California Department of Fish and Wildlife
Northern Region
601 Locust Street
Redding, CA 96001

California Endangered Species Act
Incidental Take Permit No. 2081-2019-031-01

HUMBOLDT REDWOOD COMPANY GRAVEL EXTRACTION PROJECT

Authority: This California Endangered Species Act (CESA) Incidental Take Permit (ITP) is issued by the California Department of Fish and Wildlife (CDFW) pursuant to Fish and Game Code section 2081, subdivisions (b) and (c), and California Code of Regulations, Title 14, section 783.0 et seq. CESA prohibits the take[1] of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species.[2] CDFW may authorize the take of any such species by permit if the conditions set forth in Fish and Game Code section 2081, subdivisions (b) and (c) are met (see Cal. Code Regs. tit. 14, § 783.4).

Permittee:	**Sal Chinnici**
Contact Person:	**Sal Chinnici**
Mailing Address:	**P.O. Box 712** **Scotia, CA 95565**

Effective Date and Expiration Date of this ITP:

This ITP shall be executed in duplicate original form and shall become effective once a duplicate original is acknowledged by signature of the Permittee on the last page of this ITP and returned to CDFW's Habitat Conservation Planning Branch at the address listed in the Notices section of this ITP. Unless renewed by CDFW, this ITP's authorization to take the Covered Species shall expire on **December 31, 2024.** This ITP will terminate before expiration if the covered species ceases to be a candidate species and it is not listed for protection under CESA.

Notwithstanding the expiration date on the take authorization provided by this ITP, Permittee's obligations pursuant to this ITP do not end until CDFW accepts as complete the Permittee's Final Mitigation Report required by Condition of Approval 6.6 of this ITP.

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[1]Pursuant to Fish and Game Code section 86, "'take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." (See also *Environmental Protection Information Center v. California Department of Forestry and Fire Protection* [2008] 44 Cal.4th 459, 507 [for purposes of incidental take permitting under Fish and Game Code § 2081, subdivision (b), "'take'…means to catch, capture or kill"]).

[2]The definition of an endangered, threatened, and candidate species for purposes of CESA are found in Fish and Game Code sections 2062, 2067, and 2068, respectively.

Project Location:

HRC extracts gravel from the Middle Reach of the Eel River in the vicinity of Scotia, California under Vested Rights granted by Humboldt County. The upstream boundary of the Middle Eel Reach begins approximately 5.7 miles above the confluence of the Middle and South Forks of the Eel River, and extends down river approximately 25 miles to the confluence of the main stem Eel with the Van Duzen River.

Project Description:

The gravel extraction operations consist of the harvest of gravel, rock, and sand from specified gravel bars within the bank-full river channel along the main stem of the Eel River near Scotia. Extraction is by one or more of the following methods: skimming, horseshoe pits, alcoves, wet or dry trenches, and/or wetland pits. Extraction during 2019 is anticipated to occur at five gravel bars: Scotia Dam Bar, Lower Truck Shop Bar, Dinner Creek Bar, Three Mile, and Elinor Bar. Operations at the Dinner Creek and Lower Truck Shop Bars also include the installation and removal of a low water temporary bridge. The Army Corps of Engineers Letter of Permission for gravel mining in Humboldt County requires the bridge to be placed after June 15 and removed before October 15.

Covered Species Subject to Take Authorization Provided by this ITP:

This ITP covers the following species:

Name	**CESA Status**
1. Foothill yellow-legged frog (*Rana boylii*)	Candidate[3]

This species and only this species is the "Covered Species" for the purposes of this ITP.

Impacts of the Taking on Covered Species:

Project activities and their resulting impacts are expected to result in the incidental take of Covered Species. The activities described above expected to result in incidental take of Covered Species are as follows: commercial gravel extraction operations including, but not

[3]The species status may change following the decision of the Fish and Game Commission to designate the species as threatened or endangered but if there is such a designation, the species will remain a Covered Species.

limited to, temporary bridge installation and removal activities, alcove and trench gravel extraction activities, and relocation and monitoring activities associated with these operations (Covered Activities). Take of Covered Species via high bar 'skimming' gravel extraction techniques is thought to be unlikely based on Covered Species behavior and preferred habitat, but additional information is needed to determine whether bar skimming has potential to result in take.

Incidental take of Covered Species in the form of mortality (kill) may occur as a result of Covered Activities such as bridge installation and removal, when heavy equipment will enter the channel and place fill materials, and Covered Species remaining in the substrate at the crossing location may become entrapped and crushed. Additionally, mortality of Covered Species may occur when gravel is extracted from near-stream trenches or alcoves, as these features are typically adjacent to or aligned with the edge of the river channel. Incidental take of Covered Species may also occur in the form of capture of the Covered Species during relocation efforts intended to minimize mortality prior to Covered Activities. Mortality of larval Covered Species may also occur during relocation efforts. The areas where authorized take of the Covered Species is expected to occur include those described under "*Project Location*". These areas are collectively known as the Project Area.

The Project is expected to cause the temporary loss of 0.5 acres of habitat for the Covered Species. Impacts of the authorized taking also include adverse impacts to the Covered Species related to temporal losses, increased habitat fragmentation and edge effects, and the Project's incremental contribution to cumulative impacts (indirect impacts). These impacts include: stress resulting from noise and vibrations from heavy equipment work and capture and relocation, long-term effects due to displacement from preferred habitat, increased competition for food and space, and increased vulnerability to predation.

Incidental Take Authorization of Covered Species:

This ITP authorizes incidental take of the Covered Species and only the Covered Species. With respect to incidental take of the Covered Species, CDFW authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out the Covered Activities, subject to the limitations described in this section and the Conditions of Approval identified below. This ITP does not authorize take of Covered Species from activities outside the scope of the Covered Activities, take of Covered Species outside of the Project Area, take of Covered Species resulting from violation of this ITP, or intentional take of Covered Species except for capture and relocation of Covered Species as authorized by this ITP.

Conditions of Approval:

Unless specified otherwise, the following measures apply to all Covered Activities within the Project Area, including areas used for vehicular ingress and egress, staging and parking, and noise and vibration generating activities that may/will cause take. CDFW's issuance of this ITP and Permittee's authorization to take the Covered Species are subject to Permittee's compliance with and implementation of the following Conditions of Approval:

1. **Legal Compliance:** Permittee shall comply with all applicable federal, State, and local laws in existence on the effective date of this ITP or adopted thereafter.

2. **CEQA Compliance:** Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Biological Resources section of the Final Program Environmental Impact Report (EIR) on Gravel Removal from the Lower Eel River (State Clearinghouse Number: 19922013033) certified on July 24, 1992 by the Humboldt County Planning and Building Department as Lead Agency for the Project pursuant to the California Environmental Quality Act (CEQA).

3. **LSA Agreement Compliance:** Permittee shall implement and adhere to the mitigation measures and conditions related to the Covered Species in the final Lake and Streambed Alteration Agreement 1600-2018-0093-R1 for the Project executed by CDFW pursuant to Fish and Game Code section 1600 et seq.

4. **ITP Time Frame Compliance:** Permittee shall fully implement and adhere to the conditions of this ITP within the time frames set forth below and as set forth in the Mitigation Monitoring and Reporting Program (MMRP), which is included as Attachment 1 to this ITP.

5. **General Provisions:**

    5.1. Designated Representative. Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this ITP. Before starting Covered Activities, Permittee shall notify CDFW in writing (e-mail preferred) of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.

    5.2. Designated Biologist. Permittee shall submit to CDFW in writing (e-mail preferred) the name, qualifications, business address, and contact information of a

Designated Biologist (DB) at least 30 days before starting Covered Activities, unless CDFW agrees to approve a DB in less time. Permittee shall ensure that the DB is knowledgeable and experienced in the biology, natural history, survey techniques, and collecting and handling of the Covered Species. The DB shall be responsible for monitoring Covered Activities (temporary bridge installation and removal activities and other activities in or directly adjacent to the wetted channel such as alcove and trench gravel extractions) to help minimize, fully mitigate and/or avoid the incidental take of the Covered Species, and to minimize disturbance of Covered Species habitat. Permittee shall obtain CDFW approval of the DB in writing before starting Covered Activities, and shall also obtain approval in advance in writing if the DB must be changed.

5.3. DB Authority. To ensure compliance with the Conditions of Approval of this ITP, the DB shall have authority to immediately stop any activity that does not comply with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of the Covered Species.

5.4. Education Program. Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before performing any work. The program shall consist of a presentation from the DB that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to disturbance, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.

5.5. Construction Monitoring Notebook. The DB shall maintain a construction-monitoring notebook on-site throughout the construction period, which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by CDFW.

5.6. Erosion Control Materials. Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other species, such as monofilament netting (erosion control matting) or similar material, in potential Covered Species habitat. All erosion control materials shall be 100 percent biodegradable and shall not entrap or harm wildlife. Photodegradable synthetic products are not considered biodegradable.

5.7. Avoiding Covered Species Habitat. Permittee shall ensure that vehicles, personnel, and Project activities are minimized within 25 feet of the wetted edge of streams, riparian habitat, or other Covered Species habitat as determined by the DB. With the exceptions of Covered Activities that require in or near stream work, these habitats should be avoided to the greatest extent feasible. When Project activities occur within 25 feet of Covered Species habitat, stakes, flags, rope, cord, and/or fencing may be used if deemed necessary by the DB to minimize disturbance of Covered Species habitat.

5.8. Project Access. Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description and shall not cross Covered Species habitat outside of these routes. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. Permittee shall ensure that vehicle speeds within 20 feet of surface water (the wetted edge of a river or stream, or a wetland area) do not exceed 5 miles per hour.

5.9. Staging Areas. Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to previously disturbed areas to the extent feasible. Additionally, Permittee shall not use or cross Covered Species habitat outside of the Project Area except as described in this ITP.

5.10. Hazardous Waste. Permittee shall immediately stop and, pursuant to pertinent State and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.

5.11. CDFW Access. Permittee shall provide CDFW staff with access to the Project site and mitigation areas, and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.

5.12. Refuse Removal. Upon completion of Covered Activities, Permittee shall remove from the Project Area and properly dispose of all refuse including, but not limited to, broken equipment parts, vehicles or parts of vehicles, tires, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.

6. Monitoring, Notification, and Reporting Provisions:

6.1. Notification Before Commencement. The Designated Representative shall notify CDFW at least 7 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.

6.2. Notification of Non-compliance. The Designated Representative shall immediately notify CDFW in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP including, but not limited to, any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall report any noncompliance with this ITP to CDFW within 24 hours.

6.3. Compliance Monitoring. The DB shall be on-site daily when Covered Activities occur that may result in take of Covered Species. The DB shall conduct compliance inspections to: (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of Covered Species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; and (5) ensure that any signs, stakes, and fencing are intact, and that Covered Activities are only occurring in the Project Area. The Designated Representative or DB shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP.

