATION

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. Distichlis spicata	90	Y	FAC
2. Lepidium latifolium	5	N	FAC
3. Helminthotheca echioides	5	N	FAC
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

ATTACHMENT H

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					Gravelly clay	"fill" material - not able to dig past 4"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No ✓

Remarks:

Gravel fill

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ATTACHMENT H

WETLAND DETERMINATION DATA FORM

Project/Site: Ellis Creek Outfall Replacement City/County: Petaluma/Sonoma Sampling Date: September 17, 2018

Applicant/Owner: City of Petaluma State: CA Sampling Point: 4

Investigator(s): Valerius Section, Township, Range: _____

Landform (hillslope, terrace, etc.): marsh Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Reyes Silty Clay, 0-2% Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? (no) Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (no) (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the Sampled Area within a Wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓	No ___	
Wetland Hydrology Present?	Yes ✓	No ___	

Remarks:

VEGETATION

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. Salicornia pacifica	45	Y	OBL
2. Bulboschoenus maritimus	45	Y	OBL
3. Distichlis spicata	10	N	FAC
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

ATTACHMENT H

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/1	90	10YR 5/8	10	C	M	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ✓ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ✓ No ___ Depth (inches): 8-10"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ATTACHMENT H

WETLAND DETERMINATION DATA FORM

Project/Site: Ellis Creek Outfall Replacement City/County: Petaluma/Sonoma Sampling Date: September 17, 2018

Applicant/Owner: City of Petaluma State: CA Sampling Point: 5

Investigator(s): Valerius Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Slope Slope (%): 0-2

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Reyes Silty Clay, 0-2% Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? (no) Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (no) (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___ No ✓	**Is the Sampled Area within a Wetland?** Yes ___ No ✓
Hydric Soil Present?	Yes ___ No ✓	
Wetland Hydrology Present?	Yes ___ No ✓	

Remarks:

Upland slope area below buildings

VEGETATION

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. Helminthotheca echioides	20	Y	FAC
2. Centaurea solstitialis	20	Y	UPL
3. Lepidium latifolium	10	N	FAC
4. Brassica nigra	5	N	UPL
5. Avena barbata	20	Y	UPL
6. Grasses - unknown	25	Y	UPL
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

ATTACHMENT H

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
								GRAVEL FILL

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ATTACHMENT H

WETLAND DETERMINATION DATA FORM

Project/Site: Ellis Creek Outfall Replacement City/County: Petaluma/Sonoma Sampling Date: September 17, 2018

Applicant/Owner: City of Petaluma State: CA Sampling Point: 6

Investigator(s): Valerius Section, Township, Range: _____

Landform (hillslope, terrace, etc.): marsh Local relief (concave, convex, none): planar Slope (%): 0-2

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Reyes Silty Clay, 0-2% Slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? (no) Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (no) (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ___	**Is the Sampled Area within a Wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓	No ___	
Wetland Hydrology Present?	Yes ✓	No ___	

Remarks:

OBSERVATIONAL POINT

VEGETATION

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	___ = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	___ = Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. Sarcocornia pacifica	100	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	___ = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	___ = Total Cover		

% Bare Ground in Herb Stratum ___ % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ___	x 1 = ___
FACW species ___	x 2 = ___
FAC species ___	x 3 = ___
FACU species ___	x 4 = ___
UPL species ___	x 5 = ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

ATTACHMENT H

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ☒ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Observed area same as for DP 1, 2 + 4

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ✓ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ✓ No ___ Depth (inches): ___

Saturation Present? Yes ✓ No ___ Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? Yes ✓ No ___

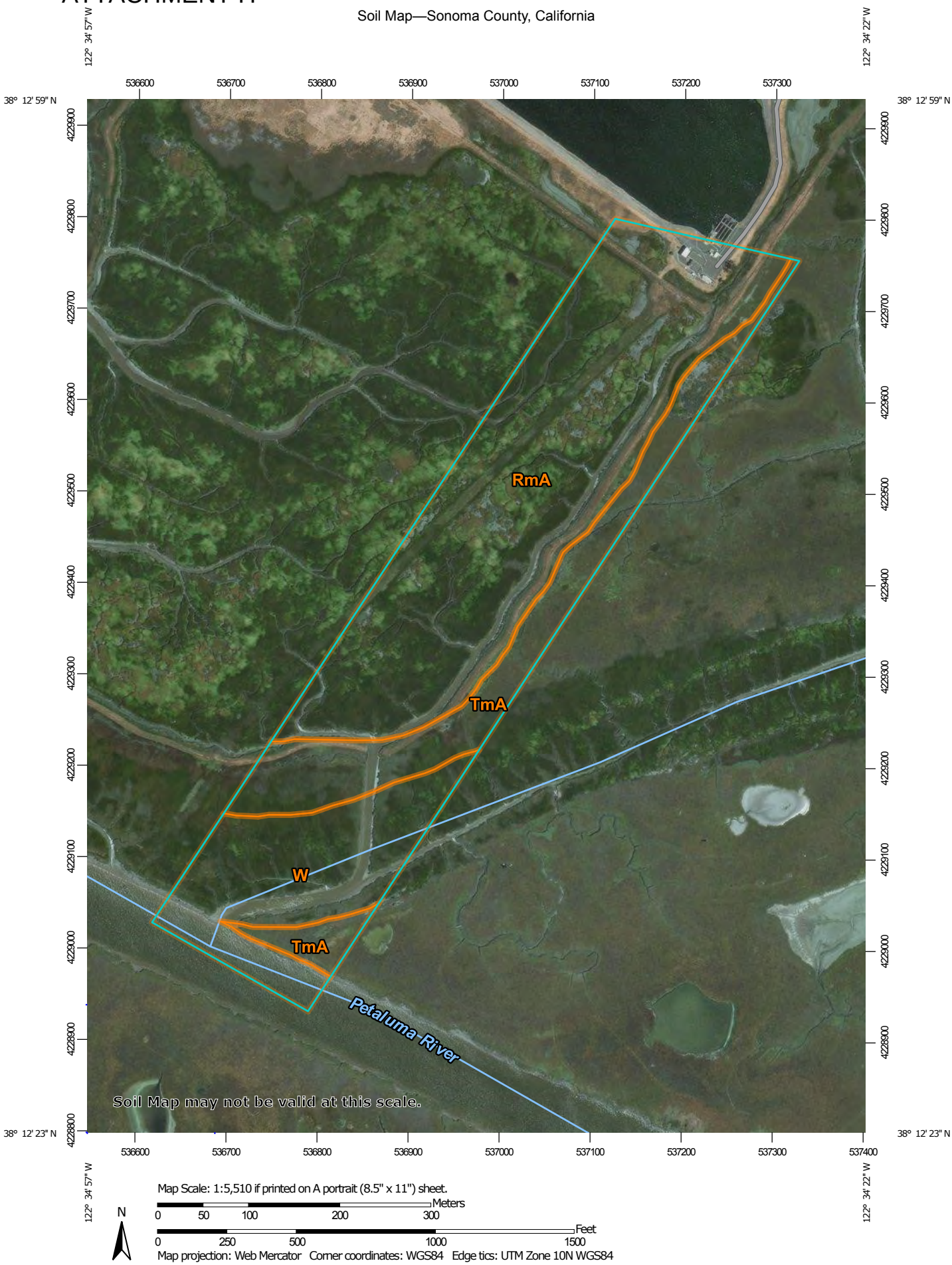
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B - Soils Map

ATTACHMENT H

Soil Map—Sonoma County, California



Map Scale: 1:5,510 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 11, Sep 21, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Mar 16, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
RmA	Reyes silty clay, 0 to 2 percent slopes	26.8	57.9%
TmA	Tidal marsh	9.7	21.0%
W	Water	9.7	21.0%
Totals for Area of Interest		**46.2**	**100.0%**

Appendix C -
Site Photographs

ATTACHMENT H

SITE PHOTOGRAPHS TAKEN ON September 17, 2018

Data Point #1 in marsh wetland looking north-east.

Data Point #2 in marsh wetland looking north-east.

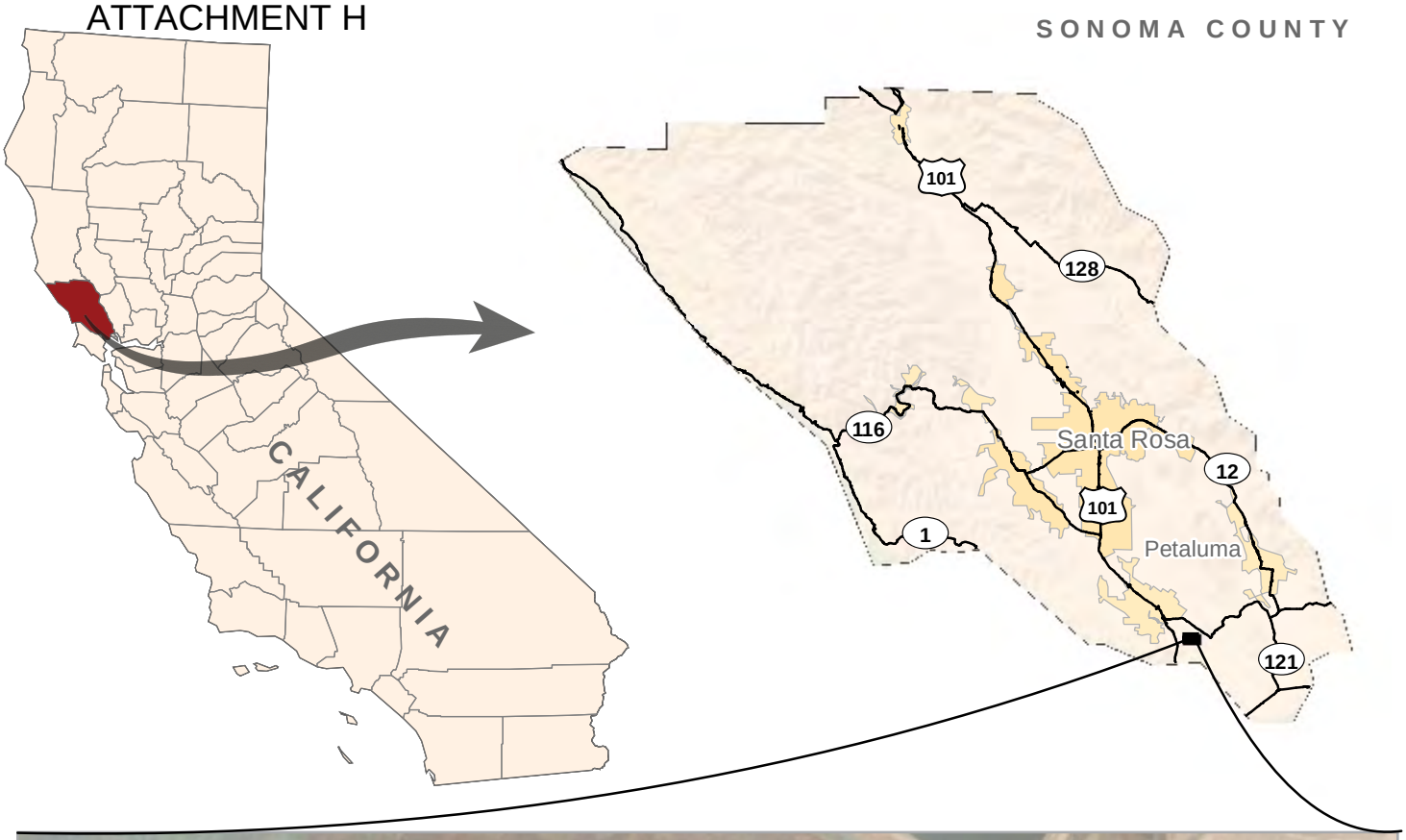
ATTACHMENT H

Data Point #3 in “road” between buildings and marsh.

Data Point #4 showing contrast between marsh and upland area.

ATTACHMENT H

SONOMA COUNTY



Paper Size ANSI A

0 0.08 0.16 0.24

Miles

N

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

City of Petaluma
Ellis Creek Water Recycling Facility
Outfall Project
Wetland Delineation Report

3890 Cypress Drive, Petaluma, CA
Vicinity

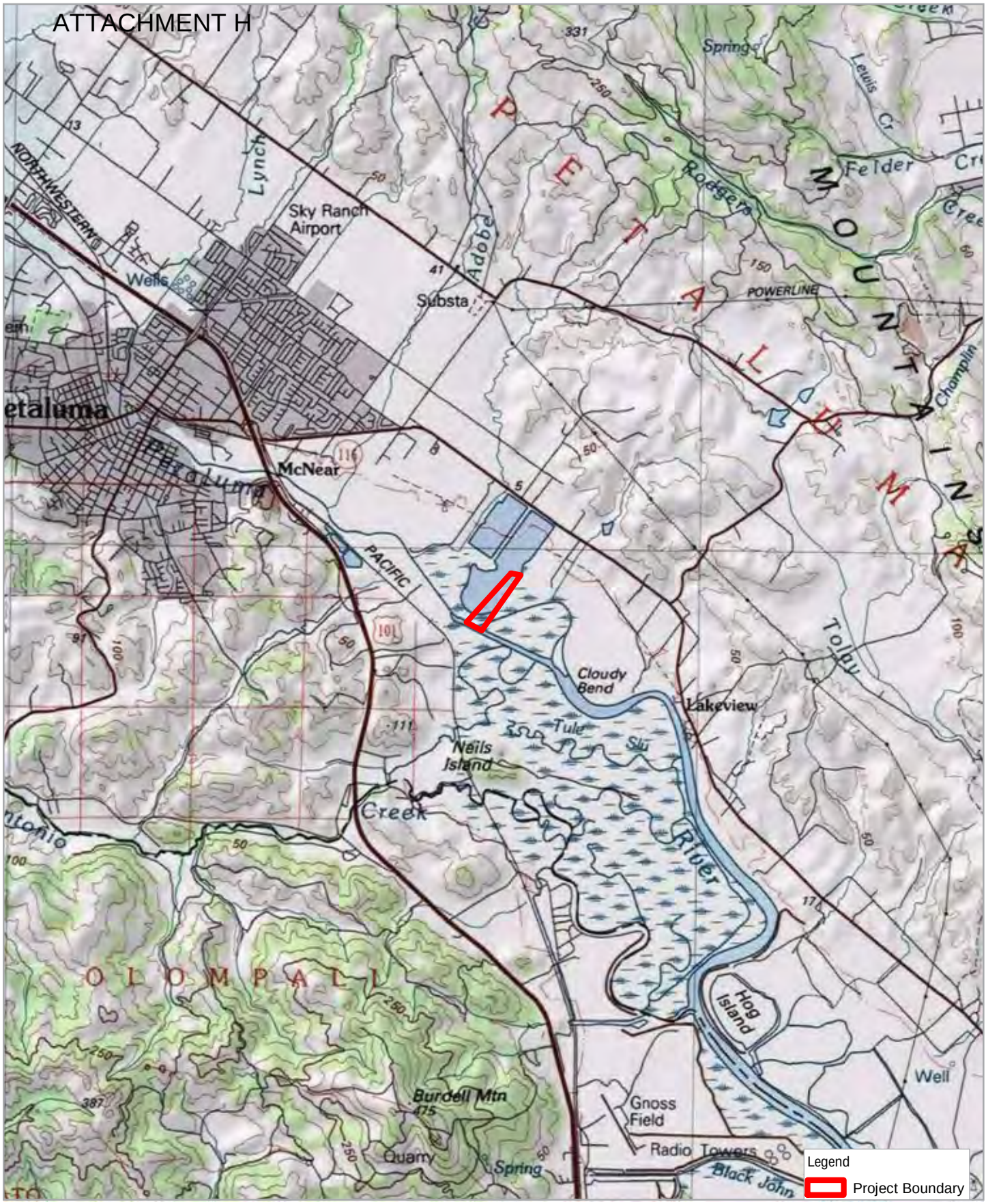
Project No. 11152197
Revision No. 1
Date 11/06/2018

FIGURE 1

C:\Users\jcurtis\Documents\01- Projects\Ellis Creek Wetland Figure\GIS\11152197_01EllisCreek_Vicinity.mxd
Print date: 05 Nov 2018 - 15:40

Created by: jcurtis

ATTACHMENT H



Paper Size ANSI A

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

N

GHD

City of Petaluma
Ellis Creek Water Recycling Facility
Outfall Project
Wetland Delineation Report

USGS Topographic Quad

Project No. 11152197
Revision No. 1
Date 11/06/2018

FIGURE 2

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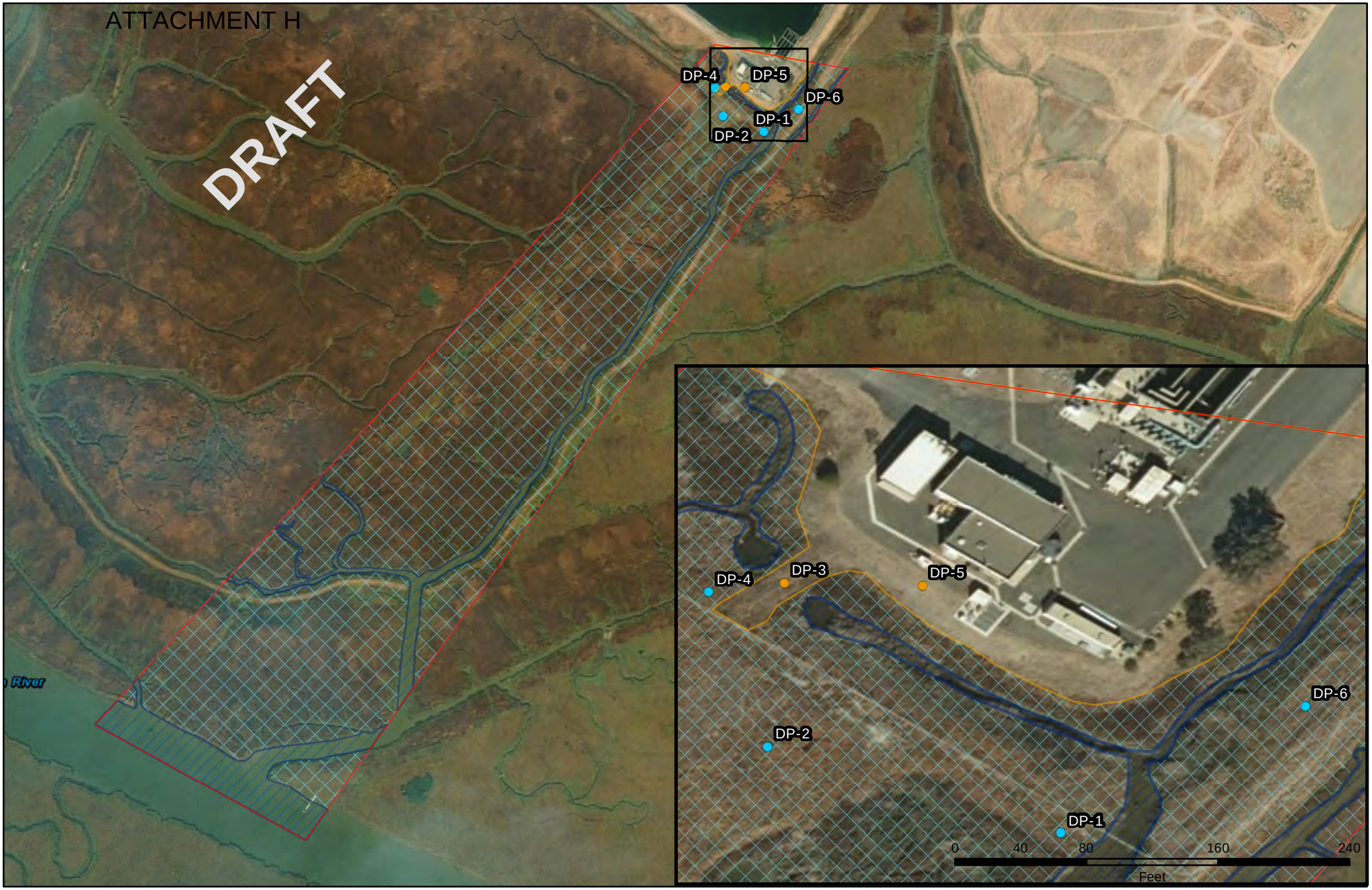
Print date: 06 Nov 2018 - 15:35

ATTACHMENT H



Legend

Project Boundary (44.48 Acres)

Sampling Points

- Non-wetland
- Wetland

Delineation

- Wetland (38.57 Acres)
- Waters (5 Acres)
- Upland (0.91 Acres)

Paper Size ANSI A

0 100 200 300

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: NAD 1983 CORS96
Grid: NAD 1983 CORS96 StatePlane California II FIPS 0402 Ft US

C:\Users\jcurtis\Documents\01- Projects\Ellis Creek Wetland Figure\GIS\11152197_03EllisCreekAquaticResources_Draft0.mxd
Print date: 19 Oct 2018 - 13:45

N

City of Petaluma
Ellis Creek Water Recycling Facility
Outfall Project
Wetland Delineation Report

Project No. 11152197
Revision No. -
Date 10/19/2018

Wetland Delineation

FIGURE 3

Data source: GHD field data, February 2018; Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: jcurtis

Attachment 5

Biological Resources Report

ATTACHMENT H

Ellis Creek Water Recycling Outfall Pipeline Replacement Preliminary Biological Report

Petaluma Water Recycling Facility
City of Petaluma

Prepared for:

GHD Services, Inc.
2235 Mercury Way, Suite 150
Santa Rosa, CA 95407
(707) 236-1532

Prepared by:

Olofson Environmental, Inc.
1830 Embarcadero Cove, Suite 100
Oakland, CA 94606

October 26, 2018

ATTACHMENT H

List of Abbreviated Terms

BCDC San Francisco Bay Conservation and Development Commission

CDFW California Department of Fish and Wildlife

CESA California Endangered Species Act

CEQA California Environmental Quality Act

CNDDB California Natural Diversity Data Base

CNPS California Native Plant Society

DPS Distinct Population Segment

EFH Essential Fish Habitat

ESA Endangered Species Act

ESU Evolutionary Significant Unit

FMP Fishery Management Plans

LSA Lake and Streambed Alteration

MBTA Migratory Bird Treaty Act

MSA Magnuson-Stevens Fishery Conservation and Management Act

NMFS National Marine Fisheries Service

NOAA National Oceanic and Atmospheric Administration

USFWS United States Fish and Wildlife Service

1 Introduction

The City of Petaluma is planning to replace a damaged outfall pipeline at the Ellis Creek Water Recycling Facility. Significant deterioration in the structural integrity of the existing outfall pipeline was documented in September 2016. In 2017, an emergency bypass outfall was placed in a tidal slough just east of the City's chlorine contact basin.

The City of Petaluma is currently reviewing three alternatives to repair the existing outfall pipe for the Ellis Creek Water Recycling Facility.

Alternative 1: Divert All Flow to Tidal Slough. Alternative 1 would divert all flow to the tidal slough where the current contingency outfall bypass is located. The new outfall would be sized with a similar capacity as the existing outfall, in excess of 16 MGD. The pipe would be installed in an open trench, disturbing about 1,250 square feet for the open trench and as much as 7,500 square feet depending on the improvements and erosion control features needed to handle the flows. Construction would happen during the summer, overlapping with avian breeding season. The existing damaged outfall pipe would remain in place.

Alternative 2. Divert All Flow to Tidal Slough and Remove/Replace Existing Outfall Pipe. Under Alternative 2, the new outfall described under Alternative 1 would be constructed and the existing damaged outfall pipe would be removed and replaced using an open trench method of construction. Replacing the existing damaged outfall pipe would result in approximately 16,000 square feet of temporary disturbance from trenching and approximately 32,000 square feet of temporary disturbance from the crane and construction mats.

Alternative 3. Remove and Replace Existing Outfall Pipe. Under Alternative 3, the existing damaged outfall pipe would be removed and replaced, in the same manner as described in Alternative 2.

This report provides a description of biological resources in the vicinity of the proposed project, a summary of relevant state and federal regulations related to the protection of biological and wetland resources, and factors to consider in evaluating the alternatives for the proposed outfall pipeline replacement. The biological resources were identified through a combination of review of available background information and site reconnaissance. This report is not an official protocol-level survey for listed species and is based on information available at the time of the study and on site conditions that were observed on the date of the site visit.

2 Project Location

The Project is located at the Ellis Creek Water Recycling Facility at 4400 Lakeville Highway in the City of Petaluma (Figure 1). The damaged outfall pipeline runs southwest from the southernmost corner of the facility, under Ellis Creek Marsh, to the outfall in Petaluma River. The current contingency outfall bypass runs a short distance from the southernmost corner of the facility into a tidal channel running parallel to a berm and connecting to the Petaluma River. The Study Area considered in this report includes the habitat surrounding both pipelines.

The wetlands in the Study Area are characterized by a mix of brackish and salt marsh vegetation, including *Salicornia pacifica*, *Bolboschoenus maritimus*, *Schoenoplectus californicus*, and *Typha latifolia*. Also within the Study Area is a small developed area, including the building and infrastructure from which the pipeline originates, and two eucalyptus trees adjacent to the building. The Study Area is located across the Petaluma River from the Petaluma Ancient Marsh, one of the oldest tidal wetlands remaining in the San Francisco Estuary.

Photo 1. Pickleweed (*Salicornia pacifica*), salt grass (*Distichlis spicta*), gumplant (*Grindelia stricta*) and other salt marsh plant species occur along the raised berm that was installed during installation of existing pipeline. Tall stands of salt marsh bulrush (*Bolboschoenus maritimus*) can be seen on the edges of the berm. The building from which the pipeline originates can be seen in the background.

