

# **Aquatic Invasive Species Plan**

## **Attachment F**

**YCWA's April 2014 Dreissenid Mussel Vulnerability  
Assessment, which was provided to Cal Fish and Wildlife**

**Yuba River Development Project**  
**FERC Project No. 2246**

September 2019

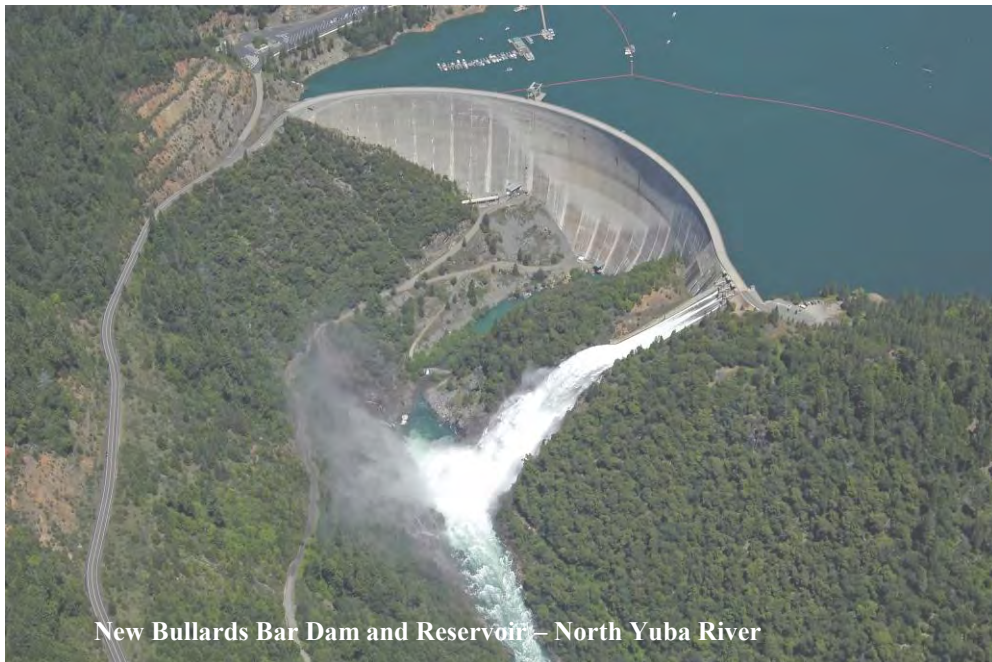
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# YUBA COUNTY WATER AGENCY

## Yuba River Development Project



## Dreissenid Mussel Vulnerability Assessment

April 2014

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## 1.0 Introduction

In January 1959, Yuba County went to the California Legislature with a bill to create a local water agency, and the Yuba County Water Agency (YCWA) was formed. Currently, YCWA owns and operates four impoundments with a total storage capacity of one million acre-feet (ac-ft) and four powerhouses that can collectively generate up to 397 megawatts of energy. The primary functions of YCWA are the generation of hydroelectric power, flood control, fishery enhancement and recreation, as well as the conservation, storage and sale of water.

The four impoundments held by YCWA are: New Bullards Bar, Our House Diversion Dam Impoundment, Log Cabin Diversion Dam Impoundment and Lake Frances (YCWA 2013a). New Bullards Bar Reservoir is a storage reservoir on the North Yuba River formed by New Bullards Bar Dam. At its normal maximum water surface elevation of 1,956 feet (ft), New Bullards Bar Reservoir extends about 13 miles (mi) upstream, has an estimated storage capacity of 966,103 ac-ft, a surface area of 4,790 acres (ac), a shoreline of about 71.9 mi, and a drainage area of 488.6 square miles (sq mi). Recreation facilities located on New Bullards Bar Reservoir include Emerald Cove Marina, Hornswoggle Group Camp, Schoolhouse Family Camp, Dark Day Campground, Dark Day Boat Ramp, Garden Point Campground, Madrone Cove Campground, and Cottage Creek Boat Ramp. There are three boat ramps on New Bullards Bar: the developed Cottage Creek Boat Ramp, the developed Dark Day Boat Launch, and the undeveloped, informal ramp at Moran Road Day Use Area (YCWA *in press*). Vehicle access is via Highway 20/Marysville Road. A variety of boats can be rented at New Bullards Bar for use solely on the reservoir, including houseboats, ski boats, patio boats, jet skis and fishing boats. Fishing with live bait is allowed on the reservoir.

