Coastside County Water District

WS 4110011

2021 UPDATE TO THE WATERSHED SANITARY SURVEY

Prepared by
Jim Steele Independent Environmental Consultant (hereinafter Consultant), Lake County CA, ecological evaluation, environmental permits, RPF #2421
November 2021

TABLE OF CONTENTS

I. INTRODUCTION

The Surface Water Filtration and Disinfection Treatment Regulations (SWTR), Section 64665, Title 22, California Code of Regulations (CCR) require that each supplier subject to the SWTR shall conduct a watershed sanitary survey once every 3 years and every 5 years for systems with outstanding performance. The Coastside County Water District (District) is an outstanding performance water district and currently utilizes surface water from Denniston Creek as a supply source to supplement water from other sources. Therefore this report reflects Denniston Watershed.

The District also has future plans to use water from San Vicente Creek as a supply source but presently there are no facilities in place for use of that source. The District does have a non-perfected water right for diversion of surface water from San Vicente Creek and considers it to be a potential future water supply source. San Vicente watershed will be included when it is an active water supply.

In 1996 the District prepared its initial (original) watershed sanitary survey (WSS) for Denniston & San Vicente Creek watersheds. The Department of Public Health has on file the initial WSS as well as the 2001, 2006, 2011 and 2016 updates.

The current report, dated November 2021, is the required 5-year update of the sanitary survey report for the Denniston Watershed and uses the same methodologies as the original report.

II. FINDINGS, CONCLUSIONS & RECOMMENDATIONS

A. Findings and Conclusions:

1. The District currently diverts surface water from Denniston Creek at Denniston Reservoir, and the District plans on continuing these diversions.
2. The ownership of the valley floor and upper slope area is Golden Gate National Recreation Area (GGNRA) and this ownership provides very low impact recreation such as hiking (with privy stops) with no horse or bicycle use. Embedded within this ownership is a 20 acre (8 hectares) farming ownership by the Lea family. The Lea family has farmed this location for several generations and is under strict food safety controls.
3. The Consultant performed a field investigation of potential contaminant sources. Ground survey found native riparian vegetation intact protecting the stream environment along Denniston Creek. A no-changes to the riparian policy exists for the farm and farm workers. No evidence of inappropriate riparian use was discovered. Field portable sanitary systems are provided for workers and the operation follows food safety protocols. One water supply pump exists in the stream for agricultural water supply and has been in place for several decades. Currently there are no observed or known significant potential contaminant sources.
4. The current watershed control and management practices within the Denniston watershed including those of the District, GGNRA, and the farmer have been reviewed and found adequate.
5. The water quality of the surface water from Denniston Creek and the water produced by the Denniston Water Treatment Plant (WTP) is in compliance with all state drinking water standards MCLs (maximum contaminant levels).
6. The current monitoring program for untreated water from Denniston Creek and for treated water from the Denniston WTP is in conformance with current regulations.
7. During the last report, the District finished the construction phase of an upgraded pretreatment process and 2017 upgrades to the chemical treatment system at the Denniston WTP are complete. These upgrades are performing as planned.

B. Recommendations:

8. This is a natural watershed which undergoes change from geologic and wildlife processes. The District should continue to annually evaluate methods to decrease the susceptibility of the Denniston Project facilities to influence from natural and human causes. Additional vigilance toward wildlife interactions with local human populations is recommended.
9. The District should maintain a channel as much as possible through the sediment created wetland upstream of the water intake in order to maintain high quality water flow, provide for a consolidated area for sediment dredging and reduce road flooding. Clearing plants along a defined channel route is the preferred method to keep the channel established and also avoid habitat impacts. This will minimize potential for contamination from within the wetland area.
10. The current CCWD water quality monitoring program for the Denniston Watershed (untreated water) and the Denniston WTP (treated water) is in compliance with DHS requirements and is considered adequate in that there are no known significant contaminant sources within the watershed. No changes are recommended.

III. CHANGES SINCE 2021 UPDATE

Brief: There have been no significant land or operational changes in the Denniston watershed which affects water quality since the 2016 Update Report. Comments below:

Section 1. Watershed and Water Supply System

A. **Watershed:**

1. Location -- No changes to CCWD facility locations since the 2016 report.
2. Land Uses -- No significant changes since the 2016 report. The watershed, other than farming and water supply remains undeveloped. The GGNRA opens the watershed above Denniston Creek to hiking and biking on upland trails, but no horse use is allowed. This is virtually the same use as previous owner POST (but without horses allowed by POST). The use is mostly by locals who are familiar with how to access the area and there is no indication of significant increase to the visitor base. The areas of access and use are the same, so the interest group remains the same (except for the loss of the horse community).
3. Zoning No changes since the 2016 report (zoned “Planned Agricultural District”).
4. Land Ownership POST was reported changed to GGNRA in the 2016 report. The ownership change was 12/9/2011. The mission of the GGNRA is preservation of the watershed, viewshed and ecological values through low impact use. The land is protected from planned golf links, subdivisions and ranchettes. Watershed ownerships for others remains unchanged; map attached. Map-Appendix 1.
5. Population No changes since the original report (No residents in the upper watershed area).
6. Topography No changes since the original report.
7. Geology No changes since the original report.
8. Soils No changes since the original report.
9. Landslide Susceptibility -- No changes since the original report.
10. Seismic Information No changes since the original report.
11. Precipitation, Runoff and Flooding Potential No significant changes since the original report. The local area has been in a prolonged drought (as was the State) but with flashy storm events. Flooding of a small portion ofaccess road to the treatment facility has occurred which resulted in additional creek brush clearing to aid flow.Rock was brought in to raise the road bed and some road edge repairs were made.
12. Hydrology No changes since the original report.
13. Reservoir Characteristics of Denniston Reservoir – As mitigation for the continuous sedimentation of the Denniston Reservoir the District annually undertakes a small dredging project to clear ~500 cu yards of sediment in the reservoir to open a small channel to the reservoir inlet (Appendix 5). No major water quality