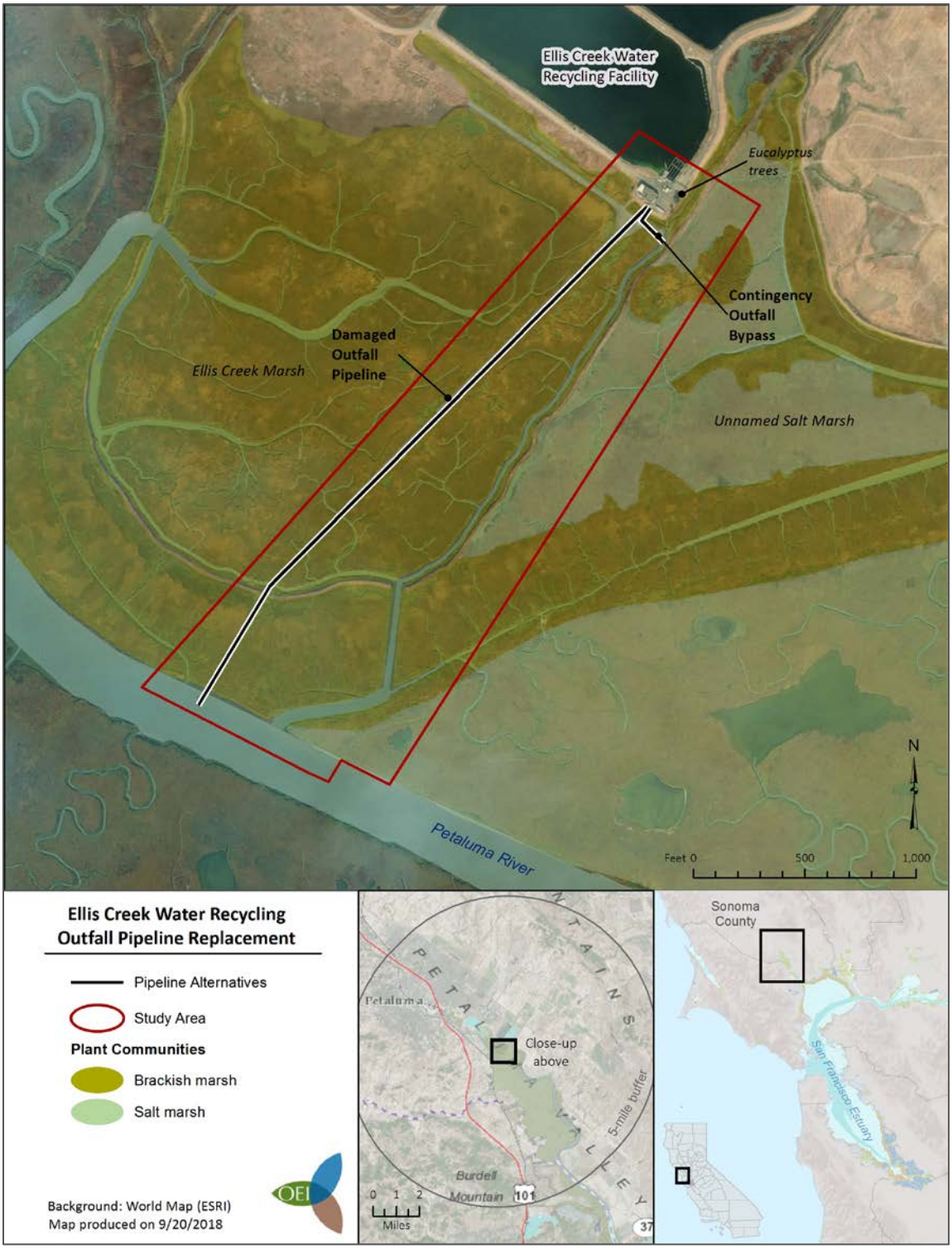


Figure 1. Location of Proposed Project and Study Area. Vegetation communities were digitized in the office using imagery from 2015. For current accurate mapping, an in depth plant and habitat mapping survey is needed.

3 Methods

Existing conditions for biological resources were identified through a combination of literature research and site reconnaissance. A field visit to evaluate habitats for wildlife and plant species was conducted on September 17, 2018. Searches of the California Natural Diversity Database (CNDDB) (CDFW 2018), the USFWS Information Planning and Consultation (IPaC) website (USFWS 2018), and the National Marine Fisheries Service (NOAA 2018) were conducted to identify all special-status plant and wildlife species that could occur in the Study Area. The likelihood of each species' occurrence in the Study Area was then assessed in more detail based on the species' known distribution (i.e., the locations and dates of known occurrences), and the types and quality of habitat present in the Study Area.

Based on the site visit, the potential for each species to occur within the Study Area was evaluated using the following criteria:

- **None:** Species is not expected to occur at the study area. Habitat is unsuitable and/or species is presumed extirpated.
- **Low:** Species is not likely to occur at the Study Area, due to marginal habitat and/or reduced distribution of species from historical extent.
- **Moderate:** Species may possibly occur at the Study Area. Some habitat components are present and/or there are recent reports of species in adjacent habitats.
- **High:** Species is likely to occur at the Study Area. Habitat is present at the Study Area and/or there are recent reports of the species at the Study Area.

4 Biological Resources

4.1 Special-Status Species

In California, special-status species include those plants and animals that are afforded legal protection under the federal and California Endangered Species Acts (ESA and CESA, respectively) and other regulations. Consideration of these species must be included during project evaluation in order to comply with CEQA and in consultation with state and federal resource agencies.

Special-status species of California include, but may not be limited to:

- Species listed or proposed for listing as threatened or endangered under the federal ESA.
- Species listed or proposed for listing as threatened or endangered under CESA.
- Species that are recognized as candidates for future listing by agencies with resource management responsibilities such as USFWS, NMFS, and CDFW.
- Species defined by CDFW as California Species of Special Concern.
- Species classified as Fully Protected by CDFW (California Fish and Game Code 3511).
- Plant species, subspecies, and varieties defined as rare or threatened by the California Native Plant Protection Act (California Fish and Game Code 1900).
- Plant species listed by the California Native Plant Society (CNPS) as List 1 and 2.
- Species that otherwise meet the definition of rare, threatened, or endangered pursuant to 15380 of the CEQA Guidelines.

Special-status species that have a moderate to high potential to occur in the Study Area are identified below and in Appendix 1. Further surveys are needed to positively identify the presence or absence of these special status-species in the Study Area.

4.1.1 Plant Species

Twenty-one special-status plant species have been documented in the vicinity of the proposed project (Appendix 1). This list was compiled based on CNDDB (CDFW 2018) records of special-status species occurring in the Petaluma River, Petaluma, and Petaluma Point USGS 7.5-minute topographic quadrangles, as well as within a 5-mile radius of the Study Area (Figure 2).

Based on the initial site visit, only one of the 21 species identified have a moderate potential to occur in the Study Area: Point Reyes salty bird's beak.

Point Reyes salty bird's beak (*Chloropyron maritimum* ssp. *palustre*) is a subspecies with a CNPS Rare Plant Rank of 1B.2. The species occurs in tidal wetlands with *Salicornia pacifica* and other low herbaceous plants in the coastal salt marsh vegetation community. Point Reyes salty bird's beak has been reported in the Petaluma Ancient Marsh across the River and should be presumed extant where habitat is suitable. It is not likely to occur in the brackish vegetation in the Ellis Creek Marsh, but there is a moderate potential for the species to occur in the pickleweed flats in the unnamed adjacent marsh. Systematic plant surveys when the plant is in bloom (June to October) are needed to determine the presence or absence of this special-status species in the Study Area.

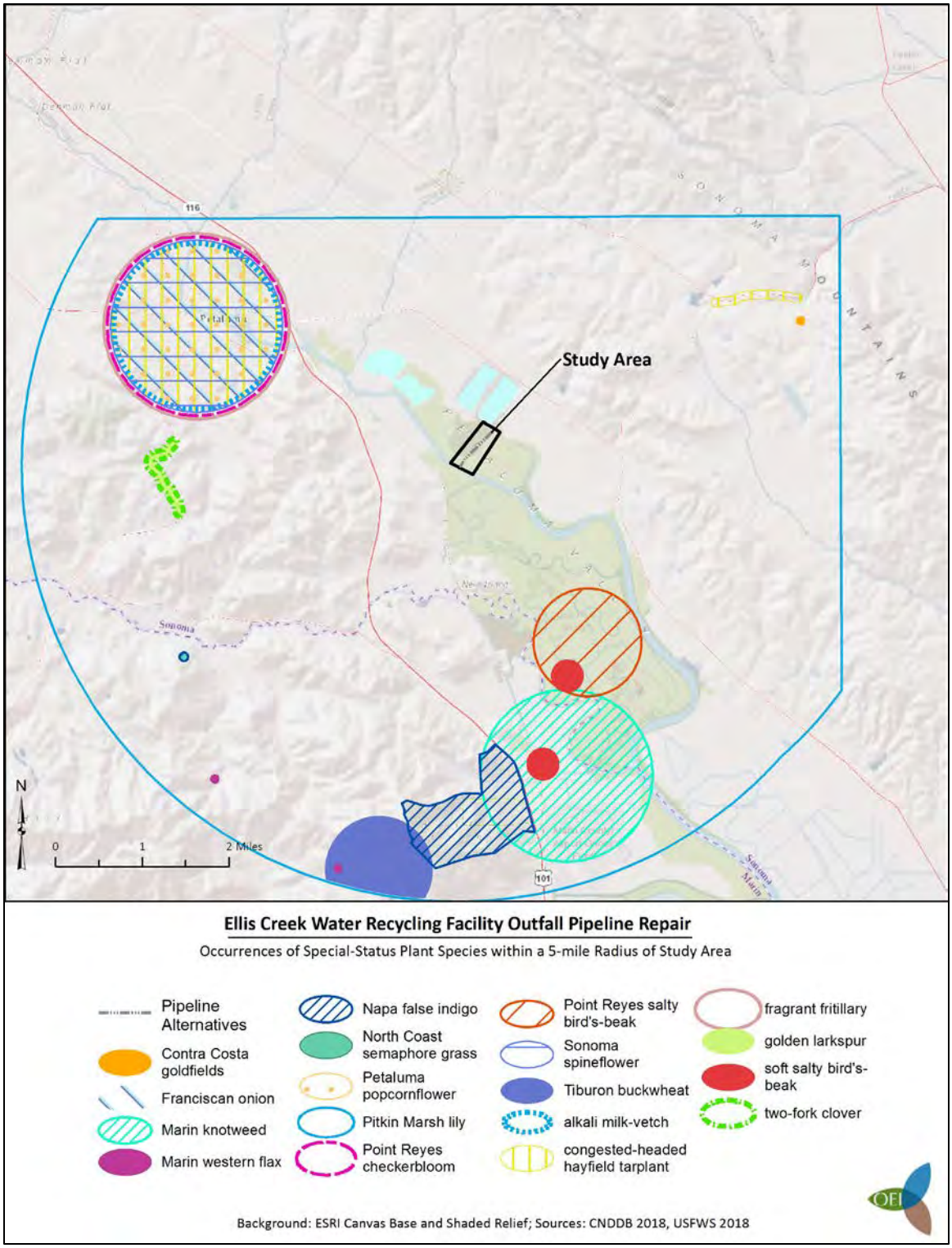


Figure 2. Map of CNDDB special-status plant occurrences within a 5-mile radius of the Study Area.

4.1.2 Animals Species

Thirty-three special-status animal species have been documented in the vicinity of the proposed project (Appendix 1). This list was compiled based on expert knowledge, USFWS IPaC search (2018), and the CNDDB (CDFW 2018) records of special-status species occurring in the Petaluma River, Petaluma, and Petaluma Point USGS 7.5-minute topographic quadrangles and in a 5-mile radius of the Study Area (Figure 3).

Based on the initial site visit, eighteen of the thirty-three special-status animal species have moderate to high potential to occur in the Study Area. These special-status animal species are described below.

Fish

Green sturgeon (*Acipenser medirostris*) – Southern DPS is listed as threatened under the ESA and is a California species of special concern. Green sturgeon are a long-lived, slow-growing anadromous fish that may use open water as a migration corridor and shallow water for foraging habitat (NOAA 2018). The Petaluma River and the adjacent tidal wetlands are part of the designated critical habitat for green sturgeon and they have the potential to be present in open water areas of the Study Area at any time of the year.

Steelhead (*Oncorhynchus mykiss irideus*) – Central California Coast DPS is a federally threatened distinct population segment, listed by NMFS in 1997. This DPS includes all naturally spawned populations of steelhead in streams from the Russian River to Aptos Creek and the drainages of San Francisco and San Pablo Bays (NOAA 2012). Steelhead enter the Estuary in early winter to migrate to upstream spawning habitat and could be present in the Study Area during in-migration and out-migration periods when utilizing shallow habitat for foraging. Additionally, steelhead juveniles use marsh habitats to forage and have the potential to be in the wetlands within the Study Area. The Petaluma River is part of the designated critical habitat for Central California Coast DPS steelhead.

Chinook salmon (*Oncorhynchus tshawytscha*) - Central Valley Fall ESU is a California species of special concern. The central valley fall ESU Chinook salmon is an anadromous fish that spawns in the Sacramento River and its tributaries, which they enter from October through February. Spawning occurs from January through March and the juveniles remain in the river for nearly a year before moving out to sea the following December through March (Moyle 2002). Although the Petaluma River is outside the currently established range of this species, central valley fall ESU chinook salmon have been observed in the Petaluma River and may occur in the Study Area. There is no suitable spawning habitat within the Study Area, however, this species may migrate through the Study Area in search of appropriate spawning habitat following winter rains. Additionally, the aquatic habitat onsite may provide suitable rearing and foraging habitat for juveniles.

Sacramento splittail (*Pogonichthys macrolepidotus*) is a California species of special concern. Sacramento splittail are minnows typically found in estuarine environments and particularly well-adapted for living in slow-moving rivers and sloughs. Most commonly found in the Delta, there is a population of Sacramento splittail in the Petaluma River (Moyle et al. 2004) and habitat within the Study Area is suitable habitat for the species.

Mammals

Salt-marsh harvest mouse (*Reithrodontomys raviventris*) is listed as endangered under the ESA and the CESA and is a fully protected species in the state of California. The present range for the species is limited to salt, brackish, and diked marshes of the Estuary. The salt marsh harvest mouse depends on dense vegetation with complex vertical structure in the middle to high marsh zone as a cover and food source. Perennial pickleweed is often the dominant vegetation type at mid-marsh elevation, although mice may utilize a broader range of marsh habitats and plant species typically found in salt marshes in the Estuary (Sustaita et al. 2012; Shellhammer 2012). Trapping efforts have found salt marsh harvest mice in stands of alkali bulrush (*Schoenoplectus robustus*) indicating the species may occupy brackish marshes in the Estuary as well (Shellhammer et. al. 2010). The coastal brackish marsh and northern coastal salt marsh within the Study Area are suitable habitat and may support salt marsh harvest mouse.

Birds

Heron and Egret Rookeries: Great egret (*Ardea alba*), Great blue heron (*Ardea Herodias*), snowy egret (*Egretta thula*), and black-crowned night-heron (*Nycticorax nycticorax*) have no formal listing status, but their rookeries are considered sensitive by CDFW. These egret and heron species nest communally, typically in trees near water. They arrive at their nesting colonies anywhere from January and February (great blue herons and great egrets) to March and April (snowy egrets and black-crowned night-herons). These egrets and herons occur in a wide variety of wetland habitats throughout California, including brackish and tidal marshes, and they are all likely to forage within the Study Area year round. There are only two small eucalyptus trees within the Study Area that could provide nesting habitat. There are established rookeries in the vicinity of the Study Area (Kelly et al. 2006), and although there are no established rookeries within the Study Area currently, there is a moderate probability that they could nest there.

Tricolored blackbird (*Agelaius tricolor*) was listed as threatened under the CESA in April 2018. Tricolored blackbirds are colonial nesters and were once abundant in coastal California. The species is now mostly restricted to agricultural lands in the Central Valley (Meese 2017). Although they are unlikely to nest in the Study Area, the species has been observed foraging in adjacent wetlands outside of the breeding season (eBird 2012) and may occur within the Study Area in the winter.

Short-eared owl (*Asio flammeus*) is a California species of special concern. Short-eared owls occur in open habitat, including salt and brackish marshes. They are more typically seen on the California coast during winter, outside of the breeding season, however short-eared owls may occasionally nest in the San Francisco Bay area. Their nests are on the ground and they require dense vegetative cover to conceal their nests from predators (Shuford and Gardali 2008). The Study Area supports suitable short-eared owl habitat for both winter foraging and for breeding, however their limited current distribution and episodic population cycles makes it difficult to predict whether they will be present in the Study Area.

Northern harrier (*Circus cyaneus*) is a California species of special concern. The northern harrier is found in open habitats throughout most of California, including brackish and tidal wetlands.

Harriers typically nest on the ground in open (i.e., treeless) areas in dense, relatively tall, vegetation (Shuford et al. 2008). Harriers are predatory and subsist on a variety of small mammals and other vertebrates. The Study Area supports suitable habitat for northern harriers both for nesting and foraging and the species is likely to be present.

White-tailed kite (*Elanus leucurus*) is listed as a fully protected species in the state of California. The white-tailed kite is a resident of a variety of open habitats including brackish and tidal wetlands throughout the lower elevations of California. Nests are constructed mostly of twigs and placed in small to large trees, often at habitat edges or in isolated groves (Dunk 1995). This species preys upon a variety of small mammals and other vertebrates. The species is likely to use the habitat within the Study Area for foraging and may potentially nest in one of the two eucalyptus trees at the northern end of the Study Area.

San Francisco common yellowthroat (*Geothlypis trichas sinuosa*) (formerly salt marsh common yellowthroat) is a California species of special concern. The San Francisco common yellowthroat is resident of the San Francisco Bay region. It typically nests and forages in emergent vegetation of salt, brackish and freshwater marshes. Nests are well-concealed in vegetative substrates such as grass, tules, cattails, and some shrubs (Shuford and Gardali 2008). This species is present in various marsh habitats along the Petaluma River and is likely to use the brackish marsh within the Study Area for both foraging and breeding.

California black rail (*Laterallus jamaicensis coturniculus*) is listed as threatened under the CESA and is a fully protected species in the state of California. In the San Francisco Estuary, black rails are most abundant in tidal marshes with some freshwater input (Evens et al. 1991). They nest primarily in pickleweed-dominated marshes with patches or borders of bulrushes, often near the mouths of creeks. Black rails build nests in tall grasses or marsh vegetation during spring, and lay about six eggs. Nests are usually constructed of pickleweed, and are placed directly on the ground or slightly above ground in vegetation. California black rails have been documented within the Ellis Creek Marsh (Evens 2003) and are likely present and breeding within the wetlands in the Study Area.

Samuels song sparrow (*Melospiza melodia samuelis*) (formerly San Pablo song sparrow) is a California species of special concern. The Samuels song sparrow is an endemic resident of tidal marsh habitat along the fringes of San Pablo Bay, including the Petaluma River. This subspecies prefers tidally influenced marsh (Shuford and Gardali 2008). Several song sparrows were observed calling in Ellis Creek marsh during the site visit on September 17, 2018. Although this observation is outside of the breeding season, song sparrows are year-round residents and it is likely that the species breeds in the wetlands within the Study Area.

Bryant's Savannah Sparrow (*Passerculus sandwichensis alaudinus*) is a California species of special concern. The Bryant's savannah sparrow is a California endemic restricted to a narrow coastal strip from Humboldt Bay south to the Morro Bay area. It is found year-round in low-elevation, tidally influenced habitat, specifically pickleweed-dominated salt marshes and adjacent grasslands and ruderal areas (Shuford and Gardali 2008). Bryant's savannah sparrows are likely to use the tidal marsh and adjacent upland vegetation within the Study Area for both foraging and breeding.

California Ridgway's rail (*Rallus obsoletus obsoletus*) (formerly California clapper rail, *Rallus longirostris obsoletus*) is listed as endangered under the ESA and the CESA and is a fully protected species in the state of California. California Ridgway's rails occur only in salt and brackish tidal marsh habitat and require vegetative cover suitable for both nesting and refuge during high tide events. Marshes where they occur are characterized by unrestricted daily tidal flows through a network of well-developed channels (USFWS 2013). Although Ridgway's rails are most commonly found in salt water marshes dominated by cordgrass (*Spartina* spp.), they are also found in brackish marshes and may potentially be present within the Study Area.

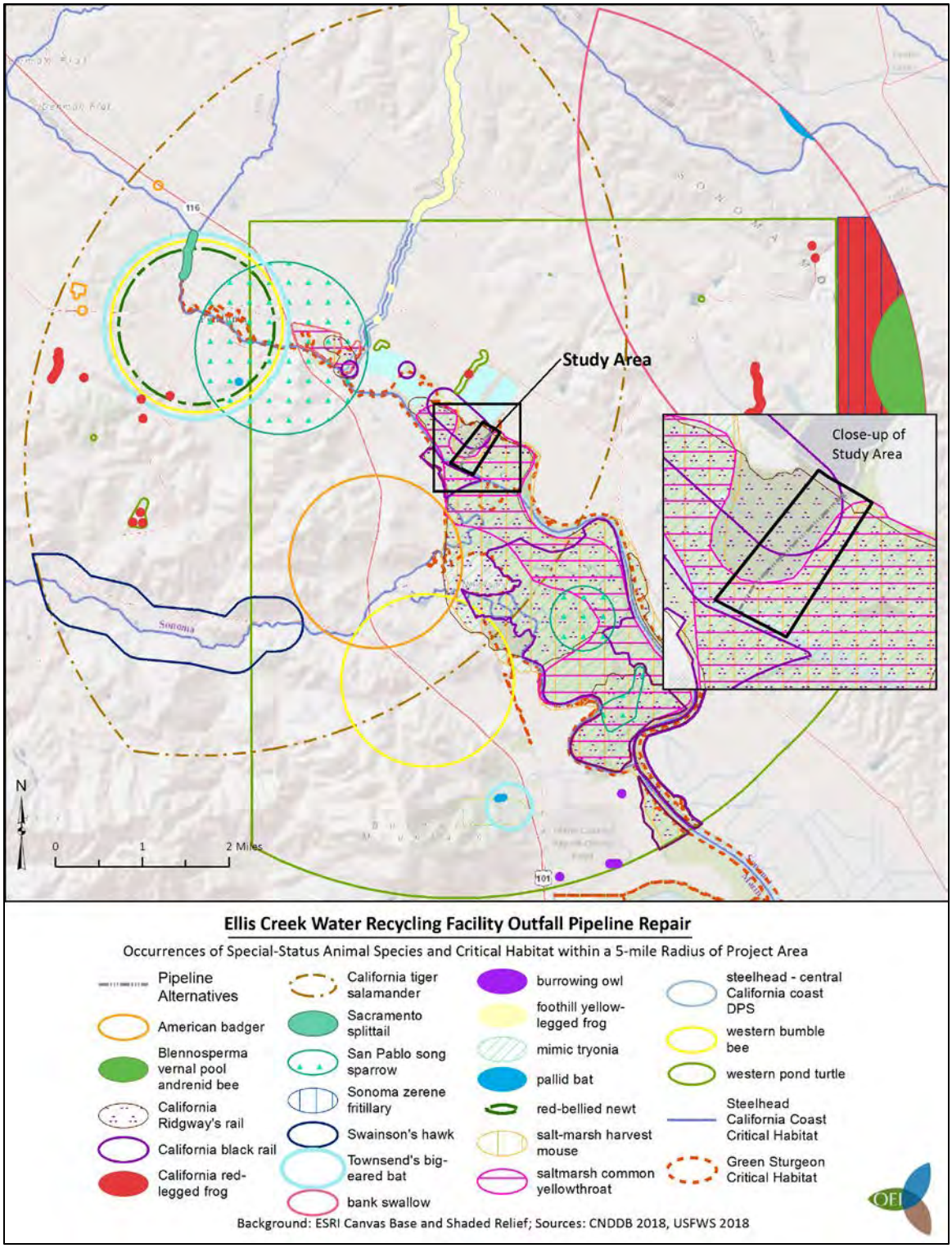


Figure 3. Map of CNDDB occurrences of special-status animal species and critical habitat for two fish species within 5-mile radius of the Study Area.

4.1.3 Other Protected Bird Species

Nesting native bird species are projected under both federal and state law. Federal regulations protect migratory birds, and their nests, eggs, and nestlings, under the Migratory Bird Treaty Act (MBTA). Birds and their nests are also protected under California Fish and Game Code 3503 and 3503.5.

Any project activities during the bird breeding season (typically February 1 to August 31) would require measures to protect native nesting birds, including preconstruction surveys, avoidance measures, and monitoring.

4.2 Special-Status Habitats and Biological Communities

Sensitive biological communities and protected habitats in the Study Area that were identified through CNDDB database searches and during the site visit are discussed below.

4.2.1 Sensitive Natural Communities

Sensitive Natural Communities are those that are listed by CDFW in the CNDDB due to the rarity of the community in the state or throughout its entire range (globally). The Study Area contains two sensitive natural communities: northern coastal salt marsh and coastal brackish marsh. These communities are summarized in Table 1 and described below.

Table 1. Table of sensitive natural communities present within the Study Area.

Vegetation Community (Holland 1986)	**Vegetation Alliance (Sawyer et al 2009)**	**Rarity Ranking[1]**
Northern coastal salt marsh	Pickleweed mats (*Sarcocornia pacifica* (*Salicornia depressa*) Herbaceous Alliance)	G4 S3
Coastal brackish marsh	Salt marsh bulrush marshes (*Bolboschoenus maritimus* Herbaceous Alliance)	G4 S3

[1] G4: Apparently Secure (Global Status). Uncommon but not rare; some cause for long-term concern due to declines or other factors
S3: Vulnerable (State Status). Vulnerable in the state due to a restricted range, few populations, recent declines, or other factors making it vulnerable to extirpation from the state

Coastal Brackish Marsh. Brackish marsh vegetation develops in shallow, standing or slow moving waters where fresh water and tidal salt water meet. Salinity may vary seasonally depending on the tide and the level of freshwater input. Coastal brackish marsh is composed of a dense cover of herbaceous monocots, characteristically dominated by cattails (*Typha* spp.), tules (*Schoenoplectus* spp.), and bulrush (*Bolboschoenus* spp.) (Holland 1986).