Our House Diversion Dam Impoundment is a diversion impoundment on the Middle Yuba River, formed by Our House Diversion Dam. The dam is 70 ft high with a crest length of 368 ft and a crest elevation of 2,049 ft. Water levels in the impoundment fluctuate a great deal throughout the year, filling during spring run-off and gradually dropping as flows are diverted through tunnels or provided downstream. At full pool the reservoir extends less than 0.5 mi upstream, has an impoundment capacity of 280 ac-ft, a surface area of 14 ac, and a drainage area of 144.8 sq mi.<sup>1</sup> Year-round, the water's residence time in the impoundment is approximately one day. No recreation facilities are associated with this impoundment, and no hydropower is generated through the dam. Vehicle access to the diversion impoundment occurs via Highway 49 to Ridge Road and then 1.8 mi along the paved Our House Dam Road. Informal parking is available at the end of the Our House Dam Road, where visitors have foot access to the shoreline. Boats are not used in the impoundment.

Log Cabin Diversion Dam Impoundment is a diversion impoundment on Oregon Creek, formed by Log Cabin Diversion Dam. The dam is 53 ft high with a crest length of 300 ft and a crest elevation of 1,979 ft. Water levels in the impoundment fluctuate a great deal throughout the year, filling during spring run-off and gradually dropping as flows are diverted through tunnels or provided downstream. At full pool the reservoir extends less than 0.25 mi upstream, has an

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<sup>1</sup> Since the impoundments formed by Our House and Log Cabin diversion dams are so minor, the drainage area is given at the dam rather than at the normal maximum water surface elevation formed by the dam.

impoundment capacity of 90 ac-ft, a surface area of 5 ac, and a drainage area of 29.1 sq mi.<sup>2</sup> Year-round, the water's residence time in the impoundment is approximately one day. No recreation facilities are associated with this impoundment, and no hydropower is generated through the dam. Vehicle access to the diversion dam is restricted. YCWA, with the permission of the United States Department of Agriculture, Forest Service, has installed and keeps locked a vehicular gate on National Forest Service land at the start of Log Cabin Road at Highway 49. Visitors can park their vehicles along the shoulder of Highway 49 and hike 1.2 mi into the diversion dam. Boats are not used in the impoundment.

The only impoundment that is not part of the Yuba River Development Project, Lake Frances (also called Lake Francis), is a small reservoir located approximately 7 mi west of New Bullards Bar on Dobbins Creek. The dam is 79 ft high and 1,341 ft wide (FindLakes.com n.d.). Originally erected in 1899 and rebuilt in 2000, the water levels do not fluctuate within the impoundment, but are maximized year-round. The impoundment has a capacity of 2,410 ac-ft, a surface area about 92 acres, and a drainage area of 6.3 sq mi. Lake Frances is used solely for recreation; no hydropower is generated through the dam. Recreation activities in the lake include fishing (with live bait), non-gasoline powered boating, and swimming. Rental boats - kayaks and pedal-boats - are available at the lake. There are no boat launches on the reservoir. Vehicle access is via Highway 20/Marysville Road to Dobbins, California. Access to the impoundment is exclusively through Lake Frances RV Resort (Lake Francis Resort 2013).