problems, such as significant toxin, taste or odor from algae blooms, have occurred within the past 5 years.

However, Cryptosporidium and Giardia have occurred in very low concentrations and are considered a potential risk. Cryptosporidium (Crypto) are monitored under Bin 2 protocol of the SWRCB, DDW. Crypto is somewhat affected by dry conditions and the recent monitored results could indicate a decreased occurrence during the low rain period. Crypto is a widespread contaminant in surface water spread through animal agriculture, wastewater discharges, slaughter houses and wild animals or other sources of fecal matter. Only wildlife occur in significant quantities in the watershed.

Also, the potential for algae and other issues is sometimes possible during low flows since the channel passing through Tule overgrowth upstream of the intake cannot be reached by dredging. A permit (1602 Agreement) from the CA Department of Fish and Wildlife has allowed for pond dredging and some hand-cleared channel through the overgrowth to establish the channel there. Clear water generally passes through that channel reach lowering the risk of algae and bacteria influence.

14. Wetland Characteristics ----- No changes since the original report.
15. Groundwater Recharge------No changes since the original report.

B. **Water Supply System:**

1. History------No changes for Denniston since the last report.
2. Service Area Characteristics ------No changes since the original report.
3. Water Supply Sources ----- No changes in source since the original report.

Updated Production by source since 2015 in MG:

Year	Denniston Creek	Denniston Wells	San Vicente Creek
2016	144.3	8.6	0.0

2017	196.8	5.44	0.0
2018	133.8	4.55	0.0
2019	228.2	2.89	0.0
2020	127.1	11.73	0.0
2021	71.7	5.71	0.0

4. Facilities ----- No changes except: The water treatment facility has been upgraded as projected previously for 2016 but with final treated water pump station and transmission pipeline construction completed in 2017. The improvements have been signed off by the oversight agencies.
   Appendix 1. Watershed Map indicates current land ownerships.
5. Emergency Plans------ An updated emergency response plan is updated as of 11/2021.

Section 2. Potential Contaminant Sources in the Watersheds

Larry McCollum of LJMWQC conducted a basic field survey of the Denniston watershed and reservoir for the 1996 base report and in 2010 (for 2011 report) and Jim Steele an independent environmental consultant in later years to review the status of potential contaminant sources. Interviews of District staff and local farmers were also utilized to confirm watershed conditions during the period covered by this update.

A. Potential Contaminant Sources –

No changes since the 2011 and 2016 reports. The watershed is remarkably unchanged by human intrusion. There remains no wastewater, reclaimed water, urban, animal agriculture or industrial runoff in the watershed. The farming operation is under CA Department of Health Services food safety guidelines and inspected regularly and unannounced.

A letter by Cabrillo Farms Agriculture Inc. (Appendix 2. Dave Lea, 2021) indicates there are no new operations (20 acres farmed) in the upper watershed.

Crops are: Brussel sprouts, peas and leaks with occasional pumpkins.

Insecticides are: List of chemicals used on crops upstream of Denniston Water Treatment Plant (provided by the farmer): Durivo, Proclaim, Warrior II, Liberate, Wrangler, Movento, Radiant, Sivanto, Initiate, Blocker 4F.

Fertilizers are: 15-15-15, 12,12,12, Urea, 16-20, Ammonium Nitrate, Calcium Nitrate.

Grazing Animals, Concentrated Animal Facilities, Vegetation, Mine Runoff, Solid and hazardous Waste Disposal Facilities or Logging activity are not in watershed and not potential contamination sources so remain unchanged from original report.

Recreational Uses: The recreational use is limited and remains as described in the original report except that GGNRA does not allow horses in the watershed.

Unauthorized Activity: remains unchanged and no illegal dump sites are known or were detected in the field survey.

Groundwater: There remains no known wells or other activity within the watershed which could have a deleterious impact on ground water.

Seawater Intrusion: The diversion point within the watershed is well above sea level and not an issue.

Geologic Hazards: Hazards remain such as earthquakes and landslides. Heavy precipitation periods can contribute turbidity above treatment capacity. Alternate sources are groundwater and pipeline from Crystal Basin.

Fires: The potential for fire exists despite an absence of historical incidents. Alternate sources of water are available as above. Fire is not a major concern for safe operations.