Coastal Brackish Marsh is the dominant vegetation community within the Study Area. The damaged outfall pipeline passes through Ellis Creek Marsh, which is dominated by salt marsh bulrush (*Bolboschoenus maritimus),* California tule (*Schoenoplectus californicus*), and broadleaf cattail (*Typha latifolia*). Pickleweed (*Salicornia pacifica*) is mixed with these monocots along the upper margins of the brackish marsh in areas where the plant community transitions to coastal salt marsh.

Northern Coastal Salt Marsh. Northern coastal salt marsh is a community typically found along sheltered margins of bays, lagoons, and estuaries, where tidal inundation of salt water occurs (Holland 1986). The salt marsh community is composed of relatively low-growing plants, ranging in height from several inches to over three feet. Plant composition changes with small differences in inundation depth and water salinity. Common herbaceous species occurring within the wetland include California cordgrass (*Spartina foliosa*), pickleweed (*Salicornia pacifica*), saltgrass (*Distichlis spicata*), jaumea (*Jaumea carnosa*), alkali heath (*Frankenia salina*), and marsh gumplant (*Grindelia stricta*) among others.

Northern coastal salt marsh vegetation, as described above, is present in the Study Area along the raised berm under which the damaged pipeline passes and in the unnamed marsh directly southeast of Ellis Creek Marsh. The unnamed marsh is not owned by the City of Petaluma and is currently separated from the Recycling Facility property by a low berm. This marsh is directly adjacent to the tidal slough into which the current contingency outfall bypass drains and where the outfall would be located under Project Alternatives 1 and 2.

4.2.2 Designated Critical Habitat

Critical habitat is defined in Section 3(5)A of the federal ESA as the specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection. Critical habitat may also include areas that are not currently occupied by the species but will be needed for its recovery.

The Study Area overlaps with the designated critical habitat for two special-status fish species: green sturgeon and steelhead – Central California Coast DPS. Compliance with the ESA would require consultation with NMFS to ensure that project activities would not adversely affect critical habitat for these fish species.

4.2.3 Essential Fish Habitat

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), regional fishery management councils establish Essential Fish Habitat (EFH) for federally managed species covered under regional Fishery Management Plans (FMP). EFH is defined as “those waters or substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (MSA Section 3). Impacts on EFH can result from the reduction in the quality and quantity of habitat, direct effects (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), and site-specific or habitat-wide impacts.

Chinook salmon, which are covered under the Pacific Coast Salmon FMP, are present within the Petaluma River. Compliance with the MSA is accomplished through consultation with NMFS. Federal agencies that fund, permit, or implement activities that may adversely affect EFH are required to consult with the NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to recommendations by the NMFS.

4.2.4 Jurisdictional Waters

Jurisdictional tidal waters are regulated by the U.S. Army Corps of Engineers (Section 404 Clean Water Act and Section 10 Rivers and Harbors Act) and the Regional Water Quality Control Board

(Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act). A delineation to determine the precise locations and boundaries of jurisdictional waters was not performed for the purposes of this report; however, the Petaluma River and the connected tidal channels and wetlands are all likely to be considered jurisdictional waters.

4.2.5 California Lakes and Streambeds

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under Sections 1600-1616 of California Fish and Game Code. The Lake and Streambed Alteration (LSA) Program reviews projects that would alter any river, stream, or lake and conditions projects to conserve existing fish and wildlife resources.

Project activities within or adjacent to the Petaluma River would require a 1602 Lake and Streambed Alteration Agreement.

4.2.6 San Francisco Bay and Shoreline

The San Francisco Bay Conservation and Development Commission (BCDC) has regulatory jurisdiction, as defined by the McAteer-Petris Act, over the Bay and its shoreline, which generally consists of the area between the shoreline and a line 100 feet landward of and parallel to the shoreline.

The Study Area is subject to tidal action and is within the BCDC jurisdiction as part of the San Francisco Bay, as defined in the McAteer-Petris Act.

5 Considerations for Project Alternatives

Alternative 1

Because of the small footprint of the shorter pipeline, Alternative 1 would result in the least amount of direct temporary disturbance to wetland and fish habitat. The likelihood of encountering any of the sensitive species outlined in Section 4.1 during pipeline construction would be greatly reduced by the relatively small amount of disturbance to the habitat. The project footprint under Alternative 1 overlaps with critical habitat for only one of the two listed fish species with critical habitat in the Study Area: green sturgeon. Fewer bird territories would be disturbed and the chance of encountering a nest during the breeding season would also be reduced under this Project Alternative. Additionally, the project would likely take much less time to complete, disrupting less of the breeding season for nesting birds.

Depending on the amount of freshwater discharge into the tidal slough and the predicted direction of flow, however, there is the potential for indirect impacts through habitat changes due to increases in freshwater input into the tidal slough. The tidal channel which would receive the seasonal freshwater discharge under Alternative 1 is directly connected to the brackish wetland at Ellis Creek Marsh. The seasonal increase of freshwater to the brackish wetlands could increase the presence of freshwater wetland species, such as *Typha latifolia* and *Schoenoplectus californicus*, and decrease the presence of *Bolboschoenus maritimus.* However, these wetlands are likely to remain brackish, with little change to the overall habitat structure and species composition. The unnamed salt marsh east of the tidal slough is separated from the slough and Ellis Creek Marsh by a low berm. If the additional discharge of water into the tidal slough crossed the berm, it is possible that the salt marsh could convert into brackish marsh with the increase of freshwater to the saline system. Several sensitive-species described in Appendix I are salt-marsh obligates and the potential habitat conversion may result in loss of habitat for these species. These species include Point Reyes salty bird's-beak, salt-marsh harvest mouse, and California Ridgway's rail. Additional analysis will be needed after the completion of the hydrologic study and development of engineered plans to better assess the risk of these habitat changes.

Alternative 2

Alternative 2 would result in the most disturbance to the wetland and fish habitat. The brackish and salt marsh habitat would be trenched and disturbed along the entire ~1000m length of the damaged pipeline, in addition to the disturbance described under Alternative 1. This wetland habitat potentially supports two federally and state endangered and fully projected special-status species: the California Ridgway's rail and the salt-marsh harvest mouse. To avoid impacts to special-status migrating fish and to maintain the use of the pipeline during wet weather, the construction would occur during the breeding season. If surveys show that there are breeding Ridgway's rails present in these wetlands, additional mitigation and avoidance measures will need to be enacted to minimize potential take of these endangered species.

Additionally, the greater project area and area of disturbance under Alternative 2 overlaps with critical habitat for two special-status fish species: green sturgeon and steelhead.

Additional information regarding future operation of the two outfalls is needed to assess the potential for indirect impacts to habitat in the tidal slough and Petaluma River associated with changes in future discharges.

Alternative 3

Alternative 3 would also disturb a large amount of wetland habitat that potentially supports breeding for several sensitive species, including the endangered Ridgway's rail and salt marsh harvest mouse, as discussed in Alternative 2 above. This Alternative would require extensive mitigation and avoidance measures to minimize impact to the special-status wetland species. Additionally, Alternative 3 overlaps with the designated critical habitat for two special-status fish species: green sturgeon and steelhead.

Under Alternative 3, the outfall pipe would continue to discharge freshwater into the Petaluma River. Because there would be no change to the location of the freshwater discharge from the facility, there would not be any new indirect effects to the adjacent habitats from Alternative 3.

6 Conclusions and Recommendations

The field surveys and this report are considered a preliminary assessment of potential biological resource issues and are meant to guide the City of Petaluma in making preliminary CEQA determinations and recommendations for further analysis. Since the project is in the initial planning stages and engineered plans and construction specifications have not been developed, additional analysis may be required to determine the full extent of impacts. The project will be constructed in environmentally sensitive areas, including jurisdictional wetlands, coastal brackish marsh, northern coastal salt marsh, designated critical habitat for green sturgeon (all alternatives) and steelhead (alternatives 2 and 3 only), and Essential Fish Habitat. Additionally, the Study Area supports breeding birds protected under the Migratory Bird Treaty Act and may support special-status plants and animals that require additional consideration under CDFW and USFWS laws.

The following includes a list of recommendations for further study and considerations for the three proposed project alternatives:

- For Alternative 1 and 2, vegetation mapping of the two sensitive natural communities (coastal brackish marsh and the northern coastal salt marsh) may be needed to determine whether there will be a change in the vegetation community due to the influx of freshwater to the tidal slough system. This vegetation mapping should accompany a review of the hydrological report to best assess the possibility of habitat change at the Study Area.

- For all alternatives, plant surveys should be conducted to determine whether there are any sensitive-species present within the project footprint. Under Alternative 1, plant surveys would be limited to the smaller footprint of the outfall in the tidal slough, unless the review of the hydrological survey revealed that there was a possibility of conversion of salt marsh to brackish marsh. In that instance, plant surveys should also be conducted in the adjacent salt marsh wetland for Alternative 1, as well.
- Surveys for California Ridgway's rail and California black rail should be conducted under any of the project alternatives. Under Alternative 1, rail surveys would be limited to the smaller footprint of the outfall in the tidal slough. The determination of whether either or both of these species are present will help guide the subsequent permitting process and indicate the number of rails that may be impacted by the proposed project actions. Assuming rails are present within 250 feet of the project site, construction should occur between October 1 and January 31, which is outside of rail breeding season. Ridgway's rail surveys should be conducted in accordance with the USFWS protocol dated June 2015, which requires four rounds of surveys to be conducted between January 15 and April 15, with the first round of surveys initiated before January 31. Protocol for black rail surveys requires surveys to be conducted between March 15 and May 31.

The proposed project will impact sensitive biological communities, including wetland habitats and waterways. These impacts will require permit authorization from the regulatory agencies, and will likely include:

- Section 404 Nationwide Permit from the Corps of Engineers
- Section 401 Water Quality Certification from the San Francisco Regional Water Quality Control Board related to the 404 permit
- Section 1602 Streambed Alteration Agreement from the CDFW
- Section 7 consultation with the Bay-Delta USFWS for impacts to ESA listed species and their habitat
- Section 7 consultation with NMFS for impacts to fish species, critical habitat, and EFH

The Section 401 and Section 1602 permits will also require a certified CEQA document prior to being authorized. A mitigation and monitoring plan will also be needed for authorization of permits to ensure temporary impacts are mitigated by returning habitat conditions to pre-construction conditions. Construction-specific species protection measures should be developed, as required, to protect terrestrial and marine environments and species. Details may include preconstruction surveys, fish and wildlife exclusion, on-going construction monitoring, worker education, and habitat mitigation, enhancement, and restoration guidelines.

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Common Name ***Scientific Name***	**Listing Status** **Federal/State**	**Habitat Description**	**Potential for Species Occurrence in Study Area**
Plants			
Franciscan onion *Allium peninsulare var. franciscanum*	--/--/1B.2	Cismontane woodland, valley and foothill grassland. Occurs in clay soils; often on serpentine; sometimes on volcanics. Dry hillsides. 5-320 m.	**None.** No suitable habitat found in Study Area.
Napa false indigo *Amorpha californica var. napensis*	--/--/1B.2	Broadleafed upland forest, chaparral, cismontane woodland. Occurs in openings in forest or woodland or in chaparral. 30-735 m	**None.** No suitable habitat found in Study Area.
alkali milk-vetch *Astragalus tener var. tener*	--/--/1B.2	Alkali playa, valley and foothill grassland, vernal pools. Occurs in low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 0-168 m.	**None.** No suitable habitat found in Study Area.
Mason's ceanothus *Ceanothus masonii*	--/CR/1B.2	Chaparral. Occurs in serpentine ridges or slopes in chaparral or transition zone. 180-460 m.	**None.** No suitable habitat found in Study Area.
Point Reyes salty bird's-beak *Chloropyron maritimum ssp. palustre*	--/--/1B.2	Coastal salt marsh. Occurs in coastal salt marsh with Salicornia, Distichlis, Jaumea, Spartina, etc. 0-115 m.	**Moderate.** Habitat is present at the Study Area and there are known occurrences within 1 mile.
soft salty bird's-beak *Chloropyron molle ssp. molle*	FE/CR/1B.2	Coastal salt marsh. Occurs in coastal salt marsh with Distichlis, Salicornia, Frankenia, etc. 0-5 m.	**Low.** Habitat is present at the Study Area, however local CNDDB records are over 40 years old and suggest species may be locally extirpated. The nearest known extant occurrences are ~20 miles away.
Sonoma spineflower *Chorizanthe valida*	FE/CE/1B.1	Coastal prairie. Occurs in sandy soil.	**None.** No suitable habitat found in Study Area.
Baker's larkspur *Delphinium bakeri*	FE/CE/1B.1	Broadleafed upland forest, coastal scrub, valley and foothill grassland. Occurs on NW-facing slope, on decomposed shale. Historically known from grassy areas along fencelines too. 105-205 m.	**None.** No suitable habitat found in Study Area.
golden larkspur *Delphinium luteum*	FE/CR/1B.1	Chaparral, coastal prairie, coastal scrub. Occurs on north-facing rocky slopes. 5-100 m.	**None.** No suitable habitat found in Study Area.
Tiburon buckwheat *Eriogonum luteolum var. caninum*	--/--/1B.2	Chaparral, valley and foothill grassland, cismontane woodland, coastal prairie. Occurs in serpentine soils; sandy to gravaelly sites. 60-640 m.	**None.** No suitable habitat found in Study Area.
fragrant fritillary *Fritillaria liliacea*	--/--/1B.2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Often on serpentine; various soils reported though usually on clay, in grassland. 3-385 m.	**None.** No suitable habitat found in Study Area.

Common Name ***Scientific Name***	**Listing Status** **Federal/State**	**Habitat Description**	**Potential for Species Occurrence in Study Area**
Plants (continued)			
congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	--/--/1B.2	Valley and foothill grassland. Occurs in grassy valleys and hills, often in fallow fields; sometimes along roadsides. 5-520 m.	**None.** No suitable habitat found in Study Area.
Marin western flax *Hesperolinon congestum*	FT/CT/1B.1	Chaparral, valley and foothill grassland. Occurs in In serpentine barrens and in serpentine grassland and chaparral. 60-400 m.	**None.** No suitable habitat found in Study Area.
Contra Costa goldfields *Lasthenia conjugens*	FE/--/1B.1	Valley and foothill grassland, vernal pools, alkaline playas, cismontane woodland. Occurs in vernal pools, swales, low depressions, in open grassy areas. 1-450 m.	**None.** No suitable habitat found in Study Area.
Pitkin Marsh lily *Lilium pardalinum ssp. pitkinense*	FE/CE/1B.1	Cismontane woodland, meadows and seeps, marshes and swamps. Occurs in saturated, sandy soils with grasses and shrubs. 45-65 m.	**None.** No suitable habitat found in Study Area.
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	--/--/1B.1	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest. Occurs in vernal pools and swales; adobe or alkaline soils. 3-1680 m.	**None.** No suitable habitat found in Study Area.
Petaluma popcornflower *Plagiobothrys mollis var. vestitus*	--/--/1A	Valley and foothill grassland, marshes and swamps. Occurs in wet sites in grassland, possibly coastal marsh margins. 10-50 m.	**None.** No suitable habitat found in Study Area.
North Coast semaphore grass *Pleuropogon hooverianus*	--/CT/1B.1	Broadleafed upland forest, meadows and seeps, north coast coniferous forest. Occurs in wet grassy, usually shady areas, sometimes freshwater marsh; associated with forest environments. 45-1160 m.	**None.** No suitable habitat found in Study Area.
Point Reyes checkerbloom *Sidalcea calycosa ssp. rhizomata*	--/--/1B.2	Marshes and swamps. Occurs in freshwater marshes near the coast. 5-95 m.	**None.** No suitable habitat found in Study Area.
two-fork clover *Trifolium amoenum*	FE/--/1B.1	Valley and foothill grassland, coastal bluff scrub. Sometimes occurs on serpentine soil, open sunny sites, swales. Most recently cited on roadside and eroding cliff face. 5-310 m.	**None.** No suitable habitat found in Study Area.
Invertebrates			
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	--/**	Vernal pools, and the uplands around vernal pools.	**None.** No suitable habitat found in Study Area.
western bumble bee *Bombus occidentalis*	--/**	Once common & widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease.	**Low.** Found in a variety of habitats and may occur at Study Area. However, species is now absent from much of its former range in western California.

Common Name ***Scientific Name***	**Listing Status** **Federal/State**	**Habitat Description**	**Potential for Species Occurrence in Study Area**
Invertebrates (continued)			
Marin blind harvestman *Calicina diminua*	--/**	Known only from the type locality, Mount Burdell, Novato, Marin County. Serpentine endemic.	**None. No suitable habitat found in Study Area.**
monarch - California overwintering population *Danaus plexippus pop. 1*	--/**	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**Low.** No roosting habitat present at Study Area, however Study Area might be used on a transient basis.
Sonoma zerene fritillary *Speyeria zerene sonomensis*	--/**	Valley & foothill grassland. Restricted to low elevation grasslands of the Sonoma Mountains. This subspecies apparently flies from mid May to early July, with a peak flight period in early to mid June.	**None.** No suitable habitat found in Study Area.
Ubick's gnaphosid spider *Talanites ubicki*	--/**	Known only from the type locality, Mount Burdell, Novato, Marin County. Serpentine endemic.	**None.** No suitable habitat found in Study Area.
Fish			
Green sturgeon *Acipenser medirostris*	FT/CSC	Spend most of their adult life near shore in coastal and estuarine waters; spawn in freshwater rivers. SF Estuary mostly used as a migration corridor, though some use it for feeding/non-reproductive purposes.	**Moderate.** Habitat is present in Study Area and Study Area overlaps with designated Critical Habitat.
Delta smelt *Hypomesus transpacificus*	FT/CE	Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, river channels and sloughs of the Delta.	**Low.** Historically abundant in Bay-Delta, now extremely rare. At present, primarily confined to Suisun Bay and a few tidal channels and flooded islands within Suisun Marsh and the Delta.
Steelhead - Central California Coast DPS *Oncorhynchus mykiss irideus*	FT/--	From Russian River, south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay basins.	**High.** Steelhead may use Petaluma River as a migration corridor. Petaluma River is part of the designated Critical Habitat for Steelhead.

Common Name ***Scientific Name***	**Listing Status** **Federal/State**	**Habitat Description**	**Potential for Species Occurrence in Study Area**
Fish (continued)			
Chinook salmon - Central Valley Fall ESU *Oncorhynchus tshawytscha*	--/CSC	Spawning and rearing restricted to Sacramento River basin, migrate through San Francisco Bay and Sacramento-San Joaquin Delta, require clean, cold water and gravel beds for spawning.	**Moderate.** Migrating individuals may be seasonally present in the Petaluma River.
Sacramento splittail *Pogonichthys macrolepidotus*	--/CSC	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay, San Pablo Bay watershed, and associated marshes. Occurs in slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning and foraging for young.	**Moderate.** Habitat is present at the Study Area and the species is known to occur in the Petaluma River estuary.
longfin smelt *Spirinchus thaleichthys*	FC/CT/ MSFCMA	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	**Low.** No freshwater habitat available for spawning in Study Area, but larvae, foraging juveniles, and young adults may be present year-round.
Reptiles and Amphibians			
California tiger salamander *Ambystoma californiense*	FT/CT	Central Valley DPS federally listed as threatened. Santa Barbara and Sonoma counties DPS federally listed as endangered. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	**None.** Tidal habitat at Study Area is saline and is not suitable for species.
western pond turtle *Emys marmorata*	--/CSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**None.** Tidal habitat at Study Area is saline and is not suitable for species.
foothill yellow-legged frog *Rana boylii*	--/CC,CSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	**None.** Tidal habitat at Study Area is saline and is not suitable for species.
California red-legged frog *Rana draytonii*	FT/CSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	**Low.** Tidal habitat at Study Area is saline and is not suitable for species, however there are known occurrences adjacent to the Study Area, in Ellis Creek.

Common Name ***Scientific Name***	**Listing Status** **Federal/State**	**Habitat Description**	**Potential for Species Occurrence in Study Area**
Reptiles and Amphibians (continued)			
red-bellied newt *Taricha rivularis*	--/CSC	Coastal drainages from Humboldt County south to Sonoma County, inland to Lake County. Isolated population of uncertain origin in Santa Clara County. Occurs in terrestrial habitats, juveniles generally underground, adults active at surface in moist environments. Will migrate over 1 km to breed, typically in streams with moderate flow and clean, rocky substrate.	**None.** Tidal habitat at Study Area is saline and is not suitable for species.
Mammals			
pallid bat *Antrozous pallidus*	--/CSC	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Low**. Marginal foraging habitat is present in project vicinity. Nearest occurrence approximately 2 miles east of Study Area.
Townsend's big-eared bat *Corynorhinus townsendii*	--/CSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Extremely sensitive to human disturbance.	**Low.** Marginal foraging habitat is present in project vicinity. Nearest occurrence approximately 4 miles south of Study Area.
salt-marsh harvest mouse *Reithrodontomys raviventris*	FE/CE,FP	Only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat, but may occur in other marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires higher areas for flood escape.	**High.** Suitable habitat is present at the Study Area and species has been documented in the marshes directly adjacent to the Study Area.
Suisun shrew *Sorex ornatus sinuosus*	--/CSC	Tidal marshes of the northern shores of San Pablo and Suisun bays. Requires dense low-lying cover and driftweed and other litter above the mean hightide line for nesting and foraging.	**Low.** Suitable habitat is present at the Study Area. Nearest documented occurrence is 9 miles southeast of Study Area.
American badger *Taxidea taxus*	--/CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Low.** Marginal habitat is present in Study Area. Species has been recently documented within the Petaluma River watershed.
Birds			
tricologred blackbird *Agelaius tricolor*	--/CT	Highly cologial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony	**Moderate** (Unlikely to nest). Suitable winter foraging habitat is present in the Study Area and ebird records have documented species at Study Area.

Common Name ***Scientific Name***	**Listing Status** **Federal/State**	**Habitat Description**	**Potential for Species Occurrence in Study Area**
Birds (continued)			
Great egret *Ardea alba*	--/** rookery site	Nest colonially in groves of trees. Rookery sites located near marshes, tide-flats, irrgated pastures, and margins of rivers and lakes	**High** (Potential to nest). Suitable foraging habitat is present within the Study Area. An established rookery is documented in the vicinity where tree groves are present, however there are no established rookeries at the Study Area. There are two trees within the Study Area, which could provide marginal nesting habitat as an egret rookery.
Great blue heron *Ardea herodias*	--/** rookery site	Colonial nester in tall trees and clifsides. Rookery sites in close proximity to foragin areas: marshes, lake margins, tide-flats, rivers, streams, and wet meadows	**High** (Potential to nest). Suitable foraging habitat is present within the Study Area. An established rookery is documented in the vicinity where tree groves are present, however there are no established rookeries at the Study Area. There are two trees within the Study Area, which could provide marginal nesting habitat as a heron rookery.
Short-eared owl *Asio flammeus*	--/CSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields.	**Moderate** (Potential to nest). Suitable foraging habitat is present in the Study Area and marsh margins may provide suitable nesting habitat.
burrowing owl *Athene cunicularia*	--/CSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**None.** No suitable habitat found in Study Area.
Swainson's hawk *Buteo swainsoni*	--/CT	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	**Low** (Unlikely to nest). Marginal foraging habitat is present on Study Area. Historically present in vicinity, but now possibly extirpated from area.
Norther harrier *Circus cyaneus*	--/CSC	Coastal salt and freshwater marsh. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**High** (Potential to nest). Suitable habitat is present within the Study Area.

Common Name ***Scientific Name***	**Listing Status** **Federal/State**	**Habitat Description**	**Potential for Species Occurrence in Study Area**
Birds (continued)			
Snowy egret *Egretta thula*	--/** rookery site	Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal flats, streams, wet meadows, and borders of laks	**High** (Potential to nest). Suitable foraging habitat is present within the Study Area. An established rookery is documented in the vicinity where tree groves are present, however there are no established rookeries at the Study Area. There are two trees within the Study Area, which could provide marginal nesting habitat as an egret rookery.
white-tailed kite *Elanus leucurus*	--/FP	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**High** (Unlikely to nest). Suitable foraging habitat is present within the Study Area, however, Study Area lacks suitable nesting habitat.
San Francisco common yellowthroat *Geothlypis trichas sinuosa*	--/CSC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**High** (Likely to nest). Suitable habitat is present within the Study Area and species has been documented in marsh adjacent to Study Area.
California black rail *Laterallus jamaicensis coturniculus*	--/CT,FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs dense vegetation for nesting habitat.	**High** (Likely to nest). Suitable habitat is present at the Study Area and species was documented at the Study Area in 2015.
San Pablo song sparrow *Melospiza melodia samuelis*	--/CSC	Resident of salt marshes along the north side of San Francisco and San Pablo bays. Inhabits tidal sloughs in the Salicornia marshes; nests in Grindelia bordering slough channels.	**High** (Likely to nest). Suitable habitat is present within the Study Area and species was observed during site visit (post-breeding season).
Bryant's Savannah Sparrow *Passerculus sandwichensis alaudinus*	--/CSC	Resident of coastal marshes and grasslands. Nests in pickleweed dominant salt marsh and adjacent ruderal habitat.	**Moderate** (Potential to nest). Suitable habitat is present within the Study Area and species is likely to occur at the Study Area.

Common Name ***Scientific Name***	**Listing Status** **Federal/State**	**Habitat Description**	**Potential for Species Occurrence in Study Area**
Birds (continued)			
Black-crowned night-heron *Nycticorax nycticorax*	--/** rookery site	Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.	**High** (Potential to nest). Suitable foraging habitat is present within the Study Area. Study Area also has marginally suitable nesting habitat, although there are no established rookeries documented in the Study Area.
California Ridgway's rail *Rallus obsoletus obsoletus*	FE/CE,FP	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	**Moderate** (Potential to nest). Suitable habitat is present within the Study Area and species has been documented in marsh adjacent to Study Area.
bank swallow *Riparia riparia*	--/CT	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	**Low** (Unlikely to nest). Suitable foraging habitat is present in the Study Area, however, current distribution of species is restricted and Study Area lacks suitable nesting habitat.