## **2.0 Dreissenid Mussels & Need for Vulnerability Assessment**

Dreissenid mussels (which include both quagga mussels [*Dreissena bugensis*] and zebra mussels [*Dreissena polymorpha*]) were first brought to the United States from Europe in ship ballasts and first discovered in the Great Lakes in 1988. By 2007, dreissenid mussels had spread westward to Lake Mead in Nevada. In 2008, zebra mussels were discovered in California, in San Justo Reservoir, part of the Central Valley Project located in San Benito County; San Justo Reservoir has been closed to the public since that time due to the infestation (San Benito County 2013). San Justo Reservoir is approximately 200 mi from New Bullards Bar reservoir.

The closest known zebra mussel infestation outside of California is in Electric Lake in Utah (USGS 2013), approximately 600 mi away from New Bullards Bar. With the exception of Lake Mead National Recreation Area and the lower Colorado River, adult mussels have not been found in Nevada. However, in April 2011, Lahontan and Rye Patch Reservoirs in Northern Nevada tested positive for the presence of quagga mussel veligers (larvae). Subsequent sampling since that time has not found any veligers or adult mussels (NDOWa 2013).

The Tahoe Resource Conservation District (TRCD) has been inspecting trailered boats for aquatic invasive species since 2009. Each year, TRCD has found dreissenid mussels adults and veligers in boats bound for Lake Tahoe. In the 2013 recreation season, through boat inspections, 11 boats were found containing mussels (TRCD 2013). Over 14,000 boats were inspected in 2013, so fewer than one percent were found to have the invasive mussels (Lake Tahoe News 2013). Lake Tahoe is about 100 mi from New Bullards Bar.

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<sup>2</sup> Since the impoundments formed by Our House and Log Cabin diversion dams are so minor, the drainage area is given at the dam rather than at the normal maximum water surface elevation formed by the dam.



If not properly cleaned, transported and trailered boats can carry dreissenid mussels between watersheds and are a primary vector of the spread of dreissenid mussels between otherwise unconnected waterbodies (USFWS 2009). Once populated, dreissenid mussels can cause tremendous damage to hydrofacilities and ecosystems. They clog water intakes and fish screens, as well as impede recreation opportunities by growing on recreation facilities. Additionally, quagga and zebra mussels consume large quantities of microscopic plants and animals, which are the basis of native communities, and can thus, lead to the disturbance of the natural ecosystem, harming plants and wildlife (USFWS 2011).

Per the federal Lacey Act, zebra mussels are prohibited from importation or shipment into the United States, or any territory of the United States. If found, any zebra mussels brought into the United States will be promptly destroyed or exported by the United States Department of Interior, Fish and Wildlife Service at the cost of the importer.

Under California Code of Regulations, California Fish and Game Code (CFGF), Title 14, §671(c)(10), quagga and zebra mussels are listed as a Restricted Species, which means it is “...*unlawful to import, transport, or possess live animals... except under permit issued by the department...*” Additionally, pursuant to this regulation, all species of *Dreissena* are termed “detrimental”, which means they pose a threat to native wildlife, the agricultural interests of the state, or to public health or safety.

In addition, CFGF §§ 2301 and 2302 provide specific regulations on dreissenid mussels, including zebra and quagga mussels. CFGF §§ 2301 states that nobody shall “...*possess, import, ship, or transport in the state, or place, plant, or cause to be placed or planted in any water within the state, dreissenid mussels...*” This law also gives the ‘director’ the right to conduct inspections, order conveyances to be drained, impound or quarantine conveyances, and close or restrict access to conveyances. In cooperation with the department, public and/or private agencies with a water supply system are to develop prevention plans for mussels and management plans for mussels, if they are located in a water supply. Additionally, any entity which discovers dreissenid mussels must immediately report the finding. CFGF §§ 2302 also mandates that “*any...local agency, district...that owns or manages and reservoir...where recreational, boating, or fishing activities...shall...assess the vulnerability of the reservoir for the introduction of nonnative dreissenid mussel species...*”

Per this last requirement, the remainder of this document addresses the susceptibility of YCWA’s impoundments to invasion by dreissenid mussels (Section 3.0), as well as preventative measures already implemented by YCWA (Section 4.0).

