

**Humboldt Bay Municipal Water District
and
Ruth Lake Community Services District**

Prevention Plan for Aquatic Invasive Species at Ruth Lake

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**Approved by Ruth Lake CSD Board of Directors
and the HBMWD Board of Directors**

Prevention Plan for Aquatic Invasive Species at Ruth Lake

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Humboldt Bay Municipal Water District and Ruth Lake Community Services District

Prevention Plan for Aquatic Invasive Species at Ruth Lake

INTRODUCTION

The Humboldt Bay Municipal Water District (HBMWD) and the Ruth Lake Community Services District (Ruth Lake CSD) are committed to protecting the long-term water quality and water supply interests of the regional drinking water system, the ecosystem and fisheries at Ruth Lake and in the Mad River, as well as recreational and sport fishing opportunities at Ruth Lake. To that end, this Prevention Plan has been developed to protect the water resource, and to preserve the ecosystem and recreational opportunities at Ruth Lake by preventing the introduction of several very destructive aquatic invasive species such as, golden, quagga, and zebra mussels.

This plan presents a number of control measures aimed at preventing these invasive species from being introduced into Ruth Lake from other water bodies that are known to be infested, or are potentially infested. These measures must be fully implemented and strictly adhered to at all time if the objective of this plan is to be achieved over the longer-term. The plan also serves as a guide for education and outreach efforts and for monitoring to facilitate early detection should the mussels be introduced into Ruth Lake.

Currently, this plan applies only to quagga and zebra mussels since these species present similar threats and given that their spread is prevented by identical methods. While this plan does not address the prevention of other aquatic invasive species, some of the strategies used to prevent the spread of zebra or quagga mussels may also assist in preventing the spread of other invasive species. This plan may be updated to address other invasive species as needed over time.

BACKGROUND

Golden mussels scientifically known as [Limnoperna fortunei](#), are a freshwater bivalve mollusk native to China and parts of Southeast Asia. They are known for their golden or yellowish-brown shell; size range from just under ½ inch to 2 inches. They do not possess hinge teeth or byssal notches. The Golden mussels have become an invasive species in South America and parts of Asia. Golden mussels have been discovered at Rough and Ready Island, just west of the Port of Stockton and further downstream at a location known as Turner Cut in October 2024. This is a rapidly developing situation, and reports continue to come in and are being followed up on. These mussels were likely introduced to California by a ship traveling from an international port. This discovery of golden mussels in the Delta is the first known occurrence in North America. Visit [California Department of Fish and Wildlife's webpage](#) for more information and for a map of verified sightings. The golden mussel can acclimate itself to many types of environments. Although a freshwater species, it tolerates a broader range of salinity than the zebra mussel and thus has the ability to live in brackish waters' because it can inhabit both

temperate and subtropical climates, it is likely capable of colonizing waters of the lower Great Lakes region. Once the golden mussel has entered a body of water, it basally attaches itself to most available substrates, and often forms colonies with densities greater than 80,000/square meter.

As an invader, the golden mussel would likely have much the same impact as the zebra mussel in the Great Lakes. It clogs the intakes, pipes and filters of water treatment facilities, industrial plants, and power stations. These issues lead to increased operational costs, because the facilities may need to be shut down to clean out mussels, shell material, and sediment. Further, decaying dead mussels emit a noxious odor and pollute drinking water systems, while empty shells add to the fouling problem. Its high reproductive capacity means that golden mussel populations increase rapidly to form dense beds, resulting in reduced benthic biodiversity. Native bivalves are starved as the mussels settle on top of them and compete with them for food, while other invertebrates and aquatic plants are displaced due to habitat modification.

Quagga (*Dreissena rostriformis bugensis*) and Zebra (*Dreissena polymorpha*) mussels are small freshwater mollusks that are native to the Ukraine. Zebra mussels were first discovered in the United States in Lake St. Clair in 1988. They most likely arrived in the Great Lake region via ballast water discharged from transoceanic ships. The Zebra and Quagga mussels quickly spread and have since colonized most of the Great Lakes, the Mississippi River watershed, and many other water bodies in the Midwest and East. There was an extensive, multi-agency effort to try to keep these mussels contained in the eastern United States (known as the 100th Meridian). However, that effort failed.

In January 2007, Quagga mussels were discovered in the lower Colorado River system at Lake Mead, and shortly thereafter, in Lake Mohave and Lake Havasu. By August 2007, they were discovered in reservoirs in the San Diego region.