LISTING STATUS CODES

Federal (USFWS):

FE = Listed as Endangered (in danger of extinction) by the federal government.
FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the federal government.
FC = Federal candidate species
MSFCMA = Magnuson-Stevens Fishery Conservation and Management Act

State (CDFW):

CE = Listed as Endangered by the State of California.
CT = Listed as Threatened by the State of California.
CC = Candidate for listing by the State of California
CSC = California Species of Special Concern.
FP = Fully Protected

California Native Plant Society (CNPS):

List 1A=Plants presumed extinct in California.
List 1B=Plants rare, Threatened, or Endangered in California and elsewhere.
List 2= Plants rare, Threatened, or Endangered in California but more common elsewhere.
An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California.
.2 – Fairly endangered in California.
.3 – Not very endangered in California.

Other Listing Status:

**Special animal—listed on CDFW's Special Animals List.

Attachment 6

Rail Survey Report

ATTACHMENT H

2021 Rail Surveys for the Ellis Creek Water Recycling Outfall Pipeline Replacement Project

Petaluma Water Recycling Facility
City of Petaluma

Prepared for:

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Prepared by:

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April 16, 2021

1 Introduction

The City of Petaluma is planning to replace a damaged outfall pipeline at the Ellis Creek Water Recycling Facility. The Project is located at the Ellis Creek Water Recycling Facility at 4400 Lakeville Highway in the City of Petaluma. Significant deterioration in the structural integrity of the existing outfall pipeline was documented in September 2016. In 2017, an emergency bypass outfall was placed in a tidal slough just east of the City's chlorine contact basin.

Based on reviews of multiple plans, it was determined that the best alternative would be to create a permanent outflow to the tidal slough where the current contingency outfall bypass is located and to leave the existing damaged outfall pipe in place. The new outfall will be sized with a similar capacity as the existing outfall. Although the footprint of the new outfall pipeline will be very small, there is the potential that the increase in freshwater flows in the tidal channel could alter the composition of the overall marsh habitat at the site.

California black rails, California Ridgway's rails, and Virginia rails were all documented at Ellis Creek Marsh when the site was last surveyed by Point Blue Conservation Science (PBCS) in 2012. Because there is legacy data at the site and because we expected to detect both black rails and Ridgway's rails, we recommended the use of the Two-Species North American Survey Protocol. This would allow us to compare the current rail species composition and distribution at the site to both past and future survey efforts.

2 Project Location

The proposed replacement outfall pipeline will replace the current contingency outfall bypass, which runs from the southernmost corner of the facility into a tidal channel running parallel to a berm and connecting to the Petaluma River. The wetlands at Ellis Creek Marsh are characterized by mostly brackish vegetation, including *Bolboschoenus maritimus*, *Schoenoplectus californicus*, and *Typha latifolia*, with *Salicornia pacifica* in the understory (**Figure 1**). Ellis Creek Marsh is located across the Petaluma River from the Petaluma Ancient Marsh, one of the oldest tidal wetlands remaining in the San Francisco Estuary.

Figure 1. Tall stands of salt marsh bulrush (*Bolboschoenus maritimus*) dominate most of Ellis Creek Marsh intermixed with an understory of pickleweed (*Salicornia pacifica*). Photo was taken from station ELCR06 during the first survey round on February 5, 2021.

Table 1. Survey station locations at Ellis Creek Marsh.

Site Name	Station Name	Transect	X-coordinate*	Y-coordinate*	Notes
Ellis Creek	ELCR02	ECLR-T2	536758	4229813	previously surveyed by PBCS in 2012
Ellis Creek	ELCR03	ECLR-T2	537039	4229568	previously surveyed by PBCS in 2012
Ellis Creek	ELCR04	ECLR-T2	537229	4229720	
Ellis Creek	ELCR05	ECLR-T2	536569	4229896	previously surveyed by PBCS in 2012 (named ELCR01)
Ellis Creek	ELCR06	ECLR-T2	536992	4229857	

** UTM NAD 83 Zone 10*

3 Methods

Rail surveys at Ellis Creek Marsh were conducted using the North American Two-Species Survey Protocol for secretive marsh birds (Wood et al, 2016). This protocol is a transect point count survey that requires the broadcast of vocalizations of two species of rail: black rails and Ridgway's rails. Five survey stations (points) were placed at least 200 meters apart in Ellis Creek Marsh (**Table 1**). Three of the five survey stations were already established in the historic database as they had been surveyed by Point Blue Conservation Science (PBCS) in 2011 and 2012.

During each of three survey rounds, a trained and permitted biologist visited all five stations for a total of 10 minutes each at either dawn or dusk. Black rail and Ridgway's rail vocalizations were broadcast sequentially after the first five minutes at the station. Biologists recorded all detections of any rail species, including black rails (BLRA), Ridgway's rails (RIRA), Virginia rails (VIRA) and sora (SORA). Species, call type, distance, and direction were recorded on a datasheet and transcribed onto a field map. Data were entered into the California Avian Data Center (CADC) and post-processed into GIS. Data will be submitted to the California Natural Diversity Database (CNDDB).

Species Profiles

California black rail (*Laterallus jamaicensis coturniculus*) is listed as threatened under the CESA and is a fully protected species in the state of California. In the San Francisco Estuary, black rails are most abundant in tidal marshes with some freshwater input (Evens et al. 1991). They nest primarily in pickleweed-dominated marshes with patches or borders of bulrushes, often near the mouths of creeks. Black rails build nests in tall grasses or marsh vegetation during spring and lay about six eggs. Nests are usually constructed of pickleweed and are placed directly on the ground or slightly above ground in vegetation. The California black rail breeding season in the San Francisco Estuary spans February through August.

California Ridgway's rail (*Rallus obsoletus obsoletus*) (formerly California clapper rail, *Rallus longirostris obsoletus*) is listed as endangered under the ESA and the CESA and is a fully protected species in the state of California. California Ridgway's rails occur only in salt and brackish tidal marsh habitat and require vegetative cover suitable for both nesting and refuge during high tide events. Marshes where they occur are characterized by unrestricted daily tidal flows through a network of well-developed channels (USFWS 2013). Although Ridgway's rails are most commonly found in saltwater marshes dominated by cordgrass (*Spartina* spp.), they may also be found in brackish marshes. The breeding season of California Ridgway's rails in the San Francisco Estuary spans February through the end of August.

Virginia rail (*Rallus limicola)* is listed as a species of "least concern" on the IUCN Red List but is protected under the US Migratory Bird Act. Virginia rails have a wide distribution and are found in brackish and freshwater marshes across North America. Virginia rails are year-round residents of the marshes where they occur in the San Francisco Estuary. Virginia rails are similar in appearance to Ridgway's rails, though are smaller with grey cheeks. In the Bay Area, the two species distributions are divided along a salinity gradient where Virginia rails tend to occupy brackish marshes and Ridgway's rails occupy salt marshes.

4 Results

Ellis Creek Marsh was visited for three rounds between February 5 and Marsh 11, 2021. Black rails and Virginia rails were detected on all three rounds at the site, but Ridgway's rails were not detected on any of the rounds. Survey results are summarized in the table below (**Table 2**) and estimates of the rails' geographic locations are shown in the map in **Figure 2**. Other bird species observed in the marsh included: marsh wren, salt-marsh common yellow throat, song sparrow, western meadowlark, and red-winged blackbirds.

Although Ridgway's rails were not detected during surveys this year, they do occasionally occupy the site, as evidenced by surveys conducted by PBCS in 2011 and 2012. During those two seasons, PBCS conducted a total of nine survey rounds at the site, but only detected Ridgway's rails at the site on one of those nine visits. On that occasion, two Ridgway's rails were detected at the southwestern edge of the site from over 250 meters away. The high frequency of Virginia rails during our surveys this season indicates that the salinity gradient at the site is more suitable to Virginia rails, the brackish-marsh species, than the Ridgway's rail, a salt-marsh obligate. An increase in freshwater flows from the outfall pipeline is unlikely to shift the species composition at the site since the marsh is already heavily influenced by freshwater inputs.

Table 2. Summary survey results by survey round.

				Number of Detections by Species			
Round	**Observer**	**Date**	**Time**	**RIRA**	**BLRA**	**VIRA**	**SORA**
1	J. McBroom	2/5/2021	16:56 - 18:11	0	5	10	0
2	L. Domecus	2/24/2021	05:53 - 07:10	0	5	6	0
3	J. Hammond	3/11/2021	17:35 - 18:49	0	13	10	0

5 Recommendations

California black rails are a fully-protected species in the state of California and disturbance to their habitat should be avoided. Construction should occur between September 1 and January 31, outside of the rail breeding season. If construction must occur during the breeding season to accommodate special-status fish species, a rail biologist should conduct pre-construction surveys to determine whether there are any rails in the immediate vicinity of the planned construction activity. Additionally, an approved biological monitor should be present onsite during construction activities to ensure that no rails or their nests are harmed during construction activities.

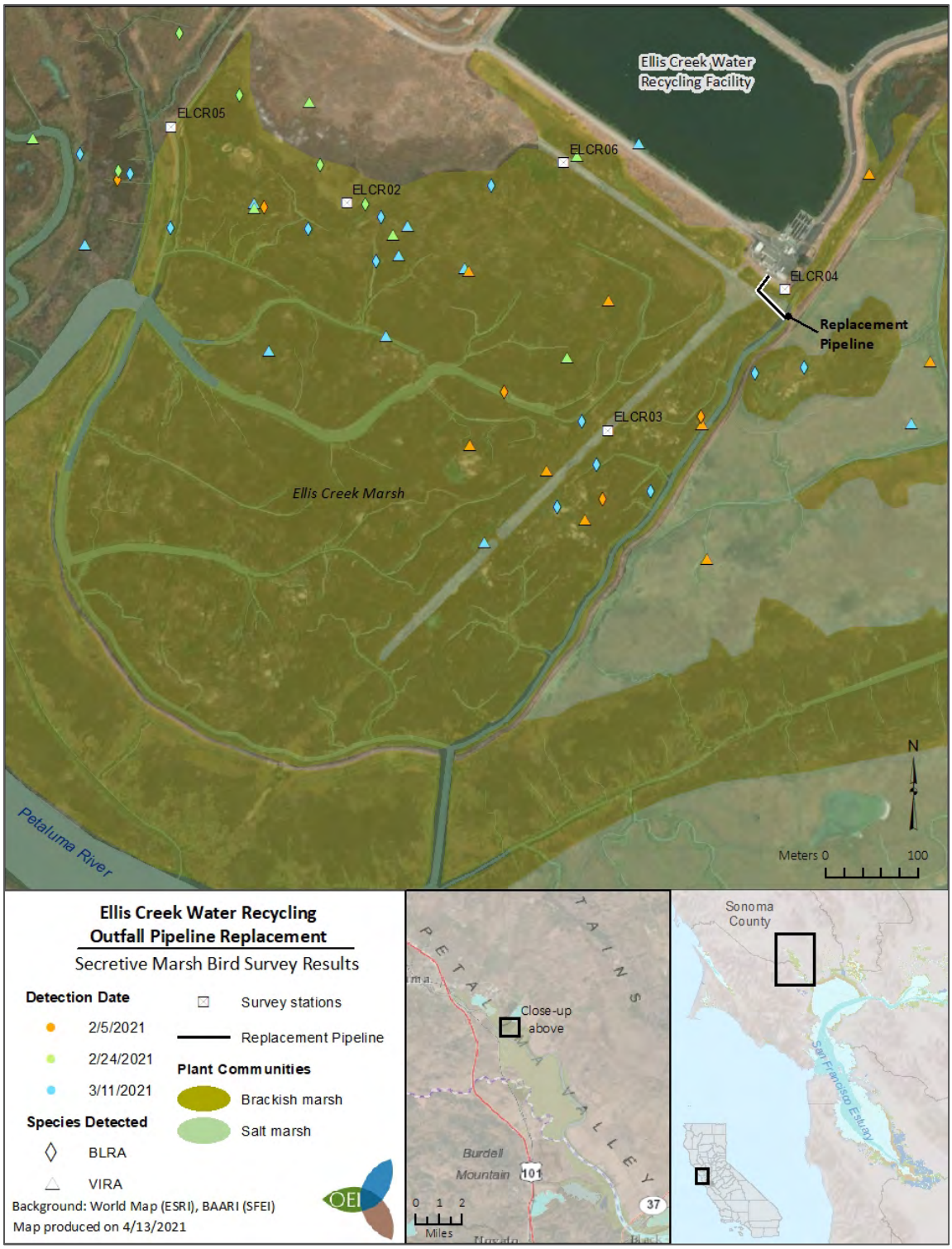

Figure 2. Location of rail observations at Ellis Creek Marsh during surveys using the North American Two-Species Survey Protocol for secretive marsh birds.

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Attachment 7

Cultural Resources Report

ATTACHMENT H

ARCHAEOLOGICAL RESOURCES REVIEW FOR THE OUTFALL REPLACEMENT PROJECT AT THE ELLIS CREEK WATER RECYCLING FACILITY, PETALUMA, SONOMA COUNTY, CALIFORNIA

Prepared for

Kristine Gaspar

September 2018

ASC
ANTHROPOLOGICAL STUDIES CENTER
SONOMA STATE UNIVERSITY

ATTACHMENT H

ARCHAEOLOGICAL RESOURCES REVIEW FOR THE OUTFALL REPLACEMENT PROJECT AT THE ELLIS CREEK WATER RECYCLING FACILITY, PETALUMA, SONOMA COUNTY, CALIFORNIA

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September 2018
NT235 ASC1806

This project was completed under the supervision of Dr. Thomas Whitley (Registered Professional Archaeologist), Director, Anthropological Studies Center.

CONFIDENTIAL

This report contains confidential cultural resource location information; distribution should be restricted to those with a need to know. Cultural resources are nonrenewable, and their cultural, scientific, and aesthetic values can be significantly reduced by disturbance. To deter vandalism, artifact collection, and other activities that can damage cultural resources, their locations should be kept confidential. The legal authority to restrict cultural resource information is in the National Historic Preservation Act of 1966, Section 304; the Archaeological Resource Protection Act of 1979, Section 9(a); and California Government Code 6254.10.

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Appendixes

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INTRODUCTION AND SUMMARY

At the request of Kristine Gaspar of GHD, Inc., the Anthropological Studies Center (ASC) of Sonoma State University conducted an archaeological resources review for the planned Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California. The City of Petaluma intends to evaluate alternatives for a permanent replacement of the existing outfall pipeline. Future alternatives could include the replacement of the existing outfall pipeline using open trench, directional drilling, and/or sliplining methods, and/or the construction of permanent discharge facilities. The archaeological resources review was completed as part of the environmental review documentation required by the City of Petaluma pursuant to the California Environmental Quality Act of 1970 (CEQA), including the recent amendments to it by Assembly Bill 52.

The archaeological resources review comprised three main parts: a records and literature search at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS), administered by the California Office of Historic Preservation (OHP); a further literature review of publications, files, and maps at ASC and online for ethnographic, historic-era, and prehistoric resources and background information; and communication with the Native American Heritage Commission (NAHC) to request a review of the Sacred Lands File and contact information for the appropriate Tribal communities, who ASC then contacted regarding the project. Based on the results of this review, this report concludes with an assessment of the potential for surficial and buried archaeological resources in the Project Area.

ASC Staff Archaeologist Scott McGaughey handled the NAHC contacts for the project. ASC Staff Archaeologist Samantha Dollinger conducted the records and literature search at the NWIC on 7 September 2018, supplemented by further literature review at ASC and online by Scott McGaughey.

The records search found no previously recorded cultural resources in the Project Area, and that a small portion of the Project Area had been previously studied. Two historic-era resources, a 1932 USGS benchmark (P-49-005003; Martin 2015) and a segment of the Northwestern Pacific Railroad (P-49-002834/CA-SON-2322H; Schultz 2011), had been recorded within 1/4 mile of the Project Area. One prehistoric resource (C-757; Gerike 1990) had been informally recorded within 1/4 mile of it. The Project Area's sensitivity for buried archaeological resources is moderate. The Project Area's sensitivity for unrecognized surficial archaeological resources is also moderate.

Report preparation and administration were done by the following ASC personnel:

- Principal investigator: Dr. Thomas Whitley, Registered Professional Archaeologist (RPA), Director of the Anthropological Studies Center, Sonoma State University.
- Staff Archaeologist: Scott McGaughey, M.A., RPA, with 5 years of experience in California prehistoric and historical archaeology.

- Staff Archaeologist: Samantha Dollinger, M.A., RPA, with 6 years of experience in California prehistoric and historical archaeology.

PROJECT AREA AND STUDY AREA

The Project Area (Figures 1 and 2) encompasses 44.7 acres of wetlands at the Ellis Creek Water Recycling Facility located at 3890 Cypress Drive, Petaluma, Sonoma County, California. It lies within unsectioned portions of wetlands associated with the Petaluma River; if the Public Land Survey System were projected over the wetlands, the Project Area would lie in Sections 1 and 12 of Township 4 North, Range 7 West, Mt. Diablo Base and Meridian, as depicted on the United States Geological Survey (USGS) Petaluma River, California 7.5-minute topographic quadrangle map (USGS 1980). The Project Area is within the course of the Petaluma River and its surrounding wetlands, at an elevation between approximately 0 and 20 feet above mean sea level.

The Study Area (Figure 2) comprises the Project Area and a 0.25-mile buffer surrounding it, deemed sufficient to capture any recorded resources likely to be affected by the project, to provide contextual background, and to indicate the potential for unknown resources in the Project Area.

GEOLOGICAL AND ECOLOGICAL SETTING

The Project Area and Study Area rest on Holocene San Francisco Bay mud interspersed with modern artificial fill placed for levee construction (Knudsen et al. 2000; Witter et al. 2006). The soils are Reyes silty clay, a poorly drained soil found in salt marshes, above alluvium (United States Department of Agriculture 2018) with slopes ranging from 0 to 2 percent; Tidal marsh, a very poorly drained soil found in tidal flats, above organic material; and Los Osos clay loam, thin solum, a well-drained soil residuum weathered from sedimentary rock with a minimum depth to bedrock of 64 cm., typically found on hills and back slopes with a moderate slope from 5 to 15 percent (United States Department of Agriculture 2018).

The natural vegetation in the Study Area in historical times has been coastal saltmarsh. The coastal saltmarsh is typically found around sheltered bays, estuaries and sheltered lagoons, usually above mean high water level and inland from intertidal sand and mud flats. The coastal saltmarsh contains a community of perennial graminoids and succulent forbs. Coverage is usually one hundred percent, but may be less at lower elevations. Algae may colonize frequently flooded areas of bare ground. Dominant species include glasswort (*Salicornia virginica*) and cordgrass (*Spartina foliosa*) (Küchler 1977). Current vegetation in the Study Area appears consistent with historical times.

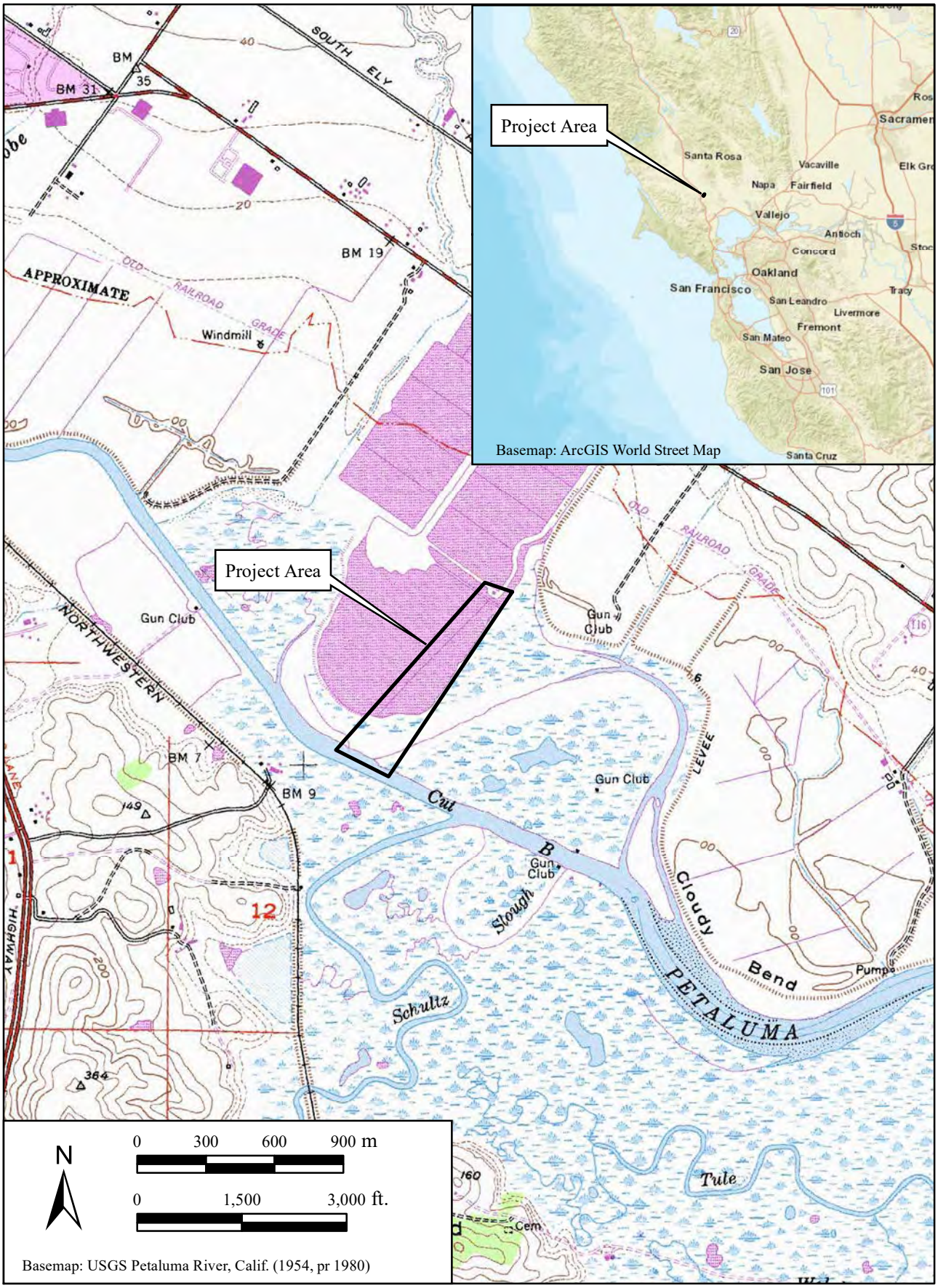

Figure 1. Project vicinity and location

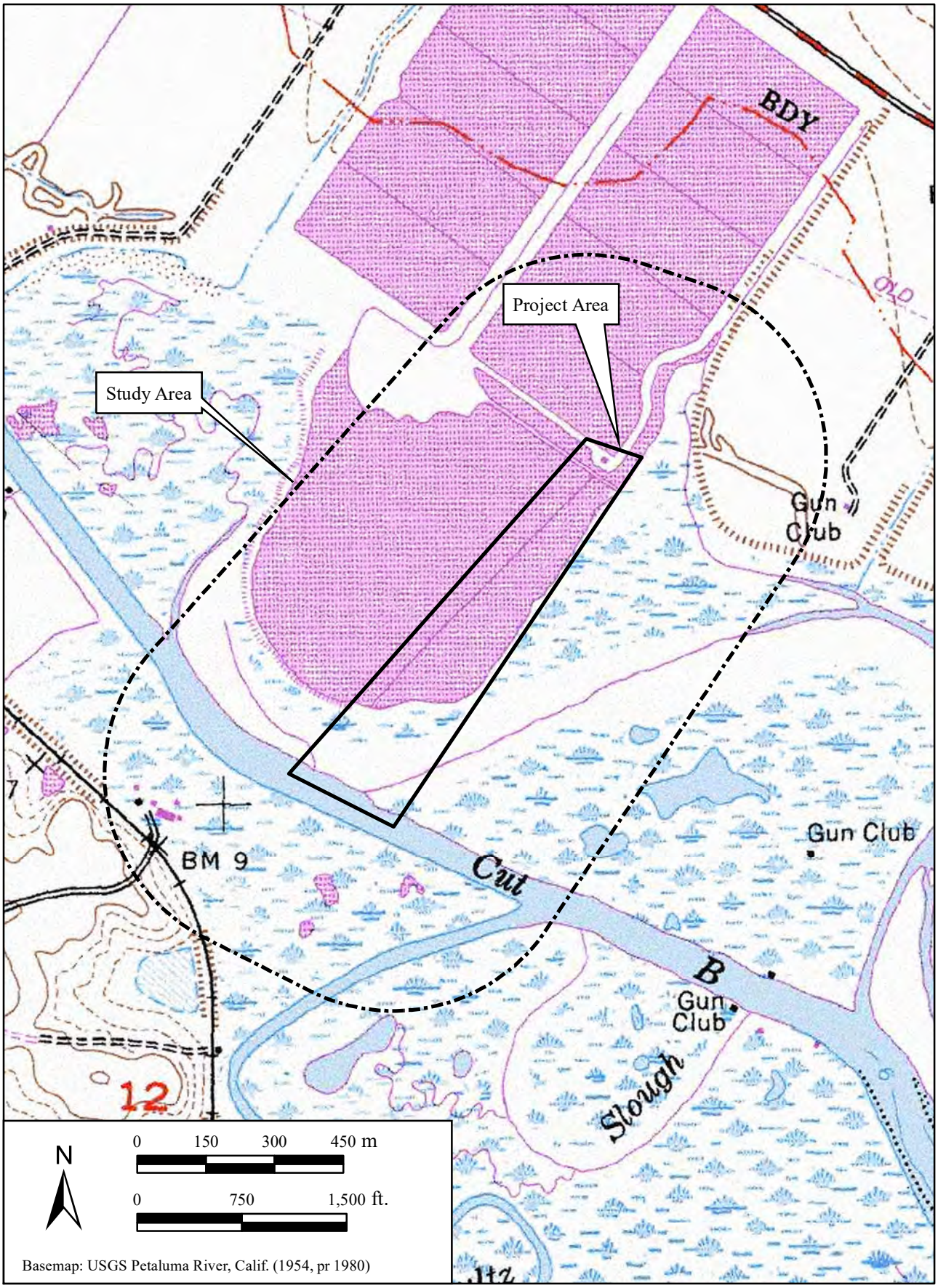

Figure 2. Project Area and Study Area

RECORDS SEARCH AND LITERATURE REVIEW

This study began with a records search and literature review to (1) determine whether archaeological or other cultural resources had been recorded within or near the Project Area; (2) assess the likelihood of unrecorded resources existing in the Project Area, based on archaeological, ethnographic, and historical documents and literature, and on the distribution and environmental settings of nearby sites; and (3) develop regional background and context information to aid in identifying resources and making preliminary assessments of them.

