

*NB Ranches, Inc.*  
**Site Plan Agreement between NB Ranches, Inc.,  
National Marine Fisheries Service (NMFS) and  
California Department of Fish and Wildlife (CDFW)  
For the Template Safe Harbor Agreement for  
Coho Salmon (*Oncorhynchus kisutch*)**

**A. Introduction**

This Site Plan Agreement for the Template Safe Harbor Agreement (Agreement) for Southern Oregon and Northern California Coast (SONCC) Evolutionarily Significant Unit (ESU) of coho salmon (the Covered Species) is between the NB Ranches, Inc. (hereinafter referred to as the Permittee), National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW). This Site Plan Agreement, combined with the measures prescribed in the Agreement, may serve as the basis for NMFS to issue a federal enhancement of survival permit (Permit) to the above named Permittee pursuant to section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended (ESA). The joint and respective responsibilities of NMFS, CDFW and the Permittees are detailed in the Template Safe Harbor Agreement. The Site Plan Agreement is subject to terms of the Template Safe Harbor Agreement and Permit.

This Site Plan Agreement documents site-specific information detailing the Permittee's enrolled property, including the location of the property and management authority of the Permittee, the Enrolled Property baseline conditions, existing and, as available, proposed future land-use activities, the duration of this Site Plan Agreement and requested permit. This Site Plan Agreement also documents the agreed-upon conservation measures to be undertaken by the Permittee on the enrolled property that are expected to benefit coho salmon.

**B. Enrolled Property - NB Ranches, Inc.**

**B.1. General narrative and map describing property**

NB Ranches, Inc. (Nicoletti; the Enrolled Property) is located along DeSoza Lane, approximately three miles east of Interstate 5 near Grenada, in Siskiyou County (41°38'11.56" N latitude, 122°29'22.88" W longitude). The Enrolled Property (or Ranch or NB Ranches) is located on the Shasta River, within the Mid-Shasta Reach and includes a total of 357.2 acres, with approximately 257.4 acres under irrigation based on GIS coverage. Approximately 1.2 river miles of the Shasta River is within the ownership of NB Ranches, within what has been designated the **Mid Shasta Reach** in the Agreement. The approximate property boundaries and general location of the Enrolled Property within the Covered Area of the Agreement is shown in Figure 1.

**B.2. Legal Description of Property Boundary**

The Enrolled Property consists of the following APNs:

038-020-200  
038-160-010  
038-160-040  
038-030-050  
038-020-190  
038-120-130  
038-160-030  
038-160-020  
038-160-100  
038-170-160

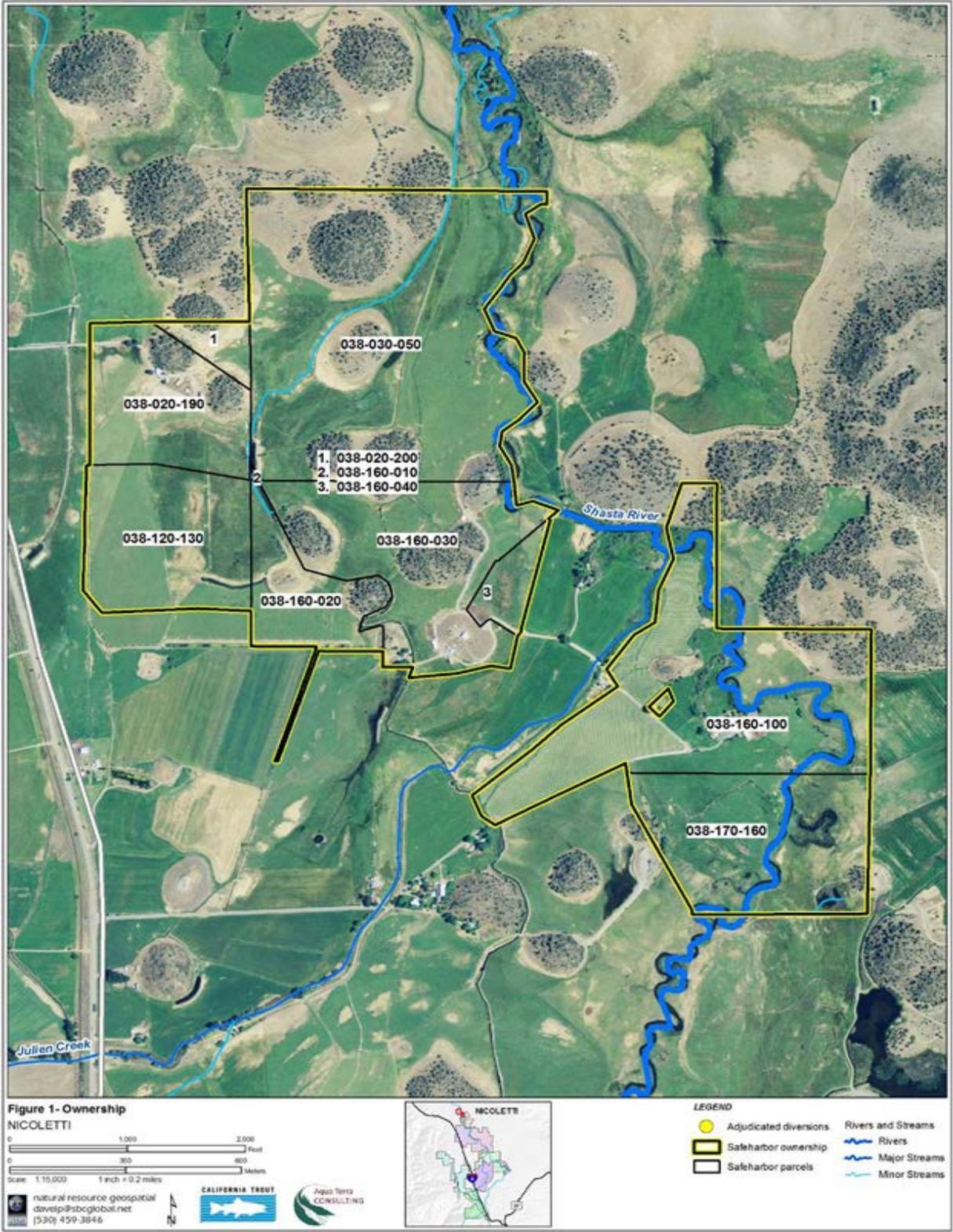


Figure 1. NB Ranches -Site Plan, Ownership Map

### **B.3. Description of Water Rights**

NB Ranches, Inc. irrigates from the Huseman Ditch Association Diversion, which is a shared point of diversion from the Shasta River. NB Ranches also benefits from several spring sources as well as deliveries and tail water from the Shasta Water Users Association, depending upon rotation scheduling. The Permittee's irrigation of the Enrolled Property under consideration herein is from the Huseman Ditch and two spring sources located on the Enrolled Property.

In addition, NB Ranches uses water provided by two springs that originate on the property (Rivers edge Spring and Driveway Spring). The combined volume of the two springs is estimated to be 0.3 cfs based on limited investigation. NB Ranches will file Initial statements of use for the two spring sources and include Irrigation and Fish and Wildlife as the beneficial uses. Together the springs equal approximately 0.30 cfs.

#### **Huseman Ditch:**

NB Ranches, Inc. receives much of its irrigation water from the Huseman Ditch and is a member of the Huseman Ditch Association. The Huseman Ditch is incorporated within the Shasta River Decree with an identified maximum capacity of 11.9 cfs for 569.8 acres (Paragraph 124 of Shasta River Decree). Per the Decree, the diversion season occurs from April 1 through September 30th of each year. A total of approximately 569 acres are irrigated with the Huseman Ditch shared between three current landowners and water users. A total of approximately 4,318 acre feet can be diverted during the irrigation season. NB Ranches, Inc. irrigates approximately 182 acres of the Enrolled Property with the Huseman Ditch and is identified as having 33.5% of the right. It is therefore estimated that the Huseman Ditch diverts approximately 1,447 acre feet per year for NB Ranches, Inc. The winter right on the Huseman Ditch is 5 cfs for the Enrolled Property, allowing up to approximately 1,805 acre feet per year to be diverted. Stock water is not fully utilized as cattle are often moved off the fields served by the Huseman Ditch in the fall resulting in roughly 200 acre feet of diversion per year under current operation or an estimated 90 acre feet per year for NB Ranches, Inc.

Table 1 shows the diversion numbers, amounts diverted, season, and amount of land that is irrigated. Figure 2 shows the Point of Diversion used on the Enrolled Property and the Place of use as defined by the adjudication and DWR's irrigated land coverage from 2010.

Table 1. Cumulative Diverted Volumes of Diversions used by Huseman Diversion (Rice and Nicolletti)

<b>Diversion #/Water Source</b>	<b>Permit/ Adjudicated/Filed Water Use Statement Amounts</b>	<b>Description</b>	<b>Season Duration</b>	<b>Total Ac-ft per season diverted</b>	<b>Acreage Irrigated with Diversion</b>	<b>Average Days per Season diverted</b>
250	11.9 cfs	Huseman Diversion	April 1- Oct 1	4318	+/-544 total between 3 users	183
250	5 cfs	Huseman Diversion	Oct 2 - March 31	1805	+/-544 total between 3 users	182

Table 2. Diverted volume of Huseman Ditch apportioned to NB Ranches, Inc.

<b>Diversion #/Water Source</b>	<b>Permit/ Adjudicated/Filed Water Use Statement Amounts</b>	<b>Description</b>	<b>Season Duration</b>	<b>NB Ranches Annual use per diversion</b>	<b>NB Ranches Acreage Irrigated with Diversion</b>	<b>Average Days per Season diverted</b>
250	11.9 cfs	Huseman Diversion	April 1- Sept 30	33.5% or 1,447 afy	Approx 182 acres	183
250	5 cfs	Huseman Diversion	Oct 1 - March 31	80 afy	450 cattle	182

NB Ranches on Ranch Spring Volumes

<b>Diversion #/water source</b>	<b>Permit/ Adjudicated/Filed Water Use Statement Amounts</b>	<b>Description</b>	<b>Season Duration</b>	<b>NB Ranches Annual use per diversion</b>	<b>NB Ranches Acreage Irrigated with Diversion</b>	<b>Average Days per Season diverted</b>
Rivers Edge Spring	0.25 cfs Initial Statement to be filed 12/23/18	Spring	April 1- Sept 30	90 afy	Approx. 5.0 acres	182
Driveway Spring	0.05 cfs Initial Statement to be filed 12/23/18	Spring	April 1- Sept 30	18 afy	Less than 1 acre	182