In 2008 there were 18 lakes and reservoirs in California with known infestations of Quagga mussels and one lake with a known infestation of Zebra mussels. As of December 2017, there were 41 lakes and reservoirs with known infestations of Quagga mussels and two reservoirs with known infestations of Zebra mussels. Appendix A contains a map depicting the reservoirs and lakes with known infestations.

Quagga and Zebra mussels in the larval or veliger stage are so small that they cannot be seen. In this state, they are highly mobile floating near the water's surface for up to five weeks before settling and attaching to a surface. The mussels are able to attach to almost any solid or semi-solid surface. Common attachment points are docks, piers, boat hulls and trailers, water intakes and water conveyance pipes/canals. Once adults take hold in a lake or reservoir, they multiply very quickly – a single mussel may release 40,000 eggs at one time and up to 1,000,000 eggs in a spawning season.

These mussels spread quickly and easily via water released from an infested water body; therefore, the Mad River may become infested if these mussels are introduced into Ruth Lake. They also spread easily via watercraft which have been in an infested lake or reservoir and then launch in another water body. Once an infestation occurs in a water body, there is currently no known eradication method available.

The invasive mussels cause physical, environmental and economic damage. Physical damage includes clogging water system infrastructure (intakes, outlet works, screens, pumps, pipes/canals, hydro-electric facilities), colonizing on docks, ramps and other marina facilities, and colonizing on boats and clogging their intakes or engines.

Environmental impacts include damage to the ecosystem since the mussels filter organic nutrients and plankton, thereby altering the aquatic food chain in the water body. Over the long-term, they harm native and sports fisheries as well. When significant infestation occurs, their consumption of organic material causes the water to become too clear, allowing sunlight to penetrate deeper, which stimulates growth of nuisance aquatic weeds and algae. This in turn may cause fish kills, given oxygen deprivation at certain times. Over the long term if a significant infestation occurs, the shoreline may become littered with dead, decomposing mussels.

If an infestation occurs, economic impacts will most likely be significant. In 2008 the federal government reported \$3 billion direct costs and \$5 billion indirect costs associated with the infestation in the Great Lakes region. For water agencies, maintenance costs have and will continue to increase, in some cases, quite significantly. Millions of dollars have already been spent by water agencies in southern and central California to address this issue. For marinas and recreational boaters, costs will increase too. Furthermore, once an infestation occurs, measures to prevent further spread must be implemented – either via installation of expensive decontamination facilities or closure of the lake to all recreational boating.

Fish and Game Code Section 2302 requires that:(a) Any person, or federal, state, or local agency, district, or authority that owns or manages a reservoir, as defined in Section 6004.5 of the Water Code, where recreational, boating, or fishing activities are permitted, except a privately owned reservoir that is not open to the public, shall do both of the following: (1) Assess the vulnerability of the reservoir for the introduction of nonnative dreissenid mussel species. (2) Develop and implement a program designed to prevent the introduction of nonnative dreissenid mussel species. (b) The program shall include, at a minimum, all of the following: (1) Public education. (2) Monitoring. (3) Management of those recreational, boating, or fishing activities that are permitted. (c) Any person, or federal, state, or local agency, district, or authority, that owns or manages a reservoir, as defined in Section 6004.5 of the Water Code, where recreational, boating, or fishing activities of any kind are not permitted, except a privately owned reservoir that is not open to the public, shall, based on its available resources and staffing, include visual monitoring for the presence of mussels as part of its routine field activities. (d) Any entity that owns or manages a reservoir, as defined in Section 6004.5 of the Water Code, except a privately owned reservoir that is not open to the public for recreational, boating, or fishing activities, may refuse the planting of fish in that reservoir by the department unless the department can demonstrate that the fish are not known to be infected with nonnative dreissenid mussels. (e) Except as specifically set forth in this section, this section applies both to reservoirs that are owned or managed by governmental entities and reservoirs that are owned or managed by private persons or entities. (f) Violation of this section is not subject to the sanctions set forth in Section 12000. In lieu of any other penalty provided by law, a person who violates this section shall, instead, be subject to a civil penalty, in an amount not to exceed one thousand dollars (\$1,000) per violation, that is imposed administratively by the department. To the extent that sufficient funds and

personnel are available to do so, the department may adopt regulations establishing procedures to implement this subdivision and enforce this section. (Amended by Stats.2009, Ch.140, Sec. 73 (AB 1164) Effective January 1, 2010)