METHODS

ASC Staff Archaeologist Samantha Dollinger conducted a records search and literature review on 7 September 2018 at the NWIC. The NWIC, at Sonoma State University in Rohnert Park, California, is administered by the State of California Office of Historic Preservation (OHP) as one of the centers that maintain the California Historical Resources Information System (CHRIS), the official state repository for records and reports on historical resources, including archaeological resources. The NWIC's records cover an 18-county area that includes Sonoma County. ASC Staff Archaeologist Scott McGaughey conducted additional research using maps, files, reports, and publications at ASC and online.

The records search and literature review examined the following documents:

- NWIC maps (USGS 7.5-minute topographic maps with NWIC annotations), to identify recorded archaeological sites, recorded archaeological surveys, and recorded historic-era resources of the built environment (buildings, structures, and objects) within the Study Area.
- Site records and study reports on file at the NWIC corresponding to those marked on the NWIC maps within the Study Area.
- The California Department of Parks and Recreation's (1976) *California Inventory of Historic Resources* and the OHP's (2012) *Historic Properties Directory* (HPD, updated 5 April 2012), to identify California Historical Landmarks, California Points of Historic Interest, and California historic properties that are listed in, or determined eligible for listing in, the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) located within the Study Area. This edition of the HPD includes the most updated consolidated listings of these registries available.
- Historic-era maps (*diseños*, General Land Office maps, and 19th- and early-20th-century USGS 15- and 7.5-minute topographic maps), to identify additional historic-era buildings, structures, objects, and areas of archaeological sensitivity located in or near the Study Area.
- *Handbook of North American Indians, Volume 8: California* (Heizer 1978) to identify ethnographic village locations in or near the Study Area.

- Online resources including historical map collections, the United States Department of Agriculture (USDA) Web Soil Survey website, United States Geological Survey online map and geological information, websites of local historical museums and societies, Tribal websites, and subject-specific search results.

RESULTS OF RECORDS SEARCH

The records search identified no recorded cultural resources in the Project Area. It did find three cultural resources in the surrounding portion of the Study Area, one of which was recorded only informally. Two cultural resources studies have been conducted in a small portion of the Project Area, and four cultural resources studies overlap surrounding parts of the Study Area.

Recorded Cultural Resources in the Project Area

The records search identified no previously recorded cultural resources in the Project Area.

Recorded Cultural Resources in the Study Area

The records search identified one prehistoric and two historic-era cultural resources outside the Project Area but within the 0.25-mile buffer of the Study Area (Table 1; Figure 3).

Table 1. Recorded Cultural Resources in the Study Area

Primary No.	Trinomial	Era	OHP Status	Description	Recorder	Relation to Project Area
P-49-002834	CA-SON-2322H	Historic	Not eligible to NRHP	Northwestern Pacific Railroad	Shultz 2011	0.19 miles southwest
P-49-005003	None	Historic	Not evaluated	1932 USGS circular brass benchmark	Martin 2015	0.19 miles southwest
C-757	None	Prehistoric	Not evaluated	"Large quantity of clam and mussel shells, charmstones, and bones"	Gerike 1990	0.10 miles northeast

P-49-002834/CA-SON-2322H is a segment of the Northwest Pacific Railroad (NWPRR) (Shultz 2011). In 2004, JRP Historical Consulting Services developed a methodology and threshold of significance for evaluating railroads under each NRHP and CRHR criteria. JRP evaluated the NWPRR as a historic district and concluded that the district does not appear to be eligible for listing in the NRHP or CRHR.

P-49-005003 is a 1932 USGS benchmark. The benchmark is a circular brass plaque stamped "L107/1932 by the U.S. Coast and Geodetic Survey" and marks an elevation of 9.304

feet above sea level. The resource was recorded during construction monitoring for the Sonoma-Marin Area Rail Transit (SMART) system railbed (Martin 2015).

C-757 is an informally recorded resource first reported to the NWIC by a local citizen in 1990 (Kelley, Pulcheon, and Gerike 2005; Kelley et al. 2005). A large quantity of clam and mussel shells, charmstones, and bones were reported to Gerike by Larry Torres in 1990 (Gerike 1990). The record for C-757 recommends survey if any improvements are planned (Gerike 1990).

Recorded Cultural Resources Studies in the Project Area

The records search identified two recorded cultural resources studies that included part Project Area (Table 2; Figure 4).

Table 2. Recorded Cultural Resources Studies in the Project Area

Study No.	Date	Author	Relation to Project Area	Findings
S-29658	2005	Kelley et al.	Partially overlaps northern Project Area	Identified and evaluated three resources, all outside the Study Area. Found P-49-002904 (Masciorini Ranch), eligible for listing in the NRHP; found P-49-002905 (FAA Facility) and P-49-002906 (Old Railroad Grade) ineligible.
S-30869	2005	Kelley, Pulcheon, and Gerike	Partially overlaps northern Project Area	Historic Property Treatment Plan for P-49-002904.

Recorded Cultural Resources Studies in the Study Area

The records search identified five recorded cultural resources studies outside the Project Area but that included part of the 0.25-mile buffer of the Study Area (Table 3; Figure 4).

Table 3. Recorded Cultural Resources Studies in the Study Area

Study No.	Date	Author	Relation to Project Area	Findings
S-2149	1979	Brandt	0.25 miles northwest of the Project Area	None.
S-13217	1990	Origer	0.19 miles southwest of the Project Area	Recorded multiple resources, none in Study Area.
S-31737	2004	Denardo and Hart	0.19 miles west of the Project Area	Recorded multiple resources, none in Study Area.
S-33061	2006	Sikes et al.	0.19 miles southwest of the Project Area	No new resources identified. Flagged and monitored Environmentally Sensitive Areas during construction. None in Study Area.
S-48626	2013	Scantlebury et al.	0.19 miles southwest of the project Area	Identified multiple resources in the SMART right-of-way. None in Study Area.

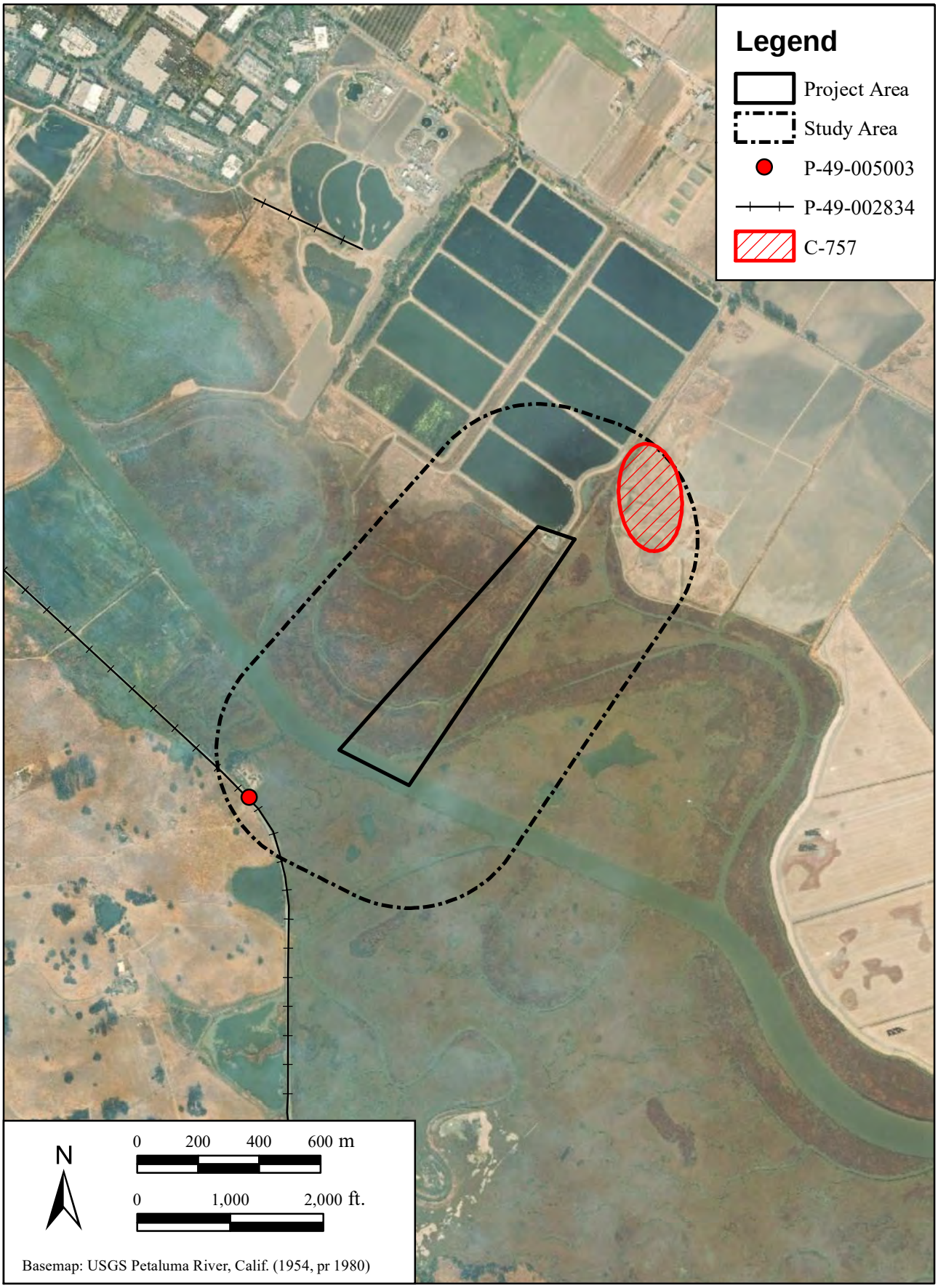

Figure 3. Recorded cultural resources in the Project Area and Study Area

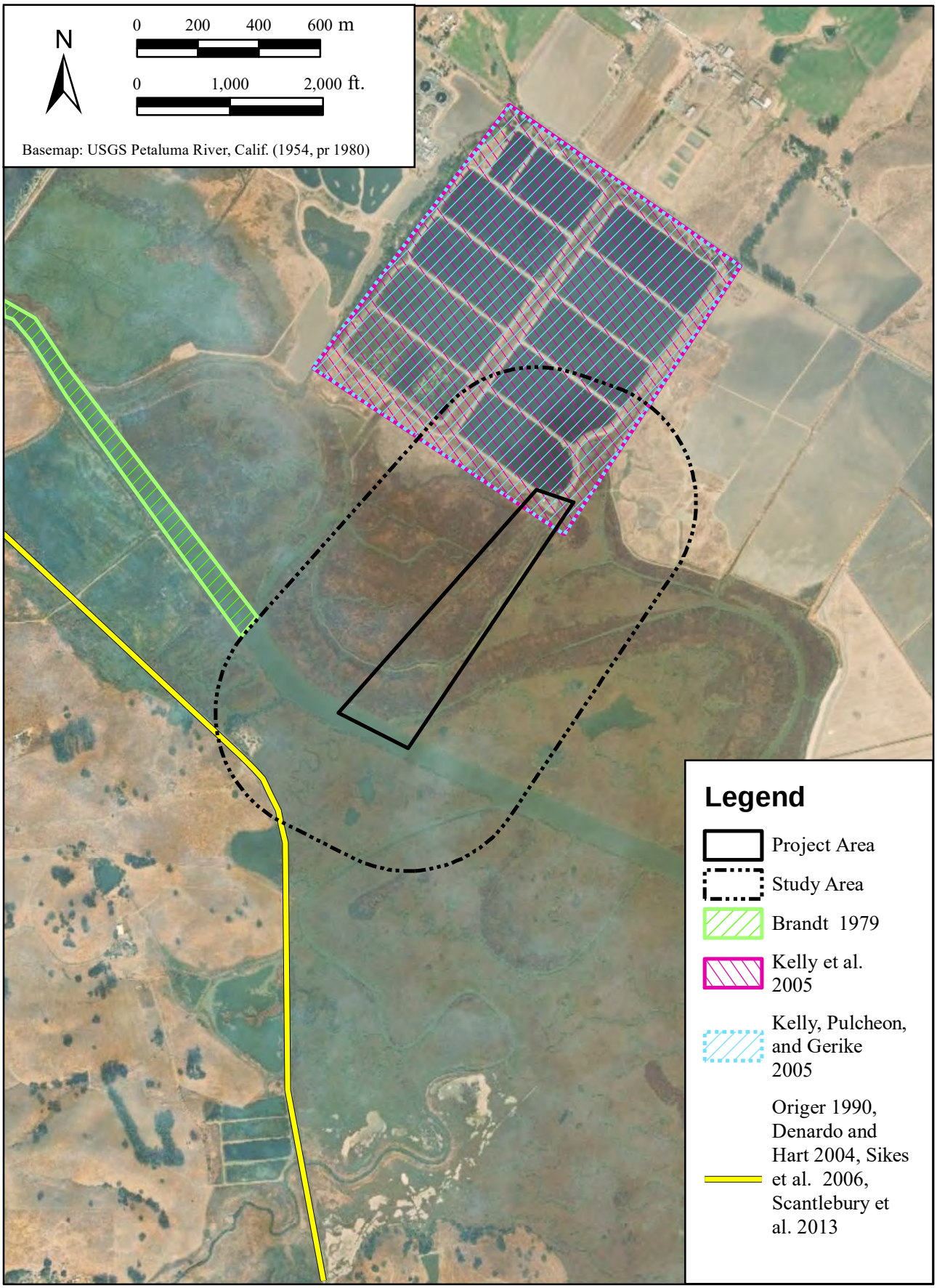

Figure 4. Recorded cultural resources studies in the Project Area and Study Area

RESULTS OF LITERATURE REVIEW

The literature review provides context for cultural resources in the region.

Prehistoric Overview

Fredrickson (1974a) outlined an analytical framework for interpreting the prehistory of the San Francisco Bay area and the North Coast Ranges that divides human history in California into three broad periods: the Paleoindian period, the Archaic period, and the Emergent period. It differentiates between cultural units based on sociopolitical complexity, trade networks, population, and the introduction and variations of artifact types. The scientific significance of prehistoric sites rests partly on their ability to help archaeologists explain the reasons for these changes in different places and at different times in prehistory. With minor revisions (Fredrickson 1994), this scheme remains the dominant framework for prehistoric archaeological research in the region.

The earliest archaeologically documented human occupation in California, the Paleoindian period (ca. 10,000-6000 B.C.), was a time of variable climate, rising sea levels, and other broad-scale environmental change. People lived in small, highly mobile groups, moving through broad geographic areas and leaving relatively sparse archaeological remains.

With the more stable climate of the long Archaic period (6000 B.C. to A.D. 1000), new groups entered the area, and regional distinctions developed. Some groups may have remained mobile, while others began to establish longer-term base camps in places from which a more diverse range of resources could be exploited. The Archaic period has been subdivided into three sub-periods (Lower Archaic, 6000 to 3000 B.C.; Middle Archaic, 3000 B.C. to 500 B.C.; and Upper Archaic, 500 B.C. to A.D. 1000), based on changes in sociopolitical complexity, trade networks, populations, and the introduction of new artifact types (Fredrickson 1974, 1994). Many of the archaeological sites in the North Coast Ranges were first used in the Middle and Upper Archaic, when populations were increasing and groups moved into new areas to exploit a more diverse range of resources, suggested by sites in a wider range of environments and the addition of new tool types such as milling tools and concave-base projectile points of obsidian and chert. By the Upper Archaic, mobility was being replaced by a more sedentary adaptation that included a reliance on intensive acorn processing and storage. With the development of numerous small villages, the beginnings of a more complex society and economy began to emerge.

During the Emergent, or Late, period (ca. A.D. 1000 to the historic era), social complexity developed toward the contact-era settlement pattern of large, central villages where political leaders resided, with associated hamlets and specialized activity sites. Innovations associated with this period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments. Archaeological sites dating to this period are common throughout the North Coast Ranges. Site types include places of ritual significance, such as rock rock-art locations. Other sites are small resource-processing areas marked by flaked-

stone tools or milling equipment such as mortars and pestles, and by debris (debitage) from manufacturing and using stone tools. Still others are moderate- to large-sized occupation sites marked by midden soils, dietary bone and shell, and a diversity of artifacts.

Ethnographic Overview

The lifeways of the people who inhabited the region encompassing the Study Area were also recorded through intensive ethnographic research efforts during the early-to-middle 20th century. Ethnographic literature indicates that at the time of historic contact, the Study Area lay within the traditional territory of the Coast Miwok, centered in present-day Marin and adjacent Sonoma counties (Kelly 1978:414–415; Kroeber 1925:272). The people collectively called the Coast Miwok by ethnographers were actually several distinct sociopolitical groups who spoke dialects of the same Penutian language. They have been referred to as three separate tribes: the Olamentko of Bodega Bay, the Lekahtewut between Petaluma and Freestone, and the Hookooeko Tribe in Marin County (Kroeber 1925:273). The primary sociopolitical unit was the village community, which was overseen by one or more chiefs.

The Project Area is located near the ethnographic village W*otōkī*. W*otōkī* was said to be located along the west bank of the Petaluma Creek, near Donahue's Landing, about three and a half miles south of Petaluma (Barrett 1908:311; Kroeber 1925:274).

The Coast Miwok economy was based on hunting, fishing, and gathering. The territory held by local groups would have included open valley environments containing a wide variety of resources, including grass seeds, acorns, bulbs and tubers, bear, deer, elk, antelope, a variety of bird species, and rabbit and other small mammals, along with bay resources such as shellfish, marine mammals, and fish. The Coast Miwok acknowledged private ownership of goods and songs, and village ownership of rights to land and/or natural resources. They appear to have aggressively protected their village territories, requiring monetary payment for access rights in the form of clamshell beads, and even shooting trespassers if caught.

After European contact, Coast Miwok society was severely disrupted by missionization, disease, and displacement. Coast Miwok population numbers diminished dramatically during the mission era, and they dropped further following secularization in the early 1830s. Kroeber (1925:275) estimated that the population of the Coast Miwok in 1908 was 1,500 people. Indigenous people were employed as farm workers and commercial fishers in Marin and Sonoma counties (Federated Indians of Graton Rancheria [FIGR] 2018).

The Coast and Bay Miwok as a cultural group were landless until 1920, when the federal government established a 15.1-acre Rancheria near Graton for Bay and Coast Miwok and local Southern Pomo families. The federal government terminated the Rancheria in 1958 and dispersed the lands to three families. After a long legal battle, federal recognition was restored in 2000, and the multi-cultural native organization became the Federated Indians of Graton Rancheria (FIGR 2018).

Historic-era Overview

The historic era began at different times in different parts of California, as Euro-Americans moved into regions where indigenous populations had been reduced or eliminated completely by waves of Old World diseases that preceded them. Subsequent government policies and ad-hoc vigilante efforts by settlers led to forced removals and violence towards local indigenous communities, resulting in new, mostly immigrant communities embedded in the new economies of ranching, timber harvesting, and farming.

The first known European explorations near the Project Area were likely those of Juan Francisco Bodega y Quadra, who entered Bodega Bay and harbor in 1775, and later of Englishman George Vancouver in 1792 (Torliatt 2018). Spanish missionaries established Mission San Rafael in 1817 and the Mission San Francisco Solano de Sonoma in 1823 to convert and control the local indigenous population. Mexico gained independence from Spain in 1821 (Torliatt 2018), expelled the missionaries and broke up the mission lands in a process called secularization from 1834 to 1836. The region that is now Sonoma County was segmented into large landgrants called *ranchos* issued to Mexican citizens, and encouraged settlement of California to secure the territory.

The Project Area is located in the historic wetlands of the Petaluma River, immediately adjacent to the former Petaluma landgrant. The 66,622-acre rancho was granted to Mariano G. Vallejo in 1834 (Gudde 1998:287; Sonoma County Historical Society 2018). Vallejo became a major landholder and political leader under Mexican rule. Many ranchos employed California Indians as laborers.

The first non-Spanish European settlers came into the area in the 1840s. After the US army suffered losses moving into disputed territory of Texas, the US declared war on Mexico in May of 1846. The Bear Flag Revolt against the Mexican government, which began about a month later in Sonoma County in 1846, contributed to Mexico's loss of California. The war ended with the Treaty of Guadalupe Hidalgo, signed on 2 February 1848.

With that treaty, Mexico ceded territory including California to the United States. The United States established a process for recognizing ownership of Spanish and Mexican landgrants, but cases typically took years to resolve. The rancho's adobe house, now part of the Petaluma Adobe State Historic Park, was built by Vallejo from 1834 to 1836. The adobe is listed as a California Historical Landmark, No. 18 (California Office of Historic Preservation 1996:280).

Petaluma's access to waterways, including the San Francisco Bay and Petaluma Creek, aided its development into a "market town" up into 1849 (Sonoma County Historical Society 2016). When gold was discovered that year, immigrants from the U.S. and the rest of the world flooded in to seek gold and the other economic opportunities that followed. California was granted statehood in 1850. The City of Petaluma was formally established in 1851 by G.W. Keller. The name Petaluma is derived from the Coast Miwoks' term *petá lúuma*, meaning hillside back (Gudde 1998:287).

Petaluma's population and agricultural ventures continued to grow as more people settled in and around the town. Chicken and egg production grew to 2,000 chicken farms in Petaluma in 1926. In 1940, approximately 30 million dozen eggs were shipped from the Petaluma vicinity and in 1945, 51 million dozen (Sonoma County Historical Society 2018).

The Project Area is located in between two lines of the Northwestern Pacific Railroad that connect just south of Petaluma, as depicted on the 1914 USGS Petaluma topographic quad map (USGS 1914). The southern rail line passed through the project's Study Area, and continued in use into the present as the SMART system tracks. The northern line ran about 700 meters northeast of the Study Area. The 1942 USGS Petaluma topographic quad map continued to depict both rail lines, but the northern line was unlabeled (USGS 1942). In 1954, the northern rail line was labeled as "old railroad grade" and two gun clubs were depicted just outside of the Study Area on the Petaluma River topographic quad map (USGS 1954). By 1968, the northern rail line was labeled as abandoned (USGS 1968).

AGENCY AND TRIBAL COMMUNICATION

ASC contacted the Native American Heritage Commission (NAHC) on 5 August 2018, requesting a review of the Sacred Lands File for information on Native American cultural resources in the Project Area. On 11 September 2018, the NAHC responded indicating that the results of the search was positive and that ASC should contact the Federated Indians of Graton Rancheria (FIGR) on the provided list for more information. The list also included additional groups and individuals who may be able to provide additional information on the potential for cultural resources in the Project Area. On 12 September 2018, Scott McGaughey sent letters to the individuals listed by the NAHC requesting additional information, and contacted FIGR Tribal Heritage Preservation Officer (THPO) Buffy McQuillen via email to inform her of the project and the results of the Sacred Lands File search. On 17 September 2018, a response was received from Ms. McQuillen stating that the Tribe is concerned about any potential ground disturbance in the Project Area and has requested that a Tribal cultural monitor participate in any archaeological survey activities conducted by ASC (McQuillen 2018, pers. comm.). ASC provided a draft report On 19 September 2018 for any additional comments the Tribe might want to have included in the final report. On 21 September 2018, a response was received from Ryan Peterson of the Middletown Rancheria Tribal Historic Preservation Department for Middletown Rancheria Tribal Vice-Chairwoman Sally Peterson requesting that all work cease and to contact the Tribe immediately if any new information or evidence of human habitation be found as the project progresses (Peterson 2018, pers. comm.). On 26, September 2018, a response was received from Brenda L. Tomaras of Tomaras & Ogas, LLP, attorneys representing the Lytton Rancheria (Tomaras 2018, pers. comm.). The Tribe indicated that the project falls within traditional Pomo territory and that there is a potential for finding Tribal cultural resources on the project site. Copies of this correspondence are provided in the Appendix.

SENSITIVITY FOR BURIED ARCHAEOLOGICAL RESOURCES

The likelihood that an area includes surface or buried archaeological remains is referred to as its archaeological sensitivity. Landform and physical processes play fundamental roles in the creation, preservation, burial, and eventual discovery of archaeological sites in much of California (Meyer and Rosenthal 1997; Rosenthal and Meyer 2004). Archaeological sites may be buried by natural processes, such as flood sediments, or by artificial fill. While much of California's landscape has remained relatively stable during human occupation, many portions have not. This means that the present landscape may not reflect the environment used by people in the past. Some landforms once used by humans have been buried, disturbed, or destroyed by these processes and, as a result, the archaeological resources on them have been, as well.

Although the presence of known archaeological sites is an indicator of the sensitivity of the general landscape, the results of the records search and NAHC review of the Sacred Lands File reflect only available information on resources that have already been documented. To account for the entire archaeological record, we must also examine landscape evolution to assess the potential of the Project Area to contain buried archaeological deposits. Predictions of an area's sensitivity are based on additional factors, including geological and soil conditions determined from maps, distance to streams or former water sources identified from maps, and environmental factors based on terrain surface modeling (Meyer, Kaijankoski, and Rosenthal 2011:126).

The age and composition of deposits affects their potential to contain prehistoric buried sites. Landforms that developed before the Quaternary Period have little potential for buried archaeological remains, as the surface formed prior to human occupation in the region (Meyer and Rosenthal 2007:15). Landforms that developed in the Holocene, however, may contain buried archaeological remains, as they formed during the time that humans were present. Studies have shown that known prehistoric sites tend to be located within 200 meters of a water source (Rosenthal and Meyer 2004). Thus, Holocene-aged deposits within 200 meters of a possible Holocene water source are considered to have an elevated potential to contain buried sites.