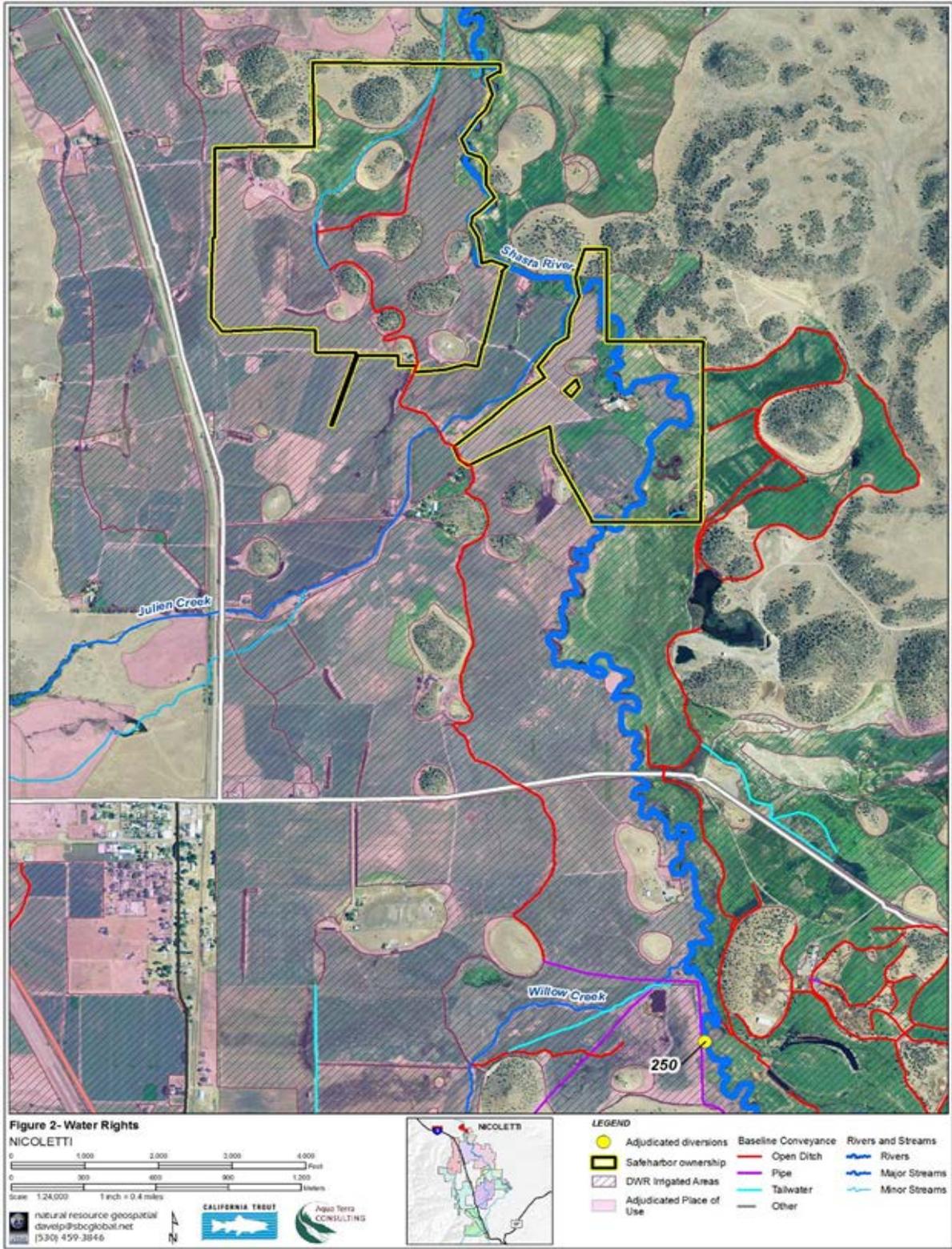


Figure 2. NB Ranches-Site Plan, Irrigated Property - water rights

## C. Routine Land Use

### C.1. Present Routine Land Use:

Permittee has approximately 257.4 irrigated acres within the 482 acres of the Enrolled Property. Irrigated acreage is flood irrigated for pasture production. The Enrolled Property is irrigated primarily by the Huseman Ditch. Several springs exist within the Enrolled Property and are used infrequently for irrigation. Other contiguous lands that are not included within the Enrolled Property is acreage is irrigated by Shasta River Water Users and related tail-water collection and distribution systems. Significant riparian acreage included in the Enrolled Property is on the east side of the river is supported by sub-irrigation and managing tailwater from other properties.

#### **Irrigation Management:**

**Huseman Ditch:** The Huseman Ditch irrigates approximately 569.8 acres total. The Huseman Ditch is operated by the Huseman Ditch Association. The Huseman Ditch is identified within the Shasta River Decree (Diversion 250, Paragraph 124) and has an identified maximum diversion capacity of 11.9 cfs from April 1 through September 30 annually. Huseman Ditch can divert approximately 4,318 acre feet throughout the irrigation season (4/1-9/30). The identified winter diversion right on the Huseman is 5 cfs.

Permittee irrigates approximately 182 acres with the Huseman Ditch and is identified as having 33.5% of volume of the Huseman water right. In 2011, Huseman Ditch added a point of diversion as part of a large water conservation and protection project. The Huseman point of diversion was moved from the Grenada Irrigation District point of diversion to a selected location on property owned by Rice Livestock Company, located approximately 31,300' feet downstream from the previously identified POD. A northern lateral pipe delivers water to the Huseman Ditch. The project eliminated the conveyance of water through 7,000' of inefficient open ditch, which is currently abandoned. The project has increased efficiency and delivery volumes overall.

As a result of the project implemented in 2011, 11.9 cfs remains instream for 31,300' before being diverted at the second point of diversion. Huseman Ditch Association now pumps Huseman Ditch water from Shasta River rather than gravity diversion via the previous diversion point. Instead of the practice of continuous diversion prior to the project implementation in 2011, Permittee currently uses approximately 110 acre feet per 15 day irrigation rotation. They have 13 irrigation rotations typically occur per year, equating to approximately 1,447 acre feet per year for the Permittee from the Huseman Ditch. Assuming current use of 1,447 acre-feet annually on an estimated 182 acres, approximately 7.95 acre-feet of water is applied per acre annually.

## **Irrigation Maintenance**

### *Ditch cleaning*

The open irrigation ditches on NB Ranches, Inc. are prone to vegetation growth, which slows the conveyance of water and clogs the buried mainlines, leading to ditch loss and reduced diversion volumes. The ditches need to be cleaned yearly to remove vegetation and repair breaches. Cleaning ditches consists of mechanical cleaning with a backhoe once or twice per year, Typically during non-irrigation season. Some work may occur during the late summer months (August and September) if aquatic vegetation growth is significant

### *Diversion cleaning*

The Huseman diversion intake is maintained by an 8' diameter self-cleaning fish screen (Cone Screen). Operation and maintenance can entail the use of heavy equipment at the point of diversion to remove spoils and deposited sediment to maintain channel design elevations.

### *Field Check and tail-water prevention berm maintenance:*

Ditches, field checks and tail water prevention berms are impacted through livestock trampling and require rebuilding and re-grading using tractors and heavy equipment to maintain their function. This work occurs as needed but work is conducted annually focusing on problem areas.

### *Fish Screen Cleaning*

The Huseman fish screen is an 8' diameter self-cleaning cone screen. The Huseman screen has not experienced any significant sedimentation issues since installation; however this may be required in the future. The brushes generally need to be replaced on a cone screen every five years. Maintenance and operation responsibilities are accepted by NB Ranches, Inc and the other Huseman users.

## **Pasture Grazing Management**

NB Ranches, Inc. has 7 distinct pastures where cattle graze. Cattle are rotated through the pastures as part of pasture management. The cattle are moved when grass height is reduced to 3-5 inches in height throughout the irrigation season.

## **Vehicle Crossings Maintenance**

NB Ranches, Inc. has a bridge crossing of the Shasta River connecting fields on the West side of the River with fields on the East. The approaches and footings require repair and replacement after flood events, including instream work at times.

## **Riparian Fencing Maintenance & Management**

The riparian corridor is fully fenced except for approximately 1,600' of the west river bank located near the northern boundary on the western side of the river. An additional 1,200' located immediately south of that would benefit from repair or replacement. NB Ranches, Inc. intends to exercise continued limited riparian grazing. The ranch maintains the riparian fencing and will continue to maintain

riparian fencing but does not accept the financial responsibility of repairing loss from major floods where 25% of the fence or greater needs replacement.

### **Road Maintenance**

The main ranch roads to the residences and barn yard complexes are covered in aggregate base/rock as are other established on farm roads. The aggregate base is maintained on an annual basis, or as needed, to minimize erosion.

### **Herbicide/Fertilizer/Pesticide Use**

Permittee applies Roundup and Crossbow herbicides along ditch borders, fence lines and spot treatment of noxious weeds outside of the riparian corridor. Treatment is conducted by hand or from an ATV unit. Herbicides are used only. Treatments are spot applied via an ATV or by hand. Treatment occurs from early April through July. Total treated acreage does not exceed 3 acres annually. Total treatment within the riparian area is less than one acre annually. Treatment does not occur within 20' of surface water ditches are treated when dry. Application standards identified on labels are followed. Treatment only occurs during dry, calm days where drift risk is minimal.

## **C.2. Avoidance and Minimization Measures**

### **Covered Activities and Avoidance and Minimization Measures**

This section outlines and describes all activities that may be implemented under the Template Safe Harbor Agreement (SHA) including Routine Land and Water Use Activities and Avoidance and Minimization Measures (AMMs), monitoring and Beneficial Management Activities (BMAs).

The Template SHA provides permittees with ESA assurances that efforts to promote the conservation and recovery of the Covered Species on their enrolled property, including implementation of Routine Land and Water Use Activities with AMMs, monitoring, and BMAs, will not result in additional restrictions on the use of the enrolled property.

Permits will authorize take of SONCC coho salmon incidental to the rights, obligations, and activities contemplated in the Template SHA provided that such take is consistent with maintaining the Present and Elevated Baseline Conditions identified in site plan agreements. The specific activities that will be implemented by each permittee on their enrolled property under the Template SHA are described in individual Site Plan Agreements. Each permittee will select appropriate activities from this section in coordination with NMFS and CDFW, and such measures will be included in Individual Site Plans.

## **I. Routine Land and Water Use**

Land and water management practices considered under the Template SHA for which incidental take will be authorized on the enrolled properties are standard

practices for production of livestock, pasture and hay, and other routine associated activities. For the purposes of the Agreement, standard practices for production of livestock, pasture and hay means: any lawful practices performed by a permittee, and persons associated with the permittee, that are incident to or in conjunction with livestock, pasture and haying operations including crop production, cultivation, growing, replanting, diversion of water, irrigation, irrigation runoff management (tailwater), harvesting, preparation for market, vehicle operation, moving of livestock and watering of livestock. Other routine associated activities include riparian area cultivation and maintenance, monitoring infrastructure activities, erosion control, flood and emergency protection, invasive plant removal and control, and installation, repair, maintenance and operation of: diversions, fish screens, instream habitat structures, fences, roads, and stream crossings. These activities will be described, as appropriate, by each permittee through a completed Site Plan Agreement. The potential effects of Routine Land and Water Use activities on the Covered Species shall be minimized and avoided through the implementation of AMMs.