DESIRED OUTCOMES

1. Keeping the invasive mussels out of Ruth Lake and the Mad River, now and in the future, thereby protecting the water resource and maintaining a healthy ecosystem and fisheries
2. Maintaining recreational opportunities at Ruth Lake
3. Minimizing adverse economic impacts to stakeholders - HBMWD; Ruth Lake CSD; and leaseholders, property owners and businesses around Ruth Lake
4. Raising awareness in the boating, fishing and community at-large and enlisting their support to combat this issue

KEY ASSUMPTIONS

The following assumptions have been used in the development of this plan, and are based on the best information available at the time the plan was prepared:

1. Golden/Quagga/Zebra mussels are destructive invasive species that have the potential to infest not only Ruth Lake, but also the Mad River and other lakes/reservoirs in northern California.
2. There is a time lag (up to two years) between when the larvae are introduced into a lake or reservoir and when adult mussels are actually detected. Therefore, mussels in their larvae state may be in neighboring lakes/reservoirs (e.g. Trinity, Lewiston, Whiskeytown, Clear Lake) before an infestation is known to exist.
3. There are significant risks of “doing nothing,” and yet there are still risks of “doing something.” However, by “doing something” – by introducing prudent prevention and control measures – HBMWD and Ruth Lake CSD will increase the likelihood that these mussels are not introduced into Ruth Lake.
4. If an aquatic invasive species infestation occurs in Ruth Lake, there is no known method to eradicate them.
5. Such an infestation will adversely impact:
 - HBMWD’s regional water system and will increase maintenance costs to water ratepayers;
 - Ruth Lake CSD’s infrastructure;
 - Recreational boating and sport fishing at Ruth Lake, which would adversely affect leaseholders, property owners, businesses, and the public;
 - The ecosystem and fisheries in Ruth Lake, and possibly the Mad River.The exact nature of the impacts and costs are not known.

ELEMENTS OF THE PREVENTION PLAN

1. ASSESSMENT OF VULNERABILITY

The most common pathways of introduction of aquatic invasive mussels to Ruth Lake are through recreational use of the lake by watercraft and fisherman, facilities maintenance and firefighting aircraft. The District identified the most common points of entry for watercraft and permanently closed off two of the five launch sites. The three remaining sites are blocked and access allowed only after passing an inspection. District staff provides maintenance on the log boom and dam. Staff conducts self-inspection and follows decontamination procedures when conducting facilities maintenance. On occasion, the USFS and CalFire will utilize the lake water in their firefighting efforts. Both entities have their own inspection and decontamination process as well.

Table 1. Risk category break points for calcium and pH used as default levels in the risk mapping application.

(Research and Development Office Science and Technology Program Final Report No. ST-2022-19007-01)

Risk Factor	Low Risk	Moderate Risk	High
Calcium Concentration	<8 mg/l	>8-20 mg/l	>20 mg/l
pH	<7.0 or >9.6	7.0-7.3 or 9.4-9.6	>7.3 - <9.4

Recent water quality data from 2024 testing at Ruth Lake indicates that the lake presents suitable conditions for the establishment and survival of golden mussels if they are introduced. Average calcium concentrations exceed 11 mg/L—well above the 5 mg/L threshold currently used by CDFW as necessary for golden mussel reproduction. Additional parameters including pH, dissolved oxygen, and temperature also fall within the tolerable range for golden mussel survival and reproductive success, based on comparative data with quagga/zebra mussels. These findings highlight a clear risk of golden mussel colonization, emphasizing the urgent need for proactive prevention measures to protect Ruth Lake. Below is a table with the 2024 testing results.

5/17/24	Marina	10	7.85
8/16/24	Dam	12	9.24
8/16/24	Headquarters dock	13	9.4

9/9/24	Ruth Marina	12	8.01
9/9/24	Headquarters dock	13	7.92

Ruth Reservoir is the District's impound for the domestic and industrial water diversions that take place at Essex, some 75 miles downstream. The water quality parameters downstream of Ruth Lake have not been analyzed for calcium carbonate deposits. If Golden, Quagga, or Zebra mussel veligers are introduced into Ruth Lake and are swept downstream, they may exist a higher degree of potential risk for growth and settlement in the watershed which could potential affect the District's diversion infrastructure.