B. Significance of Potential Contaminant Sources -- --

No changes since the 2011 and 2016 reports. Those reports and this one conclude there are no known significant potential sources within the Denniston watershed area, and therefore the potential for contamination of this supply source is low. However, since there has been a sampling result for Crypto in the surface water raw water supply. A positive result for Crypto is potentially significant and the source is unknown.

C. Anticipated Growth and Projected Changes in Sources of Contaminants -- -- No changes since the 2011 and 2016 reports. The conclusion is there are no known changes planned for the land in either of the watersheds, and because of ownerships, zoning and planning policies most types of development would be extremely difficult. No changes in sources of contaminants are anticipated for the same reasons.

D. Current Ownerships

The current major ownership of the valley floor is the Golden Gate National Recreation Area (GGNRA)-federal with inholdings by Lea farms-private and CCWD-State authorized district. The GGNRA provides very low impact recreation such as hiking in the watershed upstream of the intake. This is similar to the activities allowed by POST (Previous owner) except horse riding is presently restricted.

Section 3. Watershed Control and Management Practices

This section contains a discussion of existing and recommended watershed management practices for protection of drinking water quality for the Denniston Watershed.

A. Water Agency Management Practices for the Denniston Watershed -- --

No changes since the original report. Exceptions are additional signage indicating the sensitive nature of the area and public entrance is not allowed rather than locked gates (gates are present and can be locked as needed).

B. Other Agencies with Watershed Control Authority -- --

The changes since the 2016 report are minor but positive for reducing polluting constituents of concern since the new ownership by GGNRA.

C. Water Agency Coordination Measures -- --

No changes since the original report.

D. Recommended Control Measures –

This update report concludes that the current control measures for the Denniston watershed appear adequate. However, as with all of the District's facilities, it is recommended that the District continue to evaluate methods to decrease the susceptibility of the Denniston Project facilities to negative influences from natural and human causes. To this aim the District has instituted vegetation management immediately upstream of the intake and will continue pond dredging as needed to reduce sedimentation at the intake. The dredged area provides room in the reservoir for upstream land-erosion sediments due to storm events.

Section 4. Water Quality

This section contains a summary and evaluation of collected water quality data. The District monitors both the untreated and treated water in conformance with DPH regulations. Results are in Appendix 3 and online.

A. Bacteriological/Parasitic –Samples are collected throughout the water distribution system as originally described except for the following: Microbiological (E. coli) assessment as part of the LT2SWTR requirements determined placement in Bin 1 for the first round and Bin 2 based on the second round results of greater than 100 MPN/100mL. Bin 2 placement is for positive cryptosporidium results. CCWD is currently following a more stringent 0.15 NTU CFE/IFE requirement as per Bin 2 classification.

Annualized result example:

B.	Total Coliform MPN/100mL	E. coli MPN/100mL
2016 [1]	1840	282
2017 [2]	2135	58
2018 [3]	1363	143
2019	3571	49
2020	2867	188
2021 [4]	2107	56

1. In 2016, 8 of 11 samples were "> 2419 MPN/100 mL".
2. In 2016, 9 of 11 samples were "> 2419 MPN/100 mL".
3. From April 2018 onward, CCWD switched from monthly to weekly bacteriological sampling of Denniston raw water.
4. Results through October 27, 2021.

C. Turbidity – In addition to the annual source samples, turbidity grab samples are collected daily at Denniston WTP Influent during periods that the plant is online. To mitigate the historic, periodic high turbidity attributed to the silt accumulation behind the Denniston dam, a dredging project was conducted as described in III.1.A.13, above and in Appendix 5. The Denniston WTP is shut down during periods of high turbidity. An on-line turbidity meter is in place and monitors the influent turbidity constantly while the WTP is online.

D. Iron and Manganese – Plant influent and effluent are monitored daily for Iron and Manganese. Confirmation samples are collected weekly and sent to a contract lab for analysis. Raw water manganese levels average 0.1 mg/l and iron

1.3 mg/l in the annual sampling during the period of this update. Treated water manganese and iron levels average ND in the treatment plant effluent.

E. pH -- pH grab samples are collected daily at Denniston WTP influent and effluent. The pH of the untreated water ranges from 6.7 – 7.7. Effluent pH is targeted at levels over 8.0 for corrosion control using the Langelier Saturation Index.

F. Temperature – The temperature of the untreated and treated water at Denniston WTP is analyzed daily and is used for CT calculations.

G. Organic Chemicals –There have been no hits for any SOCs or VOCs in the Denniston watershed during the period of this update.

H. Inorganic Chemicals – When the plant is on line, General Mineral and General Physical constituents are monitored monthly and Inorganic constituents are monitored annually. Aluminum and Iron continue to be monitored weekly. Monitoring Schedule is Appendix 4. The raw water remains easy to treat and all constituents are reduced to levels below their respective MCL at the plant effluent. Improvements to the flash mixer in January 2006 improved coagulation efficiency. At the time of this report, and with the acceptance of plans by DPH, Denniston WTP has undergone major upgrades to the chemical delivery and control, solids handling, SCADA and pretreatment systems. These changes are signed off and operating.