The Template SHA and Site Plan Agreements will grant NMFS and CDFW, after reasonable prior notice to the permittees, access (in any form, including aerial) to enrolled properties for purposes of technical assistance related to monitoring and implementation, and to ascertain compliance with the Template SHA and Site Plan Agreements. Implementation monitoring of Routine Land and Water Use Activities and AMMs as specified in Individual Site Plan Agreements will be accomplished by the permittees or their consultants, with the assistance of the Parties, when appropriate, on a schedule specified in each Individual Site Plan Agreement, and using specific protocols set forth below. Permittees will document implementation of AMMs on their enrolled property using the monitoring protocols set forth below and submit documentation to the Parties in the annual report.

#### A. Water Diversion and Diversion Facilities

Water diversions included under the Template SHA include diversions of surface water through conduits or openings from streams, channels, or sloughs within the geographic scope of the Template SHA (as shown in Figure 1 of the Template SHA) by a permittee in accordance with a valid water right including the following activities associated with water diversion and diversion structures:

- Ongoing management and/or maintenance of existing flashboard dams, including the placement of boards into concrete abutments across the wetted channel to build head to divert water, and the removal of the boards.
- Ongoing maintenance, management, and repair of boulder weirs.
- Installing, operating, maintaining, and removing push-up dams or weirs. These are defined as temporary diversion structures created by using loaders, backhoes, or

excavators to move bedload within the stream channel to form a flow barrier or weir that seasonally diverts a portion of the flow of the stream.

- Installing, operating, maintaining, and removing other temporary diversion structures that are not push-up dams. “Other temporary diversion structure” is defined as any temporary structure to divert water seasonally from a stream and is typically made with hay bales, hand-stacked rocks and cobble, tarps, wood, and/or a combination of these materials placed in the channel with or without the use of heavy equipment. Equipment may be used from the bank but not within the channel.
- Installing or placing pumps and sumps and maintaining existing pumps and sumps within or adjacent to the active channel of a stream, which sometimes requires the use of large machinery within or adjacent to the active channel.
- Installing head gates and measuring devices that meet NMFS and CDFW standards and is in compliance with Senate Bill 88 on or in a diversion channel, which usually is done by excavating the site to proper elevation using large machinery, positioning the head gate and measuring device at the appropriate elevation, and installing rock or other “armoring” around the head gate to protect the structure. During installation, the stream bank could be affected by the construction of concrete forms and other necessary construction activities.
- Operating head gates and measuring devices

A1. Install a locking head gate or valve sized appropriately for the authorized diversion, that can regulate flow, and a functional measuring device or flow meter on any structure or facility connected to a stream used to divert water to facilitate better control and monitoring of water delivery within three years, unless specified otherwise in the site plan, of the effective date of the Agreement on or in all water diversion structures identified in this Agreement. The designs for head gates or valves and measuring devices in State Watermaster or Special Watermaster District Service areas shall be approved by DWR or said Special District, if applicable, in coordination with the Parties. All measuring devices and methods of water measurement shall be constructed and maintained to meet a 10% measuring accuracy for points of diversion that divert greater than or equal to 200 acre feet per year, and a 15% measuring accuracy for points of diversion that divert less than 200 acre feet per year. Data from these devices will be included in the annual SHA report, if required in the individual site plans.

A2. Fish passage will be provided for all life stages when sufficient flows are available per individual site plan descriptions.

A3. Contact NMFS and CDFW at least five (5) days before installing any dam or instream structure that could result in stranding of fish, or before changing the operation of any existing dam or instream structure that could result in stranding of fish. The types of activities that typically could result in stranding include rapid drawdown of flow or dewatering of the stream channel downstream of the diversion or within diversion ditches between the point of diversion, fish screen and bypass return flow channel.

A4. Construct, operate, maintain, and remove push-up and other temporary dams as described in the Agreement. Push-up dam or weir construction activities shall commence no earlier than

May 1 and no later than November 1. Participant may commence push-up dam construction activities prior to May 1 if (a) permittee notifies NMFS and CDFW at least seven (7) days in advance of any dam construction proposed to occur prior to May 1, (b) a survey is completed by NMFS, CDFW or a mutually agreed-upon qualified biologist sufficient to determine the presence and distribution of any Covered Species, and (c) a determination by NMFS and CDFW whether and when the activity may proceed.

A5. Routine push-up dam construction and removal will be accomplished by the operation of a bucket attached to an excavator, or backhoe that is situated outside of the wetted portion of the stream channel. Participant will check and maintain vehicles used for push-up dam construction and removal on a daily basis during the construction and removal activities to prevent leaks of materials that could be deleterious to aquatic life, wildlife, or riparian habitat; minimize disturbance to the stream bed and bank and keep turbidity of the water to a level that is not deleterious to aquatic life; and allow the work area to “rest” to allow the water to clear after any activity that causes a plume of turbidity above background levels, resuming work only after the stream has reached the original background turbidity levels.

### **Monitoring Protocols for Implementation**

All maintenance of instream diversion structures shall be monitored as follows:

- Log of what in-water work had occurred and what minimization measures were implemented will be included in the Annual SHA report
- Data from measuring devices will be included in the annual SHA report, if required in the individual site plans.
- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken

- Description of what was being documented (riparian growth, project implementation, etc)

## B. Irrigation Management and Maintenance

This Routine Land and Water Use Activity includes management and maintenance of conveyance facilities on enrolled properties that are used for diverting surface waters including piping/buried mainline, buried mainline with risers, gated pipe, sprinkler systems, open ditches, sumps, storage ponds and tailwater capture ponds/sumps. The activities associated with irrigation management and maintenance may include; head gate on/off operation, moving sprinklers, turning risers on and off, board or tarp removal/placement in ditches, pump, ditch and pond maintenance, pipe clearing/cleaning, maintenance of fish screens, operations of tailwater collection (pick-up ditches and ponds), storing water and irrigation runoff (tailwater production) and general diversion of water per the Shasta River Decree.

Irrigation maintenance activities frequently require the use of heavy equipment. At times this requires equipment and vehicles to cross flowing streams or intermittent channels and/or the construction of stream crossings at designated locations where potential spawning gravels, incubating eggs, and fry are not present based on repeated site specific surveys. Vehicle wet crossings are described in more detail below.

Irrigation management and maintenance also includes operation and maintenance of all types of fish screens. Types of screens include self-cleaning screens, including flat plate self-cleaning screens, and other self-cleaning designs, including, but not limited to, rotary drum screens and cone screens, with a variety of cleaning mechanisms. These screens are designed to continuously clean the screen surface. Periodic maintenance may be needed to remove siltation, debris, sedimentation and anything else that could inhibit normal operation, which would require lifting the screen and using heavy equipment to remove sedimentation/debris. The screens also require regular greasing of bearing and other mechanical parts. Non-self cleaning screens, including tubular, box, and other screen designs consistent with NMFS and CDFW screening criteria are generally cleared daily to remove aquatic vegetation and debris, which is usually done by hand.

B1. During regular maintenance work at diversions and fish screens, the permittee will minimize the discharge of sediments, debris, fine organic matter, and/or muddy, turbid, or silt-laden waters into natural waterways. The permittee will clean instream structures as necessary to maintain proper function.

B2. The permittee will regularly inspect all fish screens and bypass pipes or channels to verify that they are effectively protecting salmonids and other fish species in accordance with CDFW and NMFS fish screening criteria. When necessary, the permittee will clean and repair all fish screens and bypass pipes or channels. If a fish screen is removed for cleaning or repair and in channel work is necessary, the permittee will ensure either that a replacement screen is installed immediately or water is not flowing through the area where the screen is removed by either

implementing isolation or dewatering of the work site in coordination with the fish relocation effort described later in this document.

B3. When a bypass pipe is present, the bypass entrance(s) shall be installed and operated such that all life stages of the Covered Species can easily locate and enter them. All components of the bypass system, from entrance to outfall, shall be designed and operated to minimize the potential for debris blockage and must be sized to accommodate all life stages of fish and aquatic species which may be drawn into the diversion. Sufficient flow (site specifically determined depending on the volume and type of bypass structure) will be supplied from the diversion into a fish bypass to safely and efficiently return fish back to the stream. Bypass outfalls shall be designed and located so that there is sufficient depth and velocity to avoid injury to all life stages of fish and aquatic life which may be directed into a bypass pipe.

B4. When cleaning/maintaining irrigation or drainage ditches or ponds, the permittee will work when the ditch is as dry as possible to minimize or eliminate surface water turbidity and sediment transport. The permittee will place sediment and organic materials excavated from ditches or ponds in a location where the materials cannot wash into any stream channel or Covered Species habitat.

B5. Permittee will regularly monitor and repair as necessary any earthworks or facilities designed to minimize tailwater entering natural waterways.

B6. Planned Instream work shall occur only when Covered Species are least likely to be present or affected by the project; between June 15 and November 1, or as approved by NMFS and CDFW.

B7. In the case where the fish screen is down ditch, the Permittee shall notify CDFW at least 5 days prior to closing a headgate or valve when fish stranding may occur in the diversion conduit, to allow fish rescue notification and coordination by qualified individuals, NMFS and CDFW or otherwise mutually agreed upon individuals.

B8. Water releases from off-channel impoundments, ponds, and tailwater basins will be conducted in a manner that minimizes turbidity, siltation, elevated temperatures, or pollution impacts to waterways supporting Covered Species. Water shall be released in the early morning (prior to 10:00 am) and/or during cool times of the year, and will be released as gradually as possible to minimize fine sediment discharges. If the release timing and rate is not feasible, landowner will contact NMFS and CDFW prior to release.

B9. When permittee is diverting water under the rotational provision under the decree, the river shall not be dewatered and an agreed upon bypass amount will always be provided, as stipulated under the reach wide flow management plans and/or the permittee's individual site plans.

### **Monitoring Protocols for Implementation**

All relevant maintenance of irrigation facilities shall be monitored. Following are some examples of protocols:

- Log of maintenance activities carried out within the calendar year will be included in the yearly SHA report.

### C. Pasture Grazing and Riparian Grazing Management

Pasture grazing management includes the movement of cattle between pastures, as well as harrowing, mowing, and haying of pastures. Riparian grazing management includes cattle grazing within riparian areas according to a riparian grazing management plan that is part of a permittee's Site Plan Agreement. Riparian grazing management plans have been developed cooperatively with University of California (UC) Cooperative Extension or other range management specialists.

C1. Develop riparian grazing management plans in coordination with UC Cooperative Extension or other range management specialists.

C2. Fenced riparian areas may be grazed in accordance with grazing management plans approved by the Parties. The grazing management plan will address standard grazing management principles, such as the seasonal timing, duration, and intensity (number of livestock allowable per unit area [i.e., stocking rate]), of livestock grazing within the riparian zone and will explain how the proposed management plan will result in improved riparian function and enhanced aquatic habitat. In addition, the grazing plan will describe the means by which the flash grazing will avoid and minimize impacts to streambanks, riparian vegetation, spawning and rearing areas, and avoid direct impacts to spawning and rearing coho salmon.