### **3.0 Vulnerability Assessment**

The susceptibility of waterbodies to invasion by dreissenid mussels is determined using a combination of factors, including recreation use, and water quality.

### 3.1 New Bullards Bar

New Bullards Bar was evaluated for vulnerability for mussel invasion based on two factors: type and frequency of recreational use, and water quality.

#### 3.1.1 Recreation Use

The maximum water surface carrying capacity for New Bullards Bar Reservoir is 420 boats-at-one-time, a number of boats that is routinely observed during the recreation season (YCWA 2013c). The majority of boats are trailered or otherwise transported to the reservoir from elsewhere. There are three boat ramps on New Bullards Bar that serve trailered boats. Of these, two are developed Cottage Creek and Dark Day, and one is undeveloped, at Moran Road. Therefore, there is the possibility of introduction of dreissenid mussels by recreational boaters on New Bullards Bar. However, given that of the 14,000 boats inspected going to Lake Tahoe, only 11 were found to be carrying dreissenid mussels, the probability is still relatively low.

#### 3.1.2 Water Quality

Using the parameters from the *Examination of Calcium and pH as Predictors of Dreissenid Mussel Survival in the California State Water Project* (Claudi and Prescott 2011), developed by the California Department of Water Resources (DWR) for predicting dreissenid mussel survival, should an adult or larval dreissenid mussel be introduced to New Bullards Bar, the water quality conditions do not favor invasion by dreissenid mussels. Multiple factors, including calcium concentration, alkalinity, total hardness and phosphorus concentration, all fall outside the range currently considered by the best available science to be necessary for successful invasion.

Table 3.0-1 below compares the parameters documented in Claudy and Prescott (2011) as necessary for successful mussel invasion with those same parameters measured in New Bullards Bar Reservoir, both historically and in 2012, during YCWA’s Water Quality relicensing study (Technical Memorandum 2-3) (YCWA 2013b).

**Table 3.0-1. Comparison of Water Quality Parameters Necessary for Mussel Invasion (Unable [red], Potentially Able [yellow], and Able [green]) with Measurements in New Bullards Bar Reservoir.**

Parameter	From Claudy & Prescott (2011), Table 1.				New Bullards Bar Reservoir		
	Adults Do Not Survive Long-term	Uncertainty of Veliger Survival	Moderate Infestation Level	High Infestation Level	Historical Data <sup>1</sup> (YCWA 2010)	Study 2-3, Water Quality (YCWA 2013b)	Potential to support dreissenid mussels
Calcium (mg/L)	< 8 to < 10	< 15	16-24	≥ 24	--	6.44-9.57	Unable
Alkalinity (mg CaCO <sub>3</sub> /L)	< 30	30-55	45-100	> 90	--	26-38	Unable
Total Hardness (mg CaCO <sub>3</sub> /L)	< 30	30-55	45-100	≥ 90	30-38	25-38	Unable/ Uncertain
pH	< 7.0 or > 9.5	7.1-7.5 or 9.0-9.5	7.5-8.0 or 8.8-9.0	8.2-8.8	6.8-8.4	6.65-8.49	Uncertain/ Moderate
Mean Summer Temperature (°F)	< 64	64-68 or > 83	68-72 or 77-83	72-75	45.3-77	69.7-73.9	Moderate/ High
Dissolved Oxygen (mg/L)(% Saturation)	< 3 (25%)	5-7 (25-50%)	7-8 (50-75%)	≥ 8 (>75%)	1.8-8.02	5.14-8.61	Uncertain/ Moderate