6.4. Annual Compliance Report. The Designated Representative or DB shall compile the observation and inspection records identified in Condition of Approval 6.3 into an Annual Compliance Report (ACR) and submit it to CDFW no later than December 31 of every year beginning with issuance of this ITP and continuing until CDFW accepts the Final Mitigation Report identified in measure 6.6 below, along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Additionally, the ACR shall include: (1) an assessment of the effectiveness of each completed or partially

completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (2) all available information about Project-related incidental take of the Covered Species; (3) information about other Project impacts on the Covered Species; and (4) mitigation efforts as described in measure 8.1 of this ITP. The ACR shall be submitted to the CDFW offices listed in the Notices section of this ITP and via email to CDFW's Regional Representative and Headquarters CESA Program. At the time of this ITP's approval, the CDFW Regional Representative is Jennifer Olson (jennifer.olson@wildlife.ca.gov), and Headquarters CESA Program email is CESA@wildlife.ca.gov. CDFW may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If CDFW determines the reporting schedule must be changed, CDFW will notify Permittee in writing of the new reporting schedule.

6.5. CNDDB Observations. The DB shall submit all observations of Covered Species to CDFW's California Natural Diversity Database (CNDDB) by December 31 of the calendar year in which they were observed (annually) and the DB shall include copies of the submitted forms with the next ACR.

6.6. Final Mitigation Report. No later than 45 days after completion of all mitigation measures, Permittee shall provide CDFW with a Final Mitigation Report. The DB shall prepare the Final Mitigation Report which shall include at a minimum: (1) a summary of all ACRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.

7. Take Minimization Measures:

The following requirements are intended to ensure the minimization of incidental take of Covered Species in the Project Area during Covered Activities. Permittee shall implement and adhere to the following conditions to minimize take of Covered Species:

7.1. Visual Encounter Egg-mass Surveys. The DB shall conduct Visual Encounter Surveys (VES) for the egg masses of the Covered Species in any potential Covered Species breeding habitat (margins of streams) within 150 feet upstream and downstream of where Covered Activities may occur within that year. VES shall commence with the onset of the breeding season. The onset of the breeding season is generally during the receding spring hydrograph, and in northern California typically begins during the months of April-June depending on rain and river flows. Unusually wet or dry years may require earlier or later initiation of survey efforts, and the DB should coordinate with the CDFW Regional Representative to ensure surveys are timed appropriately. It is critical to identify the onset of breeding because egg masses mature and hatch quickly (approximately 2-3 weeks). During a VES, observer(s) shall walk and/or wade along the margins of the stream visually inspecting all suitable habitat and recording locations of egg masses of the Covered Species with a GPS unit. A corresponding developmental stage shall be recorded for each egg mass based on Gosner stage (Figure 2). The VES shall be conducted within the boundaries of the Project Area plus a 150-foot buffer zone upstream and downstream of the Project area. The DB shall conduct a VES for egg masses within the Project area every 7-10 days until July 1, or until no fresh egg masses have been observed for 14 days, whichever comes first.

7.2. Egg Mass Relocation Plan. If egg masses are observed within 100 feet upstream or downstream of seasonal bridge installation locations, or other locations where they may be disturbed by project activities, the DB shall notify CDFW within seven business days by submitting a Relocation Plan via email to the Regional Representative as designated in this ITP. The Relocation Plan shall contain approximate numbers and locations of egg masses to be relocated, and shall quantify the amount, location, and quality of suitable receiving habitat a minimum of 150 feet from the disturbance location, and describe methods for marking and monitoring each relocated egg mass to determine success rates of egg mass relocation. CDFW shall have three business days to comment on the Relocation Plan. If CDFW approves the Plan or has no comments, the DB shall proceed in relocating egg masses to the proposed receiving habitat by gently placing the egg mass and its attachment substrate into a 5-gallon bucket with fresh stream water, and immediately transporting the eggs below the disturbance location to the previously identified receiving habitat. Upstream receiving habitat should only be considered if insufficient habitat exists downstream. Two or three egg masses, depending on rock size, will fit in one bucket. Egg masses must be submerged at all times. Aeration is not required, assuming bucket retention time is brief. Within the receiving habitat, the DB will gently place the egg mass and its rock in

appropriate depth and velocity edge water. Other egg masses will already be present in the receiving habitat, so it is important to note their location and avoid disturbing them during relocation procedures. If any egg masses become detached from their cobble, they shall be enclosed with cobble in the sheltered low-flow receiving habitat. Relocated egg masses shall be marked with an inconspicuous marker (e.g. small wooden stake, pin flag, colored rock, etc.) that is numbered for future monitoring, and a GPS location shall be taken. Relocated egg masses shall be monitored weekly and approximate Gosner stage recorded until they are completely hatched, after which the marker shall be removed. All egg mass relocation data shall be submitted in monitoring reports, including egg masses that do not continue to develop after relocation, or do not survive for some other reason (washed away, desiccated, or otherwise destroyed).

7.3. Seasonal Work Restriction. Permittee shall ensure that Covered Activities involving construction and heavy equipment use (such as excavation, grading, and contouring) that are conducted in streams, ponds, and riparian areas are limited to the period from June 15 to October 15 of each year (Dry Season) until the expiration of this ITP, unless the Permittee receives prior approval for work outside this window from CDFW. Seasonal bridge installation may be conducted as early as June 15 only if either of the following occurs: (1) egg mass relocation and/or surveys as described in measures 7.1 and 7.2 determine there are no Covered Species tadpoles within the area impacted by seasonal bridge abutment fill, or (2) tadpoles are present but are large enough that relocation is feasible by June 15 as determined by the DB in consultation with CDFW staff.

7.4. Pre-disturbance Relocation Plan. In addition to the pre-construction surveys and egg mass relocation as described in measures 7.1 and 7.2, at least two weeks prior to seasonal bridge installation or other locations where they may be disturbed by project activities, the DB shall survey the disturbance footprint to determine whether tadpoles and/or juvenile or adults of the Covered Species are present within the footprint or a 25-foot buffer area. If Covered Species of any life stage are present, the DB shall develop and submit a Relocation Plan to CDFW at least seven days prior to proposed installation. CDFW shall have three business days to comment on the Relocation Plan. The Relocation Plan shall include what life stage(s) will be relocated (e.g., adults, tadpoles, or egg masses) and specific protocols for each life stage. The Relocation Plan shall quantify the amount, location, and quality of suitable receiving habitat. The Relocation Plan shall include capture and handling methods specific to each life stage. Covered Species shall be handled using

methodology described in the Restraint and Handling of Live Amphibians (Attachment 2), and in accordance with the Fieldwork Code of Practice (Attachment 3).

7.5. Excavations resulting in standing water. If an extraction method results in standing water (i.e., trench or some alcove extractions), the DB shall evaluate the proposed extraction site and implement either exclusion of the entire site at the end of each day via properly installed exclusion fencing, or monitoring and relocation to minimize take of adult Covered Species that may move into the wetted area as it is excavated and fills with surface water. If exclusion fencing is utilized, it shall be:

- Designed and installed by the DB, in coordination with Project equipment operators, after which it can be maintained by Project workers under instruction of the DB;
- Properly installed, both trenched in and able to maintain a vertical orientation (i.e., stands up straight on its own), and regularly maintained to ensure it effectively excludes Covered Species;
- At least three feet in height;
- The top few inches of the exclusion fencing must be folded over and away from the construction area; and
- Re-installed immediately after excavation ceases each day to prevent Covered Species entry into the trench area.

Examples of products that have been used for excluding wildlife from construction sites include:

- https://animexfencing.com
- http://ertecsystems.com/Products/Wildlife-Exclusion-Fence---Special-Status-Species-Protection#.W1kB84tFTo0.link

If monitoring and relocation is proposed, the DB shall conduct a VES for adult and sub-adult Covered Species along the active excavation side of the trench commencing on the second day of trench excavation (once the trench has filled with water). The DB shall search under all suitable sized cobble (six-inch diameter or larger) along the active side of the trench to detect Covered Species. The DB shall attempt to capture and relocate all Covered Species on the active excavation side of the trench. The captured Covered Species shall be relocated to the main channel at least 100 feet from the entire footprint of any active trench location.

After the VES and cobble searches are complete, the DB shall remain on site to inspect the first 10 bucket loads of gravel excavated from the trench to detect any Covered Species that may have been captured with the gravel. The designated biologist will attempt to capture any Covered Species detected and collect any injured or deceased Covered Species. Depending on the results of the first 10 bucket loads, the DB will determine if inspection of further loads is necessary. If Covered Species are detected in several of the first bucket loads, the DB may suspend further excavation to conduct additional cobble searches to attempt to capture and relocate Covered Species before they are caught while excavating gravel from the trench. If after the initial 10 bucket hauls, no Covered Species are detected in bucket hauls, the DB may cease monitoring of trench excavations.

If greater than five Covered Species are detected in the initial 10 bucket hauls, the DB shall continue monitoring daily to document take and shall consult with CDFW within 48 hours about measures to minimize take due to trenching.

In all trenching operations, equipment shall proceed slowly when taking the initial bucket haul of the day and shall agitate the water surface prior to taking the first bucket haul in order to encourage frogs to exit the excavation area.

If the DB decides to cease monitoring of trench excavations based on no presence of Covered Species in bucket hauls, the DB may train the equipment operator or other on-site personnel to observe and document detections of Covered Species prior to and during excavation activities. If this option is utilized, the observer shall be trained by the DB to:

1. Conduct a visual encounter survey and count the number of Covered Species present on the active side of the trench channel;
2. On the return walk from the visual encounter survey, turn over all cobble greater than six inches in diameter within five feet of the wetted trench edge to detect hiding Covered Species;
3. Record all Covered Species observed during active excavation activities; and
4. Completely fill out a log of daily activities and Covered Species observed.

These additional combination VES and cobble search surveys will occur along the active extraction edge of all trenches at approximately the midpoint of excavation and one on approximately the last day of trench excavation. This information can be used to regress numbers of Covered Species over time and by trench size in

order to understand if the number of Covered Species potentially effected increases as time and pool size increase therefore increasing the potential magnitude of risk for impact. If monitoring of the first trench suggests these factors do not influence the magnitude of Covered Species abundance, these efforts can be scaled back accordingly as recommended by the designated biologist in consultation with CDFW in subsequent years of the permit.

7.6. Covered Species Observation. During all phases of Project construction operation and maintenance, all workers shall inform the DB if they encounter Covered Species within or near the Project site. All Covered Activities with potential to take the Covered Species shall cease until the animal is relocated, if the DB determines that relocation is necessary.

7.7. No Night Work or Lighting. Permittee shall not use night lighting in the Project Area. All Project activity shall terminate 30 minutes before sunset and shall not resume until 30 minutes after sunrise. The Permittee shall use sunrise and sunset times established by the U.S. Naval Observatory Astronomical Applications Department for the geographic area where the Project is located (http://aa.usno.navy.mil/data/docs/RS_OneDay.php).

7.8. Decontamination. Permittee shall ensure all Project personnel adhere to the current version of the California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocol (Attachment 5) for all field gear and equipment that will be in contact with water or Covered Species. Heavy equipment and other motorized or mechanized equipment that comes in contact with water should generally follow watercraft decontamination protocols found in the Decontamination Protocol.

8. Habitat Management and Restoration:

CDFW has determined that management of Covered Species habitat is necessary and required pursuant to CESA to fully mitigate Project-related impacts of the taking on the Covered Species that will result with implementation of the Covered Activities. This determination is based on factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and CDFW's estimate of the acreage required to provide for adequate compensation.

To meet this requirement, the Permittee shall conduct bullfrog control via lethal removal of the bullfrogs of all life stages.