C3. To avoid direct impacts to Covered Species spawning, incubation, and emergence, grazing in riparian pastures with streams that are accessible to the Covered Species will be allowed from May 1 to November 1 or as approved by NMFS and CDFW. The permittee will perform at least one of the following actions prior to grazing livestock in riparian pastures where livestock could enter a stream between November 1 and May 9:

- Obtain written concurrence from NMFS and CDFW that potential Covered Species spawning habitat does not occur adjacent to the riparian pasture.
- If potential spawning habitat occurs adjacent to the riparian pasture, perform weekly redd surveys between November 1 and January 15. Redd surveys may be performed by NMFS, CDFW, or a qualified biologist. If surveys are performed by a non-agency biologist, written survey results will be provided to NMFS and CDFW for concurrence prior to grazing. If redds are not detected during the redd surveys, riparian grazing may occur in conformance with the Participant's riparian grazing management plan.
- If redds are determined to be present, livestock may graze within the riparian pasture between November 1 and April 30 if a temporary electric exclusion fence or wire is installed between the riparian pasture and the stream bank, and provisions are made to supply off-channel stockwater. The electric fence must be checked and maintained daily.

## Monitoring Protocols

Riparian grazing management shall be monitored as follows:

- Three to five permanent photo point stations will be established and marked at locations within each riparian pasture designed to show both vegetation changes before and after seasonal grazing activities, and long-term trends. Digital photographs will be taken at each photo point station once per year for trend monitoring, and before and after riparian pasture grazing takes place for annual implementation reporting. Permittee will provide a Photo Point monitoring map which includes:
  - Points showing the exact location of each photo monitoring point on the ranch
  - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
  - Directional orientation of photos
  - Map scale and North marker
  - Landmarks such as labeled road crossings and waterways.

Permittee will also provide a photo log which includes:

- Site code
  - Photo's code (digital label)
  - Date photos were taken
  - Description of what was being documented (riparian growth, project implementation, etc.)
- Maintain a log of grazing activities carried out within the calendar year and include in the yearly Site Plan monitoring report. At a minimum, the log will include the following information: beginning and end dates of riparian pasture grazing; number of animals, monitoring practices during the riparian grazing period, and management actions taken as a result of monitoring results including management cues used to determine the time to move livestock out of the riparian pasture.
  - NMFS and CDFW may initiate periodic inspection of grazed riparian pastures to ensure riparian grazing management plan is effective.
  - NMFS, CDFW, or a qualified party, approved by NMFS and CDFW, may conduct redd surveys to determine the need for livestock restrictions in streams. In the event surveys indicate redds are not present, then livestock access will follow the procedures described in riparian grazing management plan.

### D. Fence Maintenance

Installation, construction, maintenance, and removal of fencing material, including mesh field fence, panels, or other designed fence barriers, within riparian areas for riparian zone protection, stream crossings & stock-water access.

D1. Inspect riparian exclusion fencing during and after each season of grazing and after high flow events where over bank flows may inundate fences and prior to and after riparian grazing has occurred. If riparian exclusion fencing is damaged, repair fencing and move livestock, as appropriate, to minimize resource impacts. If cattle are present, riparian fences shall be repaired within 30 days.

D2. If riparian fences are lost due to a catastrophic event, the permittee shall notify agencies of the loss in the annual report. The permittee will repair up to the percentage of fencing they committed to replace in the Individual Site Plan, and request funding assistance for the remaining repairs beyond the percentage of its commitment. Cattle shall not have access to areas of riparian areas normally excluded through other provisions of the AMM's.

### **Monitoring Protocols**

All maintenance of riparian fencing shall be monitored as follows:

- A short description of fence maintenance activities will be included in the annual report.

#### **E. Road Use and Maintenance**

Ranch roads are regularly used to access irrigation facilities, move cattle and equipment. Roads may be secondary, which are infrequently used or only utilized by cattle and ATVs, or primary, which are roads used more regularly by trucks and heavy equipment. This category is for both the use and the regular maintenance of all ranch roads, which could include grading, rocking, laying base, and culvert replacement.

E1. Ensure fish passage at road crossings of streams that are accessible to the Covered Species including at bridges, wet crossings and culverts. Any instream crossing structure will be designed and implemented in accordance with the fish passage evaluation methods specified in the 2010 4<sup>th</sup> edition of the Department's California Salmonid Stream Habitat Restoration Manual. The most current edition of the manual is available at:  
<http://www.dfg.ca.gov/fish/Resources/HabitatManual.asp>.

E2. Minimize erosion and sedimentation from roads and road work. Rock road crossings and approaches to stream channels to minimize sedimentation. Utilize mulch or other suitable materials, as necessary, to minimize sediment runoff and transport to surface waters. Apply mulch so that not less than 90% of the disturbed areas are covered. Apply all mulches, except hydro-mulch, in a layer not less than two (2) inches deep. Where appropriate, all mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tracked as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road prism adjacent to the outlet of culverts, will be reseeded with non-invasive species at a rate which will ensure establishment.

E3. Planned Instream work shall occur only when Covered Species are least likely to be present or affected by the project, typically from June 15 through November 1.

E.4. Avoid using native surface roads for heavy traffic during wet or thaw periods, and roads not designed and constructed for these conditions. Evaluate the future needs for a road and close roads that will not be needed. Inspect roads annually to determine the need for structural maintenance. Conduct maintenance practices, when conditions warrant, including cleaning and replacement of deteriorated structures and erosion controls, grading or upgrading road surfaces with aggregate. Properly maintain permanent stream crossings and associated fills and approaches to reduce the likelihood (a) that stream overflow will divert onto roads, and (b) that fill erosion will not occur if the drainage structures become obstructed

### **Monitoring Protocols**

All maintenance of roads that have an impact on water ways shall be monitored as follows:

- A short description of annual road maintenance activities will be included in the annual report.

### **F. Livestock and Vehicle Wet Crossings**

This category includes use of wet crossings, which are only allowed where the Covered Species is absent. This activity includes moving livestock, vehicles, ATVs, and equipment across flowing streams or intermittent channels, stock water access, and/or the construction, maintenance, and use of stream crossings at designated locations where potential Covered Species spawning gravels, incubating eggs, and fry are not present based on repeated site specific surveys by agencies or qualified biologists . The crossing may need yearly maintenance to remove debris and place new rock to reinforce an existing crossing.

F1. Cross livestock and vehicles only at stable designated locations where potential spawning gravel, incubating eggs, and fry are not present. Wet crossings for cattle should be armored with rock. Fencing should be installed to guide the cattle to the crossing and across the stream on the armored surface while minimizing impacts to the stream and stream banks.

- Factors considered when selecting a crossing location include the stream gradient, channel width, and the ability to maintain the existing channel slope. Generally, to construct a crossing, a boulder weir is placed on the downstream side of the crossing and angular quarry rock is placed in the crossing location; the width of the crossing does not exceed 25 feet; the crossing spans the entire width of the channel; the crossing is “keyed” into the bank on each side; the approaches on both sides do not exceed a slope of 3:1; and bank armoring (usually using quarry rock) is added where needed.
- Angular rock will be applied to the crossing during the period of June 15 through November 1 and maintained over time. The diameter of angular rock will be selected so as to eliminate the risk of angular rock becoming a grade control affecting channel conditions. In locations where the stream crossings occur on intermittent streams, application of rock shall occur when the stream channel is dry.

- Once a crossing is established, the landowner will corroborate with agency staff after high flow events and/or after gravel introduction, to inspect the crossing and ensure it has not been compromised. The inspection shall be completed in spring or early summer.

F2. When operating vehicles in wetted portions of a stream channel, check and maintain vehicles on a daily basis to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian habitat; minimize the number of passes through the stream to avoid increasing the turbidity of the water to a level that is deleterious to aquatic life; and allow the work area to “rest” after each individual pass of the vehicle that causes a plume of turbidity above background levels, resuming work only after the stream has reached the original background turbidity levels.

### **Monitoring Protocols**

All maintenance activities related to livestock and vehicle crossing shall be monitored as follows:

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo’s code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)

### **G. Herbicide (Weed Management), Fertilizer and Pesticide Use**

This category includes weed management, in the form of livestock grazing, use of California legal weed spray products, manual removal, burning, and mowing.

G1. Ensure that any pesticide or herbicide is handled and applied by a licensed applicator (when required) in accordance with and all applicable, federal, state, local laws, regulations, procedures, and guidelines. Application of pesticides will be in conformance with the pesticide label as well as any required buffers from anadromous streams. The permittees will apply herbicides/pesticides, if any, in conformance with the applicable label directions, as well as any required buffers from anadromous streams in conformance with the Order entered in Washington Toxics Coalition et al. v. Environmental Protection Agency et al., (W.D. Wash No. C01-132C) (January 22, 2004). When possible, areas will be spot treated to reduce the amount applied. Use of broad spectrum insecticides will be minimized or avoided as they are more likely to be harmful to non-target organisms including fish and aquatic insects if exposed. Chemicals with the lowest possible toxicity rating will be used when possible. Use of mobile, pre-emergent herbicides will be minimized or avoided as they can impact non-target plants in the riparian area leading to other impacts such as sedimentation. The Applicant will avoid or minimize exposing aquatic resources by managing spray drift. This includes using modern spray equipment (e.g., low volume or electrostatic sprayers); routinely checking for nozzle wear and calibrating the sprayer frequently throughout the growing season; turning off the sprayer along creeks, drainages and in the turn-around areas; supervising the spraying to minimize effects to surface waters.

G2. Use care to minimize fertilizer use in applications that could result in nutrient loading to natural waterways.

G3. Review label information and avoid the use of any material known to be detrimental to fish where it could impact Covered Species.

G4. Use or store stationary petroleum-powered equipment in a manner to prevent the potential release of petroleum materials into natural waterways by use of drip pans or other measures.

G5. Refuel machinery and handle or store hazardous materials no less than one hundred and fifty (150) feet away from the edge of any water body. All unused or leftover materials will be transported off-site and properly disposed of, when applicable.

### **Monitoring Protocols**

Herbicide, Fertilizer and Pesticide use shall be monitored as follows:

- Log of herbicide, fertilizer and pesticide use activities carried out within the calendar year to be included in the annual report.

### **H. Flood or Emergency Events**

This category includes immediate work needed to prevent loss of or damage to property from emergencies, including flood, fire, storm, earthquake or other unexpected natural events. Activities may include sediment and debris removal, emergency fish screen repairs, fencing repairs, streambank or crossing stabilization and moving livestock or equipment across streams during emergencies. Emergency is defined in California Code of Regulations section 15359.

The following AMMs are applicable to the activities described above (specific AMMs for each enrolled property will be listed, as appropriate, in individual Site Plan Agreements):

H1: Prior to, during or immediately after the event, NMFS and CDFW will be contacted and AMMs will be developed in coordination with the permittee for the particular flood or emergency circumstances.

H2: NMFS and CDFW will be notified within 14 days of beginning emergency work per Fish and Game Code 1610.

### **Monitoring Protocols**

All flood repair shall be monitored as follows:

- Photographs of the emergency site repairs and a detailed description of the repairs to be included in the annual report.