**Table 3.0-1. (continued)**

Parameter	From Claudi & Prescott (2011), Table 1.				New Bullards Bar Reservoir		
	Adults Do Not Survive Long-term	Uncertainty of Veliger Survival	Moderate Infestation Level	High Infestation Level	Historical Data <sup>1</sup> (YCWA 2010)	Study 2-3, Water Quality (YCWA 2013b)	Potential to support dreissenid mussels
Conductivity (µS/cm)	< 30	< 30-60	60-110	≥ 100	--	0.1-82	Moderate
Salinity (mg/L) (ppt)	> 10	8-10 (< 0.01)	5-10 (0.005-0.01)	< 5 (< 0.005)	--	--	--
Secchi depth (m)	< 0.1 or > 8	0.1-0.2 or > 2.5	0.2-0.4	0.4-2.5	--	4 – 6	Unable
Chlorophyll a (µ/L)	< 2.5 or > 25	2.0-2.5 or 20-25	8-20	2.5-8	--	--	--
Total Phosphorous (µg/L)	< 5 or > 50	5-10 or 30-50	15-25	25-35	0.028J <sup>2</sup>	0.036J -0.22	Unable

Notes:

-- not available or not applicable; µS/cm = micro-Siemens per centimeter; mg/L = milligrams per liter; m = meter; µ/L = microns per liter; µg/L = micrograms per liter

Key:

<sup>J</sup> Estimated value. Results are greater than method detection limit, but lower than the reporting limit

<sup>1</sup> Samples were collected from New Bullards Bar Reservoir in 1965, 1967, and 2009.

<sup>2</sup> Orthophosphate only.

Based on historical data and data collected during the 2012 relicensing water quality study, five of the nine measured parameters were outside the range necessary for mussel survival long-term (calcium concentration, alkalinity, total hardness, secchi depth, and phosphorus concentration) and any one of the parameters would render the water inhospitable for the mussels and/or their larvae. The combined measurements of water quality fell into ranges considered of low potential for mussel invasion.

Additionally, Claudi and Prescott (2011) point out that, based on mussel life history characteristics, two of the variables, pH and calcium, are actually linked. Calcium is essential for shell formation and without adequate calcium, introduced adults will not survive and veligers will not develop into reproducing adults. At the same time, the solubility of calcium carbonate (shell) increases as pH decreases, so regardless of the presence of adequate calcium for dreissenid growth, if pH is low, mussel shells will become thin and eroded. Hence, without adequate shell thickness, adult mussels will not survive and veligers will not develop into reproducing adults.

**Table 3.0-2. Conditions of low, marginal, and high calcium and pH that are unable (red), potentially able (yellow), and able (green) to support dreissenid mussels (from Claudi and Prescott 2011).**

pH Level	Calcium Concentration		
	Ca ≤ 12 mg/L	12 mg/L < Ca ≤ 15 mg/L	Ca > 15 mg/L
pH ≤ 7.3	Unable	Unable	Unable
7.3 < pH ≤ 7.8	Unable	Potentially Able	Potentially Able
pH > 7.8	Unable	Potentially Able	Able

mg/L = milligrams per liter

≤ Less than or equal to

< Less than or not detected at the value presented

> More than

The pH range measured in New Bullards Bar was 6.65-8.49, while the calcium range was measured as 6.44-9.57 milligrams per liter (mg/L). So, in addition to having five parameters outside of the range for longterm dreissenid survival, when pH and calcium are considered in tandem, water quality conditions do not support dreissenid survival, growth, or reproduction.

New Bullards Bar has a low potential to be invaded by dreissenid mussels given the combination of incompatible water quality parameters. When these conditions are combined with YCWA's Prevention Program (Section 4.0), the probability decreases further.

## **3.2 Our House Diversion Impoundment**

Our House Diversion Impoundment was evaluated for vulnerability for mussel invasion based on two factors: type and frequency of recreational use, and water quality.

### **3.2.1 Recreation Use**

As pointed out, no recreation facilities are associated with and boats are not used in the impoundment. Access to the impoundment is poor, the water is shallow, and the water's residence time is fast.