8.1. Bullfrog monitoring and control. Within 30 days of the execution of this ITP, the Permittee shall commence control and monitoring activities for the invasive American bullfrog (*Lithobates catesbeianus*) at the Scotia Log Deck Pond, Log Deck Pond overflow ditch, and adjacent seasonally flooded area (see Figure 4). At least seven (7) days prior to commencement of bullfrog control activities, a plan must be submitted to CDFW for approval, and must include the following components:

8.1.1. An initial effort of at least 10 nights of bullfrog control effort to be completed by October 31, 2019, or within 120 days of the execution of this ITP, unless CDFW agrees in writing to an alternative schedule. Potential control methods could include:

- shooting with the aid of spotlights, using air rifles with non-lead pellets, targeting adult and subadult bullfrogs
- installation of aquatic drift fencing and/or double fyke nets for target and capture of larval bullfrogs
- capture of any life stage using hand nets, gill nets, seine nets, drift fencing, or double fyke nets
- gigging with the aid of spotlights
- electroshocking

8.1.2. Subsequent effort including at least twice weekly targeted removal of adults in spring, during approximately the month prior to commencement of breeding as determined by the designated biologist. After one month of twice weekly targeted removal efforts, twice monthly efforts may commence. This schedule shall continue (subject to modification with concurrence of CDFW) until CDFW agrees in writing that control efforts have been successful and may cease.

8.1.3. All control efforts shall include monitoring and recording of captures per unit effort over time (depletion surveys) to determine whether control of the bullfrog population is occurring. These data shall be submitted to CDFW as part of the Permittees ACR as described in measure 6.4 of this ITP. If control of the population does not occur, the Permittee shall increase control efforts accordingly, in consultation with CDFW.

9. Performance Security

The Permittee may proceed with Covered Activities only after the Permittee has ensured funding (Security) to complete any activity required by Condition of Approval 8 that has not been completed before Covered Activities begin. Permittee shall provide Security as follows:

9.1. Security Amount. The Security shall be in the amount of $26,000. This amount is based on the cost estimates for planning and implementation of bullfrog control using a variety of methods above.

9.2. Security Form. The Security shall be in the form of an irrevocable letter of credit (see Attachment 4), or another form of Security approved in advance in writing by CDFW's Office of the General Counsel.

9.3. Security Timeline. The Security shall be provided to CDFW before Covered Activities begin or within 30 days after the effective date of this ITP, whichever occurs first.

9.4. Security Holder. The Security shall be held by CDFW or in a manner approved in advance in writing by CDFW.

9.5. Security Transmittal. If CDFW holds the Security, Permittee shall transmit it to CDFW with a completed Mitigation Payment Transmittal Form or by way of an approved instrument such as escrow, irrevocable letter of credit, or other.

9.6. Security Drawing. The Security shall allow CDFW to draw on the principal sum if CDFW, in its sole discretion, determines that the Permittee has failed to comply with the Conditions of Approval of this ITP.

9.7. Security Release. The Security (or any portion of the Security then remaining) shall be released to the Permittee after CDFW has conducted an on-site inspection and received confirmation that all secured requirements have been satisfied.

Amendment:

This ITP may be amended as provided by California Code of Regulations, Title 14, section 783.6, subdivision (c), and other applicable law. This ITP may be amended without the concurrence of the Permittee as required by law, including if CDFW determines that

continued implementation of the Project as authorized under this ITP would jeopardize the continued existence of the Covered Species or where Project changes or changed biological conditions necessitate an ITP amendment to ensure that all Project-related impacts of the taking to the Covered Species are minimized and fully mitigated.

Stop-Work Order:

CDFW may issue Permittee a written stop-work order requiring Permittee to suspend any Covered Activity for an initial period of up to 25 days to prevent or remedy a violation of this ITP including, but not limited to, the failure to comply with reporting or monitoring obligations, or to prevent the unauthorized take of any CESA endangered, threatened, or candidate species. Permittee shall stop work immediately as directed by CDFW upon receipt of any such stop-work order. Upon written notice to Permittee, CDFW may extend any stop-work order issued to Permittee for a period not to exceed 25 additional days. Suspension and revocation of this ITP shall be governed by California Code of Regulations, Title 14, section 783.7, and any other applicable law. Neither the DB nor CDFW shall be liable for any costs incurred in complying with stop-work orders.

Compliance with Other Laws:

This ITP sets forth CDFW's requirements for the Permittee to implement the Project pursuant to CESA. This ITP does not necessarily create an entitlement to proceed with the Project. Permittee is responsible for complying with all other applicable federal, state, and local law.

Notices:

The Permittee shall deliver a fully executed duplicate original ITP by registered first class mail or overnight delivery to the following address:

Habitat Conservation Planning Branch
California Department of Fish and Wildlife
Attention: CESA Permitting Program
Post Office Box 944209
Sacramento, CA 94244-2090

Written notices, reports and other communications relating to this ITP shall be delivered to CDFW by registered first class mail at the following address, or at addresses CDFW may subsequently provide the Permittee. Notices, reports, and other communications shall reference the Project name, Permittee, and ITP Number (2081-2019-031-01) in a cover letter and on any other associated documents.

Original cover with attachment(s) to:

Tina Bartlett, Regional Manager
California Department of Fish and Wildlife
601 Locust Street
Redding, CA 96001
(530) 225-2300

and a copy to:

Habitat Conservation Planning Branch
California Department of Fish and Wildlife
Attention: CESA Permitting Program
Post Office Box 944209
Sacramento, CA 94244-2090

Unless Permittee is notified otherwise, CDFW's Regional Representative for purposes of addressing issues that arise during implementation of this ITP is:

Jennifer Olson, Environmental Scientist
619 Second Street
Eureka, CA 95501
(707) 445-5387
jennifer.olson@wildlife.ca.gov

Compliance with CEQA:

CDFW's issuance of this ITP is subject to CEQA. CDFW is a responsible agency pursuant to CEQA with respect to this ITP because of prior environmental review of the Project by the lead agency, the Humboldt County Planning and Building Department. (See generally Pub. Resources Code, §§ 21067, 21069.) The lead agency's prior environmental review of the Project is set forth in the Final Program EIR on Gravel Removal from the Lower Eel River (State Clearinghouse Number: 19922013033), that the Lead Agency certified on July 24, 1992. At the time the Lead Agency certified the EIR it also adopted various mitigation measures for the Covered Species as conditions of Project approval.

This ITP, along with CDFW's related CEQA findings, which are available as a separate document, provide evidence of CDFW's consideration of the lead agency's EIR for the Project and the environmental effects related to issuance of this ITP (CEQA Guidelines, § 15096, subd. (f)). CDFW finds that issuance of this ITP will not result in any previously

undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects exists, CDFW finds adherence to and implementation of the Conditions of Project Approval adopted by the lead agency, and that adherence to and implementation of the Conditions of Approval imposed by CDFW through the issuance of this ITP, will avoid or reduce to below a level of significance any such potential effects. CDFW consequently finds that issuance of this ITP will not result in any significant, adverse impacts on the environment.

Findings Pursuant to CESA:

These findings are intended to document CDFW's compliance with the specific findings requirements set forth in CESA and related regulations. (Fish & G. Code § 2081, subs. (b)-(c); Cal. Code Regs., tit. 14, §§ 783.4, subds, (a)-(b), 783.5, subd. (c)(2).)

CDFW finds based on substantial evidence in the ITP application, results of field visits, and the administrative record of proceedings, that issuance of this ITP complies and is consistent with the criteria governing the issuance of ITPs pursuant to CESA:

(1) Take of Covered Species as defined in this ITP will be incidental to the otherwise lawful activities covered under this ITP;

(2) Impacts of the taking on Covered Species will be minimized and fully mitigated through the implementation of measures required by this ITP. Measures include: (1) habitat creation and enhancement; (2) establishment of avoidance zones and relocation plans (3) worker education; and (4) Monthly Compliance Reports. CDFW evaluated factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and CDFW's estimate of the acreage required to provide for adequate compensation. Based on this evaluation, CDFW determined that the management of invasive bullfrogs in habitat that is contiguous with other protected Covered Species habitat, along with the minimization, monitoring, reporting, and funding requirements of this ITP minimizes and fully mitigates the impacts of the taking caused by the Project;

(3) The take avoidance and mitigation measures required pursuant to the conditions of this ITP and its attachments are roughly proportional in extent to the impacts of the taking authorized by this ITP;

(4) The measures required by this ITP maintain Permittee's objectives to the greatest extent possible;

(5) All required measures are capable of successful implementation;

(6) Permittee has ensured adequate funding to implement the measures required by this ITP as well as for monitoring compliance with, and the effectiveness of, those measures for the Project; and

(7) Issuance of this ITP will not jeopardize the continued existence of the Covered Species based on the best scientific and other information reasonably available, and this finding includes consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (1) known population trends; (2) known threats to the species; and (3) reasonably foreseeable impacts on the species from other related projects and activities. Moreover, CDFW's finding is based, in part, on CDFW's express authority to amend the terms and conditions of this ITP without concurrence of the Permittee as necessary to avoid jeopardy and as required by law.

Attachments:

FIGURE 1	Map of Project Area
FIGURE 2	Gosner Stages
FIGURE 3	Sample Visual Encounter Surveys (VES) Datasheet
FIGURE 4	Bullfrog Management Areas
ATTACHMENT 1	Mitigation Monitoring and Reporting Program (MMRP)
ATTACHMENT 2	Restraint and Handling of Live Amphibians
ATTACHMENT 3	Fieldwork Code of Practice
ATTACHMENT 4	Letter of Credit Form
ATTACHMENT 5	Decontamination Protocol

ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

on 8/15/19

for **Tina Bartlett,** Regional Manager
NORTHERN REGION

ACKNOWLEDGMENT

The undersigned: (1) warrants that he or she is acting as a duly authorized representative of the Permittee, (2) acknowledges receipt of this ITP, and (3) agrees on behalf of the Permittee to comply with all terms and conditions