## **II. Beneficial Management Activities**

The primary objective of the Template SHA and Site Plan Agreements is to enhance, restore, or maintain habitat to benefit the Covered Species. To accomplish this, the Parties will implement BMAs (the types of actions to be implemented will vary with each Site Plan) that will result in improved habitat conditions for the Covered Species. Habitat restoration projects authorized under the Template SHA will be designed and implemented consistent with techniques and minimization measures presented in CDFG's *California Salmonid Stream Habitat Restoration Manual, Third Edition, Volume II* with four chapters (*Part IX: Fish Passage Evaluation at Stream Crossings, Part X: Upslope Assessment and Restoration Practices, Part XI: Riparian Habitat Restoration, and Part XII: Fish Passage Design and Implementation*) added in 2003, 2004, and 2009, respectively (Flosi et al. 1998, hereafter referred to as CDFG Manual). The Template SHA requires AMMs for all projects to avoid or minimize adverse effects to the Covered Species and habitat.

Individual Site Plans will include property-specific BMAs that will be implemented on an enrolled property, and the monitoring protocol that will be implemented for each BMA. Project design and implementation of BMAs will include the AMMs provided below. Table 1 lists the entire suite of potential BMAs that could be implemented under the Template SHA on a given property and the type of monitoring that will be associated with each BMA. If grant funds are obtained to implement a given BMA on an enrolled property, data collection and reporting will be required to satisfy the grant contract obligations. Implementation monitoring of BMA's, as described below will be used to inform the Parties and to confirm that each BMA has been constructed as intended, without any structural changes or omissions that would compromise the integrity of the project or reduce it's intended benefits.

**Table 1. Beneficial Management Activities and Associated Monitoring Techniques.**

<b>Beneficial Management Activity</b>	<b>Monitoring Techniques</b>
Barrier Modification and Fish Passage Improvement	Photo monitoring, as-built surveys
Fish Screen Installation or Replacement	Photo monitoring, screening criteria compliance monitoring
Instream Habitat Structures and Improvements	Photo monitoring, as-built surveys
Riparian Habitat Restoration, Bioengineering and Fencing	Photo monitoring, transects, survival monitoring
Off-channel and Side-channel restoration	Photo monitoring, as-built surveys
Road and Trail Erosion Control	Photo monitoring
Water Conservation Measures*	Photo monitoring, SB88 compliant diversion monitoring

\*includes Water Exchange and Efficiency Measures, Tailwater Management and Collection Ponds, Irrigation Management, Water Storage Tanks, Piping Ditches and Loss Evaluation, Sprinkler/Pressurized Irrigation, Head gates and Water Measuring Devices)

**A. Instream Habitat Structures and Improvements**

Instream habitat structures and improvements are intended to provide predator escape and resting cover, increase spawning habitat, improve migration corridors, improve pool to riffle ratios, and add habitat complexity and diversity. Specific techniques for instream habitat improvement may include:

- placement of large woody debris (LWD) scour and cover structures, log weirs, upsurge weirs, single and opposing log-wing-deflectors, engineered log jams, Hewitt ramps, divide logs, digger logs, spider logs; and log, root wad, and boulder combinations),
- boulder structures (boulder weirs, vortex boulder weirs, boulder clusters, and single and opposing boulder-wing-deflectors),
- install post-assisted wood structures (PAWS) or beaver dam analog structures (BDAS) to increase rearing habitat, and placement of imported spawning gravel. Implementation of these types of projects may require the use of heavy equipment (e.g., self-propelled logging yarders, excavators, backhoes, helicopters), however, hand labor will be used when possible. Projects will include both anchored and unanchored logs, depending on site conditions and wood availability.

## Monitoring Protocols:

- Provide Photo Monitoring in the Annual SHA report upon completion of the habitat structures that can clearly document changes over time. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)

## B. Beaver Management

Two of the most common undesirable impacts to ranching activities that are caused by beavers include cutting of trees and flooding of properties or facilities important to the routine agricultural activities that occur on the property. Potential non-lethal measures that may be considered to mitigate for unwanted tree cutting in critical locations include the installation of wire mesh cages or the application of paint and sand mix at the base of trees in need of protection. Where the construction of beaver dams have raised the water level to cause unwanted flooding of ranch infrastructure landowners should consider installation of pond levelers or Clemson levelers as described Chapter 9 of The Beaver Restoration Guidebook (Pollock et al. 2015). If it is determined that implementation of the measures described in the Beaver Restoration Guidebook would not alleviate the impacts to agricultural activities caused by beaver dam construction, then the landowner is permitted to modify the structure and discourage future beavers from utilizing the site in the future when NMFS and CDFW have assessed the situation and agree on the extent of dam modification.

## Monitoring Protocols:

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)

### C. Barrier Modification for Fish Passage Improvement

Barrier modification projects are intended to improve passage for the Covered Species by (1) providing access to upstream habitat, and (2) increasing the duration of accessibility (both within and between years). Projects may include those that improve Covered Species passage through beaver dams, existing culverts, diversions, dams, bridges, and paved and unpaved fords through replacement, removal, or retrofitting. In particular, these practices may include the use of gradient control weirs upstream or downstream of barriers to control water velocity, water surface elevation, or provide sufficient pool habitat to facilitate jumps, or interior baffles or weirs to mediate velocity and the increased water depth. BMAs also include log jam and beaver dam modifications to facilitate passage by juvenile and adult life stages of the Covered Species. Implementing these types of projects may require the use of heavy equipment (*e.g.*, self-propelled logging yarders, mechanical excavators, backhoes), however, hand labor will be used wherever possible.

The chapter in the CDFG Manual (Part XII), entitled *Fish Passage Design and Implementation*, provides technical guidance for the design of Covered Species passage projects at stream crossings, small dams and water diversion structures and should be referenced when developing Covered Species passage remediation projects. Part XII is intended to “guide designers through the general process of selecting a design approach for passage improvement. Where there is

further opportunity to protect the Covered Species, additional site-specific criteria may be appropriate and recommended by agencies.

### **Monitoring Protocols**

All Covered Species passage projects shall be monitored using the following protocols:

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)
- The NOAA Restoration Center's Fish Passage Barrier Removal Performance Measures and Monitoring Worksheet which includes longitudinal profiles, cross sections and socio/economic information.  
[http://www.habitat.noaa.gov/toolkits/restoration\\_center\\_toolkits/forms\\_and\\_guidance\\_documents/ori\\_monitoring\\_sheet\\_w\\_guidance.pdf](http://www.habitat.noaa.gov/toolkits/restoration_center_toolkits/forms_and_guidance_documents/ori_monitoring_sheet_w_guidance.pdf)

#### **D. Bioengineering and Riparian Habitat Restoration**

These projects are intended to improve Covered Species habitat through increased stream shading intended to lower stream temperatures, increase future recruitment of LWD to streams, and increase bank stability and invertebrate production. Riparian habitat restoration projects will aid in the restoration of riparian habitat by increasing the number of plants and plant groupings, and will include the following types of projects: natural regeneration, livestock exclusion fencing, bioengineering, and revegetation. Part XI of the CDFG Manual, *Riparian Habitat Restoration*, contains examples of these techniques and should be referenced when planning riparian projects. Reduction of instream fine sediment will improve Covered Species habitat and

Covered Species survival by increasing fish embryo and alevin survival in spawning gravels, reducing injury to juveniles from high concentrations of suspended sediment, and minimizing the loss of, or reduction in size of, pools from excess sediment deposition.

The proposed activities will reduce stream sedimentation from bank erosion by stabilizing stream banks with appropriate site-specific techniques including: boulder-streambank stabilization structures, log-streambank stabilization structures, tree revetment, native plant material revetment, willow wall revetment, willow siltation baffles, brush mattresses, check dams, brush check dams, water bars, and exclusion fencing.

Guidelines for stream bank stabilization techniques are described in Part VII of the CDFG Manual, *Project Implementation*. These types of projects usually require the use of heavy equipment but hand labor will be used where ever possible.

### **Monitoring Protocols:**

- CDFW Quantitative Effectiveness Monitoring of Bank Stabilization and Riparian Vegetation Restoration, 2007. Reports on field testing specific protocols for bank stabilization and riparian vegetation restoration. <http://cesonoma.ucanr.edu/files/27283.pdf>
- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)

## E. Removal of Small Dams (permanent and flashboard)

The CDFG Manual does not cover the removal of small dams, however guidelines and minimization measures have been developed here. Types of small dams covered are permanent, flash board, and seasonal dams with the characteristics listed below. Implementing these types of projects may require the use of heavy equipment (*e.g.*, mechanical excavators, backhoes, etc.). Dams removed in part or in whole, by the use of explosives are not included as a BMA. Dams included here are less than 25 feet in height from the natural bed of the stream or watercourse at the downstream toe of the barrier, or from the lowest elevation of the outside limit of the barrier to the maximum possible water storage elevation. In addition, BMAs will only include dam removal that will result in the formation of a channel at natural grade and shape upstream of the dam, naturally or with excavation, in order to minimize negative effects on downstream habitat. Candidate dam removal projects will (1) have a relatively small volume of sediment available for release, that when released by storm flows, will have minimal effects on downstream habitat, or (2) are designed to remove sediment trapped by the dam down to the elevation of the target thalweg including design channel and floodplain dimensions. This can be accomplished by estimating the natural thalweg using an adequate longitudinal profile (CDFG Manual Part XII *Fish Passage Design and Implementation*) and designing a natural shaped channel that provides the same hydraulic conditions and habitat for the Covered Species that is provided by the natural channel and has the capacity to accommodate flows up to a 2-year flood.

### *Data Requirements and Analysis*

- A longitudinal profile of the stream channel thalweg for at least a distance equal to 20 channel widths upstream and downstream of the structure and long enough to establish the natural channel grade, whichever is farther, shall be used to determine the potential for channel degradation (as described in the CDFW Manual).
- A minimum of five cross-sections: one downstream of the structure, three roughly evenly spaced through the reservoir area upstream of the structure, and one upstream of the reservoir area outside of the influence of the structure to characterize the channel morphology and quantify the stored sediment.
- Sediment characterization within the reservoir and within a reference reach of a similar channel to determine the proportion of coarse sediment (>2mm) in the reservoir area and target sediment composition.
- Prior to project initiation, further consultations with CDFW and NMFS will be required prior to removing a small dam to determine if: (1) sediments stored behind dam have a reasonable potential to contain environmental contaminants [dioxins, chlorinated pesticides, polychlorinated biphenyls (PCB's), or mercury] beyond the freshwater probable effect levels (PELs) summarized in the NMFS Screening Quick Reference Table guidelines or (2) the risk of significant loss or degradation of downstream spawning or rearing areas by sediment deposition is high. Sites shall be considered to have a reasonable potential to contain contaminants of concern if they are downstream of historical contamination sources such as lumber or paper mills, industrial sites, or intensive agricultural production going back several decades (*i.e.*,

since chlorinated pesticides were legal to purchase and use). In these cases, preliminary sediment sampling is advisable.