I. Radionuclides –Radium levels were below the DLR in all four quarters of sampling, which was scheduled for 2007 during the period before this update.

Evaluation of Ability to Meet Surface Water Treatment Regulations Requirements:

A. SWTR/IESWTR/LT1ESWTR/Stage1D-DBPR -- The Denniston WTP is in compliance with the current regulations. CCWD continues to meet SWTR compliance in the areas of 1. Filtration; 2. Disinfection; 3. Monitoring; 4. Treatment Reliability. The watershed is an undisturbed watershed with minimal known influences on raw WQ.

B. Filter Backwash Rule – The Denniston WTP has dealt with issues raised in the 2011 Update and continues to be in compliance with the FBR.

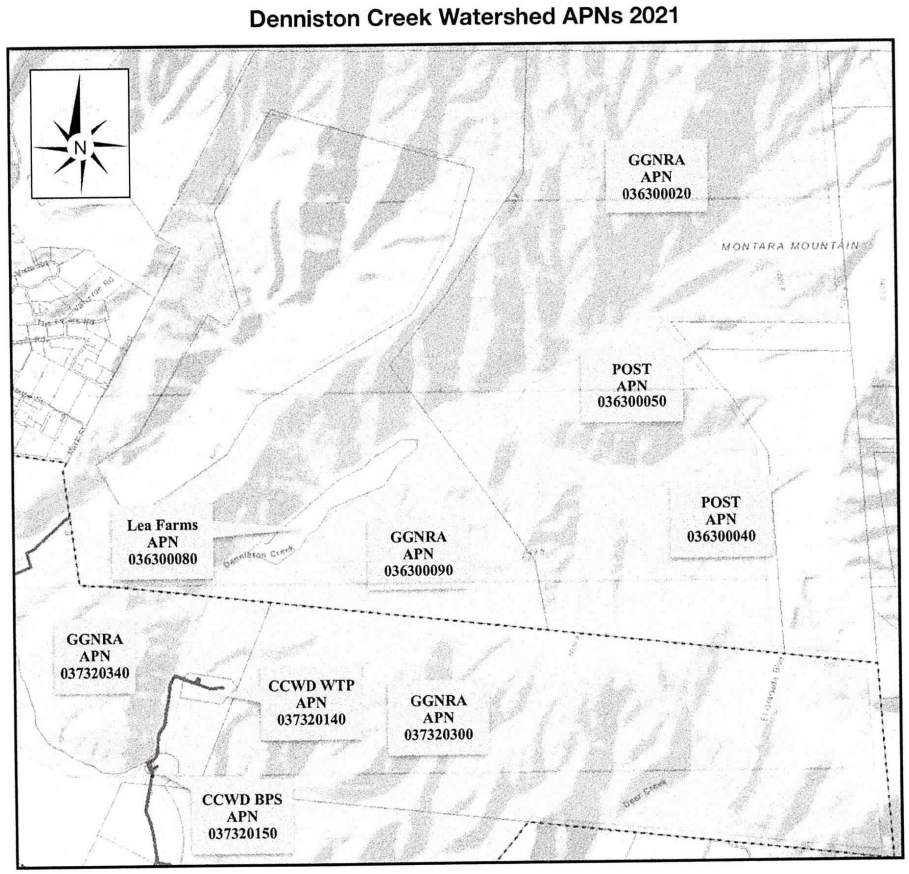
Evaluation of Ability to Meet Future Surface Water Treatment Regulations Requirements:

A. LT2SWTR – The results of District sampling have place it in Bin 2 because of the crypto monitoring result. The cryptosporidium results require additional monitoring and reporting to determine if additional steps should be taken in treatment. A continued evaluation of the source for crypto would be valuable. None of the usual sources exist in this relatively undisturbed watershed except for wildlife and that source has not changed. Wildlife transmission from potential sources such as nearby downstream human housing are possible through interaction with raccoon and bear scavenging. Raccoons are known to range throughout the lower and upper watershed. This interaction can be reduced significantly through increased waste-security public information as practiced by some rural counties.

B. Stage 2 DBPR -- The Denniston WTP has dealt with issues mentioned in the 2011 Update and continues to be compliant with the Stage 2 DBPR.

IV. APPENDICIES

Appendix 1 Ownership Map



Cabrillo Farms Agriculture Inc.

September 27, 2021

James Derbin
Superintendent of Operations
Coastside County Water District
650 726 4405

Dear James,

In response to your query regarding the Watershed Sanitary Survey, Cabrillo Farms Agriculture, Inc. has not made any changes in its land usage or operations within the backfield watershed. All cultural practices used are in accordance with all agricultural laws and regulations. We are also supervised by the San Mateo County Agricultural Commissioner's office.

Please let me know if you have any questions.