2. MANAGEMENT OF RECREATIONAL ACTIVITIES, INCLUDING PUBLIC EDUCATION AND OUTREACH

a) Education and Outreach

A broad-based education and outreach effort was launched by HBMWD in July 2008 to begin to educate key stakeholders and the public at-large.

Letters were sent to the Humboldt and Trinity County Boards of Supervisors and the District's wholesale customers. Two letters were sent to stakeholders at Ruth Lake – to all leaseholders, and approximately 200 private property owners, including local businesses. Two letters were also sent to marina operators, marine/boat stores and fishing/tackle shops in Humboldt, Trinity, Shasta and Del Norte Counties. In total, over 1,000 letters were mailed to these parties in July and August 2008 to raise awareness of this important issue and to solicit support in addressing it.

Additional modes and methods to communicate were also initiated including: 1) notice to out-of-town parties who had reservations at Ruth Lake CSD campgrounds, 2) placement of signs at various locations around Ruth Lake, 3) posting information on HBMWD's website, 4) creation of a telephone hotline for boaters, 5) issuance of several Press Releases which generated articles in local newspapers, and 6) advertisements in newspapers and on radio stations in Eureka, Ukiah and Redding markets.

i. Continued Education and Outreach

Communication efforts will continue to targeted audiences as follows:

- Stakeholders around Ruth Lake (US Forest Service, leaseholders, private property owners, and local businesses)
- HBMWD's wholesale customers
- Trinity and Humboldt County
- State legislative representatives
- Boat owners/fishermen in Humboldt, Trinity and neighboring counties
- The public at-large in Trinity and Humboldt Counties

The timing and manner in which communication occurs will be tailored to the audience and specific needs at the time.

ii. Placement of Signs

Once this Prevention Plan was approved, the 13 “STOP” signs which were placed at various locations around Ruth Lake in July 2008 were removed and replaced with new signs with appropriate content. The 13 “Don’t Move a Mussel” signs will remain in place at this time at various locations around Ruth Lake since they communicate general information to the boating community and provide DFG’s contact information.

“Permanent” signs were placed on all highway and county roads leading to Ruth Lake pending approval from CalTrans and the County. Proposed Location of Highway Signs:

- Highway 36 just west of Red Bluff
- Highway 36, just west of the Highway 3 junction
- Highway 36, east of the junction with Rohnerville Road near Carlotta
- Lower Mad River Road (County Road 504) just after turn off from Highway 36
- Alderpoint Road just east of Highway 101 near Garberville

- Ruth Lake CSD Marina
- Ruth Lake CSD Ruth Recreation Campground
- Sheriff’s Cove Day-use area
- Old Ruth Day-use area
- Ruth Lake CSD Hobart Creek Campground
- Ruth Lake CSD Barlow Group Campsite
- Ruth Lake CSD Hetton (Boyscout) Cove Day-use and primitive camping area
- USFS Fir Cove Campground
- USFS Bailey Canyon Campground
- USFS Mad River Campground (just downstream of Ruth Lake)

b) Control Measures - Watercraft

i. Segregation of Watercraft and Requirements for Each

Watercraft shall be segmented into two categories as follows with specific requirements tailored to each segment.

Category 1 – Watercraft *Resident* to Ruth Lake

Watercraft in this category must be: 1) ***resident*** to the immediate area around Ruth Lake, 2) only launched in Ruth Lake, and 3) remain in this immediate area at all times (except for the one allowance noted below).

The area in which a watercraft may be designated ***resident*** is within the boundaries of the Ruth Lake CSD and the Southern Trinity Joint Unified School District, which Districts have contiguous boundaries. Appendix B contains a map illustrating this area.

Owners of *Resident Watercraft* shall register their watercraft and sign a sworn affidavit that their watercraft is only used in Ruth Lake and never leaves the immediate area, but for one possible exception. If a watercraft meets the resident requirement and remains at all times in the immediate area during the boating season, but is then removed from the immediate area for winter storage on land, that watercraft must be banded with a tamper proof band upon leaving the Ruth Lake area (see banding details in next section). Upon return to Ruth Lake the following year, if the band is still in tact, that watercraft may reregister in Category 1 without an inspection. However, if the band is not in tact, that boat will be subject to an inspection prior to registration.