### **Monitoring Protocols:**

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)
- The NOAA Restoration Center's Fish Passage Barrier Removal Performance Measures and Monitoring Worksheet which includes longitudinal profiles, cross sections and socio/economic information.  
[http://www.habitat.noaa.gov/toolkits/restoration\\_center\\_toolkits/forms\\_and\\_guidance\\_documents/ori\\_monitoring\\_sheet\\_w\\_guidance.pdf](http://www.habitat.noaa.gov/toolkits/restoration_center_toolkits/forms_and_guidance_documents/ori_monitoring_sheet_w_guidance.pdf)

### **F. Creation of Off-channel/Side Channel Habitat**

The creation of off-channel or side channel habitat is not included in the CDFG Manual however, guidelines and minimization measures have been developed for this BMA. Types of side channel or off-channel restoration projects that are eligible as a BMA under the Template SHA are:

- Connection of abandoned side channel or pond habitats to restore Covered Species access
- Connection of adjacent ponds

- Connection of oxbow lakes on floodplains that have been isolated from the meandering
- Channel by river management schemes, or channel incision
- Creation of side channel or off-channel habitat with self-sustaining channels
- Creation of alcoves
- Improvement of hydrologic connection between floodplains and main channels

Projects that involve the installation of a flashboard dam, head gate or other mechanical structure are not part of the BMAs under the Template SHA. Off channel ponds constructed under the Template SHA will not be used as a point of water diversion. The use of logs or boulders as stationary water level control structures will be allowed.

Restoration projects in this category may include: removal or breaching of levees and dikes, channel and pond excavation, creating temporary access roads, constructing wood or rock tailwater control structures, and construction of LWD habitat features. Implementation of these types of projects may require the use of heavy equipment (*e.g.*, self-propelled logging yarders, mechanical excavators, backhoes).

Information regarding consideration of water supply (channel flow/overland flow/groundwater), water quality, and reliability; risk of channel change; as well as, channel and hydraulic grade should be considered when developing off channel habitat features. A good reference document for designing off channel habitat features can be found in “Section 5.1.2 Side Channel/Off Channel Habitat Restoration in the Washington Department of Fish and Wildlife 2004 Stream Habitat Restoration Guidelines” (Saldi-Caromile, et al. 2004).

### **Monitoring Protocols:**

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo’s code (digital label)

- Date photos were taken
  - Description of what was being documented (riparian growth, project implementation, etc.)
- Pre- and post-construction and design flow surveys of constructed inlet and outlet structures, including any other critical or controlling hydraulic features.

#### G. Developing Alternative Stockwater Supply

Many riparian fencing projects will require the development of off channel watering areas for livestock. These are often ponds that have been excavated and are filled either by rainwater, overland flow, surface diversions or groundwater (either through water table interception or pumping). BMAs under the Template SHA also include small wells with solar pumps, water lines, watering troughs, and piping used to provide ground or surface water to livestock. All pump intakes associated with surface diversions will be screened in accordance with NMFS Southwest Region “Fish Screening Criteria for Salmonids” (NMFS 1997). Stockwater ponds will be located at a distance from the edge of the active channel as to avoid or minimize stranding of juvenile salmonids or channel avulsion during flood events.

#### **Monitoring Protocols:**

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo’s code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)

## H. Riparian Restoration and Revegetation

This category includes revegetation of riparian areas and only other types of restoration that are consistent with the methods specified in the most current edition of the CDFW Salmonid Stream Habitat Restoration Manual, or as otherwise approved in writing by CDFW. The most current edition of the manual is available at [www.dfg.ca.gov/fish/resources/habitatmanual.asp](http://www.dfg.ca.gov/fish/resources/habitatmanual.asp).

Typically, riparian vegetation is planted within or adjacent to the active channel, and often in or near the wetted channel. Plantings include native herbaceous perennials, emergent species, grasses, trees, and shrubs. Planting methods vary by species, site, and size of material planted, ranging from hand planting to using a backhoe or excavator. For riparian trees, planting densities range from 130 to 300 plantings per acre, depending on the restoration goals (e.g., shading, sediment trapping, and bank stabilization), substrate, soil chemistry and hydrology. Trees and cuttings range in size from small rooted plugs to large diameter pole plantings. When installing pole plantings, heavy equipment may be used to excavate to or below water table depth. Maintenance activities include the occasional use of hand tools, portable pumps, pick-up trucks and/or water trucks in or near the bed, bank, or channel, for irrigation, debris removal, and replanting of restoration sites.

### **Monitoring Protocols:**

- CDFW Quantitative Effectiveness Monitoring of Bank Stabilization and Riparian Vegetation Restoration, 2007. Reports on field testing specific protocols for bank stabilization and riparian vegetation restoration. <http://cesonoma.ucanr.edu/files/27283.pdf>
- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. Photo point locations will be selected to give a sense of extent of planting and survival. These locations will be likely located along the fence line and revisited yearly, for 5 years, to establish qualitative success rates.
- The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)

- Date photos were taken
- Description of what was being documented (riparian growth, project implementation, etc.)

#### **I. Monitoring and Research**

This includes monitoring required by permittee's ESA Section 10 permits, CDFW's 1600 permit and all other regulatory requirements. Other studies and research that landowners will allow to further the understanding of the Shasta River are also included such as studies for riparian survival, Covered Species surveys, habitat improvement, and food availability.

#### **Monitoring Protocols:**

- Reports on all monitoring and research done within a reporting year be included in the annual SHA report if author of the research gives consent for inclusion.

#### **J. Water Storage and Tailwater Capture Systems**

This BMA addresses water storage that results from storage of water diverted from surface or groundwater sources and tailwater capture (off channel). A water storage facility enables a landowner to use stored water at a later date or when desired. Water storage facilities can have many benefits that go beyond agricultural use including groundwater recharge, and allowing diversion during winter and early spring when instream discharge is ample. Water storage, when paired with reduction of water use later in the season, can be a benefit to the Covered Species.

Tailwater is created in flood irrigation operations as unabsorbed, untranspired, and unevaporated irrigation water that may flow back into the stream. Restoration projects to address tailwater input will include construction of tailwater capture systems (pond, berms or pick up ditches) to intercept tailwater before it enters streams as surface flow. Water held in capture systems, such as a pond, can be reused for future irrigation purposes, therefore reducing the need for additional stream diversions. Tailwater ponds are used primarily during the irrigation season (dry summer months).

A tailwater pond allows a landowner the ability to irrigate between set irrigation cycles (if in an irrigation district). The State Water Board allows for captured water to be put to beneficial use, not used to irrigate ground that may not have been in production in the past or otherwise harm other legal users of water. Tailwater ponds will be located at a distance from the edge of the active channel to avoid causing stranding of juvenile salmonids or channel avulsion during flood events. Tailwater ponds must be combined with a reduction in diversion amounts or be utilized at an existing point of diversion to ensure water allocation is consistent with adjudication. Tailwater berms allow for intercepting tailwater before it enters the stream, but is not able to be reused. Berms allow tailwater to be kept on the fields and percolate into soils and back to the river. These shall be placed in areas where they will not pose any channel pressure in the event of a flood and in areas where soils have high permeability (well-draining) and not be an excessive amount. Tailwater pick up ditches allow the landowner to intercept tailwater and

convey it to another place of use to utilize for irrigation, thereby reducing demand for surface water diversion.

**Monitoring Protocols:**

- Report of amount of water stored or captured and reused where possible.

**K. Piping Ditches**

Piping projects consist of constructing a pipe to transport irrigation water as an alternative to conveying water in an open ditch, thereby reducing water loss including from evaporation and absorption. A water budget/balance or consumptive use analysis will be completed to determine actual amount of water saved by these projects. The amount determined to be saved will remain in the stream to benefit the Covered Species. These projects must demonstrate that they intend to dedicate the saved water for instream beneficial use, and make progress towards instream dedication through a means mutually agreeable to the permittee and NMFS and CDFW.

**Monitoring Protocols:**

- Provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc.).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)
- Real time water diversion monitoring protocol (TBD) or water measuring protocol that is in concurrence with SB88.

## L. Fish Screens

This category includes the installation, operation, and maintenance of the types of fish screens described below, provided they meet the NMFS (1996, 1997) fish screening criteria. Installing a fish screen usually includes site excavation, forming and pouring a concrete foundation and walls, excavation and installation of a fish bypass pipe or channel, and installation of the fish screen structure. Dewatering is often required and could be implemented through coffer dams or sheet piling. Heavy equipment is typically used for excavation of the screen site and bypass. If the fish screen is placed within or near flood prone areas, typically rock or other armoring is installed to protect the screen. Fish screen types include:

- Self-cleaning screens, including flat plate self-cleaning screens, and other self-cleaning designs, including, but not limited to, rotary drum screens and cone screens, with a variety of cleaning mechanisms, consistent with NMFS fish screening criteria (1996, 1997).
- Non-self-cleaning screens, including tubular, box, and other screen designs consistent with NMFS screening criteria (1996, 1997).

### **Monitoring Protocols:**

- In the event the fish screen is installed, repaired, replaced, and/or relocated, provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)

- Pre- and post-construction and design flow surveys of structure and any other critical or controlling hydraulic features.

#### M. Headgates and Water Measuring Devices

Measuring devices are typically installed with the head gate to allow water users to determine the volume of water diverted. These devices will help diverters ensure that they are diverting their legal water right. Head gate designs will be approved by a NMFS or CDFW engineer prior to installation; *provided, however*, that such approval will be deemed to have occurred if an agency fails to take action within 60 days of submission of head gate designs by a permittee to NMFS and CDFW. This category includes the installation and maintenance of stream gages in the active stream channel, usually using pipe 2” or greater in diameter. Typically, the pipe is secured to the bank by notching it into the bank and by then attaching it to the bedrock, a boulder, or a concrete buttress. Generally, heavy equipment is not needed to install and maintain stream gages. Water measuring devices will have the ability to record diversion volumes hourly for points of diversion that have water rights greater than or equal to 1,000 acre feet per year and daily for points of diversion with water rights less than 1,000 acre feet per year. For points of diversion with water rights less than or equal to 10 acre feet per year should be recorded monthly.

#### **Monitoring Protocols:**

- In the event a head gate is installed, replaced, repaired, and/or relocated, Permittee will provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc.).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo’s code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)

- Include the water measuring data as specified in the individual site plan.

#### N. Optimizing cold water spring inputs

Cold water springs are an important habitat feature on the Shasta River and can provide both local and reach scale benefits to the Covered Species.. Projects to optimize cold water spring inputs may include developing alcoves (described in the off channel section above), installing spring boxes or piping springs to the river to improve habitat conditions at a specific location. All spring optimization projects will be designed to maintain Covered Species passage, minimize erosion, comply with water laws, and improve, or not impair, water quality conditions. All spring optimization projects will be reviewed and approved by a NMFS/CDFW engineer to ensure that these conditions have been met.

#### Monitoring Protocols:

- If any infrastructure is constructed to convey spring water to the river the Permittee will provide Photo Monitoring in the Annual SHA report that can clearly document changes over time and/or management activities. The Permittee will do the following as part of photo point monitoring:
  1. Establish, label and re-occupy set photo points, with a permanent marker in view of the photo monitoring point (i.e. fencepost, hillside, large tree, etc.).
  2. Provide a Photo Point monitoring map which includes:
    - Points showing the exact location of each photo monitoring point on the ranch
    - Labels for each photo monitoring point with a site code (Ranch ID/Photo Point #)
    - Directional orientation of photos
    - Map scale and North marker
    - Landmarks such as labeled road crossings and waterways.
  3. Photo log which includes:
    - Site code
    - Photo's code (digital label)
    - Date photos were taken
    - Description of what was being documented (riparian growth, project implementation, etc.)
- Temperature Monitoring Protocol (TBD) as specified in the Individual site plan or in the Flow Management Plan.
- Real time water diversion monitoring protocol (TBD) as specified in the Individual site plan or in the Flow Management Plan.