By: _____ Date: 8/19/19

Printed Name: SAL CHINNICI Title: DIRECTOR, FOREST SCIENCES

Figure 1: Site Map

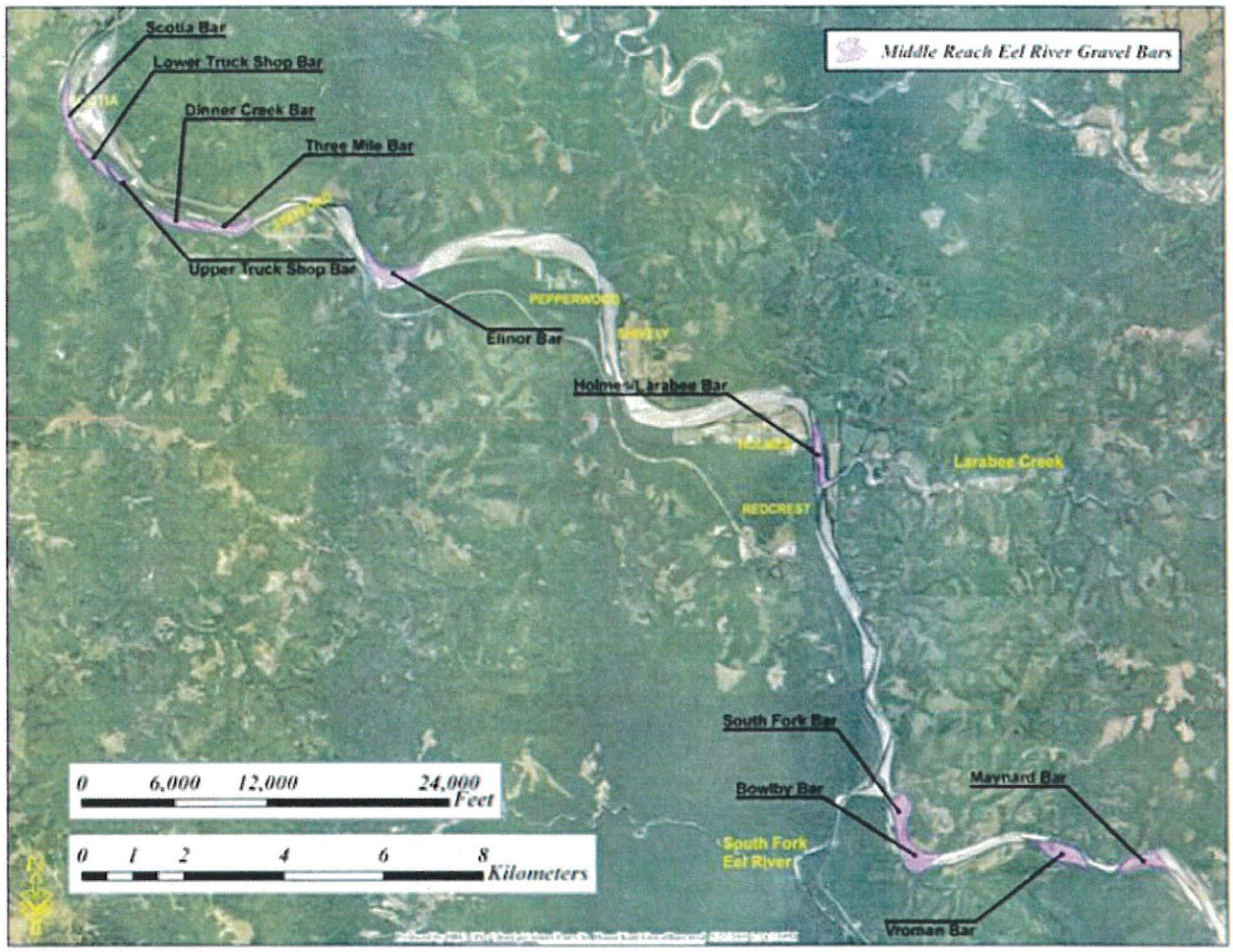
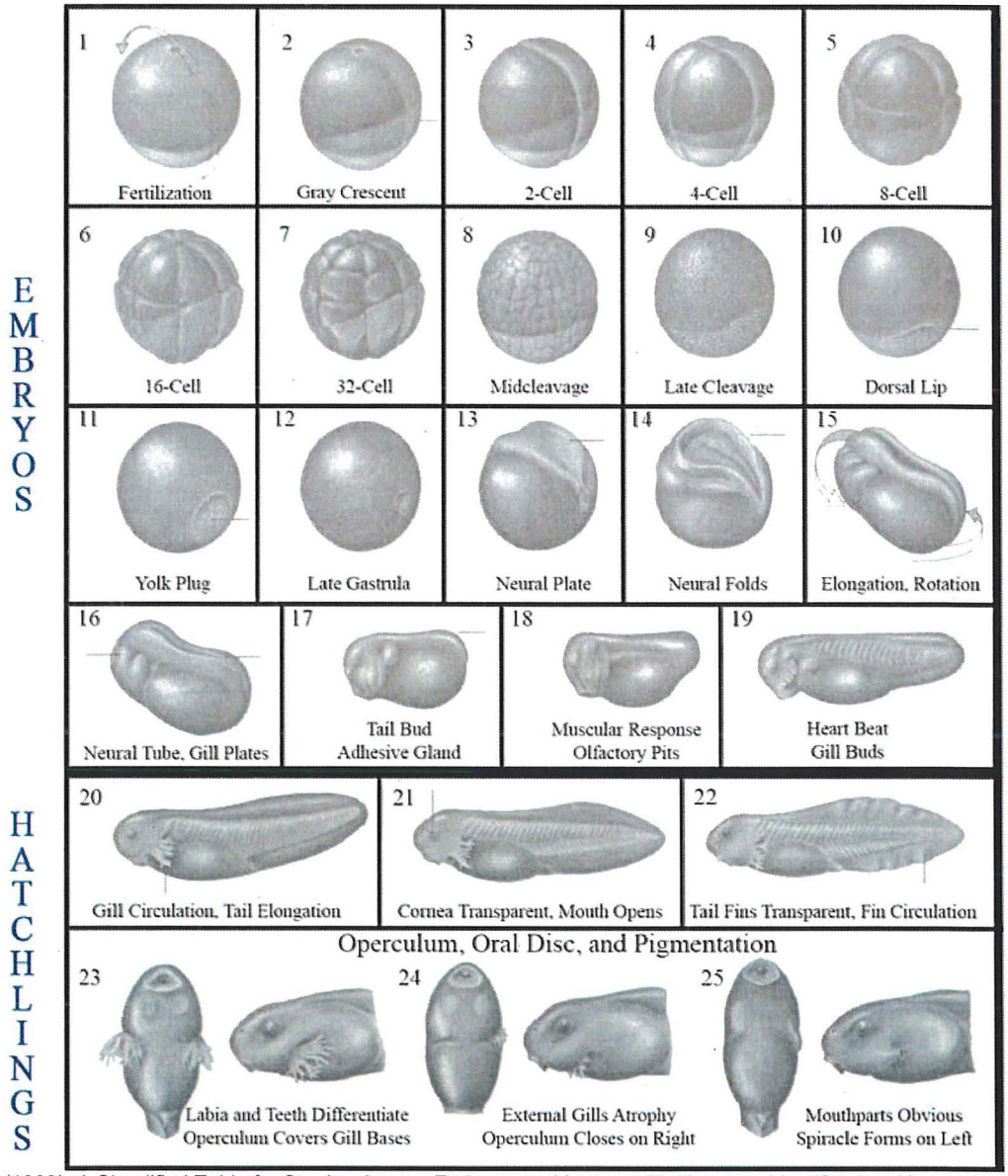


Figure 2: Gosner Stages



From Gosner, K. (1960). A Simplified Table for Staging Anuran Embryos and Larvae with Notes on Identification. Herpetologica, 16(3), 183-190.

Stages 1 – 14: ROUND
Stages 15 – 19: BEAN
Stages 20 – 22: TAIL
An egg mass is considered "HATCHED" as soon as one tadpole has exited and is freely swimming.

2018 CDFW RABO Visual Encounter Egg Mass Survey

Date:		**Site Photos ID #**	**Sky:**	**Moisture:**	**Observers:**
Location:					
Start Time:		**GPS Unit Used:**	**Temp:**	**Wind:**	
End Time:		**GPS Accuracy:**			

Egg Mass Waypoint #		Species Observations	Gosner (round, bean, tail, hatched)	Egg Mass Waypoint #		Species Observations	Gosner (round, bean, tail, hatched)
1				21			
2				22			
3				23			
4				24			
5				25			
6				26			
7				27			
8				28			
9				29			
10				30			
11				31			
12				32			
13				33			
14				34			
15				35			
16				36			
17				37			
18				38			
19				39			
20				40			

Sky: Clear, Partly cloudy, Very cloudy. **Moisture**: Dry, Foggy, Int. rain, Light, Heavy. **Temperature**: Frigid, Cool, Warm, Hot. **Wind**: None, Light, Moderate, Strong
Species Codes: **RAAU**=Northern Red-legged Frog; **RABO**= Foothills Yellow-legged Frog; **HYRE**= Pacific Tree Frog; **BUBO**=Western Toad; **ACMA**=Western Pond Turtle; **LICA**=Bullfrog

FROG TALLY BOX

RAAU
Adult:
Juvenile:

RABO
Adult:
Juvenile:

LICA
Adult:
Juvenile:

HYRE
Adult:
Juvenile:

BUBO
Adult:
Juvenile:

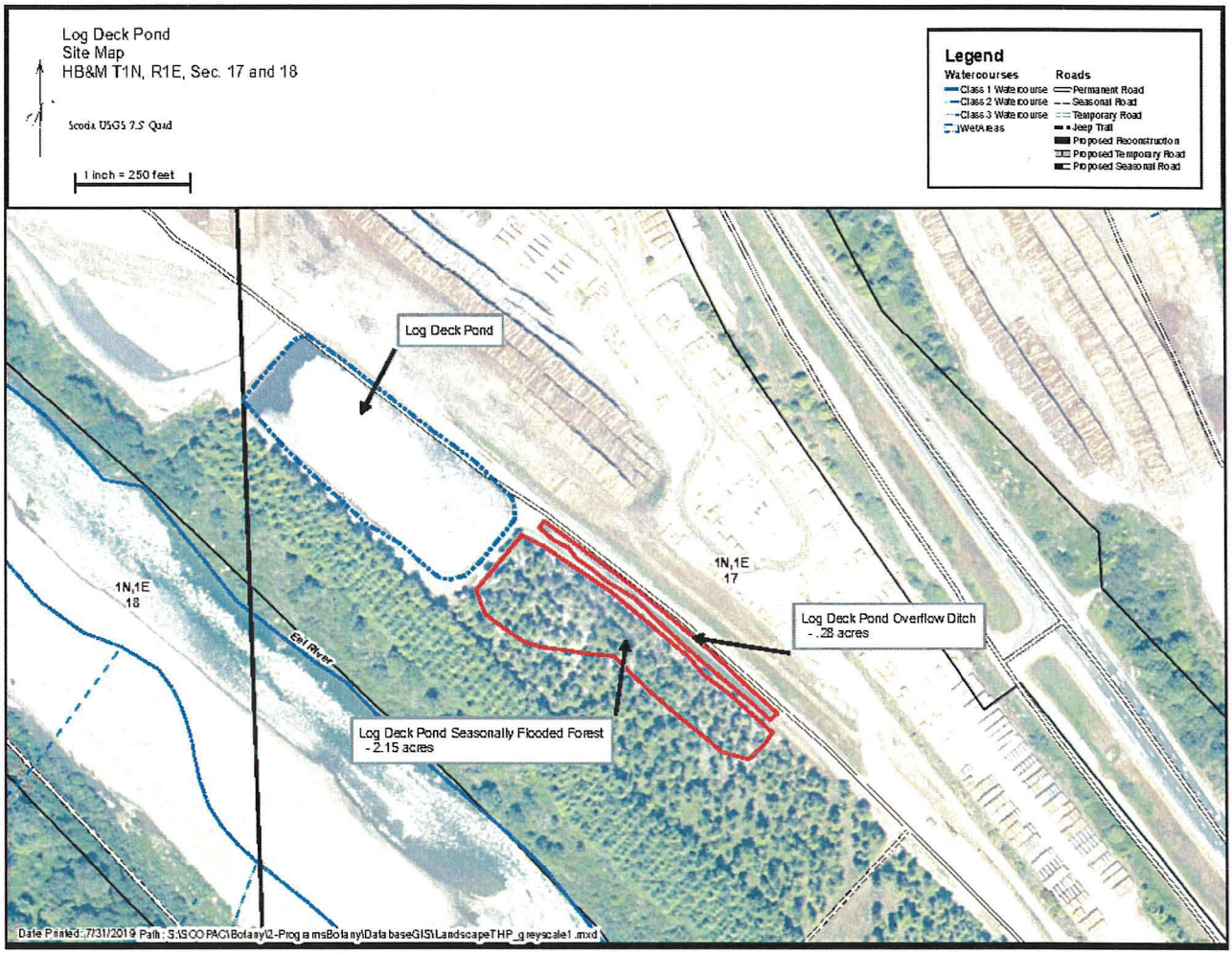
String:

ACMA

Notes:

Figure 3: Sample VES Datasheet

Figure 4: Bullfrog Management Area



Attachment 1

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)
CALIFORNIA ENDANGERED SPECIES ACT

INCIDENTAL TAKE PERMIT NO. 2081-2019-031-01

PERMITTEE: **Sal Chinnici**

PROJECT: **Humboldt Redwood Company Gravel Extraction Project**

PURPOSE OF THE MITIGATION MONITORING AND REPORTING

The purpose of the Mitigation Monitoring and Reporting (MMRP) is to ensure that the impact minimization and mitigation measures required by the Department of Fish and Wildlife (CDFW) for the above-referenced project (Project) are properly implemented, and thereby to ensure compliance with section 2081(b) of the Fish and Game Code and section 21081.6 of the Public Resources Code. A table summarizing the mitigation measures required by CDFW is attached. This table is a tool for use in monitoring and reporting on implementation of mitigation measures, but the descriptions in the table do not supersede the mitigation measures set forth in the California Incidental Take Permit (ITP) and in attachments to the ITP, and the omission of a permit requirement from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

OBLIGATIONS OF PERMITTEE

Mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance with all mitigation measures and for reporting to CDFW on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the ITP itself and are summarized at the front of the attached table.

VERIFICATION OF COMPLIANCE, EFFECTIVENESS

CDFW may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

TABLE OF MITIGATION MEASURES

The following items are identified for each mitigation measure: Mitigation Measure, Source, Implementation Schedule, Responsible Party, and Status/Date/Initials. The Mitigation Measure column summarizes the mitigation requirements of the ITP. The Source column identifies the ITP condition that sets forth the mitigation measure. The Implementation Schedule column shows the date or phase when each mitigation measure will be implemented. The Responsible Party column identifies the person or agency that is primarily responsible for implementing the mitigation measure. The Status/Date/Initials column shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report, and must identify the implementation status of each mitigation measure, the date that status was determined, and the initials of the person determining the status.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
BEFORE DISTURBING SOIL OR VEGETATION					
1	Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with CDFW and overseeing compliance with this ITP. Before starting Covered Activities, Permittee shall notify CDFW in writing (e-mail preferred) of the Designated Representative's name, business address, and contact information, and shall notify CDFW in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.	ITP Condition # 5.1	Before commencing ground- or vegetation-disturbing activities/duration of Project	Permittee	
2	Permittee shall submit to CDFW in writing (e-mail preferred) the name, qualifications, business address, and contact information of a Designated Biologist (DB) at least 30 days before starting Covered Activities, unless CDFW agrees to approve a DB in less time. Permittee shall ensure that the DB is knowledgeable and experienced in the biology, natural history, survey techniques, and collecting and handling of the Covered Species. The DB shall be responsible for monitoring Covered Activities (temporary bridge installation and removal activities and other activities in or directly adjacent to the wetted channel such as alcove and trench gravel extractions) to help minimize, fully mitigate and/or avoid the incidental take of the Covered Species, and to minimize disturbance of Covered Species habitat. Permittee shall obtain CDFW approval of the DB in writing before starting Covered Activities, and shall also obtain approval in advance in writing if the DB must be changed.	ITP Condition # 5.2	Before commencing ground- or vegetation-disturbing activities/duration of Project	Permittee	
3	Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before performing any work. The program shall consist of a presentation from the DB that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to disturbance, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.	ITP Condition # 5.4	Before commencing ground- or vegetation-disturbing activities/duration of Project	Permittee	
4	The Designated Representative shall notify CDFW at least 7 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.	ITP Condition # 6.1	Before commencing ground- or vegetation-disturbing activities/duration of Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
5	The DB shall conduct Visual Encounter Surveys (VES) for the egg masses of the Covered Species in any potential Covered Species breeding habitat (margins of streams) within 150 feet upstream and downstream of where Covered Activities may occur within that year. VES shall commence with the onset of the breeding season. The onset of the breeding season is generally during the receding spring hydrograph, and in northern California typically begins during the months of April-June depending on rain and river flows. Unusually wet or dry years may require earlier or later initiation of survey efforts, and the DB should coordinate with the CDFW Regional Representative to ensure surveys are timed appropriately. It is critical to identify the onset of breeding because egg masses mature and hatch quickly (approximately 2-3 weeks). During a VES, observer(s) shall walk and/or wade along the margins of the stream visually inspecting all suitable habitat and recording locations of egg masses of the Covered Species with a GPS unit. A corresponding developmental stage shall be recorded for each egg mass based on Gosner stage (Figure 2). The VES shall be conducted within the boundaries of the Project Area plus a 150-foot buffer zone upstream and downstream of the Project area. The DB shall conduct a VES for egg masses within the Project area every 7-10 days until July 1, or until no fresh egg masses have been observed for 14 days, whichever comes first.	ITP Condition # 7.1	May - June	Permittee	
6	If egg masses are observed within 100 feet upstream or downstream of seasonal bridge installation locations, or other locations where they may be disturbed by project activities, the DB shall notify CDFW within seven business days by submitting a Relocation Plan via email to the Regional Representative as designated in this ITP. The Relocation Plan shall contain approximate numbers and locations of egg masses to be relocated, and shall quantify the amount, location, and quality of suitable receiving habitat a minimum of 150 feet from the disturbance location, and describe methods for marking and monitoring each relocated egg mass to determine success rates of egg mass relocation. CDFW shall have three business days to comment on the Relocation Plan. If CDFW approves the Plan or has no comments, the DB shall proceed in relocating egg masses to the proposed receiving habitat by gently placing the egg mass and its attachment substrate into a 5-gallon bucket with fresh stream water, and immediately transporting the eggs below the disturbance location to the previously identified receiving habitat. Upstream receiving habitat should only be considered if insufficient habitat exists downstream. Two or three egg masses, depending on rock size, will fit in one bucket. Egg masses must be submerged at all times. Aeration is not required, assuming bucket retention time is brief. Within the receiving habitat, the DB will gently place the egg mass and its rock in appropriate depth and velocity edge water. Other egg masses will already be present in the receiving habitat, so it is important to note their location and avoid disturbing them during relocation procedures. If any egg masses become detached from their cobble, they shall be enclosed with cobble in the sheltered low-flow receiving habitat. Relocated egg masses shall be marked with an inconspicuous marker (e.g., small wooden stake, pin flag, colored rock, etc.) that is numbered for future monitoring, and a GPS location shall be taken. Relocated egg masses shall be monitored weekly and approximate Gosner stage recorded until they are completely hatched, after which the marker shall be removed. All egg mass relocation data shall be submitted in monitoring reports, including egg masses that do not continue to develop after relocation, or do not survive for some other reason (washed away, desiccated, or otherwise destroyed).	ITP Condition # 7.2	Prior to seasonal bridge installation	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
7	In addition to the pre-construction surveys and egg mass relocation as described in measures 7.1 and 7.2, at least two weeks prior to seasonal bridge installation or other locations where they may be disturbed by project activities, the DB shall survey the disturbance footprint to determine whether tadpoles and/or juvenile or adults of the Covered Species are present within the footprint or a 25-foot buffer area. If Covered Species of any life stage are present, the DB shall develop and submit a Relocation Plan to CDFW at least seven days prior to proposed installation. CDFW shall have three business days to comment on the Relocation Plan. The Relocation Plan shall include what life stage(s) will be relocated (e.g., adults, tadpoles, or egg masses) and specific protocols for each life stage. The Relocation Plan shall quantify the amount, location, and quality of suitable receiving habitat. The Relocation Plan shall include capture and handling methods specific to each life stage. Covered Species shall be handled using methodology described in the Restraint and Handling of Live Amphibians (Attachment 2), and in accordance with the Fieldwork Code of Practice (Attachment 3).	ITP Condition # 7.4	Prior to seasonal bridge installation	Permittee	
8	The Permittee may proceed with Covered Activities only after the Permittee has ensured funding (Security) to complete any activity required by Condition of Approval 8 that has not been completed before Covered Activities begin. Permittee shall provide Security as follows: a) Security Amount. The Security shall be in the amount of $26,000. This amount is based on the cost estimates for planning and implementation of bullfrog control using a variety of methods above. b) Security Form. The Security shall be in the form of an irrevocable letter of credit (see Attachment 4), or another form of Security approved in advance in writing by CDFW's Office of the General Counsel. c) Security Timeline. The Security shall be provided to CDFW before Covered Activities begin or within 30 days after the effective date of this ITP, whichever occurs first. d) Security Holder. The Security shall be held by CDFW or in a manner approved in advance in writing by CDFW. e) Security Transmittal. If CDFW holds the Security, Permittee shall transmit it to CDFW with a completed Mitigation Payment Transmittal Form or by way of an approved instrument such as escrow, irrevocable letter of credit, or other. f) Security Drawing. The Security shall allow CDFW to draw on the principal sum if CDFW, in its sole discretion, determines that the Permittee has failed to comply with the Conditions of Approval of this ITP. g) Security Release. The Security (or any portion of the Security then remaining) shall be released to the Permittee after CDFW has conducted an on-site inspection and received confirmation that all secured requirements have been satisfied.	ITP Condition # 9	Before commencing ground- or vegetation-disturbing activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
DURING CONSTRUCTION					
9	To ensure compliance with the Conditions of Approval of this ITP, the DB shall have authority to immediately stop any activity that does not comply with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of the Covered Species.	ITP Condition # 5.3	Duration of Project	Permittee	
10	The DB shall maintain a construction-monitoring notebook on-site throughout the construction period, which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by CDFW.	ITP Condition # 5.5	Duration of Project	Permittee	
11	Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other species, such as monofilament netting (erosion control matting) or similar material, in potential Covered Species habitat. All erosion control materials shall be 100 percent biodegradable and shall not entrap or harm wildlife. Photodegradable synthetic products are not considered biodegradable.	ITP Condition # 5.6	Duration of Project	Permittee	
12	Permittee shall ensure that vehicles, personnel, and Project activities are minimized within 25 feet of the wetted edge of streams, riparian habitat, or other Covered Species habitat as determined by the DB. With the exceptions of Covered Activities that require in or near stream work, these habitats should be avoided to the greatest extent feasible. When Project activities occur within 25 feet of Covered Species habitat, stakes, flags, rope, cord, and/or fencing may be used if deemed necessary by the DB to minimize disturbance of Covered Species habitat.	ITP Condition # 5.7	Duration of Project	Permittee	
13	Project-related personnel shall access the Project Area using existing routes, or routes identified in the Project Description and shall not cross Covered Species habitat outside of these routes. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. Permittee shall ensure that vehicle speeds within 20 feet of surface water (the wetted edge of a river or stream, or a wetland area) do not exceed 5 miles per hour.	ITP Condition # 5.8	Duration of Project	Permittee	
14	Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to previously disturbed areas to the extent feasible. Additionally, Permittee shall not use or cross Covered Species habitat outside of the Project Area except as described in this ITP.	ITP Condition # 5.9	Duration of Project	Permittee	
15	Permittee shall immediately stop and, pursuant to pertinent State and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.	ITP Condition # 5.10	Duration of Project	Permittee	
16	Permittee shall provide CDFW staff with access to the Project site and mitigation areas, and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.	ITP Condition # 5.11	Duration of Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
17	The Designated Representative shall immediately notify CDFW in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP including, but not limited to, any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall report any noncompliance with this ITP to CDFW within 24 hours.	ITP Condition # 6.2	Duration of Project	Permittee	
18	The DB shall be on-site daily when Covered Activities occur that may result in take of Covered Species. The DB shall conduct compliance inspections to: (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of Covered Species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; and (5) ensure that any signs, stakes, and fencing are intact, and that Covered Activities are only occurring in the Project Area. The Designated Representative or DB shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP.	ITP Condition # 6.3	Duration of Project	Permittee	
19	The Designated Representative or DB shall compile the observation and inspection records identified in Condition of Approval 6.3 into an Annual Compliance Report (ACR) and submit it to CDFW no later than December 31 of every year beginning with issuance of this ITP and continuing until CDFW accepts the Final Mitigation Report identified in measure 6.6 below, along with a copy of the MMRP table with notes showing the current implementation status of each mitigation measure. Additionally, the ACR shall include: (1) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (2) all available information about Project-related incidental take of the Covered Species; (3) information about other Project impacts on the Covered Species; and (4) mitigation efforts as described in measure 8.1 of this ITP. The ACR shall be submitted to the CDFW offices listed in the Notices section of this ITP and via email to CDFW's Regional Representative and Headquarters CESA Program. At the time of this ITP's approval, the CDFW Regional Representative is Jennifer Olson (jennifer.olson@wildlife.ca.gov), and Headquarters CESA Program email is CESA@wildlife.ca.gov. CDFW may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If CDFW determines the reporting schedule must be changed, CDFW will notify Permittee in writing of the new reporting schedule.	ITP Condition # 6.4	Annually by December 31	Permittee	
20	The DB shall submit all observations of Covered Species to CDFW's California Natural Diversity Database (CNDDB) by December 31 of the calendar year in which they were observed (annually) and the DB shall include copies of the submitted forms with the next ACR.	ITP Condition # 6.5	Annually by December 31	Permittee	
21	Permittee shall ensure that Covered Activities involving construction and heavy equipment use (such as excavation, grading, and contouring) that are conducted in streams, ponds, and riparian areas are limited to the period from June 15 to October 15 of each year (Dry Season) until the expiration of this ITP, unless the Permittee receives prior approval for work outside this window from CDFW. Seasonal bridge installation may be conducted as early as June 15 only if either of the following occurs: (1) egg mass relocation and/or surveys as described in measures 7.1 and 7.2 determine there are no Covered Species tadpoles within the area impacted by seasonal bridge abutment fill, or (2) tadpoles are present but are large enough that relocation is feasible by June 15 as determined by the DB in consultation with CDFW staff.	ITP Condition # 7.3	Duration of Project	Permittee	