Upon successful registration and payment of an annual fee, the owner will be issued two **Yellow** stickers. One sticker must be affixed to the watercraft and the other sticker must be affixed to the trailer.

Each sticker will have a unique registration number, and the year in which the sticker is valid. Each year, owners of *Resident Watercraft* must re-register, sign the sworn affidavit, and pay the annual fee to obtain a new sticker.

The registration form and sworn affidavit for this category are contained in Appendix B.

Category 2 – All other Watercraft

All watercraft which do not qualify for Category 1, are in this second Category 2. Many watercrafts in this category reportedly are from Trinity and Humboldt Counties, and quite often only frequent Ruth Lake (per information provided by Ruth Lake CSD and the Ruth Lake Leaseholders Association). Given that, owners of watercraft in this category may take advantage of a “banding” program that, once initiated, will allow them to launch at Ruth Lake without further registration or inspection until the next year.

All owners must register their watercraft and undergo an initial inspection. If the watercraft passes inspection, it will be issued two **Red** stickers and the watercraft (if trailered) is eligible for “banding” which secures the boat to the trailer with a tamper-proof band. Non-trailered watercraft must be inspected before launching.

Regarding banding, its purpose is to ensure that a watercraft has not been launched elsewhere thereby protecting Ruth Lake, yet allows that watercraft to quickly and efficiently launch at Ruth Lake if the tamper-proof band is still in tact. If the band is in place, watercraft in this category will be allowed to launch without further registration or inspection. When the watercraft exits Ruth Lake, the owner/operator may request that a new band be installed. If a band is not in place, watercraft in this Category will be subject to the registration and inspection process again.

Furthermore, if a watercraft which passed inspection and been issued a **Red** sticker, will be staying at Ruth Lake for consecutive days in one of the Ruth Lake CSD or USFS campgrounds, or on a Ruth Lake CSD Lease Site, a “duration pass” may be obtained allowing that watercraft to launch at any authorized site during that time period without further processing.

Regarding the **Red** stickers which are issued for this category, one must be affixed to the watercraft and the other must be affixed to the trailer (if a trailered watercraft). Each sticker will have a unique registration number, and the year in which the sticker is valid. Each year, owners of watercraft in this category must re-register their watercraft and pay the fee (annual or per launch) to obtain new stickers.

Appendix C contains detailed instructions for the registration and inspection process.

HBMWD and Ruth Lake CSD provided several registration and inspection opportunities within the local community the first winter season (2008-09). This allowed owners to pre-register their watercraft, undergo the required inspection, and be banded prior to the start of the 2009 boating season at Ruth Lake. The timing and location of these registration opportunities were announced and advertised in advance. Currently there are three locations outside of the Ruth Lake CSD boundaries that have trained inspectors conducting inspections for Ruth Lake.

Note Regarding Non-Motorized Watercraft

Risk factors associated with non-motorized watercraft (e.g. kayaks, canoes, sailboats) are generally less than risk factors associated with motorized watercraft. However, non-motorized watercraft still pose some risk if they were launched in another body and still contain water from that water body upon entering Ruth Lake. Non-motorized watercraft will also be segmented into one of the two Categories outlined above, and all requirements for the applicable category must be satisfied prior to launch. Obviously, the banding option would not be available to most non-motorized watercraft since they are not trailered. Each non-motorized craft will be inspected on a case-by-case basis to see if a band can be used.

ii. Summary of Inspection Requirements

The registration and inspection requirements for watercraft in each Category were introduced above and are outlined in greater detail in Appendix C. They are summarized here to help the reader quickly understand the requirements.

Inspections must be done by trained and certified inspectors. Inspectors, as well as HBMWD and Ruth Lake CSD staff who are consulted on inspection requirements, must at all times adhere to a “zero-tolerance” policy related to the inspection policy and procedures. If a watercraft fails any step in the inspection process, that watercraft will be denied access to Ruth Lake and placed on the quarantine list for the 30-day quarantine period.

Watercraft with ballast tanks or other components that cannot be drained will automatically fail an inspection. Owners have the option to have their vessel decontaminated at a designated decontamination station where these water-containing areas will be flushed with hot (120 F) water to kill mussels and their larvae. Watercraft will then receive a blue Ruth Lake band and may launch immediately if desired.