The Project Area lies on Holocene San Francisco Bay mud (Knudsen et al. 2000; Witter et al. 2006), which is soft and subject to horizontal and vertical remodeling by river and tidal flows. Given the Project Area's location not far from the informally-recorded site C-757, within an area said to contain Native American cultural resources according to the Sacred Lands File, and near two recorded historical resources, the soils in the Project Area have the potential to contain buried prehistoric or historic-era archaeological remains.

In summary, the sensitivity of the Project Area for buried archaeological resources is **moderate**.

POTENTIAL FOR ARCHAEOLOGICAL RESOURCES

As discussed above, the sensitivity of the Project Area for buried archaeological resources is moderate. The same records of an informally recorded prehistoric resource within 0.25 miles of the Project Area and Native American cultural resources noted in the Sacred Lands File indicate that the sensitivity for Native American archaeological remains on the surface is also moderate. Historical research and two historic-era sites located within 0.25 miles of the Project Area indicate that the potential for historic-era archaeological resources to be found on the surface within the Project Area is moderate as well.

CONCLUSIONS

The records search and literature review identified no previously recorded archaeological resources in the Project Area. Background research and positive results of the NAHC search of the Sacred Lands File indicate a moderate sensitivity for prehistoric and/or historic-era archaeological resources and/or Sacred Sites on the surface within the Project Area. The area's sensitivity for buried prehistoric or historic-era archaeological resources and/or Sacred Sites is also moderate. Federated Indians of Graton Rancheria (FIGR) Tribal Heritage Preservation Officer (THPO) Buffy McQuillen was contacted via email regarding the NAHC finding. Ms. McQuillen has indicated that the Tribe is concerned about any potential ground disturbance in the Project Area and has requested that a Tribal cultural monitor participate in any archaeological survey activities conducted by ASC.

ENCOUNTERING UNRECORDED ARCHAEOLOGICAL RESOURCES

There is a possibility that unrecognized surficial resources or subsurface archaeological deposits are present within the Project Area. Prehistoric and historic-era resources may be obscured by colluvium, alluvium, vegetation, or other factors.

If concentrations of prehistoric or historic-era materials are encountered during project activities, it is recommended that all work in the immediate vicinity stop until a qualified archaeologist can evaluate the finds and make recommendations.

Prehistoric materials might include obsidian and/or chert flaked-stone tools such as projectile points, knives, or scrapers; the debris from making, sharpening, and using them ("debitage"); culturally darkened soil containing shell, dietary bone, heat-affected rock, and carbonized plant material ("midden"); or stone milling equipment such as mortars, pestles, handstones, or milling slabs.

Historic-era materials might include adobe, stone, brick, or concrete footings or walls; buildings or other remains with cut nails; filled privies or wells; or deposits of metal, glass, and/or ceramic artifacts.

ENCOUNTERING HUMAN REMAINS

While there is no indication of human remains within the Project Area, the possibility of encountering archaeological resources that contain human remains cannot be discounted. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial. If human remains are encountered, work must halt in the vicinity and, as required by law, the County Coroner must be notified immediately. At the same time, an archaeologist should be contacted to evaluate the situation.

If human remains are suspected to be of Native American origin, the Coroner must notify the Native American Heritage Commission within 24 hours of that determination. The Commission then notifies the Most Likely Descendant, who has 48 hours to make recommendations to the landowner for the disposition of the remains.

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ATTACHMENT H

APPENDIX

Correspondence

ATTACHMENT H

ATTACHMENT H

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

County: Sonoma

USGS Quadrangle Name: Petaluma River, Calif. (1954, pr 1980)

Township: 4N **Range:** 7W **Section(s):** Unsectioned portion of Wetlands landgrant, projected sections 01 and 12.

Company/Firm/Agency: Anthropological Studies Center at Sonoma State University

Street Address: 1801 E. Cotati Ave., Bldg. 29

City: Rohnert Park **Zip:** 94928

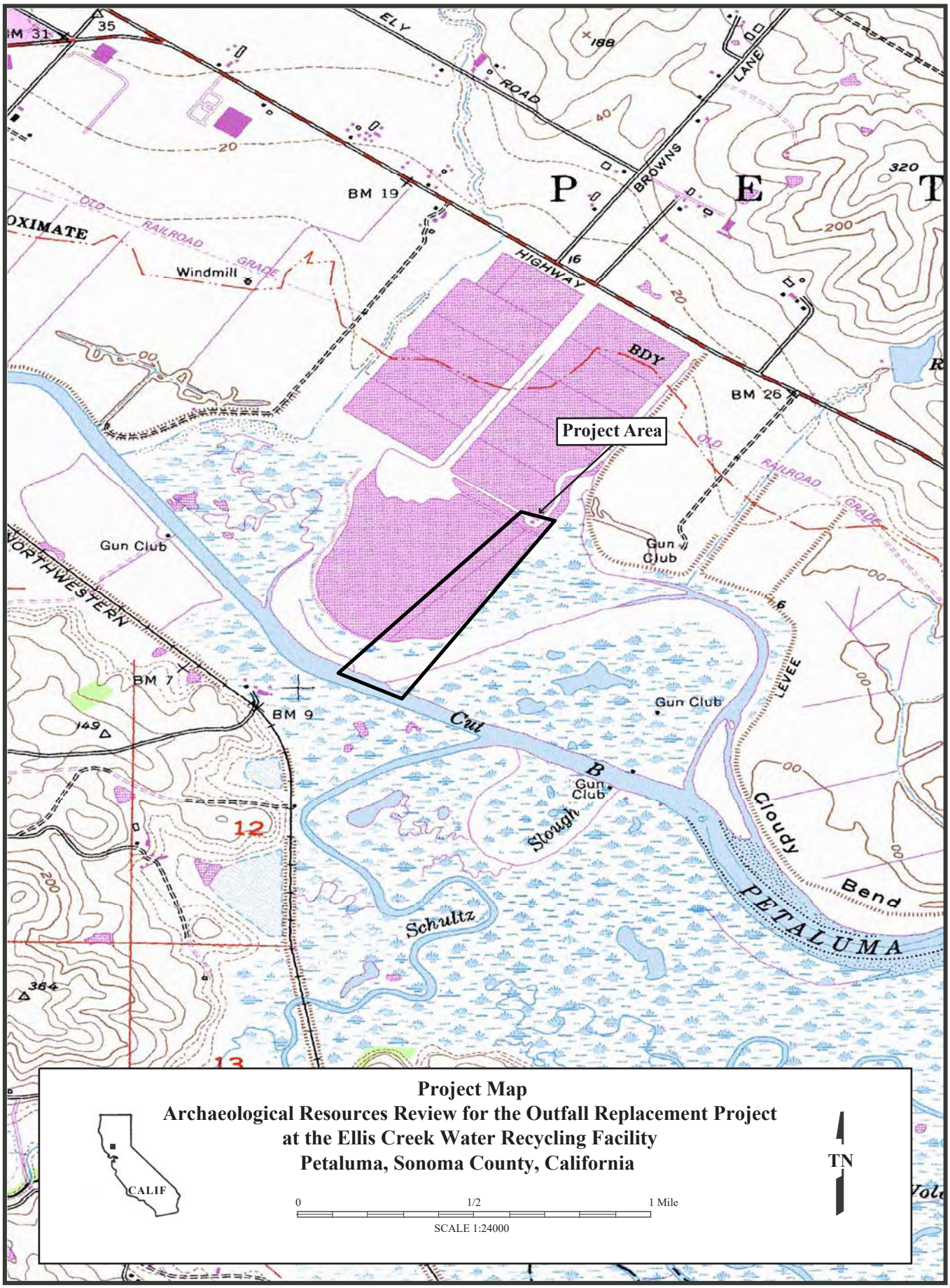
Phone: 707-664-2381

Fax: 707-664-4155

Email: mcgaughe@sonoma.edu

Project Description:
Anthropological Studies Center (ASC) of Sonoma State University is conducting an archaeological resources review for the planned Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California. The City of Petaluma intends to evaluate alternatives for a permanent replacement of the existing outfall pipeline. Future alternatives could include the replacement of the existing outfall pipeline using open trench, directional drilling, and sliplining methods, and the construction of permanent discharge facilities. The archaeological resources review will be completed as part of the environmental review documentation required by the City of Petaluma pursuant to the California Environmental Quality Act of 1970 (CEQA). No pedestrian archaeological resources survey will be conducted as a part of this project.

ATTACHMENT H



Project Map
Archaeological Resources Review for the Outfall Replacement Project
at the Ellis Creek Water Recycling Facility
Petaluma, Sonoma County, California

USGS Petaluma River, Calif. (1954, pr 1980)

ATTACHMENT H

STATE OF CALIFORNIA — Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

September 11, 2018

Scott McGaughey
Sonoma State University

VIA Email to: mcgaughe@sonoma.edu

RE: Archaeological Resources Review for the Outfall Replacement Project, Petaluma River, Sonoma County

Dear Mr. McGaughey:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the Federated Indians of Graton Rancheria on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: Sharaya.Souza@nahc.ca.gov.

Sincerely,

for

Sharaya Souza
Staff Services Analyst
(916) 573-0168

Attachment

ATTACHMENT H

Native American Heritage Commission
Native American Consultation List
9/11/2018

Cloverdale Rancheria of Pomo Indians
Patricia Hermosillo, Chairperson
555 S. Cloverdale Blvd., Suite A — Pomo
Cloverdale ,CA 95425
(707) 894-5775
(707) 894-5727

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(707) 522-4233
(707) 522-4286

Federated Indians of Graton Rancheria
Gene Buvelot
6400 Redwood Drive, Ste 300 — Coast Miwok
Rohnert Park ,CA 94928 — Southern Pomo
gbuvelot@gratonrancheria.com
(415) 279-4844 Cell
(707) 566-2288 ext 103

Federated Indians of Graton Rancheria
Greg Sarris, Chairperson
6400 Redwood Drive, Ste 300 — Coast Miwok
Rohnert Park ,CA 94928 — Southern Pomo
(707) 566-2288 Office
(707) 566-2291 Fax

Kashia Band of Pomo Indians of the Stewarts Point Ranch
Dino Franklin Jr.,Chairperson
1420 Guerneville Rd. Ste 1 — Pomo
Santa Rosa ,CA 95403
dino@stewartspoint.org
(707) 591-0580 Office
(707) 591-0583 Fax

Lytton Rancheria
Marjorie Mejia, Chairperson
437 Aviation Blvd. — Pomo
Santa Rosa ,CA 95403
margiemejia@aol.com
(707) 575-5917
(707) 575-6974 - Fax

Middletown Rancheria
Jose Simon III, Chairperson
P.O. Box 1035 — Pomo
Middletown ,CA 95461 — Lake Miwok
(707) 987-3670 Office
(707) 987-9091 Fax

Mishewal-Wappo Tribe of Alexander Valley
Scott Gabaldon, Chairperson
2275 Silk Road — Wappo
Windsor ,CA 95492
scottg@mishewalwappotribe.com
(707) 494-9159

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes for the proposed:
Archaeological Resources Review for the Outfall Replacement Project, Petaluma River, Sonoma County

ATTACHMENT H

SONOMA STATE UNIVERSITY
1801 East Cotati Avenue, Building 29
Rohnert Park, CA 94928-3609

ANTHROPOLOGICAL STUDIES CENTER
707.664.2381 • Fax 707.664.4155
www.sonoma.edu/asc

Chris Wright, Chairperson
Dry Creek Rancheria Band of Pomo Indians
P.O. Box 607
Geyserville, CA 95441

12 September 2018

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Dear Chairperson Wright,

The Anthropological Studies Center (ASC) is conducting a cultural resources review of approximately 45 acres of wetlands at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County. The project is located within unsectioned wetlands associated with the Petaluma River, Township 4N, Range 7W, Mount Diablo Base and Meridian, as depicted on the USGS Petaluma River, Calif. (1954, Pr 1980). A map depicting the project area is enclosed.

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The Native American Heritage Commission conducted a search of the Sacred Lands File for the project area. The results of the search were positive. We respectfully request any information or concerns that you or your organization may wish to share regarding cultural resources within or in the vicinity of the project area. If you have concerns or questions, please do not hesitate to give me a call at (707) 664-2381 or contact me via email at mcgaughe@sonoma.edu. We look forward to hearing from you.

Sincerely,

Scott McGaughey, M.A., RPA
Project Manager

ATTACHMENT H

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Rohnert Park, CA 94928-3609

ANTHROPOLOGICAL STUDIES CENTER
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www.sonoma.edu/asc

12 September 2018

Lorin Smith Jr.
Tribal Historic Preservation Officer
Kashia Band of Pomo Indians of the Stewarts Point Rancheria
1420 Guerneville Road, Suite 1
Santa Rosa, CA 95403

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Dear THPO Smith Jr.,

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Sincerely,

Scott McGaughey, M.A., RPA
Project Manager

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Rohnert Park, CA 94928-3609

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Jose Simon III, Chairperson
Middletown Rancheria
P.O. Box 1035
Middletown, CA 95461

12 September 2018

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Dear Chairperson Simon III,

The Anthropological Studies Center (ASC) is conducting a cultural resources review of approximately 45 acres of wetlands at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County. The project is located within unsectioned wetlands associated with the Petaluma River, Township 4N, Range 7W, Mount Diablo Base and Meridian, as depicted on the USGS Petaluma River, Calif. (1954, Pr 1980). A map depicting the project area is enclosed.

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Sincerely,

Scott McGaughey, M.A., RPA
Project Manager

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Rohnert Park, CA 94928-3609

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Greg Sarris, Chairperson
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

12 September 2018

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Dear Chairperson Sarris,

The Anthropological Studies Center (ASC) is conducting a cultural resources review of approximately 45 acres of wetlands at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County. The project is located within unsectioned wetlands associated with the Petaluma River, Township 4N, Range 7W, Mount Diablo Base and Meridian, as depicted on the USGS Petaluma River, Calif. (1954, Pr 1980). A map depicting the project area is enclosed.

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Sincerely,

Scott McGaughey, M.A., RPA
Project Manager

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Marjorie Mejia, Chairperson
Lytton Rancheria
437 Aviation Blvd.
Santa Rosa, CA 95403

12 September 2018

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Dear Chairperson Mejia,

The Anthropological Studies Center (ASC) is conducting a cultural resources review of approximately 45 acres of wetlands at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County. The project is located within unsectioned wetlands associated with the Petaluma River, Township 4N, Range 7W, Mount Diablo Base and Meridian, as depicted on the USGS Petaluma River, Calif. (1954, Pr 1980). A map depicting the project area is enclosed.

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Sincerely,

Scott McGaughey, M.A., RPA
Project Manager

ATTACHMENT H

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Rohnert Park, CA 94928-3609

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12 September 2018

Buffy McQuillen
Tribal Heritage Preservation Officer (THPO)
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Dear THPO McQuillen,

The Anthropological Studies Center (ASC) is conducting a cultural resources review of approximately 45 acres of wetlands at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County. The project is located within unsectioned wetlands associated with the Petaluma River, Township 4N, Range 7W, Mount Diablo Base and Meridian, as depicted on the USGS Petaluma River, Calif. (1954, Pr 1980). A map depicting the project area is enclosed.

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Sincerely,

Scott McGaughey, M.A., RPA
Project Manager

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www.sonoma.edu/asc

Patricia Hermosillo, Chairperson
Cloverdale Rancheria of Pomo Indians
555 S. Cloverdale Blvd., Suite A
Cloverdale, CA 95425

12 September 2018

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Dear Chairperson Hermosillo,

The Anthropological Studies Center (ASC) is conducting a cultural resources review of approximately 45 acres of wetlands at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County. The project is located within unsectioned wetlands associated with the Petaluma River, Township 4N, Range 7W, Mount Diablo Base and Meridian, as depicted on the USGS Petaluma River, Calif. (1954, Pr 1980). A map depicting the project area is enclosed.

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Sincerely,

Scott McGaughey, M.A., RPA
Project Manager

ATTACHMENT H

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Rohnert Park, CA 94928-3609

ANTHROPOLOGICAL STUDIES CENTER
707.664.2381 • Fax 707.664.4155
www.sonoma.edu/asc

Scott Gabaldon, Chairperson
Mishewal-Wappo Tribe of Alexander Valley
2275 Silk Road
Windsor, CA 95492

12 September 2018

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Dear Chairperson Gabaldon,

The Anthropological Studies Center (ASC) is conducting a cultural resources review of approximately 45 acres of wetlands at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County. The project is located within unsectioned wetlands associated with the Petaluma River, Township 4N, Range 7W, Mount Diablo Base and Meridian, as depicted on the USGS Petaluma River, Calif. (1954, Pr 1980). A map depicting the project area is enclosed.

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Sincerely,

Scott McGaughey, M.A., RPA
Project Manager

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12 September 2018

Dino Franklin Jr., Chairperson
Kashia Band of Pomo Indians of the Stewarts Point Rancheria
1420 Guerneville Road, Suite 1
Santa Rosa, CA 95403

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Dear Chairperson Franklin Jr.,

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Scott McGaughey, M.A., RPA
Project Manager

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12 September 2018

Gene Buvelot
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Dear Mr. Buvelot,

The Anthropological Studies Center (ASC) is conducting a cultural resources review of approximately 45 acres of wetlands at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County. The project is located within unsectioned wetlands associated with the Petaluma River, Township 4N, Range 7W, Mount Diablo Base and Meridian, as depicted on the USGS Petaluma River, Calif. (1954, Pr 1980). A map depicting the project area is enclosed.

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Sincerely,

Scott McGaughey, M.A., RPA
Project Manager

ATTACHMENT H

Re: ASC NEW Project - Petaluma - NAHC Positive Results

Scott McGaughey

Wed 9/19/2018 10:09 AM

To: Buffy McQuillen <BMcQuillen@gratonrancheria.com>;

Cc: THPO@gratonrancheria.com <THPO@gratonrancheria.com>;

1 attachments (6 MB)

Petaluma Ellis Creek Draft Report.pdf;

Hello Buffy,

Please find attached the draft archaeological resources review report for the Ellis Creek project. I've included Tribal concerns regarding ground disturbing activities and the request for Tribal cultural monitor participation on a pedestrian survey. At this time, no survey has been discussed. Please return any additional comments on the report that you may have by September 28th. I'm happy to include any additional comments into a final report.

And again, I will update you when I get more information on the possibility of a field survey.
-Scott

Scott McGaughey, M.A., RPA
Staff Archaeologist
Anthropological Studies Center
Sonoma State University
p:(707)-664-2381; mcgaughe@sonoma.edu

From: Scott McGaughey
Sent: Monday, September 17, 2018 3:59:54 PM
To: Buffy McQuillen
Cc: THPO@gratonrancheria.com
Subject: Re: ASC NEW Project - Petaluma - NAHC Positive Results

Thank you, Buffy.

I will recommend to GHD that a survey be conducted and that a Tribal cultural monitor is present for the survey. I'll let you know when I get more information.

-Scott

From: Buffy McQuillen <BMcQuillen@gratonrancheria.com>
Sent: Monday, September 17, 2018 10:23:00 AM
To: Scott McGaughey
Cc: THPO@gratonrancheria.com
Subject: RE: ASC NEW Project - Petaluma - NAHC Positive Results

ATTACHMENT H

Hi Scott, thank you for the notification. We are concerned about any potential ground disturbance and would like to participate in any survey activities conducted by ASC. Please keep me updated.

Sincerely,
Buffy McQuillen
Tribal Heritage Preservation Officer (THPO)
Native American Graves Protection and Repatriation Act (NAGPRA)
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928
Office: 707.566.2288; ext. 137
Cell: 707.318.0485
FAX: 707.566.2291
bmcquillen@gratonrancheria.com

From: Scott McGaughey [mailto:mcgaughe@sonoma.edu]
Sent: Wednesday, September 12, 2018 12:15 PM
To: Buffy McQuillen <BMcQuillen@gratonrancheria.com>
Subject: ASC NEW Project - Petaluma - NAHC Positive Results

Hello Ms. McQuillen,

ASC is conducting an archaeological resources review for an outfall replacement project at the Ellis Creek Water Recycling Facility in Petaluma. At this time no survey of the project area is planned. A records search was conducted at the NWIC on 7 September 2018. Just outside of the project area, one informally recorded resource (C-757) is on file with the NWIC. Please see attached a map of the project area and location of C-757 with this email. Also included is the text from the C-757 recording.

I've received a response from the NAHC search of the Sacred Lands File. The NAHC response indicated the results of the search is positive and to contact the Federated Indians of Graton Rancheria directly for more information. Please let me know how you would like to proceed with this. I'm wondering if the informally recorded resource is what is triggering the positive search result. I'm happy to include any recommendations you may have. I'm thinking a field survey may be in order to rule out the site being located in the project area. Since the resource has not been formally recorded the site boundary is an approximate location.

Thank you for your time,
Scott

Scott McGaughey, M.A., RPA
Staff Archaeologist
Anthropological Studies Center
Sonoma State University
p:(707)-664-2381; mcgaughe@sonoma.edu

ATTACHMENT H

Middletown Rancheria
Tribal Historic Preservation Department
P.O. Box 1035
Middletown, CA 95461

September 19, 2018 Via Electronic Mail

Mr. Scott McGaughey
Sonoma State Universoty
1801 East Cotati Avenue, Building 29
Rohnert Park, CA 94928

Re: Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California

Dear Mr. McGaughey:

The Middletown Rancheria (Tribe) is in receipt of your letter dated September 12, 2018 regarding the Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California.

Though we have no specific comments at this time, should any new information or evidence of human habitation be found as the project progresses, we request that all work cease and that you contract us immediately. We do have a process to protect such important and sacred resources.

Thank you for the opportunity to provide comments to the above referenced project. The Tribe looks forward to continuing to be a part of the archaeological process.

Nothing herein should be construed to be a waiver of or limitation of any of the Tribe's rights in law, in equity, or otherwise. All rights, claims and remedies are specifically reserved.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Sally Peterson
Tribal Vice-Chairwoman

Phone (707) 987-3670 ext 1307 *Fax (707) 987-9091*

ATTACHMENT H

Ellis Creek Water Recycling Facility Project

lorin@stewartspoint.org

Wed 10/3/2018 2:14 PM

To: Scott McGaughey <mcgaughe@sonoma.edu>;

Scott,

The Proposed Project at Ellis Creek, Petaluma, Ca. is out of the Aboriginal Territory of the Stewarts Point Rancheria Kashia Band of Pomo Indians.

We do not have any concerns or comments at this time.

Thank You,

Lorin W. Smith, Jr.
Tribal Historic Preservation Officer
1420 Guerneville Road, Suite 1
Santa Rosa CA 95403
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ATTACHMENT H

CITY OF PETALUMA

POST OFFICE BOX 61
PETALUMA, CA 94953-0061

February 19, 2019

Buffy McQuillen, Tribal Heritage Preservation Officer
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928

RE: AB 52 Notification for City of Petaluma Ellis Creek Water Recycling Facility Outfall Replacement Project
3890 Cypress Drive, Petaluma, CA 94954 (APN 068-010-024)
Project No. C66501836

Mrs. McQuillen,

This letter provides notice, pursuant to Public Resources Code §2080.3.1(d), that the City of Petaluma Public Works Department (City) is undertaking the Ellis Creek Water Recycling Facility Outfall Replacement Project, which is subject to the California Environmental Quality Act (CEQA) and Assembly Bill 52. The City recognizes the importance of preserving tribal cultural resources and respectfully invites you to consult on and participate in the review process for this project.

Project Location: 3890 Cypress Drive, Petaluma, CA 94954 (APN 068-010-024)

Project Description: The City uses the Ellis Creek Water Recycling Facility outfall pipe to discharge secondary-treated municipal wastewater effluent to the Petaluma River. In September 2016, the City discovered longitudinal cracks, separating pipe joints, and deformed sections of pipe along the existing outfall pipe. To address these structural integrity issues, the City is proposing to construct a new 250-foot-long, 48-inch-diameter outfall pipe between the recycling facility and the tidal slough located immediately east of the facility.

The new outfall would have a slightly larger discharge capacity than the existing outfall but the total volume of effluent discharges would not increase as a result of the project. The new pipe would be installed using open-trench construction methods. The City would implement erosion control improvements along the banks of the slough channel to protect the slough from erosion at the discharge location. Construction would last approximately three months and would involve an estimated 2,500 square feet of temporary and 7,600 square feet of permanent disturbance in jurisdictional wetlands. Construction in wetland areas would be limited to the dry season.

Project Report: The Sonoma State University Anthropological Studies Center

Community Development Department
11 English Street
Petaluma, CA 94952

Phone (707) 778-4301
Fax (707) 778-4498

Building Division
Phone (707) 778-4301
Fax (707) 778-4498
E-Mail:
cdd@ci.petaluma.ca.us

To Schedule Inspections
Phone (707) 778-4479

Planning Division
Phone (707) 778-4470
Fax (707) 778-4498
E-Mail:
petalumaplanning@ci.petaluma.ca.us

(ASC) prepared the *Archaeological Resources Review for the Outfall Replacement Project at the Ellis Creek Water Recycling Facility, Petaluma, Sonoma County, California* (September 2018, File No. NT235 ASC1806). The records search and literature review that were conducted as part of this review identified no previously recorded archaeological resources within the Project boundary, but did identify an informal recorded prehistoric resource within 0.25 miles. Background research and positive results of the North American Heritage Commission's search of the Sacred Lands File indicate a moderate sensitivity for prehistoric and/or historic-era archaeological resources and/or Sacred Sites on the surface within the Project Area. The area's sensitivity for buried prehistoric or historic-era archaeological resources and/or Sacred Sites is also moderate. Scott McGaughey, M.A., RPA, from ASC contacted you about this project via email on September 12, 2018, and sent you the above-referenced report via email on September 19, 2018. Your email response dated September 17, 2018, requested that the Rancheria participate in any survey activities conducted by the ASC. Sally Peterson's (Tribal Vice-Chairwoman) email response dated September 19, 2018 requested that the Rancheria be kept informed of any new information or evidence of human habitation that becomes available as the project progresses.