## Q. 1707 Dedications

Permittees who divert water under any legal basis of right, including riparian, permitted, and licensed water rights, may petition the State Water Board pursuant to Water Code section 1707 for a “change for purposes of preserving or enhancing wetlands habitat, fish and wildlife resources, or recreation in, or on, the water.” The section 1707 petition may be coupled with an application for a water right or a petition to amend an existing permit or license in order to modify an existing project so that diversion will occur in a manner that improves conditions for Covered Species.

### **Monitoring Protocols:**

- Temperature Monitoring Protocol (TBD)
- Real time water diversion monitoring protocol (TBD)

### **IIA. Avoidance and Minimization Measures for Beneficial Management Activities**

The following general minimization measures, as they apply to particular BMAs, shall be incorporated into Site Plan Agreements authorized under the Template SHA, as appropriate.

#### A. General Protection Measures

- The general construction season shall be from June 15 to November 1st Restoration, construction, fish relocation, and dewatering activities within any wetted or flowing stream channel shall only occur within this period. Revegetation outside of the active channel may continue beyond November 1, if necessary.
- Prior to construction, any contractor shall be provided with the specific protective measures to be followed during implementation of the project. In addition, a qualified biologist shall provide the construction crew with information on the listed species in the project area, the protection afforded the species by the ESA, and guidance on those specific protection measures that must be implemented as part of the project.
- All activities that are likely to result in negative aquatic effects, including temporary effects, shall proceed through a sequencing of effect reduction: avoidance, reduction in magnitude of effect.
- Poured concrete shall be excluded from the wetted channel until the water surrounding the concrete structure has a PH between 6 and 8.5 to avoid water quality issues for Covered Species.
- If the thalweg (location of the deepest and fastest part) of the stream has been altered due to construction activities, efforts shall be undertaken to reestablish it to its original configuration<sup>1</sup>.

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<sup>1</sup> Projects that may include activities, such the use of willow baffles, which may alter the thalweg are allowed

## B. Requirements for Covered Species Relocation and Dewatering Activities

**1. Guidelines for dewatering.** Project activities funded or permitted under the Template SHA may require Covered Species relocation or dewatering activities. Dewatering may not be appropriate for some projects that will result in only minor input of sediment, such as placing logs with hand crews, or installing boulder clusters. Dewatering can result in the temporary loss of aquatic habitat, and the stranding, or displacement of Covered Species. Increased turbidity may occur from disturbance of the channel bed. The following guidelines may minimize potential effects for projects that require dewatering of a stream:

- In those specific cases where it is deemed necessary to work in flowing water, the work area shall be isolated and all flowing water shall be temporarily diverted around the work site to maintain downstream flows during construction. Restoration actions such as installing LWD, boulder structures or spawning gravel, where heavy equipment does not enter the stream and can operate from the streambank, do not need to occur in a dewatered stream channel.
- Exclude Covered Species from occupying the work area by blocking the stream channel above and below the work area with fine-meshed net or screens. Mesh will be no greater than 1/8 inch diameter. The bottom of a seine must be completely secured to the channel bed. Screens must be checked twice daily and cleaned of debris to permit free flow of water. Block nets shall be placed and maintained throughout the dewatering period at the upper and lower extent of the areas where Covered Species will be removed. Block net mesh shall be sized to ensure Covered Species upstream or downstream do not enter the areas proposed for dewatering between passes with the electrofisher or seine.
- Prior to dewatering, determine the best means to bypass flow through the work area to minimize disturbance to the channel and avoid direct mortality of Covered Species and other aquatic vertebrates (as described more fully below under **General conditions for all Covered Species capture and relocation activities.**)
- Coordinate project site dewatering with a qualified biologist in coordination with NMFS and CDFW to perform Covered Species relocation activities. The qualified biologist(s) must be familiar with the life history and identification of the Covered Species within the action area.
- Prior to dewatering a construction site, qualified individuals will capture and relocate Covered Species and other native fish and amphibians to avoid direct mortality and minimize adverse effects. This is especially important if listed species are present within the project site.
- Minimize the length of the dewatered stream channel and duration of dewatering, to the extent practicable.
- Any temporary dam or other artificial obstruction constructed shall only be built from materials such as sandbags or clean gravel which will cause little or no siltation. Cofferdams should be constructed to minimize water seepage into the construction areas. Cofferdams and stream diversion systems shall remain in place and fully functional throughout the construction period.
- When coffer dams with bypass pipes are installed, debris racks will be placed at the bypass pipe inlet. Bypass pipes will be monitored a minimum of two times per day, seven days a week. All accumulated debris shall be removed.

- Bypass pipes will be sized to not create scour at the outflow and to accommodate the existing streamflow.
- The work area may need to be periodically pumped dry of seepage. Place pumps in flat areas, well away from the stream channel. Secure pumps by tying off to a tree or stake in place to prevent movement by vibration. Refuel in an area well away from the stream channel and place fuel absorbent mats under pump while refueling. Pump intakes shall be covered with 1/8 inch mesh to prevent potential entrainment of Covered Species that failed to be removed. Check intake periodically for impingement of Covered Species.
- If pumping is necessary to dewater the work site, procedures for pumped water shall include requiring a temporary siltation basin for treatment of all water prior to entering any waterway and not allowing oil or other greasy substances originating from operations to enter or be placed where they could enter a wetted channel. Projects will adhere to NMFS Southwest Region *Fish Screening Criteria for Salmonids* (NMFS 1997).
- Discharge sediment-laden water from construction areas to an upland location or settling pond where it will not drain sediment-laden water back to the stream channel.
- When construction is complete, the flow diversion structure shall be removed as soon as possible in a manner that will allow flow to resume with the least disturbance to the substrate. Cofferdams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than one inch per hour. This will minimize the probability of Covered Species stranding as the area upstream becomes dewatered.

**2. General conditions for all Covered Species capture and relocation activities:**

- Covered Species relocation and dewatering activities shall only occur between June 15 and November 1 of each year.
- All seining, electrofishing, and relocation activities shall be performed by a qualified fisheries biologist. The qualified fisheries biologist shall capture and relocate the Covered Species prior to construction of the water diversion structures (*e.g.*, cofferdams). The qualified fisheries biologist shall note the number of salmonids observed in the affected area, the number and species of salmonids relocated, where they were relocated to, and the date and time of collection and relocation. The qualified fisheries biologist shall have a minimum of three years field experience in the identification and capture of salmonids.. The qualified biologist will adhere to the following requirements for capture and transport of Covered Species:
  1. Determine the most efficient means for capturing Covered Species (*i.e.*, seining, dip netting, trapping, electrofishing). Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, Covered Species may be concentrated by pumping-down the pool and then seining or dipnetting Covered Species.
  2. Notify NMFS and CDFW one week prior to capture and relocation of Covered Species to provide NMFS and CDFW an opportunity to monitor.
  3. Initial Covered Species relocation efforts will be conducted several days prior to the start of construction. This provides the fisheries biologist an opportunity to return to the work area and perform additional seining or electrofishing passes immediately

prior to construction. In many instances, additional Covered Species will be captured that eluded the previous day's efforts.

4. In streams with high water temperature, perform relocation activities during morning periods.
- Prior to capturing Covered Species, determine the most appropriate release location(s). Consider the following when selecting release site(s):
    1. Similar water temperature as capture location
    2. Ample habitat for captured Covered Species
    3. Low likelihood of Covered Species reentering work site or becoming impinged on exclusion net or screen.
    4. Covered Species must be released in the nearest suitable location within the same stream . If another location is proposed, this will be approved in advance by NMFS or CDFW.
  - Periodically measure air and water temperatures. Cease activities when measured water temperatures exceed 18 °C if Covered Species are present. Temperatures will be measured at the head of riffle tail of pool interface.

**3. Electrofishing Guidelines.** The following methods shall be used if Covered Species are relocated via electrofishing:

- All electrofishing will be conducted according to *NMFS Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act (2000)*.
- The backpack electrofisher shall be set as follows when capturing Covered Species:

Voltage setting on the electrofisher shall not exceed 300 volts.

A) Voltage:	100 Volts	300 Volts
B) Duration:	500 $\mu$ s (microseconds)	5 ms (milliseconds)
C) Frequency:	30 Hertz	70 Hertz

- A minimum of three passes with the electrofisher shall be conducted to ensure maximum capture probability of Covered Species within the area proposed for dewatering.
- No electrofishing shall occur if water conductivity is greater than 350 microSiemens per centimeter ( $\mu$ S/cm) or when instream water temperatures exceed 18 °C. Water temperatures shall be measured at the pool/riffle interface. Direct current (DC) shall be used.
- A minimum of one assistant shall aid the fisheries biologist by netting stunned fish and other aquatic vertebrates.

**4. Seining guidelines.** The following methods, shall be used if Covered Species are removed with seines.

- A minimum of three passes with the seine shall be utilized to ensure maximum capture probability of Covered Species within the area.

- All captured Covered Species shall be processed and released prior to each subsequent pass with the seine.
- The seine mesh shall be adequately sized to ensure Covered Species are not gilled during capture and relocation activities.

**5. Guidelines for relocation of Covered Species.** The following methods shall be used during relocation activities associated with either method of capture (electrofishing or seining):

- Covered Species shall not be overcrowded into buckets; allowing approximately six cubic inches per young-of-the-year (0+) individual and more for larger individuals.
- Every effort shall be made not to mix 0+ salmonids with larger salmonids, or other potential predators. Have at least two containers and segregate 0+ age Covered Species from larger age-classes. Place larger amphibians in containers with larger fish.
- Covered Species predators, such as sculpins (*Cottus sp.*) collected and relocated during electrofishing or seining activities shall be relocated so as to not concentrate them in one area. Particular emphasis shall be placed on avoiding relocation of sculpins to relocation sites identified for the Covered Species. To minimize predation on Covered Species, these species shall be distributed throughout the wetted portion of the stream so as not to concentrate them in one area.
- All captured Covered Species shall be relocated, preferably upstream, of the proposed construction project and placed in suitable habitat. Captured Covered Species shall be placed into a pool, preferably with a depth of greater than two feet with available instream cover.
- All captured Covered Species will be processed and released prior to conducting a subsequent electrofishing or seining pass.
- All Covered Species and other native fish captured will be allowed to recover from electrofishing before being returned to the stream.
- Minimize handling of Covered Species. When handling is necessary, always wet hands or nets prior to touching Covered Species. Handlers will not wear DEET based insect repellents.
- Temporarily hold Covered Species in cool, shaded, aerated water in a container with a lid. Provide aeration with a battery-powered external bubbler. Protect Covered Species from jostling and noise and do not remove Covered Species from this container until time of release.
- Place a thermometer in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds 18 °C., Covered Species shall be released and rescue operations ceased.
- In areas where aquatic vertebrates are abundant, periodically cease capture, and release at predetermined locations.
- Visually identify species and estimate year-classes of fishes at time of release. Record the number of Covered Species and other fish captured. Avoid anesthetizing or measuring Covered Species.
- If more than three percent of the Covered Species captured are killed or injured, the project lead shall contact NMFS and CDFW. The purpose of the contact is to allow the agencies a courtesy review of activities resulting in take and to determine if additional protective

measures are required. All salmonid mortalities must be retained, placed in an appropriately sized whirl-pak or zip-lock bag, labeled with the date and time of collection, fork length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by NMFS.