Dave Lea
650 888 2302

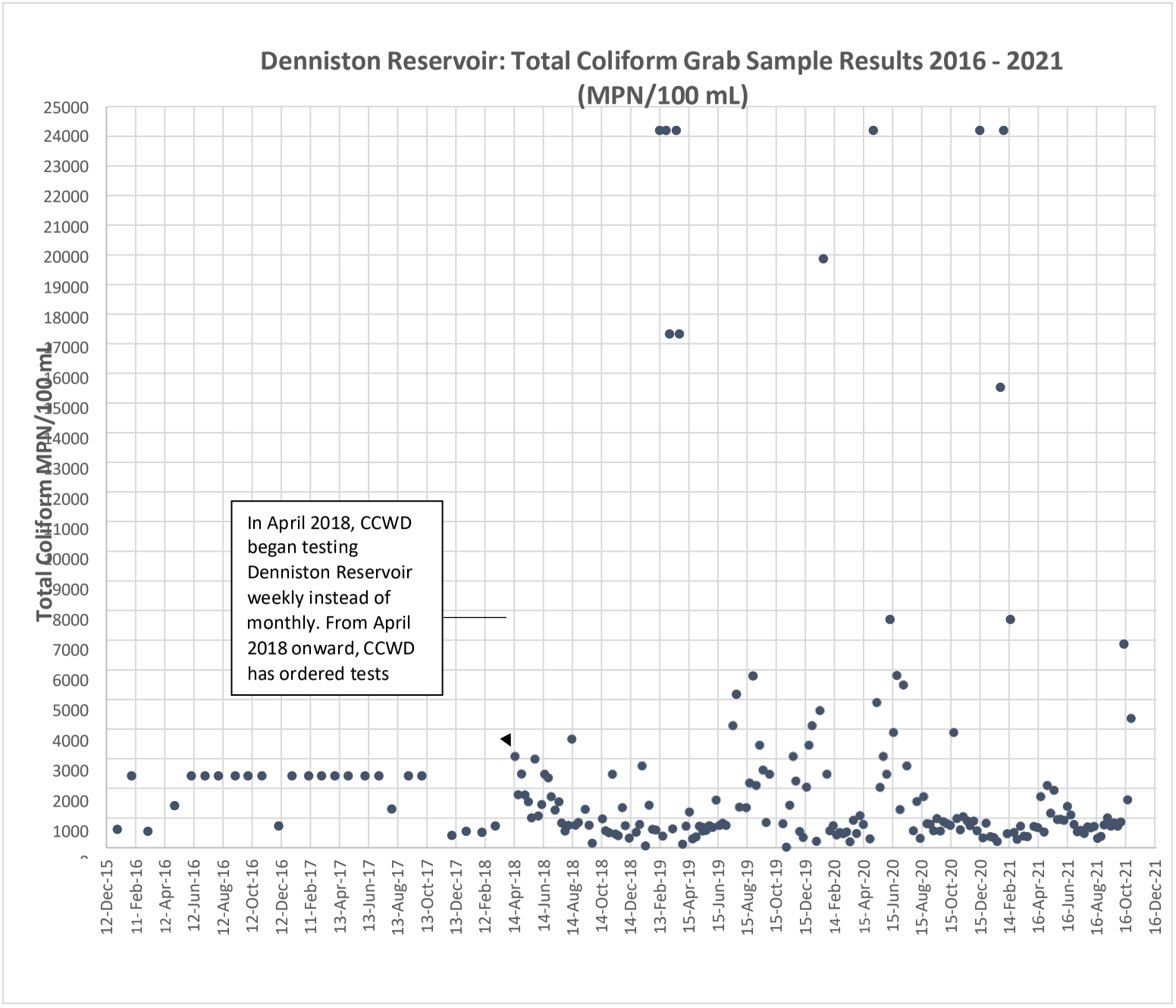
Thanks
David

Appendix 3. Water Sampling Results.

All data is available online at the Water Board data center at this link:

https://sdwis.waterboards.ca.gov/PDWW/JSP/NMonitoringSchedules.jsp?tinwsys_is_number=4127&tinwsys_st_code=CA&ReportFormat=SR

! **1550 Entries are on file for all analytes required by DHD. Charts below indicate coliform, E.coli and turbidity results:**