22	If an extraction method results in standing water (e.g. trench or some alcove extractions), the DB shall evaluate the proposed extraction site and implement either exclusion of the entire site at the end of each day via properly installed exclusion fencing, or monitoring and relocation to minimize take of adult Covered Species that may move into the wetted area as it is excavated and fills with surface water. If exclusion fencing is utilized, it shall be: • Designed and installed by the DB, in coordination with Project equipment operators, after which it can be maintained by Project workers under instruction of the DB; • Properly installed, both trenched in and able to maintain a vertical orientation (i.e. stands up straight on its own), and regularly maintained to ensure it effectively excludes Covered Species; • At least three feet in height; • The top few inches of the exclusion fencing must be folded over and away from the construction area; and • Re-installed immediately after excavation ceases each day to prevent Covered Species entry into the trench area. Examples of products that have been used for excluding wildlife from construction sites include: • https://animexfencing.com • http://ertecsystems.com/Products/Wildlife-Exclusion-Fence---Special-Status-Species-Protection#.W1kB84tFTo0.link If monitoring and relocation is proposed, the DB shall conduct a VES for adult and sub-adult Covered Species along the active excavation side of the trench commencing on the second day of trench excavation (once the trench has filled with water). The DB shall search under all suitable sized cobble (six inch diameter or larger) along the active side of the trench to detect Covered Species. The DB shall attempt to capture and relocate all Covered Species on the active excavation side of the trench. The captured Covered Species shall be relocated to the main channel at least 100 feet from the entire footprint of any active trench location. After the VES and cobble searches are complete, the DB shall remain on site to inspect the first 10 bucket loads of gravel excavated from the trench to detect any Covered Species that may have been captured with the gravel. The designated biologist will attempt to capture any Covered Species detected and collect any injured or deceased Covered Species. Depending on the results of the first 10 bucket loads, the DB will determine if inspection of further loads is necessary. If Covered Species are detected in several of the first bucket loads, the DB may suspend further excavation to conduct additional cobble searches to attempt to capture and relocate Covered Species before they are caught while excavating gravel from the trench. If after the initial 10 bucket hauls, no Covered Species are detected in bucket hauls, the DB may cease monitoring of trench excavations.	ITP Condition # 7.5	Duration of Project during extraction activities that result in standing water	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
	If greater than 5 Covered Species are detected in the initial 10 bucket hauls, the DB shall continue monitoring daily to document take and shall consult with CDFW within 48 hours about measures to minimize take due to trenching. In all trenching operations, equipment shall proceed slowly when taking the initial bucket haul of the day and shall agitate the water surface prior to taking the first bucket haul in order to encourage frogs to exit the excavation area. If the DB decides to cease monitoring of trench excavations based on no presence of Covered Species in bucket hauls, the DB may train the equipment operator or other on-site personnel to observe and document detections of Covered Species prior to and during excavation activities. If this option is utilized, the observer shall be trained by the DB to: 1. Conduct a visual encounter survey and count the number of Covered Species present on the active side of the trench channel; 2. On the return walk from the visual encounter survey, turn over all cobble greater than six inches in diameter within five feet of the wetted trench edge to detect hiding Covered Species; 3. Record all Covered Species observed during active excavation activities; and 4. Completely fill out a log of daily activities and Covered Species observed. These additional combination VES and cobble search surveys will occur along the active extraction edge of all trenches at approximately the midpoint of excavation and one on approximately the last day of trench excavation. This information can be used to regress numbers of Covered Species over time and by trench size in order to understand if the number of Covered Species potentially effected increases as time and pool size increase therefore increasing the potential magnitude of risk for impact. If monitoring of the first trench suggests these factors do not influence the magnitude of Covered Species abundance, these efforts can be scaled back accordingly as recommended by the designated biologist in consultation with CDFW in subsequent years of the permit.	ITP Condition # 7.5 (cont)	Duration of Project during extraction activities that result in standing water (cont)	Permittee (cont)	
23	During all phases of Project construction operation and maintenance, all workers shall inform the DB if they encounter Covered Species within or near the Project site. All Covered Activities with potential to take the Covered Species shall cease until the animal is relocated, if the DB determines that relocation is necessary.	ITP Condition # 7.6	Duration of Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
24	Permittee shall not use night lighting in the Project Area. All Project activity shall terminate 30 minutes before sunset and shall not resume until 30 minutes after sunrise. The Permittee shall use sunrise and sunset times established by the U.S. Naval Observatory Astronomical Applications Department for the geographic area where the Project is located (http://aa.usno.navy.mil/data/docs/RS_OneDay.php).	ITP Condition # 7.7	Duration of Project	Permittee	
25	Permittee shall ensure all Project personnel adhere to the current version of the California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocol (Attachment 5) for all field gear and equipment that will be in contact with water or Covered Species. Heavy equipment and other motorized or mechanized equipment that comes in contact with water should generally follow watercraft decontamination protocols found in the Decontamination Protocol.	ITP Condition # 7.8	Duration of Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
26	Within 30 days of the execution of this ITP, the Permittee shall commence control and monitoring activities for the invasive American bullfrog (*Lithobates catesbeianus*) at the Scotia Log Deck Pond, Log Deck Pond overflow ditch, and adjacent seasonally flooded area (see Figure 4). At least seven (7) days prior to commencement of bullfrog control activities, a plan must be submitted to CDFW for approval, and must include the following components: i) An initial effort of at least 10 nights of bullfrog control effort to be completed by October 31, 2019, or within 120 days of the execution of this ITP, unless CDFW agrees in writing to an alternative schedule. Potential control methods could include: (1) shooting with the aid of spotlights, using air rifles with non-lead pellets, targeting adult and subadult bullfrogs (2) installation of aquatic drift fencing and/or double fyke nets for target and capture of larval bullfrogs (3) capture of any life stage using hand nets, gill nets, seine nets, drift fencing, or double fyke nets (4) gigging with the aid of spotlights (5) electroshocking ii) Subsequent effort including at least twice weekly targeted removal of adults in spring, during approximately the month prior to commencement of breeding as determined by the designated biologist. After one month of twice weekly targeted removal efforts, twice monthly efforts may commence. This schedule shall continue (subject to modification with concurrence of CDFW) until CDFW agrees in writing that control efforts have been successful and may cease. iii) All control efforts shall include monitoring and recording of captures per unit effort over time (depletion surveys) to determine whether control of the bullfrog population is occurring. These data shall be submitted to CDFW as part of the Permittees ACR as described in measure 6.4 of this ITP. If control of the population does not occur, the Permittee shall increase control efforts accordingly, in consultation with CDFW.	ITP Condition # 8.1	Within 30 days of execution of ITP	Permittee	
POST-CONSTRUCTION					
27	Upon completion of Covered Activities, Permittee shall remove from the Project Area and properly dispose of all refuse including, but not limited to, broken equipment parts, vehicles or parts of vehicles, tires, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.	ITP Condition # 5.12	Post-construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
28	No later than 45 days after completion of all mitigation measures, Permittee shall provide CDFW with a Final Mitigation Report. The DB shall prepare the Final Mitigation Report which shall include at a minimum: (1) a summary of all ACRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.	ITP Condition # 6.6	Post-construction and after completion of mitigation	Permittee	

Attachment 2

Restraint and Handling of Live Amphibians

Citation:
Green, D. E. 2001. Restraint and handling of live amphibians. Amphibian Research and Monitoring Initiative Standard Operating Procedure, No. 100. National Wildlife Health Center. Available from http://www.nwhc.usgs.gov/publications/amphibian_research_procedures/handling_and_restraint.jsp (accessed June 2018).

STANDARD OPERATING PROCEDURE
ARMI SOP No. 100
Revised, 16 February 2001

I. PURPOSE: Provide guidelines for humane handling of amphibians so that injury and distress to the amphibian are minimized.

II. SCOPE: These guidelines apply to larvae and tadpoles, as well as adult frogs, toads, salamanders and neotenes. Because of their anatomically different and very delicate skin, tadpoles and larvae must be handled differently than post-metamorphic amphibians.