As part of YCWA's relicensing *Recreational Use and Visitor Survey Study* (Study 8.1), YCWA surveyed recreational visitors at Project diversion dam impoundments (YCWA 2013c). Visitors to these impoundments were asked a range of questions about their use and the facilities. Only one respondent stayed overnight (at Our House Diversion Dam). Most of the day-use recreationists visit often, with friends and family; with an average of group size of three people. The number of visitor-days per year was a few hundred. Most groups were there to swim, pan for gold, watch wildlife, or hike. These activities are not considered do not generally include recreational gear that might carry mussels between waterbodies.

### **3.2.2 Water Quality**

YCWA collected surface water samples from Our House Diversion Impoundment in the spring of 2010 and summer of 2009 and 2010 (YCWA 2013b). In spring, the pH measured in Our House Diversion impoundment was 6.8 and calcium was 11.9 mg/L. In summer, the pH was 7.5 – 7.6 and calcium range was 20.7 – 20.9 mg/L

## **3.3 Log Cabin Diversion Impoundment**

Log Cabin Diversion Impoundment was evaluated for vulnerability for mussel invasion based on two factors: type and frequency of recreational use, and water quality.

### **3.3.1 Recreational Use**

Our House Diversion impoundment has a low potential to be invaded by dreissenid mussels. Though summer water quality suggests a moderate potential for survival, spring water quality

does not. Given the remote location, lack of boating and water quality measures, Our House Diversion Impoundment has a very low potential for invasion.

As pointed out, no recreation facilities are associated with this impoundment and boats are not used in the impoundment. Access to the impoundment is poor, the water is shallow, and the water's residence time is fast. As with Our House Diversion Impoundment, Log Cabin Diversion Impoundment hosts a few hundred visitor-days each year who swim, pan for gold, watch wildlife, or hike. These activities are not considered do not generally include recreational gear that might carry mussels between waterbodies.

### **3.3.2 Water Quality**

YCWA collected surface water samples from Log Cabin Diversion impoundment spring of 2010 and in summer of 2009 and 2010 (YCWA 2013b). In spring, the pH measured in Log Cabin Diversion impoundment was 7.2 and calcium range was 6.12 mg/L. In summer the pH was 7.6 – 8.1 and calcium range was 11.3 – 21 mg/L. The spring measurements indicated that mussels would be unable to survive. The summer measurements indicate a potential for survival.

Log Cabin Diversion impoundment has a low potential to be invaded by dreissenid mussels. Water quality suggests a low potential for survival. The facility is also remote and does not support trailered boating.

## **3.4 Lake Frances**

Lake Frances was evaluated for vulnerability for mussel invasion based on two factors: type and frequency of recreational use and water quality.

### **3.4.1 Recreational Use**

Because gasoline-powered boats are not allowed on the lake, there is no boat ramp for trailered boats, and all access is through the Lake Frances RV Resort, the potential for the introduction of dreissenid mussels to Lake Frances is very low (Lake Francis Resort 2013).

### **3.4.2 Water Quality**

Frances Lake's calcium concentration were was measured in April 2013 and found to be between 6.1 and 6.6 mg/L, which is below the range necessary for adult mussel survival long-term (above 8 to 10 mg/L). By this parameter, Lake Frances would have a low potential for invasion, although it is only a single data point. There is no additional water quality data available for Lake Francis at this time; however, this information will be added and compared to the Claudi and Prescott (2011) parameters if the data are collected in the future.

Based on recreation access, with the added support of the one calcium reading, Lake Frances has a low potential for invasion by dreissenid mussels. When these conditions are combined with YCWA's Prevention Program (Section 4.0), the probability decreases further.

## **4.0 Prevention Program**

YCWA has implemented several measures to prevent the invasion of New Bullards Bar Reservoir by dreissenid mussel species, consisting of signage, education, monitoring and boat inspection. Signs were installed at all launches prior to 2009 with information on aquatic invasive mussels and how to prevent their introduction to the reservoir. Mussel awareness posters have been posted at the marina. Additionally, representatives from the United States Department of Agriculture, Forest Service hand out pamphlets about dreissenid mussels to boaters at the three boat launches.