Denniston Reservoir: Total Coliform Grab Sample Results 2016 - 2021
(MPN/100 mL)
Total Coliform MPN/100 mL
In April 2018, CCWD began testing Denniston Reservoir weekly instead of monthly. From April 2018 onward, CCWD has ordered tests
25000
24000
23000
22000
21000
20000
19000
18000
17000
16000
15000
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
12-Dec-15
11-Feb-16
12-Apr-16
12-Jun-16
12-Aug-16
12-Oct-16
12-Dec-16
11-Feb-17
13-Apr-17
13-Jun-17
13-Aug-17
13-Oct-17
13-Dec-17
12-Feb-18
14-Apr-18
14-Jun-18
14-Aug-18
14-Oct-18
14-Dec-18
13-Feb-19
15-Apr-19
15-Jun-19
15-Aug-19
15-Oct-19
15-Dec-19
14-Feb-20
15-Apr-20
15-Jun-20
15-Aug-20
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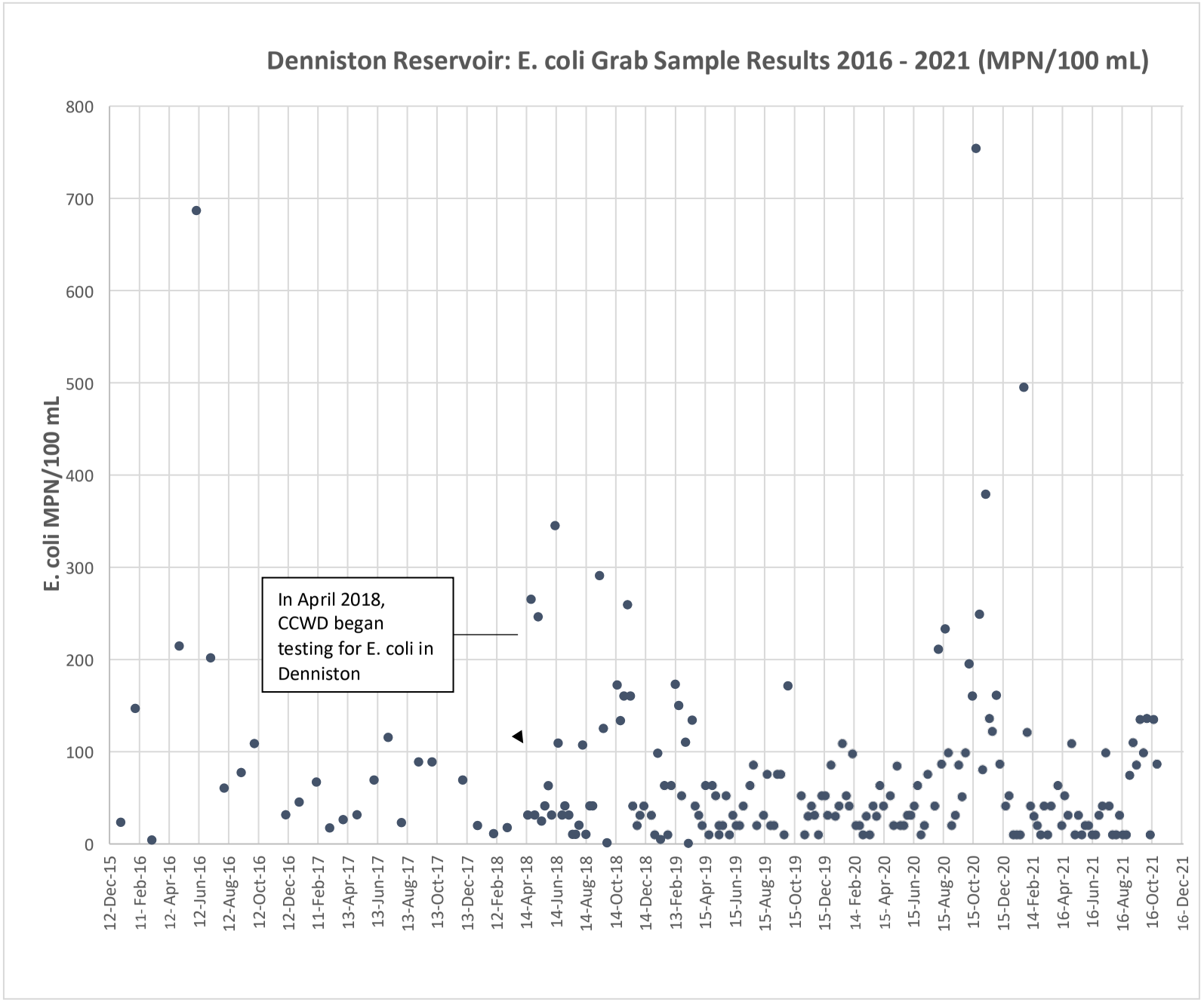
16-Jun-21
16-Aug-21
16-Oct-21
16-Dec-21