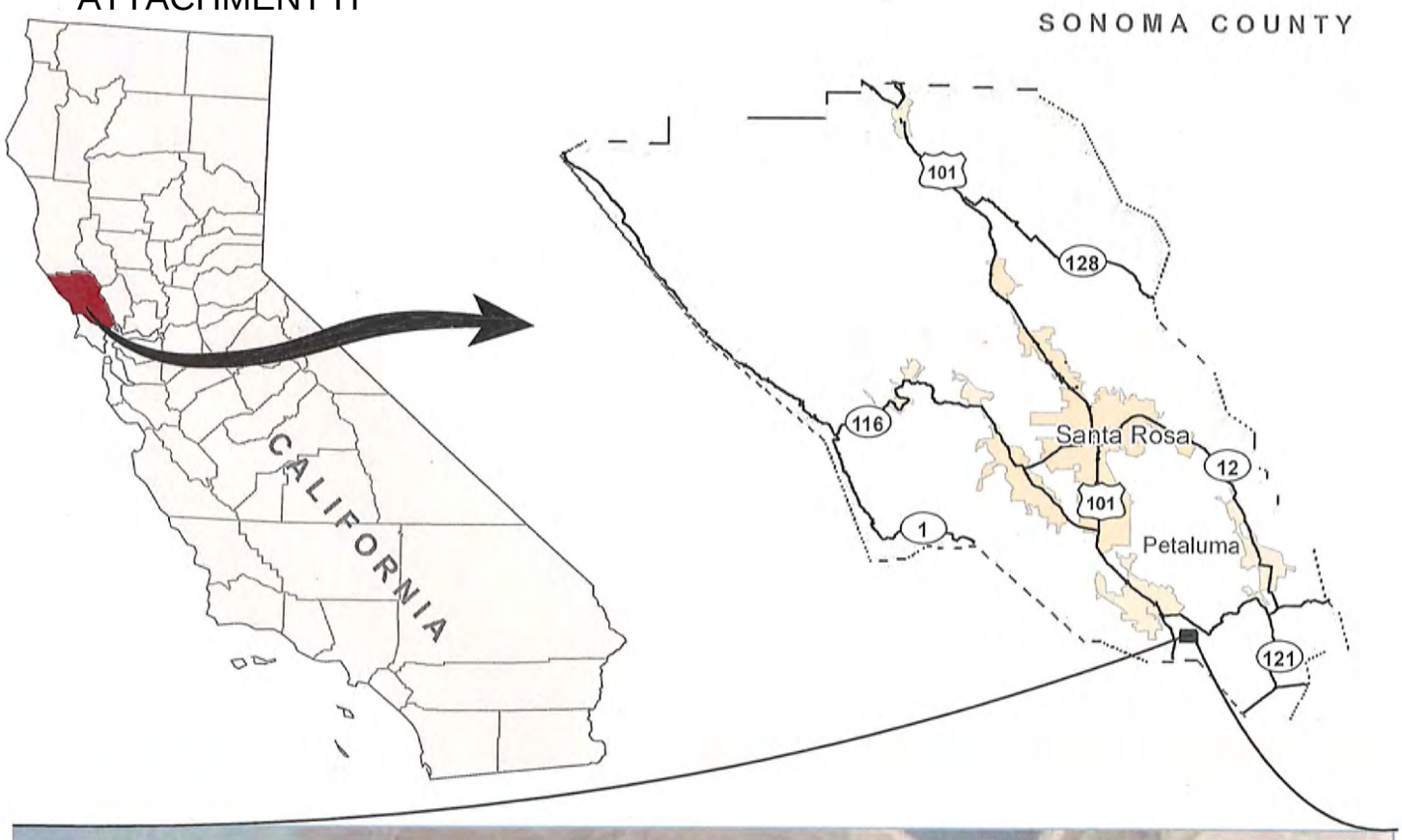
Upon receipt of this notice, the Federated Indians of Graton Rancheria has thirty (30) days to request consultation pursuant to Public Resources Code §21083.3.1, 21083.3.2, and 21083.3. If the Federated Indians of Graton Rancheria provides the City of Petaluma with confidential information subject to Public Resources Code §21082.3(c), Government Code §6254.10, or Government Code Section §6254(r), we request that it be explicitly labeled and packaged to prevent inadvertent public disclosure.

If you have any questions and/or would like to request consultation, please contact me at 707-776-3777 or lwalker@ci.petaluma.ca.us.

Leah Godsey Walker, P.E.
Environmental Services Manager

Enclosure: Location Map

ATTACHMENT H



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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California II FIPS 0402 Feet

GHD

City of Petaluma
Ellis Creek Water Recycling Facility
Outfall Project

3890 Cypress Drive, Petaluma, CA

Location Map

Project No. 11152197
Revision No. 1
Date 02/15/2019

FIGURE 1

C:\Users\jcurtis\Documents\01- Projects\Ellis Creek Wetland Figure\GIS\11152197_01EllisCreek_Vicinity.mxd
Print date: 05 Nov 2018 - 15:40

Created by: jcurtis

ATTACHMENT H

ATTACHMENT H

From: THPO@gratonrancheria.com <THPO@gratonrancheria.com>
Sent: Monday, April 15, 2019 11:58 AM
To: Walker, Leah <LWalker@cityofpetaluma.org>
Subject: City of Petaluma, Ellis Creek Water Recycling Facility Outfall Replacement Project, 3890 Cypress Drive, Petaluma, APN 068-010-024

---Warning: Use caution before clicking any attachments. THIS EMAIL IS FROM OUTSIDE OUR EMAIL SYSTEM.--- Dear Leah Walker,

Thank you for notifying the Federated Indians of Graton Rancheria about City of Petaluma, Ellis Creek Water Recycling Facility Outfall Replacement Project, 3890 Cypress Drive, Petaluma, APN 068-010-024, a project within the Tribe's Ancestral Territory. We appreciate being notified and will review your project within 10 business days. If you have an immediate request please contact the Tribal Heritage Preservation Office for assistance by phone at (707) 566-2288 or by email at thpo@gratonrancheria.com.

Sincerely,
Buffy McQuillen
Tribal Heritage Preservation Officer (THPO)
Native American Graves Protection and Repatriation Act (NAGPRA)
Office: 707.566.2288; ext. 137
Cell: 707.318.0485
FAX: 707.566.2291

Antonette Tomic
THPO Administrative Assistant
Federated Indians of Graton Rancheria
6400 Redwood Drive, Suite 300
Rohnert Park, CA 94928
Office: 707.566.2288, ext. 143
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atomic@gratonrancheria.com

February 16, 2021

To:	Josh Minshall and Ken Eichstaedt, City of Petaluma	Ref. No.:	11152197
From:	Aaron Holloway and Braden Froble, GHD	Tel:	
cc:	Kristine Gaspar, GHD and Matthew Pierce, City of Petaluma		
Subject:	**City of Petaluma Ellis Creek Water Recycling Facility – Sea Level Rise Analysis DRAFT**		

ES-1. Executive Summary

The City of Petaluma Ellis Creek Water Recycling Facility (ECWRF) currently discharges treated effluent to the Petaluma River and is proposing to relocate the outfall to a slough adjacent to the treatment plant, approximately 3,000 feet from the main river channel. This memo presents the findings of a sea-level rise (SLR) analysis which evaluated how storm and non-storm water levels, combined with SLR, could affect the outfall structure and other elements of the ECWRF. All elevations referenced in this analysis are relative to the North American Vertical Datum of 1988 (NAVD88).

Key findings of this study are presented in Table 1 for various projections of SLR based on a 50-year design life (i.e., 2070 planning horizon). The SLR projections evaluated focused on the higher end of SLR projections in 2070 which are assumed to represent the risk tolerance for ECWRF infrastructure.

Table 1: Key Findings of the ECWRF Sea-level Rise Vulnerability Assessment

Sea-level Rise (ft)	SLR Probability of Exceedance in 2070	Potential ECWRF Vulnerabilities	
		Non-storm (MHHW)	Extreme Storm (100-yr)
2.2	~5%	None	Outfall hydraulics have capacity to withstand 1-2 hour event duration.
3.3	~0.5%	Outfall hydraulics potentially vulnerable during spring high tides	Outfall hydraulics potentially vulnerable to extreme water levels
5.2	Worst-case scenario (H++), no probability assigned	Outfall hydraulics vulnerable to daily water level fluctuations	Treatment wetland berms vulnerable to breaching. Main entrance road vulnerable to flooding.

These key study findings are discussed in more detail below:

- **Primary wastewater treatment assets and infrastructure** at ECWRF (i.e. preliminary, secondary and tertiary treatment infrastructure**) are not exposed to any potential flooding for the SLR scenarios evaluated**. Based on this finding we conclude these elements have an extremely low vulnerability to sea-level rise over the next 50 years.
- **Outfall hydraulics are considered the most vulnerable aspect of the ECWRF**. This is unsurprising given the outfall's position at the downstream end of the ECWRF's hydraulic profile and relatively close proximity to the Petaluma River (River). **The degree of vulnerability depends largely on how sensitive the outfall hydraulics are to the tidally influenced water level fluctuations in the River**.
    - Based on our understanding of the outfall system hydraulics, existing extreme (i.e. 100-yr return period) water levels are not a major concern because of the temporary and infrequent occurrence of these events. The outfall system is equipped with a gate that can be closed to prevent backflow from high water levels in the River. We are assuming there is adequate storage in the ponds and wetlands to accommodate a temporary closure of the outfall lasting about 1-2 hours during the peak tide cycle of this extreme event.
    - The mean higher high water (MHHW) water levels are a better indicator of the outfall operation's sensitivity to sea-level rise. MHHW represents a typical or average high tide water level; however, it should be noted that this average is exceeded regularly, especially during spring tides. MHHW in addition to 3.3 feet of SLR would require frequent closure of the outfall discharge gate during spring high tides. This could potentially increase the risk of discharging partially treated wastewater to the River in the event there is insufficient storage capacity during high water level periods. The probability of 3.3 feet of SLR being exceeded in 2070 is about 0.5%.
- **SLR of 5.2 feet** represents the worst-case projection in 2070 based on the assumptions associated with the H++ scenario. Based on our analysis, this **appears to be a key threshold at which extensive damage would be expected during an extreme event**. Most of the outfall infrastructure (chlorine contact basin, pump stations and buildings) would be vulnerable to flood damage in this scenario. Earthen berms adjacent to the outfall would likely breach resulting in significant damage and disruption to the treatment wetlands and outfall operations.

Proposed Adaptation Strategy:

Based upon the impact thresholds described, a preliminary adaptation strategy is outlined below. This strategy focuses on improving the understanding of the existing outfall system in the near-term and developing an action plan to accommodate sea level rise amounts greater than 3 feet over longer planning horizons.

- <u>Near-term: 0-2 feet of SLR (2020-2050):</u>

- Improve understanding of ECWRF's outfall system and hydraulic operations to determine potential thresholds at which River water levels could reduce discharge capacity. This may involve a more detailed assessment of facility hydraulics to determine storage capacity and the ability of the system to tolerate temporary closures of the outfall gate.
- Implement a program to monitor water levels (as needed) near the outfall and within the Petaluma River to further evaluate how increases in sea-level rise affect outfall operations.
- Develop an action plan for adjusting operations and implementing improvements (if needed) to accommodate up to 3.5 feet of SLR. Note, this strategy would align with OPC's strategic objective of ensuring the California coast is resilient to 3.5 feet of SLR by 2050 (OPC, 2020).

- Medium-term: 2-3 feet of SLR (2050-2070):
  - Implement action plan and necessary improvements to maintain operations with the ability to accommodate 3.5 feet of SLR.
  - Develop long-term plan for ECWRF, including options for the outfall system to cope with SLR greater than 5 feet. We assume this effort would be coordinated with a long-term plan for primary treatment elements which will be approaching the end of their service life at that time.
- Long-term: 3-5 feet of SLR (2070-2100):
  - Implement long-term plan for ECWRF and outfall system to cope with SLR greater than 5 feet, based on observations, updated projections for sea level rise, site hazards and needs of the community.

1. Introduction

The City of Petaluma Ellis Creek Water Recycling Facility (ECWRF) currently discharges treated effluent to the Petaluma River and is proposing to relocate the outfall to a slough adjacent to the treatment plant, approximately 3,000 feet from the main river channel. This memo presents the findings of a sea-level rise (SLR) analysis which evaluated how storm and non-storm water levels, combined with SLR, could affect the outfall structure and other elements of the ECWRF.

Assessing sea-level rise impacts early in the design phase is imperative for all projects in the coastal zone given the high likelihood of impacts from coastal hazards (e.g., flooding, erosion) and implications for water quality. Additionally, given stricter state and federal permitting standards around sea-level rise and climate change impacts, outlining how a project will be designed resiliently will ensure a smoother permitting process.

This document outlines what sea-level rise projections from the *State of California Sea-Level Rise Guidance* (OPC 2018) are relevant to the Petaluma Outfall (outfall or project site) given an assumed 50-year design life, and conducts a vulnerability assessment of storm and non-storm water levels to determine potential impact thresholds which may result in damage or disruption to facility operations. All elevations referenced in this analysis are relative to the North American Vertical Datum of 1988 (NAVD88).

1.1 Site Description and Topography

Most of the wastewater treatment processes (i.e. preliminary, secondary and tertiary treatment phases) at the ECWRF occur in the northwest portion of the site, accessed via the West Access Road. Primary access to the facility is through an entrance gate located off of this roadway. After tertiary treatment, wastewater flows through a series of oxidation ponds (1-8), treatment wetlands, polishing wetlands (A-D), a contact chlorine basin, and a pump station/outfall, which are accessed to via dirt and paved roads (Figure 1). The oxidation ponds and treatment wetlands are encased by berms, providing biological treatment and additional storage during peak flow events. The contact chlorine basin is located at the southern treatment wetland near the main pump station and outfall. Additionally, a ~10ft weir exists at the outfall to regulate discharge.

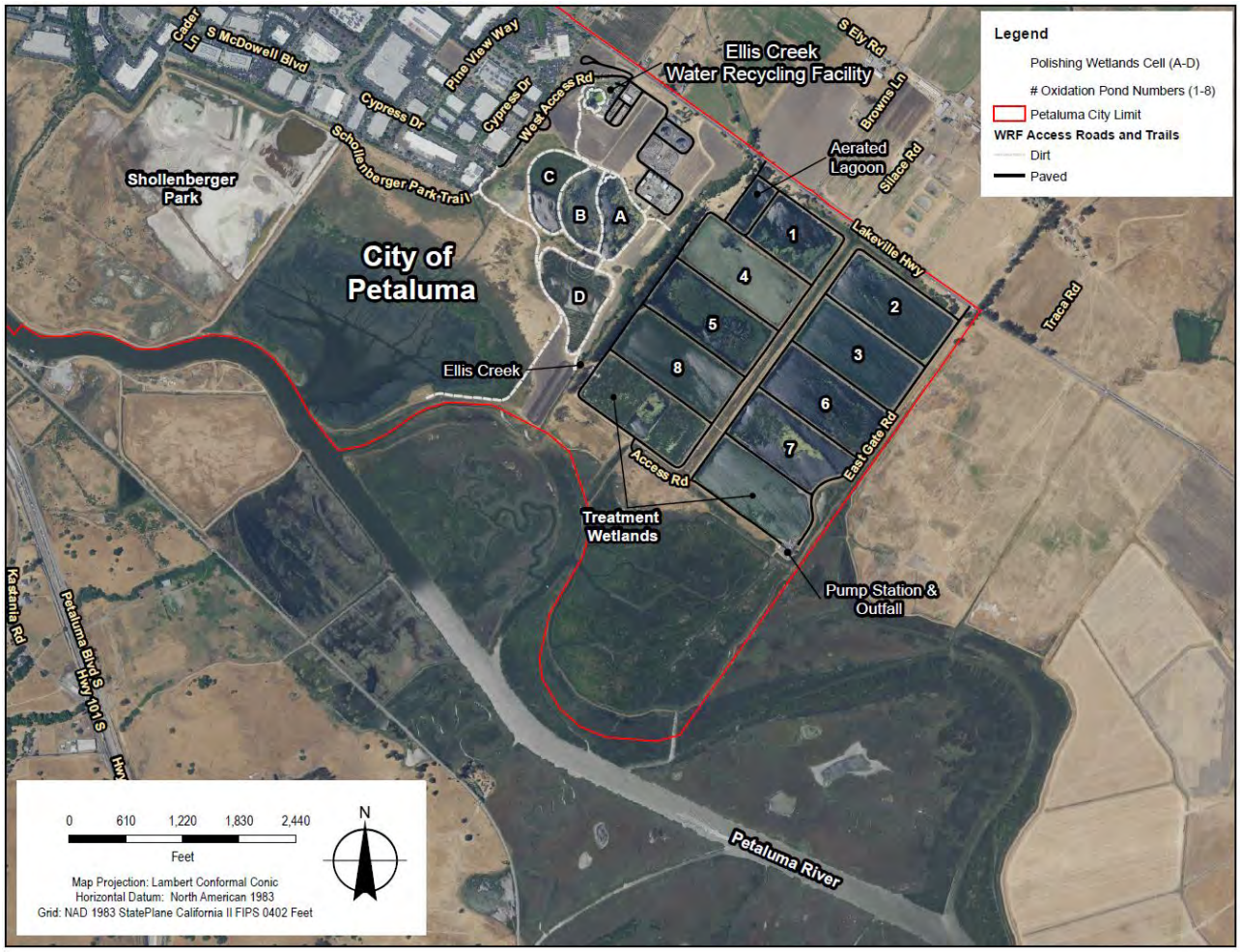

Figure 1. Ellis Creek Water Recycling Facility

The ECWRF is in a low-lying region with steep grades to the North-East and South-West. The elevation through the facility is greatest to the North near Lakeville Hwy and the West Access Road, ranging around 20-30ft (Figure 2). The overall onsite grades decline to the south, reaching a low-point of 5ft or below at the Petaluma River. Shown in Figure 3, the elevation of the oxidation pond berms steadily declines from northeast to the southwest, in which the treatment wetland berms are the lowest at ~14 to~ 15 feet.

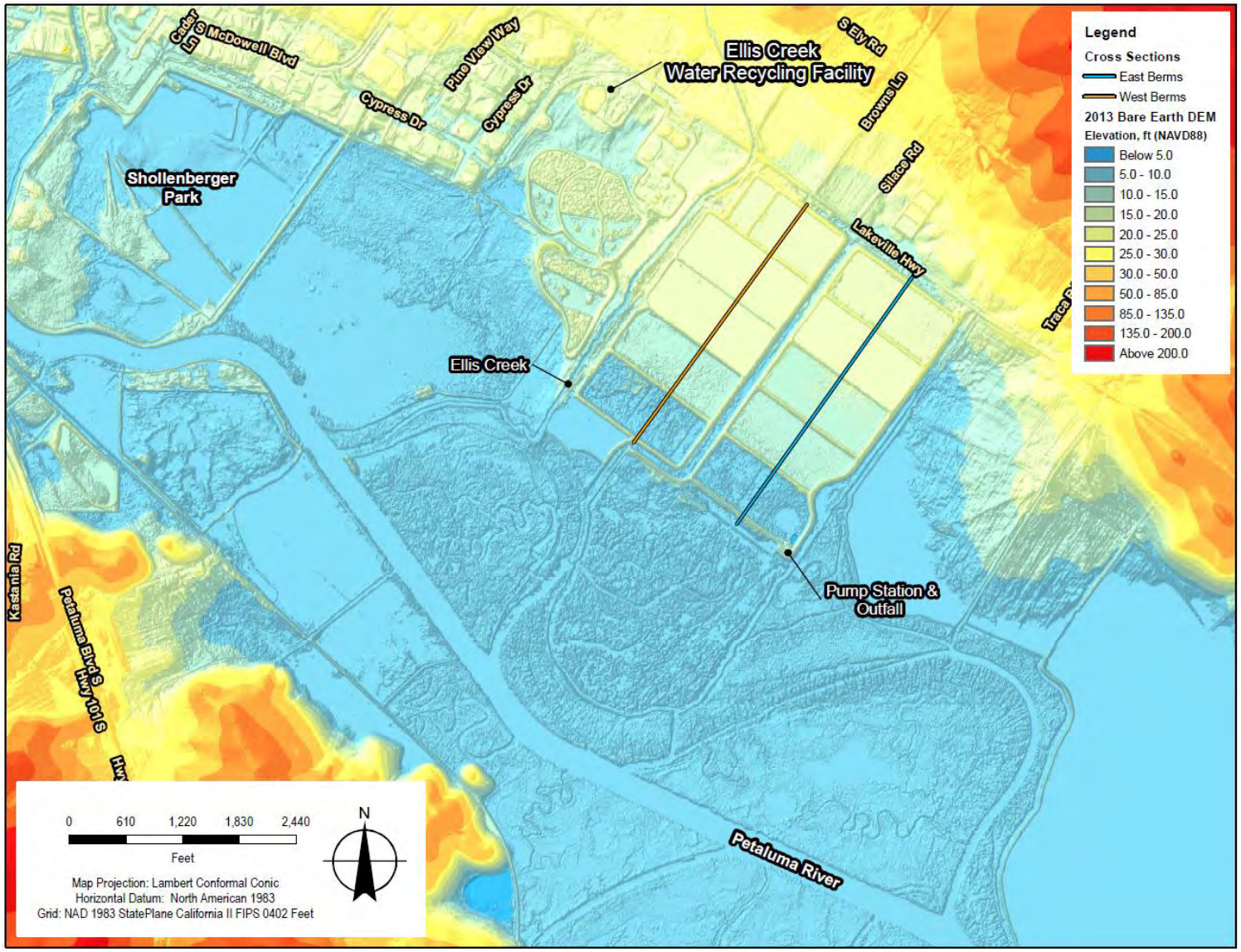

Figure 2. WRF Topography (2013 Sonoma County Bare Earth DEM)

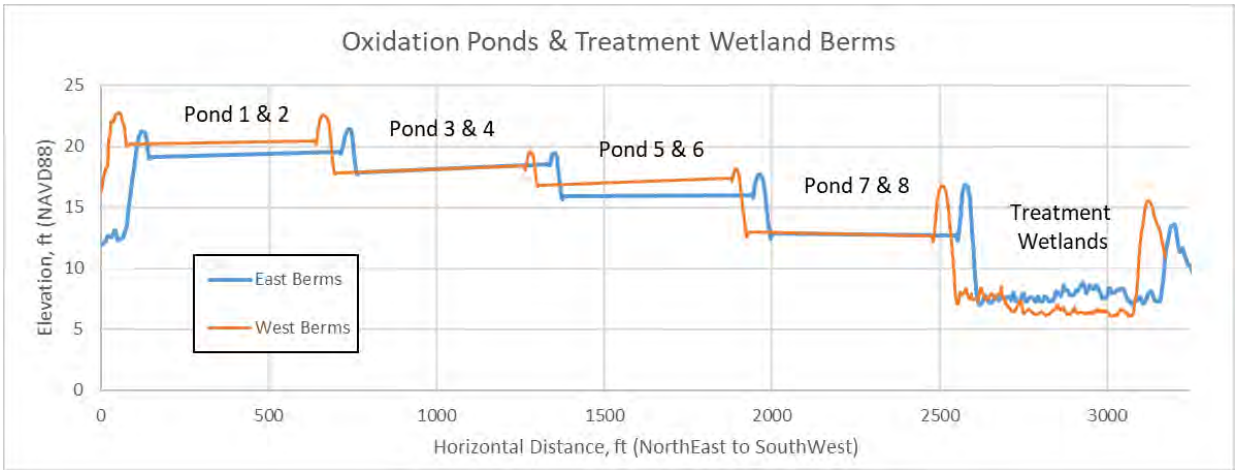

Figure 3. Elevation of Oxidation Pond-Treatment Wetland Berms

1.2 Project Background

During an inspection of the facility in September 2016, the City discovered longitudinal cracks along the top and bottom of the existing outfall pipe, separating pipe joints, and sections of pipe that have been flattened into an oval shape. To address this structural integrity issue, the City is proposing to construct a new outfall pipeline and outfall structure in the tidal slough within and adjacent to the southern corner of the existing facility.

The City of Petaluma is proposing to divert all future wastewater effluent discharges to the tidal slough located in the southeast corner of the ECWRF via a new outfall pipeline and outfall structure. A 48-inch-diameter outfall pipe would be installed from the facility to the adjacent tidal slough. A new outfall structure would be constructed in the tidal slough.

Slope protection improvements, likely rip rap, would be installed along the bed and banks of the slough immediately downstream of the proposed outfall structure to protect the slopes from erosion during discharges.

The existing 42-inch outfall pipeline and outfall structure would be left in place as a back-up discharge method. At some point in the future, if complete failure of the existing pipeline occurs, the existing outfall structure in the Petaluma River may be removed and the pipeline capped. If the outfall were removed, both above and below water appurtenances would be removed.

1.3 Vulnerability Assessment Approach

Vulnerability is the degree to which natural, built, and human systems are susceptible to harm as defined in the Adaptation Planning Guide[1] which was recently updated by the State of California Office of Planning and Research. Assessing vulnerability is one of the key steps in understanding existing and

[1] https://resilientca.org/apg/

future hazards and their potential impacts and consequences. Vulnerability is typically evaluated based on three factors:

- **Exposure** is the degree to which a resource is exposed to sea level rise (SLR) and associated hazards. Exposure is often described in terms of the spatial extent, duration and frequency of a specific hazard.
- **Sensitivity** is the degree an asset would be impaired by the impacts of SLR. Systems that are greatly impaired by small changes in SLR have a high sensitivity, while systems that are minimally impaired by the same small change in SLR have a low sensitivity.
- **Adaptive capacity** is the ability of an asset to respond to SLR, to moderate potential damages, to take advantage of opportunities, and to cope with the consequences. This does not mean that the system must look the same as before the impact, but it must provide comparable services and functions with minimum disruption or additional cost.

Identifying impact thresholds, or tipping points, at which the potential consequences associated with a given hazard scenario increase significantly are a key outcome of this assessment. The impact thresholds can be correlated to a SLR projection to quantify the probability of occurrence at a given time horizon. This provides valuable information for prioritizing adaptation strategies and understanding how these strategies may need to evolve over longer planning horizons.