III. EQUIPMENT and SUPPLIES.
   A. Standard capture equipment (seine nets, dip nets, minnow traps)
   B. Clear plastic bags (half liter or full liter size)

IV. BACKGROUND: There are three main hazards associated with handling live amphibians: two to the amphibian and one to the handler. To amphibians, the main dangers of being handled are skin damage that could result in secondary skin infections, and bone and muscle injuries caused by struggling when being held. For the handler, the main danger comes from toxic skin secretions produced by some amphibians (in the USA, this is mostly newts and the introduced giant/marine toad).
Tadpoles and larvae have thin delicate skin that is very easily damaged by the slightest handling. The skin of larvae lacks keratin and has fewer cell layers than adult amphibian skin. Therefore, direct contact handling of tadpoles and larvae is to be avoided; instead, these amphibian stages are examined through clear flexible plastic bags containing water. Although the skin of adult (post-metamorphic) amphibians has keratin and is less delicate than larval skin, their skin is still much more delicate than the skin of reptiles, birds and mammals. Rough handling of adult amphibians can easily result in skin abrasions, small tears, punctures, erosions and ulcers; normally, minor skin wounds heal quickly, but if contaminants, sewage or high levels of microorganisms are present in the pond or other environment, then wound infections are possible.
Frogs and Toads. All amphibians can be expected to struggle following capture. For anurans, there is a danger that vigorous kicking with the hindlimbs can cause joint dislocations or a broken (fractured) back; broken backs are a well-

2. Overdosing in anesthetic solutions of MS222 or benzocaine
3. Application of a benzocaine-based topical ointment (as used by humans to relieve tooth-aches) to the top or the head and dorsum of the body.

C. Broken leg: If a major bone of a limb is broken during capture or handling, the animal should be euthanized or taken to a wildlife rehabilitation center or veterinarian for treatment. A broken leg bone typically is recognized as an abnormal bend in the leg where there is no joint; other signs of a broken leg bone are protrusion of a bone fragment through the skin, inability of the animal to move a limb or position a leg in its normal resting posture. After treatment, amphibians with broken bones might be given to a zoo or placed in a captive breeding program. Only if the injured amphibian is kept isolated from all other fish, amphibians and reptiles (eg, in a separate cage) during treatment, can it later be considered for release at the point of capture. Injuries to digits (toes and fingers) generally are not life-threatening; if the skin of the injured toe also is wounded, then treatment with Bactine® prior to immediate release is acceptable. If a toe bone is broken and protruding through the skin, the affected toe may be amputated just proximal to the site of the fracture, the stump should be sprayed with Bactine®, and the animal may be released.

D. Automized tail: If a salamander automizes (detaches) its tail during capture or handling, the stump should be treated (sprayed) with Bactine®; the salamander can then be promptly released.

E. Crushing injuries to head and body. Amphibians that have serious injuries to skin, muscles and bones should be promptly euthanized. Crushing injuries that are limited to a limb or tail will require treatment at a wildlife rehabilitation center or a veterinary clinic; alternatively, the animal may be euthanized, but it would be inhumane to release a seriously injured amphibian.

F. Snout abrasions. Amphibians that are held in glass or clear plastic containers may jump head-first into the glass, or may rub their snout against the container in attempts to burrow out. If amphibians are held for more than an hour in a clear container (bottle, aquarium, etc), they should be examined for evidence of skin injury at the tip of the snout and elsewhere around the head prior to release. If abrasions are detected, they should be sprayed with Bactine® prior to release.

G. Toxic skin secretions. All amphibians have glands in their skin that secrete a vast number of chemicals; some of which are merely noxious and repellant-like, while others may cause skin or eye irritation, and some may actually kill. The poison-dart frogs of Central America are an example of a frog with toxic secretions that can kill a human. Among the native

Attachment 3

The Declining Amphibian Task Force Fieldwork Code of Practice

A code of practice, prepared by the Declining Amphibian Task Force (DAPTF) to provide guidelines for use by anyone conducting fieldwork at amphibian breeding sites or in other aquatic habitats. Observations of disease and parasite-infected amphibians are now being frequently reported from sites all over the world. This has given rise to concerns that releasing amphibians following a period of captivity, during which time they can pick up unapparent infections of novel disease agents, may cause an increased risk of mortality in wild populations. Amphibian pathogens and parasites can also be carried in a variety of ways between habitats on the hands, footwear, or equipment of fieldworkers, which can spread them to novel localities containing species, which have had little or no prior contact with such pathogens or parasites. Such occurrences may be implicated in some instances where amphibian populations have declined. Therefore, it is vitally important for those involved in amphibian research (and other wetland/pond studies including those on fish, invertebrates and plants) to take steps to minimize the spread of disease and parasites between study sites.

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires, and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each study site.
2. Boots, nets, traps, etc., should then be scrubbed with 70% ethanol solution (or sodium hypochlorite 3 to 6%) and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland.
3. In remote locations, clean all equipment as described above upon return to the lab or "base camp." Elsewhere, when washing machine facilities are available, remove nets from poles and wash with bleach on a "delicates" cycle, contained in a protective mesh laundry bag.
4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean and store them separately at the end of each field day.
5. When amphibians are collected, ensure the separation of animals from different sites and take great care to avoid direct contact between them (e.g., via handling, reuse of containers) or with other captive animals. Isolation from un-sterilized plants or soils which have been taken from other sites is also essential. Always use disinfected/disposable husbandry equipment.
6. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly screened for the presence of any potential disease agents.
7. Used cleaning materials (liquids, etc.) should be disposed of safely and if necessary taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

California Department of Fish and Wildlife
Aquatic Invasive Species Cleaning/Decontamination Protocols
(Northern Region)

The California Department of Fish and Wildlife (Department) is committed to protecting the State's diverse fish, wildlife, and plant resources, and the habitats upon which they depend. Preventing the spread of aquatic invasive species (AIS) in both the Department's activities as well as those activities the Department permits others to conduct is important to achieving this goal. The protocols outlined below are a mandatory condition of your Department authorization to work in aquatic habitats intended to prevent the spread of AIS.

Information about New Zealand mudsnails (NZMS), quagga and zebra mussels, chytrid fungus, and Sudden Oak Death Syndrome is summarized in Attachments A through D. For more complete information on the threats of AIS and aids to their identification, please visit the links provided in this document and the Department's Invasive Species Program webpage at: https://www.wildlife.ca.gov/Conservation/Invasives

Many AIS are difficult, if not impossible, to see in the environment and can be unknowingly transported to new locations on equipment. Therefore, decontamination is necessary to prevent the spread of AIS between different waterbody locations. To achieve this, equipment should be decontaminated following the protocols outlined in this document. All equipment that comes into contact with water during field activities and watercraft should be decontaminated using one or more of the protocols listed below.

General procedures to prevent the spread of AIS:

- If decontamination is ***not*** done onsite, transport contaminated equipment in sealed plastic bags and keep separate from clean gear.
- Gear may be dedicated for a specific field site but should be left onsite and be cleaned when moved offsite.
- Sets of field gear may be rotated in and out of field per cleaning cycle.
- When practical, begin work upstream and work downstream. This avoids transporting AIS to non-infested upstream areas.

Option 1: Standard Decontamination (Office method)

Freeze + Saltwater Immersion + Dry

- This option consists of three parts, as freezing alone may not kill some organisms (e.g. chytrid fungus, Sudden Oak Death Syndrome, etc.).
- Scrub gear before leaving field with a stiff-bristled brush to remove all debris. Thoroughly brush small crevices such as boot laces, seams, net corners, etc.

- Bag gear for transport from field to office.
- Place gear and bag in a freezer below 32°F for a minimum of eight hours.
- Thaw gear and bag.
- Immerse gear and bag in 5-10% saltwater solution for 10 minutes.
- Rinse gear.
- Hang gear to dry.

References

Johnson M.L, L. Berger, L. Philips, R. Speare. Fungicidal effects of chemical disinfectants, UV light, desiccation and heat on the amphibian chytrid *Batrachachytrium dendrobatitis*. Diseases of Aquatic Organisms Vol. 57: 255-260, 2003.

Richards, D.C., P. O'Connell, and D.C. Shinn. 2004. Simple control method to limit the spread of the New Zealand mudsnail, *Potamopyrgus antipodarum*. North American Journal of Fisheries Management 24(1):114-117.

USFS Intermountain Region Technical Guidance For Resource Advisors. Preventing the Spread of Aquatic Invasive Organisms Common to the Intermountain Regions. 2014 Technical Guidelines for Fire Operations. Available: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5373422.pdf.

Option 2: Chemical Treatment (Field method)

In general, *chemical cleaning/decontamination/disinfection should only be used when Option 1 cannot be performed.* This would be the case when conducting activities at more than one watershed or between long distances before returning back to the base office where a freezer and drying rack are available.

- Always decontaminate/disinfect before leaving a watershed **if** you will be conducting activities within another watershed in the same day before returning back to the office and there is **not** clean or dedicated gear available for the next site.
- Prepare disinfection solution by diluting concentrate containing GS HD 256 (quat) in a well-ventilated space using gloves, eye protection, and a NI0SH-approved N95 filter mask. See Dilution Table on page 4 for dilution factors. Pour decontamination solution into a suitable holding container and submerge gear for at least 10 minutes. Gear may need to be weighed down and/or rotated for complete and sustained immersion.
- Check field gear immersed in disinfection solution and inspect it to make sure all surfaces have been wetted for the required time.
- After treatment, rinse field gear with *fresh* water (***not water from previous waterbody--to avoid further contamination***). Dispose of *rinse water* at least 100 feet from any surface water.

- Make up fresh solution as needed and discard after it becomes heavily soiled with organic matter. Check with quat test strips: readings should be above 500 ppm for adequate disinfection.
- **Disinfection solution** should be saved to be disposed of in a **wastewater sewer facility** (not in a septic system), **or** it can be neutralized on site. Mix the quat working solution with bentonite clay proportions as directed in the Dilution Table, pg. 4. Mix bentonite/quat. decon. solution slurry a couple of times before pouring it out on the ground at least 100 feet away from surface water. It will be completely neutralized in 3-5 hours.

Dilution Table

Concentrate	to 1 gal. water	to 5 gal. water
NaCl[1] (rock salt)	1.5 cups (9% salt)	7.5 cups (9% salt)
GS HD 256[2]	2.5 oz. (1.8% solution)	12.5 oz. (1.8% solution)
bentonite clay[3,4]	3 Tbs.	3.75 cups

References

California Department of Fish and Wildlife Northern Region tests (unpublished)

Johnson M.L, L. Berger, L. Philips, R. Speare. Fungicidal effects of chemical disinfectants, UV light, desiccation and heat on the amphibian chytrid Batrachachytrium dendrobatitis. Diseases of Aquatic Organisms Vol. 57: 255-260, 2003.