Denniston Reservoir: E. coli Grab Sample Results 2016 - 2021 (MPN/100 mL)
E. coli MPN/100 mL
800
700
600
500
400
300
200
100
0
In April 2018, CCWD began testing for E. coli in Denniston
12-Dec-15
11-Feb-16
12-Apr-16
12-Jun-16
12-Aug-16
12-Oct-16
12-Dec-16
11-Feb-17
13-Apr-17
13-Jun-17
13-Aug-17
13-Oct-17
13-Dec-17
12-Feb-18
14-Apr-18
14-Jun-18
14-Aug-18
14-Oct-18
14-Dec-18
13-Feb-19
15-Apr-19
15-Jun-19
15-Aug-19
15-Oct-19
15-Dec-19
14-Feb-20
15-Apr-20
15-Jun-20
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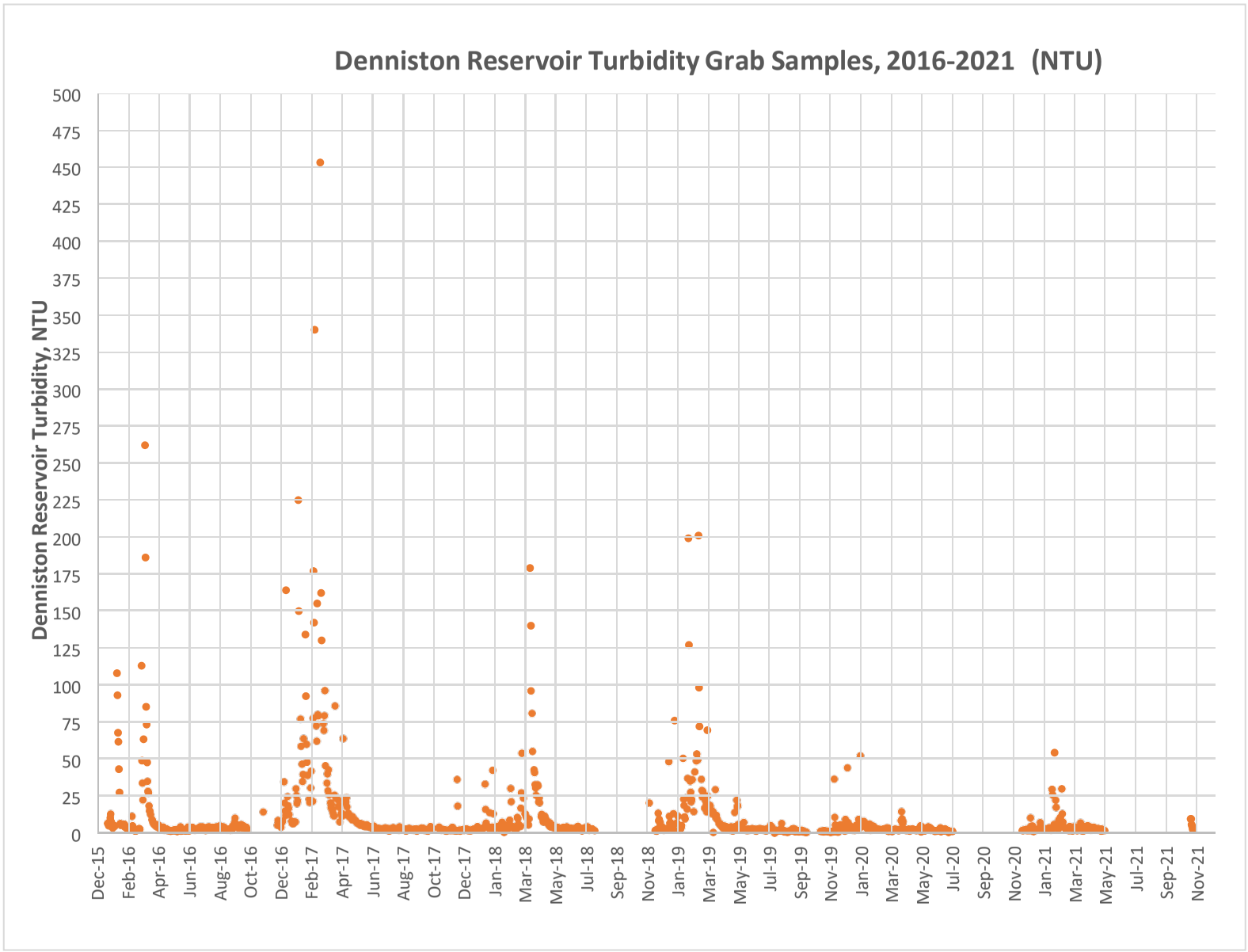
16-Jun-21
16-Aug-21
16-Oct-21
16-Dec-21


Denniston Reservoir Turbidity Grab Samples, 2016-2021 (NTU)
Denniston Reservoir Turbidity, NTU
500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
Dec-15
Feb-16
Apr-16
Jun-16
Aug-16
Oct-16
Dec-16
Feb-17
Apr-17
Jun-17
Aug-17
Oct-17
Dec-17
Jan-18
Mar-18
May-18
Jul-18
Sep-18
Nov-18
Jan-19
Mar-19
May-19
Jul-19
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Jan-20
Mar-20
May-20
Jul-20
Sep-20
Nov-20
Jan-21
Mar-21
May-21
Jul-21
Sep-21
Nov-21

Appendix #4 sampling schedule

Denniston WTP Watershed: Monitoring Frequencies

Sample Point Name	Denniston Reservoir - Raw	Denniston Well 1	Denniston Well 9	Denniston WTP - Treated	Denniston WTP Influent - Raw Blend
PS Code	*CA4110011_001_001*	*CA4110011_002_002*	*CA4110011_008_008*	*CA4110011_010_010*	*CA4110011_024_024*
Secondary/GP Panel	Annually	Three years	Three years	Annually	
Inorganics Panel	Annually	Three years	Three years	Annually	
Nitrate/Nitrite	Annually	Three years	Three years	Annually	
Regulated VOC Panel	Annually	Three years	Three years	Annually	
Regulated SOC Panel	Annually	21 months	33 months	Annually	
Gross Alpha	Nine Years	Three years	Three years		
Iron/Manganese/Aluminum	Weekly			Weekly	Monthly
Iron/Manganese			Quarterly		

Appendix #5 Surface Water Dredging Report.