If a decontamination station is unavailable and/or a boat owner chooses not to have their vessel decontaminated, the vessel can be sealed with a red quarantine band and will not be permitted to launch at the Ruth Lake facilities for a minimum of 30 days. After completing the 30-day quarantine period, the vessel is eligible for launching.

Inspections are required on all watercraft wishing to launch at Ruth Lake with the only exceptions as follows:

- Watercraft approved in Category 1 (“*Resident*”) which have been issued a **Yellow** sticker for the current year; and
- Watercraft in Category 2 (all other watercraft) which previously passed an inspection and have been issued a **Red** sticker for the current year, and which have either: 1) the tamper-proof band in tact which ties the watercraft to the trailer, or 2) a valid “duration pass”. Boats which are not banded or do not possess a valid “duration pass” must be inspected and registered prior to

launch.

iii. Quarantine Times (During Which Watercraft May Not Launch)

If a watercraft does not meet the yellow and red sticker exceptions above, permission to launch at Ruth Lake is revoked for a period of **thirty (30) days** (provided that boat remains in quarantine during the 30-day period).

All other watercraft which fail the required inspection shall not be allowed to launch at Ruth Lake and will be placed on a thirty (30) day quarantine.

If a watercraft is determined to have an aquatic invasive species such as golden, quagga or zebra mussels on it, permission to launch at Ruth Lake will be revoked indefinitely, and the results will immediately be reported to the California State Department of Fish and Wildlife.

iv. Launch Sites - Generally

Gates with key card locks are installed across the entry to the three remaining boat launch sites at Old Ruth day-use area, the Ruth Recreation Campground and the Ruth Lake CSD Marina. All motorized watercraft must launch from these sites in accordance with the provisions outlined below. Motorized watercraft are prohibited from launching at all other locations.

There are numerous sites around Ruth Lake from which non-motorized watercraft – such as canoes and kayaks - may launch. After registration, inspection, and issuance of either a **Yellow** or **Blue** sticker, and possibly a “duration pass”, non-motorized watercraft will be allowed to launch from any location around Ruth Lake for the authorized time period.

v. Launch Site at Old Ruth Day-Use Area

As noted above, locked gates are installed across all existing boat launch sites. Access to the launch site at Old Ruth was previously only granted to owners of *Resident* watercraft (Category1) who have registered their watercraft, signed the sworn affidavit that their watercraft is only used in Ruth Lake and never leaves the immediate area, and had a valid **Yellow** sticker on their boat and trailer.

The HBMWD received a grant for fiscal year 16/17 from the Department of Boating and Waterways to convert Old Ruth to a public launch site. This launch site is now public and not restricted to residents. Key cards are required to access this gate once watercraft have passed inspections. The electrical conduit which feeds the Old Ruth gate was destroyed during the August Complex fire and is

currently being restored with a recent 24/25 grant. Until the electrical feed is energized, this boat launch is closed.

If the gate at this location is torn down, or otherwise vandalized rendering it ineffective, access to the launch will immediately be blocked by large rocks (or other means) and all boating access to Ruth Lake will be directed to the Ruth Recreation Campground (if open) or the Marina. Access shall remain blocked until such time as the Ruth Lake CSD replaces the gate and key card system.

vi. Launch Site at Ruth Rec Campground

As noted above, gates are installed across existing boat launch sites, including the one at Ruth Rec Campground. The gate is automatic with an electronic card key system. The purpose of the card key system is to allow watercraft that are properly registered and authorized, to enter Ruth Lake without additional process or procedure. A manual mechanism will also be installed across the boat ramp, which will be closed if the cross arms of the automatic gate is broken or otherwise breached. Access shall remain blocked until such time as the Ruth Lake CSD replaces the gate and lock system.

Ruth Rec Campground is one of the locations at which watercraft registration and inspections will occur. All boats that possess a yellow sticker, or a red sticker with a band, and have a valid card key may launch immediately. All other boats must check in at Ruth Rec or the Marina for inspection and processing. All boats, that are properly registered and pass inspection, will be issued a “card key”. This card key may then be used to access the boat launch at Ruth Rec, Old Ruth or the Marina during the hours of operation for the valid duration. For non-trailerred water craft (e.g. kayaks, canoes) a “duration pass” will consist of a **Blue** sticker noting the duration of the current visit to Ruth Lake.