YCWA conducts a couple of types of monitoring for dreissenid mussels on New Bullards Bar. Substrate monitoring, using California Department of Fish and Wildlife's (Cal Fish and Wildlife) protocol (most recently updated 4/2013), has been conducted in two places (a log boom a couple hundred yards upstream of the dam and one near Dark Day Boat Launch) on a monthly basis since 2009. When new houseboats are going to be added to the reservoir, they are inspected prior to being put in the water. Additionally, houseboats are also generally inspected when they are removed from the reservoir for maintenance. These inspections are general and not specifically for dreissenid mussels, but they would be detected during inspection.

YCWA notes that, with funding from Cal Fish and Wildlife, since 2011, using Cal Fish and Wildlife's protocol (most recently updated 4/2013), YCWA has been veliger net monitoring in the reservoir twice a year, after the 4<sup>th</sup> of July and just after Labor Day. Cal Fish and Wildlife's laboratory is used to analyze samples. No dreissenid mussels have been located during protocol monitoring, boat inspections, or as incidental observations during relicensing studies or any other time.

YCWA's prevention program augments State and local agency prevention programs. Both the Nevada Department of Wildlife and the TRCD have boater fee collection and decal programs that fund aquatic invasive species (AIS) prevention measures, including boat inspections (NDOW 2013; TRCD 2013). Their campaigns have increased boater awareness of AIS and how to prevent the spread of AIS. Though not tracked, it is possible that their inspection program, and the boat cleaning requirement when found, has intercepted boats carrying AIS, bound to New Bullards Bar Reservoir.

California's Department of Parks and Recreation, Division of Boating and Waterways is adopting regulations to set procedures for the collection and use of the quagga and zebra infestation prevention fee. Collection of the fee, as required by California Harbors and Navigation Code Chapter 5, Division 3, Article 1.3, Sections 675 through 676, will begin with the 2014 recreational vessel registrations payable on December 31, 2013, and thereafter, on a bi-annual basis. The legislation underlying the new regulations was passed in 2012. Hence, starting December 31, 2013, the State of California will collect fees to from boaters who use Project facilities and these fees be used to address quagga and zebra monitoring and prevention in state waters.

Nevada's AIS decal requirement became effective on January 1, 2013, requiring all in and out-of-state motorized watercraft, as well as most paddle-craft, to obtain a decal. Fees from the

program will be used for AIS prevention, education, monitoring and enforcement of laws (NDOW 2013b).

## **5.0 Conclusions**

YCWA's impounded waters are evaluated to have a low vulnerability to invasion by dreissenid mussels. Only New Bullards Bar has a higher possibility of introduction of the species, due to the higher numbers of recreationists (specifically trailered-boaters) on the reservoir. However, water quality data suggests, should adult mussels or veligers be introduced into impounded water, they would not survive.

YCWA already has implemented a dreissenid mussel prevention program in New Bullards Bar that consists of signage, education, monitoring, and boat inspection. These actions further reduce the probability of invasive mussel introduction into the impoundments. YCWA plans to expand the signage and education program to Lake Frances in 2014.