Coastside County Water District

Denniston Reservoir Maintenance Project
Department of Fish and Game permit 1600-2016-350-R3

Independent biological oversight monitoring report for
California Department of Fish and Wildlife
Jim Steele
October 03 through-October 06, 2021 (5th year)

The Coastside County Water District water intake pond facility at Denniston Reservoir was dredged of ~500 Cu. Yds. sediment and vegetative spoils and transported to an approved disposal site ~1/2 mile upstream. Denniston Reservoir is located ~one-mile NE of the Half Moon Bay Airport on Denniston Road. The following is a report of operations. Among important species to protect were the ESA Listed SF Garter Snake (SFGS) *Thamnophis sirtalis tetrataenia* and the CA red-legged frog (CRLF) *Rana aurora*. The SFGS has one historical unconfirmed sighting (Berry) on record and the CRLF is confirmed at this site. Other species not ESA listed but of concern, are the (pacific pond turtle) and the dusty footed wood rat (DFWR). Also monitored for risk from operations were all nesting bird species, and the CA foothill yellow legged frog *Rana boylei* (which have not been sighted in the area).

A night survey was conducted October 3rd for CRLF before dredging operations began on Oct 4th and was repeated following dredge operations. Hot spot areas significant for CRLF were avoided during dredging or if discovered while dredging. Each area was surveyed during operations using binoculars.

Before operations began, straw bales were placed on strategic banks to protect frog and snake movement near equipment. Straw bales have been found useful as frogs are excluded from movement near the equipment and snakes tend to locate under the bales as a hide response. The bales were checked for wildlife by rolling each bale and then moving them as needed. Several common garter snakes *T. sirtalis,* and *T. elegans* and CRLF were detected this way. At one area where plastic silt fencing was used to protect from road silt during edge repairs a *T. sirtalis* was detected trying to get past the

barrier. This highlighted the trapping nature of the plastic silt fence toward the operations and demonstrated the value of the straw bales (straw bales should only be used in areas where introduced weeds are not a concern).

Prior to beginning operations training was provided to operators about avoiding and protecting CRLF and SFGS specifically and other wildlife generally. Drivers were restricted to 10 MPH on hauls. No truck drivers were switched out during the week and the drivers were enthusiastic about protecting wildlife. A plus for this operation is the use of a seasoned dredging equipment operator with several years' experience in Denniston Creek pond.

Dredging operations began on 10/04/2021 until 10/06/2021 from 1 hour after sunrise to sunset. The operations ran generally without interruption through the day. Before dredging equipment is moved to each area the equipment tracks are checked for wildlife. After movement, the track path is checked for casualties as a quality assurance. None were found.

At the beginning of each day and at the end, the dredge site was inspected for displaced wildlife. Several CA newt *Torica torosa* tracks and one individual were found (by a truck driver). The dredge site was also inspected at the end of operations to ensure that proper erosion controls (straw bales) were in place.

A biological monitor (Steele) was on site for all equipment operations. A 10X binocular was used to inspect each placement of the bucket, particularly where new bank area was disturbed.

General numbers of interest: Fog bank early clearing by 10. Air T 14C, H2O T 16C
Species noted: American coots~10, Great Blue Heron 3, King Fisher 1, extensive schools of three spine stickleback, several hundred tricolored blackbirds in tules early in the morning.

A significant hatch of CRLF were evident with 1 ½ to 3" frogs common. Maintaining the ponds open water area has been important during the past drought years. Several large adults were also noted.

Recommendations:

1. CDFW should consider aeration rather than pond drawdown to protect small fish species. Hypoxic conditions that affect wildlife are more likely during low water than maintaining water levels and adding aeration with water spray. Aeration is also more effective during light cyanobacteria blooms in maintaining O2 levels in the water column.
2. Retain hay bale boundary for operations. This has been very successful at keeping wildlife from equipment.

3. For new permits, retain the ability of CCWD to keep the channel above the pond clear of vegetation. This improves water quality for wildlife and water supply. Using equipment and developing a proper channel rather than hand cutting is recommended (the channel is closing down faster than the hand cutting effort). Water quality improvement will be significant.


616-44-6007
ppi
HercRentals

Water is discharged down race way

Straw bales are placed along N. edge of operations. Note large tules across waterway. 10/04/2021

Equipment being cleaned offsite before using at pond. Correct time stamp 10/03/2021

Tules are pulled down for better viewing of bucket arm and wildlife. They spring back later.

View before dredging. Correct time stamp 10/04/2021

Face of dam immediately after dredging complete. Correct time stamp 10/05/2021

Long reach excavator avoids contact with bank. Correct time stamp 10/05/2021

Trucks are loaded behind hay bale protection before transport to dumpsite 10/04/2021

Dump site ½ mile up watershed is a temporary holding facility while materials dry out. 10/05/2021

Morning inspections before operations find and remove CRLF back to pond environment.

View to south after water fill and dredge complete 10/25/2021

Dredging is complete and pond is refilled. View to North taken 10/25/2021

Attested: Jim Steele, Biological Consultant

Jim Steele, Independent Biological Monitor
RPF#2421, Fresh water and Watershed Ecologist
Submitted October 27, 2021.