Trained inspector(s) shall be present on-site. The inspector shall:

1. register watercraft which have not previously been registered and issue the appropriate sticker;
2. for Category 2 watercraft, confirm a valid **Red** sticker has been issued, **and** confirm the band is in place, or that a valid “duration pass” has been issued and is in place;
3. conduct inspections for all Category 2 boats which are not banded or do not possess a valid “duration” sticker;
4. place watercraft which do not pass inspection on quarantine and prohibit their entry into the lake for the entire quarantine period; and
5. re-band Category 2 watercraft when they exit the lake.

Registration and inspections shall be done in accordance with the procedures in Appendix C.

Watercraft may launch from the Ruth Rec boat launch during the season and hours of operation noted above, subject to the following conditions being met.

- i. Category 1 - Owners of *Resident* watercraft who have registered their watercraft, signed the sworn affidavit that their watercraft is only used in Ruth Lake and never leaves the immediate area, and have a valid **Yellow** sticker on their boat and trailer.
- ii. Category 2 - Owners/operators of all other watercraft whose watercraft has been registered, displays a valid **Red** sticker on the boat and trailer, *and* which has the tamper-proof band in place, *or* possesses a valid “duration pass”. If the watercraft does not meet the above criteria, it must register and successfully pass inspection.

vii. Launch Site at Ruth Lake CSD’s Marina

As noted above, gates are installed across existing boat launch sites, including at the Marina. Two gates are installed. The two gates are automatic with an electronic card key system. The purpose of the card key system is to allow watercraft that are properly registered and authorized, to enter Ruth Lake without additional process or procedure. A manual gate is also installed across the boat ramp, which will be closed if the cross arms of the automatic gates are broken or otherwise breached. Access shall remain blocked until such time as the Ruth Lake CSD replaces the gate and lock system.

The Marina will be open year-round to those boats with a valid yellow sticker, or red sticker with band in place, or a (Blue) duration sticker. All require a current card key.

All boats wishing to launch at the Marina, except Category 1, or Banded with a valid card key, or having a (Blue) duration sticker, must first be properly registered and pass inspection, then will be issued a “duration pass”. For trailered watercraft, this “duration pass” consists of card key which is programmed to allow access only for the duration of the current visit to Ruth Lake. This card key may then be used to access the boat launch at Ruth Rec or the Marina or Old Ruth during the hours of operation for the valid duration. For non-trailered water craft (e.g. kayaks, canoes) the “duration pass” will consist of a **Blue** sticker noting the duration of the current visit to Ruth Lake.

At Ruth Lake CSD’s discretion, watercraft registration and inspection may also be done at the Marina. This may occur on weekends to help expedite boat launches (especially on busy weekends). At such times, a trained inspector shall be present on-site. The inspector shall:

1. confirm requirements for any Category 1 watercraft wishing to launch and confirm a valid **Yellow** sticker is in place;
2. register watercraft which have not previously been registered and issue the appropriate sticker;
3. for Category 2 watercraft, confirm a valid **Red** sticker has been issued, **and** confirm the band is in place, or that a valid “duration pass” has been issued and is in place;
4. conduct inspections for all Category 2 boats which are not banded or do not possess a valid “duration” sticker;
5. place watercraft which do not pass inspection on quarantine and prohibit their entry into the lake for the entire quarantine period; and
6. re-band Category 2 watercraft when they exit the lake.

Registration and inspections shall be done in accordance with the procedures in Appendix C.

Watercraft may launch from the Marina subject to the following conditions being met:

- i. Category 1 - Owners of *Resident* watercraft who have registered their watercraft, signed the sworn affidavit that their watercraft is only used in Ruth Lake and never leaves the immediate area, and have a valid **Yellow** sticker on their boat and trailer.
- ii. Category 2 - Owners/operators of all other watercraft whose watercraft has been registered, displays valid **Red** stickers on the boat and trailer, **and** which has the tamper-proof band in place, **or** possesses a valid “duration pass” at the time of launch. If the watercraft does not meet the above criteria, it must register and successfully pass inspection.

c) Other Control Measures

- i. Organized Recreational Events
The sponsor of Bass Tournaments, or other organized events on the lake, shall develop procedures for the tournament or other event. The procedures must, at a minimum, include provisions for registration and inspection of all watercraft, in accordance with the requirements outlined in Appendix C.
- ii. System to Track Watercraft Registration and Quarantine Periods
A system was developed to track all watercraft that are registered at Ruth Lake in each Category, the results of the inspection process for each watercraft, and quarantine periods for any watercraft which did not pass inspection. This tracking system is used by inspectors during the registration process to confirm that a boat is not on the quarantine list and is eligible to launch. It is also used to generate any reports of interest to HBMWD, Ruth Lake CSD.