3. Sea-Level Rise Projections

SLR projections along the west coast of California are provided in the 2018 State of California Sea Level Rise Guidance document (OPC, 2018) for 12 active tide gauges. The California Coastal Commission Sea Level Rise Policy Guidance, updated in 2018 to reflect the latest projections, refers to these as the "best available science" on SLR projections in California. San Francisco is the nearest tide gauge to Petaluma for which SLR projections are provided in the OPC SLR Guidance document. These projections are listed in Table 2 for a range of probabilistic scenarios and time horizons provided in the guidance.

Table 2: Sea Level Rise Projections for San Francisco (OPC, 2018)

Time Horizon	Likely Range, 66% probability SLR is between... (feet)		5% Probability Projection (feet)	0.5% Probability Projection (feet)	H++ Scenario Projection (feet)
2030	0.3	0.5	0.6	0.8	1.0
2050	0.6	1.1	1.4	1.9	2.7
2060	0.8	1.5	1.8	2.6	3.9
2070	1.0	1.9	2.4	3.5	5.2
2080	1.2	2.4	3.0	4.5	6.6
2100	1.6	3.4	4.4	6.9	10.2

Risk tolerance and design life are important factors to consider when evaluating SLR projections and their effect on coastal hazards. This analysis is focused on the outfall structure, in which the service life of this element was assumed to be 50 years and corresponding to the 2070 timeframe. This has long been a default value for civil infrastructure projects based largely on the durability of commonly used construction material and degradation in the marine environment. Depending on the rate of SLR, some adaptation strategies may have to be implemented before this time horizon (i.e. 2070)

Specific risk tolerances vary for different elements of the ECWRF depending on how sensitive they are to flood hazards. A range of SLR scenarios have been evaluated in this memo to capture the full range of projections through 2070, including the worst-case H++ scenario. The state guidance document provides a range of projections at each time horizon along with probabilities associated with each projection as illustrated in Table 2. The guidance document provides some limited direction for pairing risk tolerance and associated SLR projection to a given project.

- "Low Risk Aversion" projects should evaluate the upper end of the likely range of SLR projections at a given time horizon. "Low Risk Aversion" refers to projects which would suffer little or no damage or disruption if SLR exceeded this projection.

- "Medium-high Risk Aversion" projects should evaluate the 0.5% probability SLR projections at a given time horizon. "Medium-high Risk Aversion" covers a wide range on the spectrum of risk and would apply to projects which would suffer greater consequences (damage and disruption) if SLR exceeded this projection. To clarify what is meant by the probability of these projections, there is a 0.5% chance these values will be exceeded at each time horizon based on the "best available science" at the time of this study.
- "Extreme Risk Aversion" projects should evaluate the worst-case SLR projections as indicated by the H++ scenario. "Extreme Risk Aversion" refers to projects that would pose a major threat to life, public health and safety, or the environment if damaged or disruption would be expected under an extreme SLR scenario.

The state guidance document does not specify how these projections should be combined with other hazards such as an extreme storm event. The combination of SLR and storm events should be further evaluated with input from the City and stakeholders, so the project design assumptions are in line with the Community's risk tolerance and long-term strategy for wastewater management.

Wastewater infrastructure projects are often characterized as critical infrastructure and lumped into the "Extreme Risk Aversion" category although sensitivity to SLR and associated hazards depends on a variety of site-specific details. It is important to note that the H++ scenario projections are based on a series of assumptions, not probabilistic modeling, and therefore the likelihood of this scenario cannot be determined This memo includes analysis of the H++ scenario to describe the potential site-specific risks under such a scenario, but this SLR projection may not be prudent for design purposes.

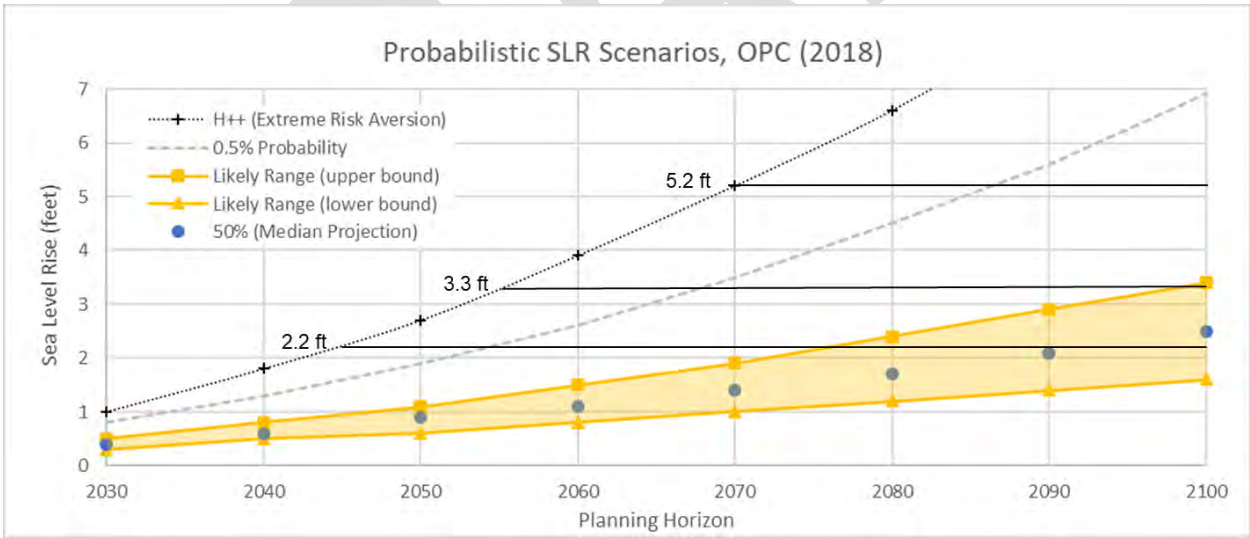

Figure 4 Sea-level rise projections at San Francisco (OPC, 2018)

Three scenarios evaluated in this analysis are identified in Figure 4. Scenarios of 2.2, 3.3 and 5.2 feet were selected to be consistent with prior work on the project and because they align well with projections in 2070 for each risk aversion scenario. While projections evaluated in this memo were based around a design life of 2070, they do capture the vast majority of SLR projections through 2100. Under a high emission scenario, there is only a 3% chance that SLR will exceed 5 feet by 2100 (OPC, 2018).

4. Coastal Flood Hazards

The tidal scenarios chosen for this analysis range between the Mean Higher-High Water (MHHW) datum and the 100-year return period extreme water level. The MHHW elevation is a useful baseline for typical high-water levels, however it is important to recognize that the MHHW level is exceeded regularly during Perigean tides (Spring or King tides). A hydrodynamic modeling study for the Petaluma River found the MHHW to be ~6.5ft and the 100-year flood to be ~9.5 ft (RMA, 2020). These values are generally consistent with a study carried out by AECOM (2016), which calculated the MHHW to be ~6 ft and the 100-year extreme water level elevation to be ~10ft at the mouth of the Petaluma River. The anticipated water levels combined with SLR are presented in Table 3.

Table 3. Sea Level Rise & Water Level Scenarios

Year	Sea Level Rise Scenario (ft)	MHHW + SLR (ft)	100-year water level + SLR (ft)
2021	0	6.5	9.5
2070	2.2	8.7	11.7
2070	3.3	9.8	12.8
2070	5.2	11.7	14.7

Site specific flood mapping was carried out for the elevations presented in Table 3 using the 2013 Sonoma County Lidar topography. This is the most recent publicly available topographic dataset for the project site and flooding projections are based on a comparison of ground elevation to the peak water level which provides a conservative estimate of flood extents. Actual flooding may vary depending on the site hydrology, hydraulic connectivity and ecology (i.e. soil characteristics/permeability, vegetation, precipitation, fluvial forces).

This section presents coastal flood hazards in the non-storm and extreme storm scenarios. The vulnerabilities associated with these hazards are discussed in a subsequent section.

4.1 Non-Storm (MHHW + SLR)

The potential flood extent for each SLR + MHHW scenario is shown in **Error! Reference source not found.**, which includes water level elevations of 6.5', 8.7', 9.8' and 11.7' (Table 3). Flooding under the non-storm (i.e. MHHW+SLR) scenarios is representative of more frequent flooding that would be experienced several times per month, especially during spring tides. The ECWRF is not exposed to flooding hazards under a typical MHHW water level scenario with no sea level rise.

MHHW flooding within the grounds of the facility is not expected until a water level of 8.7 ft is reached (2.2ft SLR+MHHW). Under this scenario, low-lying pedestrian trails are exposed but facility infrastructure would not be adversely affected. This includes limited portions of land adjacent to the oxidation ponds and polishing wetland C. Once a water level of 9.8ft (3.3ft SLR + MHHW) is reached, flooding may occur in the northwest region of the ECWRF adjacent to the polishing wetlands. However, the berms which surround the polishing wetlands are higher than this water level so it is unlikely this scenario would affect the function of these wetlands. Flood conditions for a water level of 11.7 feet (5.2 feet SLR+MHHW) will extend as far north as the West Access Road and possibly Lakeview Highway through the channel between the oxidation ponds. However, most of the ECWRF infrastructure and treatment elements are not exposed to flooding under this scenario.

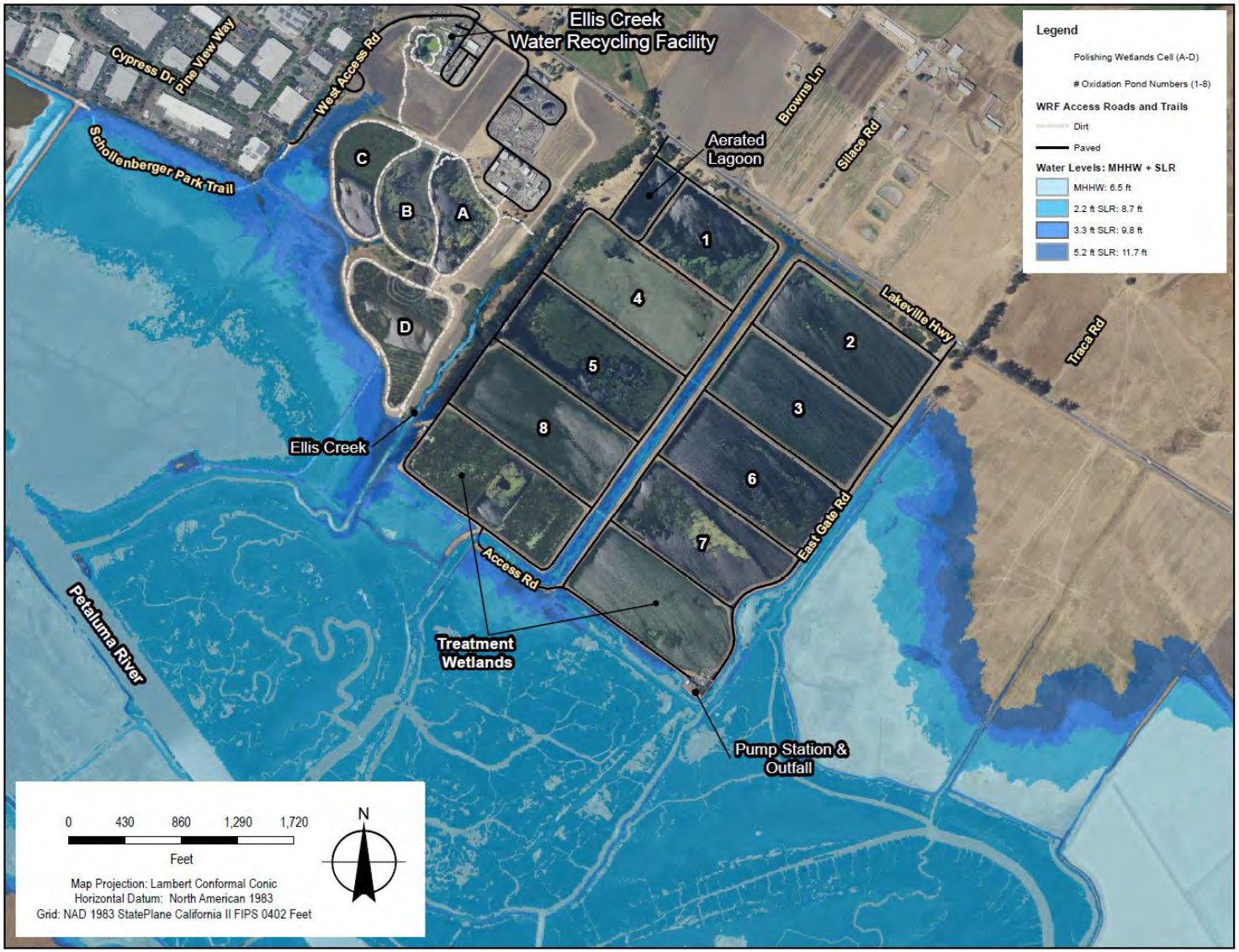

Figure 5. Potential Non-storm Flood Extents with Sea Level Rise (MHHW + Sea-level Rise)

4.2 Extreme Storm (100-Year Storm +SLR)

The potential flood extent for each SLR + 100-year storm scenario is shown in Figure 6, which includes water level elevations of 9.5', 11.7', 12.8' and 14.7' (Table 3). The Extreme Storm (i.e. 100-year flood + SLR) scenarios represent a higher intensity, but less frequent event that may lead to temporary flooding. Similar to the non-storm conditions, the occurrence of a 100-year flood for existing conditions (no sea level rise) will impact low-lying areas northwest of the ECWRF around the polishing wetlands C and D, Ellis Creek, and the channel between the treatment wetlands. Sea level rise of 2.2 to 3.3 feet will increase the flooding extent of the impact areas, mainly in the low-lying space between the wetland/pond berms. It is unlikely that the facility operations will be significantly impacted, as no ECWRF infrastructure is compromised.

The 100-year + 5.2 feet SLR water level would likely result in breaching of the berms at the southern-most treatment wetland and flood damage to the outfall infrastructure. This scenario is also the impact threshold at which flooding of the West Access Road and Lakeview Highway may occur which could temporarily inhibit access to the ECWRF.

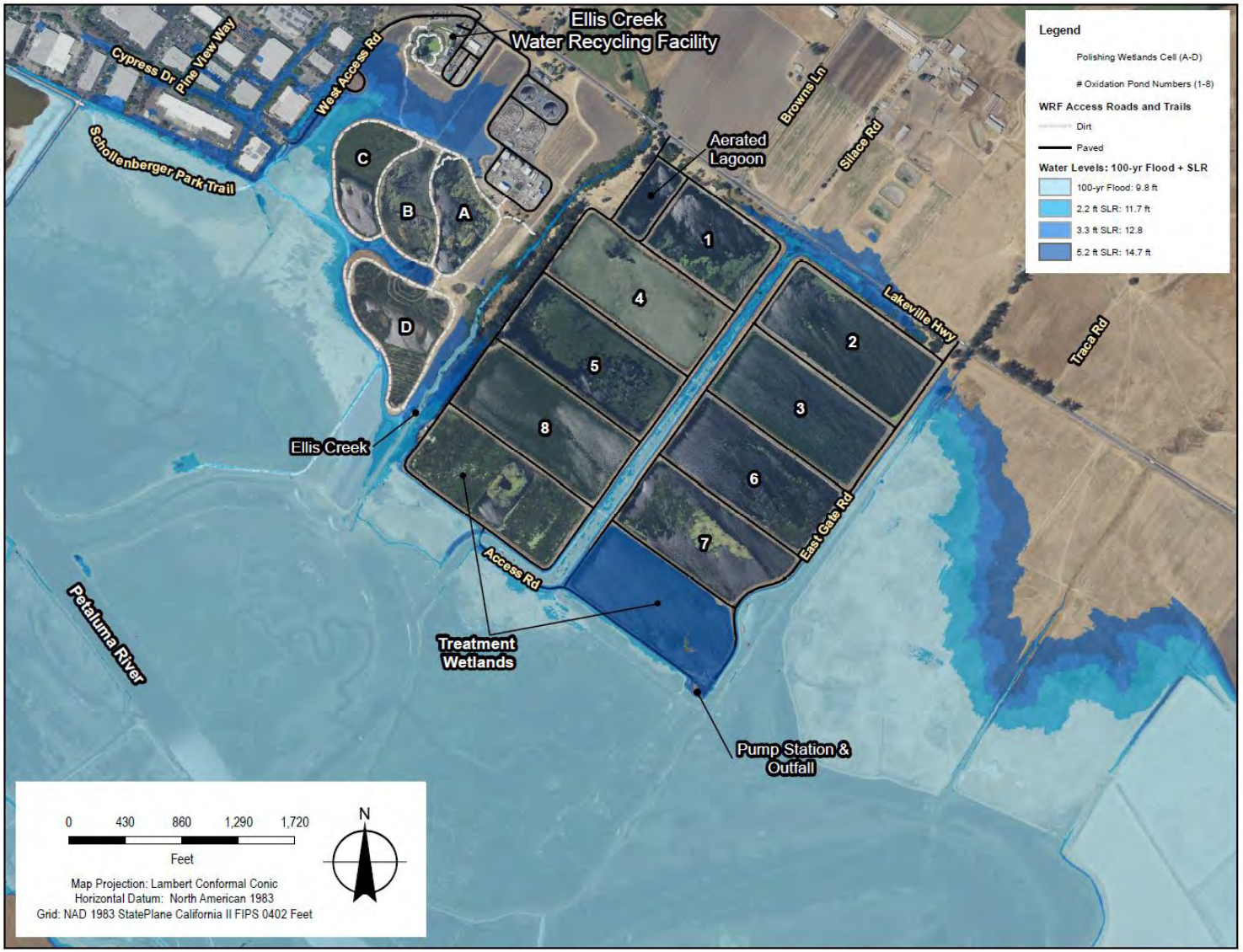

Figure 6. Potential Extreme Storm Flood Extents with Sea Level Rise (100-year water level + Sea-level Rise)

5. Vulnerability Assessment

This section describes the vulnerability of ECWRF infrastructure based on the coastal flood exposure described in Section 4 and the sensitivity to these hazards. An estimated likelihood of occurrence corresponding to each of the vulnerability thresholds is also provided.

5.1 Outfall Operations

The hydraulic operation of the outfall system is controlled at the downstream end by the weir in junction box No. 2, which regulates gravity flow through the ponds/wetlands before eventually discharging into the Petaluma River. The weir has an estimated elevation of ~10 feet, based on a datum conversion from the record drawings (Carollo Engineers, 2009). The outfall junction box is adjacent to the East Gate Road, which has an elevation of ~13-14 feet. A gate exists at the connection between the junction box and outfall, which provides additional regulation of discharge and can be sealed during peak flow events to prevent backflow from high river levels.

Based on the weir elevation, the outfall operations could be temporarily impacted during extreme events with less than 1 foot of SLR. These events would require temporary closure of the gate in junction box No. 2 requiring storage of treated wastewater in the pond system for a duration of 1-2 hours during the peak tide cycle of this extreme event. Based on our understanding of the outfall system hydraulics, extreme (i.e. 100-yr return period) water levels are not a major concern because of the temporary and infrequent occurrence of these events. This is based on the assumption there is adequate storage volume in the pond/wetland system to accommodate a temporary closure.

MHHW levels are assumed to be a better indicator of the outfall operation's sensitivity to sea-level rise. MHHW represents a typical high tide water level that is exceeded regularly, especially during spring tides. MHHW was exceeded for 3-4 hours/day, over six consecutive days during the spring tide cycle of January 9th-14th 2021 based on observed water levels at the San Francisco tide station (NOAA #9414290).

MHHW + 3.3 feet of SLR would require frequent closure of the outfall discharge gate during spring high tides. This could potentially increase the risk of discharging partially treated wastewater in the event there is insufficient storage capacity during high water level periods. The probability of 3.3 feet of SLR being exceeded in 2070 is about 0.5%. In other words, these impacts are not expected in the near-term and there is sufficient time to monitor and analyze the system's ability to accommodate temporary closures due to increasing water levels in the Petaluma River.

5.2 Wetland-Pond Berms & Outfall Infrastructure

The oxidation ponds, treatment wetlands and polishing wetlands are all bounded with berms and access roads. The southeast treatment wetland is the most vulnerable to overtopping, but the threshold is only exceeded for the 5.2 feet of sea level rise with a 100-year flood. Once flood levels exceed this berm elevation most of the outfall infrastructure (chlorine contact basin, pump stations and buildings) would be vulnerable to damage from surface flooding. The existing berms around the polishing wetlands (A-D) and

oxidation ponds (1-8) are sufficiently elevated and are not expected to overtop with any of the water level scenarios examined in this analysis.

5.3 Access Roads

There are a variety of paved and unpaved access roads and trails through the ECWRF. The majority of these roads are above the flood levels evaluated in this report, except for the roads noted below. The roads vulnerable to flooding include:

- Treatment wetland access road (Paved): The channel crossing between ponds appears vulnerable to flooding at the MHHW + 3.3 ft SLR scenario. This would temporarily limit use of this road, but there are other access roads that can be used to access both treatment wetlands and associated infrastructure.
- West Access Road (Paved): This road provides primary access to the ECWRF and would be vulnerable to flooding under the 100-yr + 5.2 ft SLR water level scenario. This scenario has a very low probability of occurrence over the next 50 years (see Section 5.4). Long-term facility plans may need to consider alternative access points from Lakeview Highway, or elevation of the West Access Road to accommodate extreme SLR scenarios greater than 5.2 feet.
- East Gate Road (Paved): The southeast portions of the East Gate Road are also vulnerable to flooding in the 100-yr + 5.2 ft SLR scenario. In addition to potentially damaging the pond berms, the surface flooding would also restrict access to the outfall infrastructure. Long-term plans may need to consider alternative access road and outfall configurations to accommodate extreme SLR scenarios greater than 5.2 feet.

5.4 Probabilities

The probabilities corresponding to each sea level rise scenario and extreme flood event are important to compare with the risk tolerance of the ECWRF infrastructure. The annual exceedance probability for MHHW was not considered for this analysis as this baseline is exceeded multiple times during each monthly spring tide cycle. The 100-year flood corresponds to a return period of 100 years and thus a probability of 0.01 in any given year.

A basic method to determine joint probability,(i.e. multiplying individual probabilities together) was used to examine the probability of sea level rise occurring with a 100-year flood (Table 4). As the MHHW level is anticipated to be exceeded multiple times throughout the year, the joint probability with SLR is approximately the same as the SLR scenario. The 100-year flood + SLR joint probability declines at a rate 100 times that of the SLR scenarios. The OPC (2018) Sea Level Rise guidance does not estimate a probability for the H++ scenario, thus, a joint probability was not calculated for this scenario.

Table 4. Joint Probabilities

Year	Sea Level Rise Scenario (ft)	SLR Probability	100-year extreme tide elevation (ft)	100-Yr Flood Exceedance Probability	100-year extreme tide elevation + SLR (ft)	100-yr Flood + SLR Joint Probability
2021	0	Existing	9.5	0.01	9.5	**0.01**
2070	2.2	0.05	9.5	0.01	11.7	**0.0005**
2070	3.3	0.005	9.5	0.01	12.8	**0.00005**
2070	5.2	N/A	9.5	0.01	14.7	**N/A**

6. Adaptation Strategies

Based on the findings of the vulnerability assessment, this section proposes a phased adaptation strategy to increase the resiliency of the assets and infrastructure within the ECWRF to SLR.

6.1 Planning Phase, 0 to 2 feet of SLR (2020-2050)

Near-term adaptation strategies should focus on planning efforts to better understand potential vulnerabilities and develop specific action plans with triggers for implementation. Based on the findings of this analysis, the hydraulic operation of the outfall system appears to be most vulnerable to SLR, although the impact threshold may not occur until SLR exceeds 3 feet. Since there is only a 0.5% chance 3 feet of SLR occurs before 2070 there is time to monitor, plan and adapt to these future hazards. A few suggested adaptation strategies for this phase include:

- Improve understanding of the ECWRF's outfall system and hydraulic operations to determine potential thresholds at which Petaluma River water levels could reduce discharge capacity. This may involve a more detailed assessment of facility hydraulics to determine storage capacity and the ability of the system to tolerate temporary closures of the outfall gate.
- Implement a program to monitor water levels (as needed) near the outfall and within the Petaluma River to further evaluate how increases in sea-level rise affect outfall operations.
- Develop an action plan for adjusting operations and implementing improvements (if needed) to accommodate up to 3.5 feet of SLR. Note, this strategy would align with OPC's strategic objective of ensuring the California coast is resilient to 3.5 feet of SLR by 2050.

6.2 Implementation Phase, 2 to 3 feet of SLR (2050-2070)

The action plan items developed in the prior planning phase should begin implementation when SLR exceeds 2 feet to account for the lead time necessary to design, permit and secure funding for any necessary improvements to accommodate 3.5 feet of SLR. Suggested actions within this phase are as follows:

- Implement the action plan and necessary improvements to maintain operations with the ability to accommodate 3.5 feet of SLR. This could include raising the elevation of the vulnerable access roads or installing pumps at the outfall structure to discharge effluent when river water levels prohibit discharge via gravity.
- Develop a long-term plan for ECWRF, including options for the outfall system to cope with SLR greater than 5 feet. This effort should focus on planning horizons at 2100 or beyond in which it may not be feasible or economical to maintain the outfall structure and treatment wetlands in their current locations. This long-term plan should also involve an updated assessment of the ECWRF's service life and potential vulnerability to SLR based on the best available science at that time.

6.3 Long-term Adaptation Phase, 3 to 5 feet of SLR (2070-2100)

This phase of adaptation will presumably coincide with the end of the service life for the existing ECWRF. The long-term adaptation plan will have to account for a wide variety of future conditions that are difficult to predict with any accuracy today. SLR and flood hazards are one consideration, but there will also likely be changes in population densities, water use and wastewater treatment technology that will also be significant over the next 50-100 years. As such, suggested actions within this phase would be to implement the long-term plan for ECWRF and outfall system to cope with SLR greater than 5 feet, based on observations, updated projections for sea level rise, site hazards and needs of the community.

7. References

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