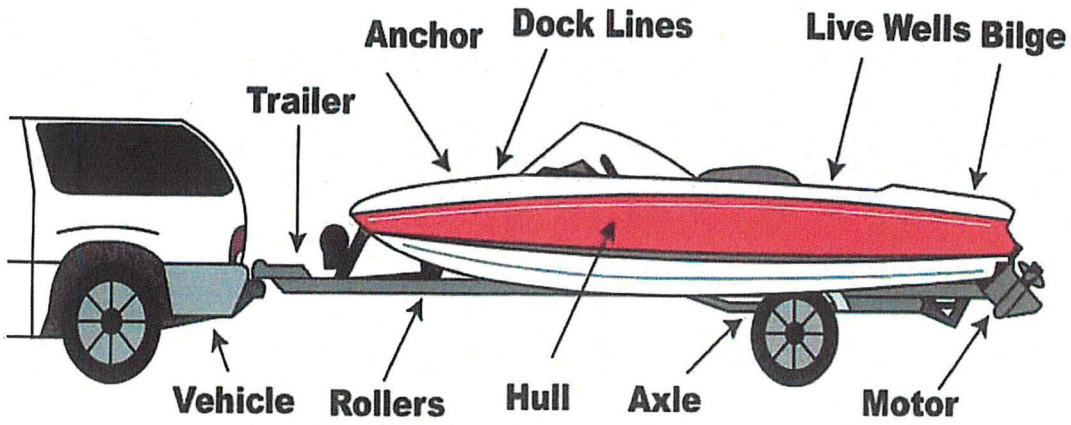
Petrille III, J.C. and Werner, M.W., Betz Laboratories, Inc., 1996. Methods of detoxifying quaternary ammonium compounds toward aquatic organisms. U.S. Patent 5,518,636.

USFS Intermountain Region Technical Guidance For Resource Advisors. Preventing the Spread of Aquatic Invasive Organisms Common to the Intermountain Regions. 2014 Technical Guidelines for Fire Operations. Available: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5373422.pdf

Safety Data Sheets

GS HD 256: http://www.spartanchemical.com/msds_sds/downloads/AGHS/EN/3508.pdf

Watercraft Decontamination



- Prior to leaving the launch area, remove all debris from your watercraft, trailer, and equipment. Dispose of all material in the trash, on site if possible.
- Prior to leaving the launch area, drain all water from your watercraft and dry all areas, including motor, motor cooling system, live wells, bilges, and lower-end unit. Before leaving water body area, run motor dry for 5-10 seconds to flush water from engine.
- After leaving a ***known or suspected invasive mussel infested water,*** pressure wash the watercraft and trailer at base facilities, with 140°F water[1], including all of the boat equipment (i.e., ropes, anchors, etc.) that had come into contact with the water.
- Flush the engine, live wells, bilges, and all other areas that could contain water with hot water that is at least 140°F. Make sure that water is contained sufficiently so that it doesn't run into storm drains or surface waters.

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[1]To ensure 100% mortality the water needs to be 140°F or greater at the point of contact.

Attachment A

New Zealand Mudsnail

- NZMS reproduce asexually, therefore, it only takes a single NZMS to colonize a new location.
- NZMS are prolific, and a single NZMS can give rise to 40 million snails in one year.
- Densities of over 750,000 NZMS per square meter have been documented.
- NZMS out-compete and replace native invertebrates that are the preferred foods of many fish species, and alter the food web of streams and lakes.

Identifying NZMS:

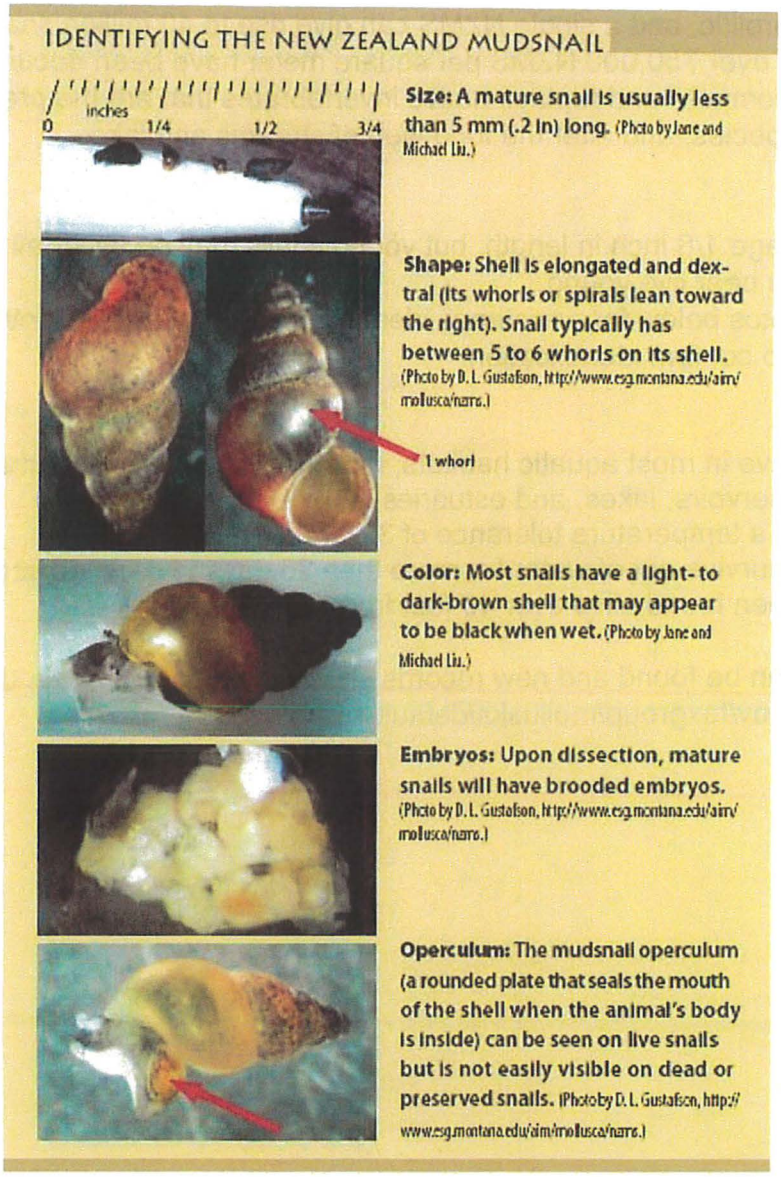
- NZMS average 1/8 inch in length, but young snails may be as small as a grain of sand. Adults bear live young.
- See the photos below for assistance identifying NZMS. Expert identification will be necessary to confirm identification.

NZMS Habitat:

- NZMS can live in most aquatic habitats, including silted river bottoms, clear mountain streams, reservoirs, lakes, and estuaries.
- NZMS have a temperature tolerance of 32-77°F.
- NZMS can survive out of water for more than 25 days in cool, moist environments, and have been found alive over 40 feet from water.

Known locations can be found and new records should be reported to the USGS at: http://nas.er.usgs.gov/taxgroup/mollusks/default.aspx.

Descriptive features of the New Zealand Mudsnail



Attachment 5
California Department of Fish and Wildlife
Aquatic Invasive Species Cleaning/Decontamination Protocols (Northern Region)
Revision February 2016

Attachment B

Quagga and Zebra Mussels

- Dreissenid mussels multiply quickly and out-compete other species for food and space.
- Their presence can alter food webs and alter environments, negatively affecting native and game fish species.
- Dreissenid mussels attach to hard and soft surfaces, and negatively impact water delivery systems, hydroelectric facilities, agriculture, recreational boating and fishing.
- Adults can survive up to 30 days out of water in cool, humid conditions.
- They produce microscopic larvae that can be unknowingly transported in water, including live-wells, bilges, and motors.

Identifying Dreissenid mussels:

- Typically the same size as a fingernail but can grow up to about 2 inches long.
- Variable, usually dark and light alternating stripes. May also be solid cream, brown, or black.

Dreissenid mussel habitat:

- Variable, including both hard and soft surfaces in freshwater.
- From surface depth to more than 400 feet in depth.

Current known locations of Dreissenid mussels in California can be found at:
http://nas.er.usgs.gov/taxgroup/mollusks/zebramussel/

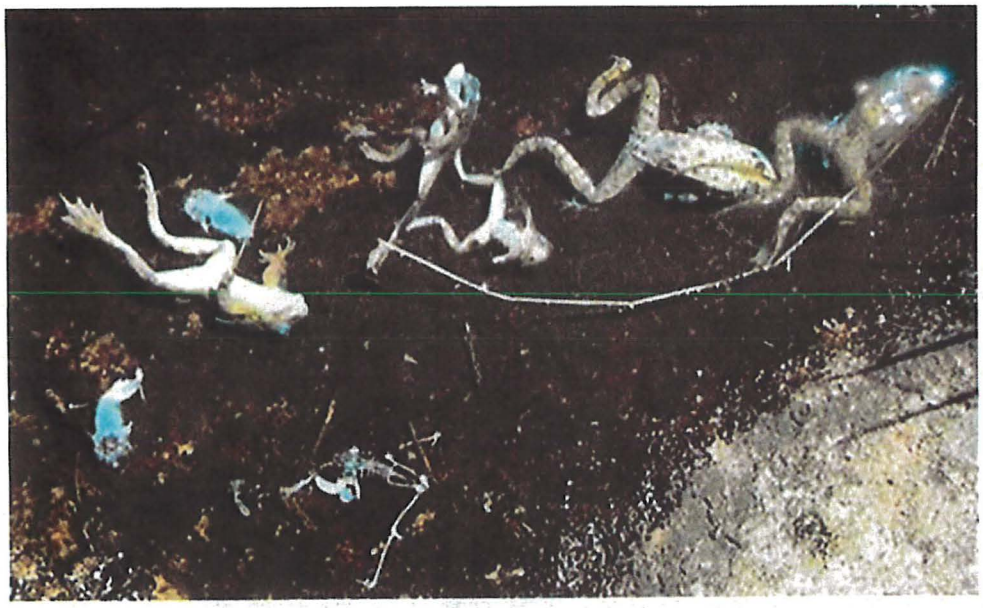
Attachment 5
California Department of Fish and Wildlife
Aquatic Invasive Species Cleaning/Decontamination Protocols (Northern Region)
Revision February 2016

Attachment C

Chytrid Fungus

This disease has been linked to dramatic population declines and even extinctions of amphibians in several parts of the world including North America. Thirty percent of amphibian populations may have been affected by this disease, worldwide. Chytrid fungus or Bd (*Batrachochytrium dendrobatidis*) is invisible to the naked eye, but its effects can be seen in many amphibian populations that have been exposed to it. Certain animals/populations, however, seem to be immune and some may actually act as carriers of the disease. This fungus breaks down amphibians' keratinized tissue causing morbidity. This subsequently causes mortality.

For more information on chytrid fungus, see http://cisr.ucr.edu/chytrid_fungus.html.



Effects of chytrid fungus.

Attachment D

Sudden Oak Death Syndrome (SODS)

Since the mid-1990s, *Phytophthora ramorum* has killed millions of tanoak trees and several oak tree species (coast live oak, California black oak, Shreve oak, and canyon live oak), and caused twig and foliar diseases in numerous other plant species, including California bay laurel, Douglas-fir, and coast redwood. *P. ramorum* thrives in cool, wet climates. In California, coastal evergreen forests and tanoak/redwood forests within the fog belt are the primary habitat. For more information, visit www.suddenoakdeath.org.

Tanoak mortality in Humboldt County, circa 2006.

For questions on California Department of Fish and Wildlife Northern Region Aquatic Invasive Species procedures, contact:

L. Breck McAlexander, Region 1 Aquatic Invasive Species Coordinator
LMCALEXANDER@dfg.ca.gov ; office: (530) 225-2317; mobile: (530) 440-0208.