iii. Fish Stocking

The California Department of Fish and Wildlife currently stocks Ruth Lake with Rainbow Trout. HBMWD request that DFW protect Ruth Lake from introduction of these invasive mussels, and expects that DFW will confirm the water quality before the lake is stocked.

iv. Wildfire Suppression

HBMWD has allowed agencies to draw water from Ruth Lake for fighting wildfires in the Mad River basin. HBMWD initiated discussions with the Forest Service (given their land holdings around Ruth Lake) regarding policies or practices to protect water bodies from invasive species during fire fighting activities. The Forest Service has informed HBMWD that Region 6 has adopted a policy to address this issue, but Region 5, which includes Six River National Forest, has not. HBMWD has had discussions with the Forest Service and CalFire regarding the appropriate measures in place, to the extent feasible, to protect Ruth Lake from introduction of golden, quagga and zebra mussels.

v. Enforcement

Ruth Lake CSD will endeavor to have law enforcement on the lake during weekends and high-volume times such as Memorial Day, Independence Day, etc. The District will budget \$5,000 annually to assist with enforcement on the lake including checking to see that watercraft have the proper stickers proving they passed the invasive mussels inspection process. There may be times when Ruth Lake CSD is unable to procure enforcement on the lake. The District will provide financial assistance for law enforcement only when enforcement services on the lake are available.

vi. Watercraft Inspection Database (WID)

Ruth Lake CSD has registered with the nation-wide Watercraft Inspection Database and received inspector training. The WID will be used to track watercraft launching at Ruth Lake to determine where the watercraft has previously launched.

vii. Decontamination System

RLCSD and HBMWD recently submitted a grant application to CDFW for an immersive decontamination tank and associated site improvements. If the decontamination is installed, it will be an option in lieu of a mandatory 30-day quarantine.

3. Monitoring Program for Adult and Juvenile Invasive Mussels

The California Department of Fish and Wildlife (CDFW) placed four substrate-monitoring devices in Ruth Lake at locations where quagga or zebra mussels would potentially colonize if introduced into the lake. CDFW, with support from HBMWD and Ruth Lake staff, has conducted ongoing monitoring of these substrate devices since 2009 to determine if the mussels have colonized. To date, no mussels have

colonized. Substrate monitoring is conducted monthly within the boating season. This helps determine if golden, quagga, or zebra mussels are present in Ruth Lake. HBMWD and Ruth Lake CSD staff also visually monitor other structures too (e.g. piers and docks at the Marina and the log boom) to see if the mussels have colonized. To date, no mussels have colonized. This surface monitoring is conducted on a quarterly basis. Additionally, plankton tow monitoring will be conducted annually. All monitoring is conducted using CDFW protocols.

Appendix F contains DFG's Substrate Monitoring Protocol and reporting procedures which HBMWD and Ruth Lake CSD staff will reference and utilize.

4. Water Quality Monitoring Plan and Threat Assessment

California DFW conducts quarterly inspection and monitoring of Ruth Lake to assess whether aquatic invasive species are present .

Prevention Plan for Quagga and Zebra Mussels at Ruth Lake

APPENDICES

- Appendix A Registration Form and Affidavit for Watercraft in Category 1 and Area from which Watercraft must reside year-round to qualify for Category 1
- Appendix B Watercraft Inspection and Banding Procedures
- Instructions for Inspectors
 - Watercraft Inspection Checklist (to be completed by Inspector)
 - Watercraft Survey (to be completed by owner/operator)
 - Watercraft Inspection Failure Notice (to be completed by Inspector following inspection)
- Appendix C Informational Material from CA Dept of Fish and Game:
- Invasive Mussel Guidebook for Recreational Water Managers and Users – Strategies for Local Involvement
 - A Guide to Cleaning Boats and Preventing Mussel Damage
- Appendix D Ordinance 19-An Ordinance of the Board of Directors of HBMWD Adopting a Registration and Inspection Program for All Watercraft at Ruth Lake
- Appendix E Maps of Ruth Lake Inspection/Launch sites, Mad River Watershed, and Northern California area