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Commenter	Sub-Section Number and Title	Comment Number	Date of Comment	Comment	YCWA Response
Jennifer LaBay - California Department of Fish and Wildlife (from comment table)	1.0 Introduction	1	5/23/2013	Is all boating allowed at New Bullards Bar Reservoir? Are there any restrictions on boating? How about restrictions on fishing? Is live bait allowed? If so, please include. (pg 1)	There are no restrictions on boating on New Bullards Bar Recreation Fishing with live bait is allowed. (pg 1)
Jennifer LaBay - California Department of Fish and Wildlife (from comment table)		2	5/23/2013	Aside from gas-powered boats, are there any other restrictions on boating at Lake Frances? How about restrictions on fishing? Is live bait allowed? If so, please include. (pg 1)	The only restriction on boating is gas-powered boats. Fishing with live bait is allowed. (pg 1)
Jason Julienne - California Department of Fish and Wildlife (in text comments)		1	5/23/2013	[Recreation facilities] How many developed launch ramps? Rental boats? Where do rentals come from? Are they dedicated for use only at NBBR? (pg 1)	There are two developed boat ramps on New Bullards Bar - Dark Day and Cottang Creek. Rentals from the marina, for use only on the reservoir, are available. (pg 1)
Jason Julienne - California Department of Fish and Wildlife (in text comments)		2	5/23/2013	[No recreation facilities] Does this mean no public access? (pg 1)	Informal parking is available at the end of the Our House Dam Road, where visitors have foot access to the shoreline. (pg1)
Jason Julienne - California Department of Fish and Wildlife (in text comments)		3	5/23/2013	[No recreation facilities] Does this mean no public access? (pg 1)	Visitors can park their vehicles along the shoulder of Highway 49 and hike into the diversion dam. (pg 1)
Jason Julienne - California Department of Fish and Wildlife (in text comments)		4	5/23/2013	[used mostly for recreation] What forms of recreation? (pg 1)	Non-gas powered boating, fish and swimming are allowed (pg 1).
Jennifer LaBay - California Department of Fish and Wildlife (from comment table)	2.0 Dreissenid Mussels	3	5/23/2013	Should include a description of the quagga mussel infestation in southern California. These infestations could also be a potential source of mussels for reservoirs in the north. Boats can carry mussels from infested waters. (pg 1)	A description of mussels in Southern California was added. (pg 2)
Jason Julienne - California Department of Fish and Wildlife (in text comments)		5	5/23/2013	[USFWS 2011] Include info pertaining to current infestations within California and adjacent states as vessels traveling from these locations are the likely source of new introductions. (pg 2)	Information for the location of known infestations was added to the assessment. (pg 2)
Jennifer LaBay - California Department of Fish and Wildlife (from comment table)		4	5/23/2013	The plan indicates that prevention may expand to Lake Frances in the future. Please note that per Fish and Game Code 2302(a), any entity that operates a reservoir that allows recreational, boating, or fishing activities is required to implement a prevention program that includes public education, monitoring, and management of recreational activities. This would apply to Lake Frances as well as New Bullards Bar Reservoir. (pg 4-5)	Wording changed for the prevention program. (pg 4-5)

Jason Julienne - California Department of Fish and Wildlife (in text comments)	4.0 Prevention Program	6	5/23/2013	[Substrate] How many and at what locations? (pg 4)	Information on substrate monitoring added (pg 4)
Jason Julienne - California Department of Fish and Wildlife (in text comments)		7	5/23/2013	[year] What protocol is used for the plankton collection? Where are samples analysed? (pg 5)	Information on veliger tow monitoring added (pg 5)
Jason Julienne - California Department of Fish and Wildlife (in text comments)		8	5/23/2013	[inspected] Are inspectors trained and certified? (pg 5)	The inspections are general and not specifically related to AIS (pg 5)
Jason Julienne - California Department of Fish and Wildlife (in text comments)		9	5/23/2013	[inspected] Are inspectors trained and certified? (pg 5)	Same as above comment
Jason Julienne - California Department of Fish and Wildlife (in text comments)	5.0 Conclusions	10	5/23/2013	[This program may be expanded to Lake Frances by the construction of informational signs about mussels similar to those posted at New Bullards Bar.] See Fish and Game Code Section 2302. Any entity that operates a reservoir that allows recreational, boating, or fishing activities is required to implement a prevention program that includes public education, monitoring, and management of recreational activities. Lake Francis falls under this code section. (pg 5)	Wording changed for prevention program. (pg 5)

[NOTE: [in bracket text is from document]