#### C. Measures to Minimize Disturbance from Instream Habitat Restoration Construction

Measures to minimize disturbance associated with instream habitat restoration construction activities are presented below.

- Construction will only occur between June 15 and November 1.
- Debris, soil, silt, excessive bark, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project related activities, shall be prevented from contaminating the soil or entering waterways. Any of these materials, placed within or where they may enter a stream or lake, by the applicant or any party working under contract, or with permission of the applicant, shall be removed immediately. During project activities, all trash that may attract potential predators of Covered Species will be properly contained, removed from the work site, and disposed of daily.
- Where feasible, the construction shall occur from the bank, or on a temporary pad underlain with filter fabric.
- Use of heavy equipment shall be minimized in a channel bottom with rocky or cobbled substrate. If access to the work site requires crossing a rocky or cobbled substrate, a rubber tire loader/backhoe is the preferred vehicle. Only after this option has been determined infeasible will the use of tracked vehicles be considered. The amount of time this equipment is stationed, working, or traveling within the creek bed shall be minimized. When heavy equipment is used, woody debris and vegetation on banks and in the channel shall not be disturbed if outside of the project's scope.
- Hydraulic fluids in mechanical equipment working within the stream channel shall not contain organophosphate esters. Vegetable based hydraulic fluids are preferred.
- The use or storage of petroleum-powered equipment shall be accomplished in a manner to prevent the potential release of petroleum materials into waterways.
- Areas for fuel storage, refueling, and servicing of construction equipment must be located in an upland location.
- Prior to use, clean all equipment to remove external oil, grease, dirt, mud and potential invasive species. Wash sites must be located in upland locations so wash water does not flow into a stream channel or adjacent wetlands.
- All construction equipment must be in good working condition, showing no signs of fuel or oil leaks. Prior to construction, all mechanical equipment shall be thoroughly inspected and evaluated for the potential of fluid leakage. All mechanical equipment shall be inspected on a daily basis to ensure there are no motor oil, transmission fluid, hydraulic fluid, or coolant leaks. All leaks shall be repaired in the equipment staging area or other suitable location prior to resumption of construction activity.

- Oil absorbent and spill containment materials shall be located on site when mechanical equipment is in operation with 100 feet of the proposed watercourse crossings. If a spill occurs, no additional work shall commence in-channel until (1) the mechanical equipment is inspected by the contractor, and the leak has been repaired, (2) the spill has been contained, and (3) CDFW and NMFS are contacted and have evaluated the impacts of the spill.

#### D. Measures to Minimize Degradation of Water Quality

Construction or maintenance activities for projects covered under the Template SHA may result in temporary increases in turbidity levels in the stream. The following measures will be implemented to reduce the potential for adverse effects to water quality during and post-construction:

##### ***1. General erosion control during construction:***

- When appropriate, isolate the construction area from flowing water until project materials are installed and erosion protection is in place.
- Effective erosion control measures shall be in place at all times during construction. Do not start construction until all temporary control devices (*e.g.*, straw bales with sterile, weed free straw, silt fences) are in place downslope or downstream of project site within the riparian area. The devices shall be properly installed at all locations where the likelihood of sediment input exists. These devices shall be in place during and after construction activities for the purposes of minimizing fine sediment and sediment/water slurry input to flowing water and detaining sediment-laden water on site. If continued erosion is likely to occur after construction is complete, then appropriate erosion prevention measures shall be implemented and maintained until erosion has subsided. Erosion control devices such as coir rolls or erosion control blankets will not contain plastic netting of a mesh size that would entrain reptiles (*esp.* snakes) and amphibians.
- Sediment shall be removed from sediment controls once it has reached one-third of the exposed height of the control. Whenever straw bales are used, they shall be sterile and weed free, staked and dug into the ground 12 cm. Catch basins shall be maintained so that no more than 15 cm of sediment depth accumulates within traps or sumps.
- Sediment-laden water created by construction activity shall be filtered before it leaves the settling pond or enters the stream network or an aquatic resource area.
- The contractor/applicant to the Program is required to inspect, maintain or repair all erosion control devices prior to and after any storm event, at 24 hour intervals during extended storm events, and a minimum of every two weeks until all erosion control measures have been completed.

##### ***2. Guidelines for temporary stockpiling:***

- Minimize temporary stockpiling of material. Stockpile excavated material in areas where it cannot enter the stream channel. Prior to start of construction, determine if such sites are available at or near the project location. If nearby sites are unavailable, determine location where material will be deposited. Establish locations to deposit spoils well away from

watercourses with the potential to deliver sediment into streams supporting, or historically supporting populations of the Covered Species. Spoils shall be contoured to disperse runoff and stabilized with mulch and (native) vegetation. Use devices such as plastic sheeting held down with rocks or sandbags over stockpiles, silt fences, or berms of hay bales, to minimize movement of exposed or stockpiled soils.

- If feasible, conserve topsoil for reuse at project location or use in other areas. End haul spoils away from watercourses as soon as possible to minimize potential sediment delivery.

***Pre Rainstorm and Post construction erosion control:***

- Prior to a forecasted precipitation event of  $>1/2$  inch, immediately after project completion and before close of seasonal work window, stabilize all exposed soil with erosion control measures such as mulch, seeding, and/or placement of erosion control blankets. Remove all artificial erosion control devices after the project area has fully stabilized. All exposed soil present in and around the project site shall be stabilized after construction. Erosion control devices such as coir rolls or erosion control blankets will not contain plastic netting of a mesh size that would entrain reptiles (esp. snakes) and amphibians.
- All bare and/or disturbed slopes ( $> 100$  square ft of bare mineral soil) will be treated with erosion control measures such as hay bales, netting, fiber rolls, and hydroseed as permanent erosion control measures.
- Where straw, mulch, or slash is used as erosion control on bare mineral soil, the minimum coverage shall be 95 percent with a minimum depth of two inches.
- When seeding is used as an erosion control measure, only seeds from native plant species will be used. Sterile (without seeds), weed-free straw, free of exotic weeds, is required when hay or hay bales are used as erosional control measures.

E. Measures to Minimize Loss or Disturbance of Riparian Vegetation

Measures to minimize loss or disturbance to riparian vegetation are described below. The revegetation and success criteria that will be adhered to for projects implemented under the Template SHA that result in disturbance to riparian vegetation are also described below.

***1. Minimizing disturbance:***

- Retain as many trees and brush as feasible, emphasizing shade-producing and bank-stabilizing trees and brush.
- Prior to construction, determine locations and equipment access points that minimize riparian disturbance. Avoid entering unstable areas. Use project designs and access points that minimize riparian disturbance without affecting less stable areas, which may increase the risk of channel instability.
- Minimize soil compaction by using equipment with a greater reach or that exerts less pressure per square inch on the ground than other equipment, resulting in less overall area disturbed or less compaction of disturbed areas.
- If riparian vegetation is to be removed with chainsaws, only use vegetable-based bar oil.

## 2. *Revegetation and success criteria:*

- Any stream bank area left barren of vegetation as a result of the implementation or maintenance of the practices shall be restored to a natural state by seeding, planting, or other means with native trees, shrubs, or grasses prior to November 1 of the project year. Barren areas shall typically be planted with a combination of willow stakes, native shrubs and trees and/or erosion control grass mixes.
- Native plant species shall be used for revegetation of disturbed and compacted areas. The species used shall be specific to the Shasta Valley, and comprise a diverse community structure (plantings shall generally include both woody and herbaceous species, in coordination with NMFS and CDFW).
- For projects where re-vegetation is implemented to compensate for riparian vegetation impacted by project construction, a re-vegetation monitoring report will be required after 5 years to document success. Success is defined as 50 percent survival of plantings or 50 percent native ground cover for broadcast planting of seed after a period of 3 years. If revegetation efforts will be passive (*i.e.*, natural regeneration), success will be defined as total cover of woody and herbaceous material equal to or greater than pre-project conditions. If at the end of five years, the vegetation has not successfully been re-established, the project applicant to the Program will be responsible for replacement planting, additional watering, weeding, invasive exotic eradication, or any other practice, to achieve the above success standards. If success is not achieved within the first 5 years, the project applicant will need to prepare a follow-up report in an additional 5 years. This requirement will proceed in 5 year increments until success is achieved.
- All exclusion netting or fencing placed around plantings will be removed after 3 years, or later until plantings are no longer being substantially impacted by livestock or wildlife.

### F. Measures to Minimize Impacts to Roads in Project Area

Upon the completion of restoration activities, roads within the riparian zone used for implementation of BMAs and AMMs shall be weather proofed according to measures as described in *Handbook for Forest and Ranch Roads* by Weaver and Hagans (1994) of Pacific Watershed Associates and in Part X of the CDFG Manual entitled “*Upslope Assessment and Restoration Practices.*” The following are some of the methods that may be applied to roads impacted by project activities implemented under the Template SHA.

- Establish waterbreaks (*e.g.*, waterbars and rolling dips) on all seasonal roads, skid trails, paths, and fire breaks by October 15. Do not remove waterbreaks until May 15.
- Maximum distance between waterbreaks shall not exceed the following standards: (1) 100 feet for road or trail gradients less than 10 percent slope; (2) 75 feet for road or trail gradients from 11 to 25 percent; (3) 50 feet for road or trail gradients from 26 to 50 percent slope; and (4) 50 feet for road or trail gradients greater than 50 percent slope. Depending on site-specific conditions more frequent intervals may be required to prevent road surface rilling and erosion.
- Locate waterbreaks to allow water to be discharged onto some form of vegetative cover, slash, rocks, or less erodible material. Do not discharge waterbreaks onto unconsolidated fill.

- Waterbreaks shall be cut diagonally a minimum of six inches into the firm roadbed, skid trail, or firebreak surface and shall have a continuous firm embankment of at least six inches in height immediately adjacent to the lower edge of the waterbreak cut.
- The maintenance period for waterbreaks and any other erosion control facilities shall occur after every major storm event for the first year after installation.
- Rolling-dips are preferred over waterbars. Waterbars shall only be used on unsurfaced roads where winter use (including use by bikes, horses, and hikers) will not occur.
- After the first year of installation, erosion control facilities shall be inspected for failure prior to the winter period (October 15) after the first major storm event, and prior to the end of the winter period (May 15). If the erosion controls have failed, additional erosion control elements will be installed to the project site.
- Applicant will establish locations to deposit spoils well away from watercourses with the potential to delivery sediment into streams supporting, or historically supporting Covered Species. Spoils shall be contoured to disperse runoff and stabilized with mulch and (native) vegetation.
- No berms are allowed on the outside of the road edge.

### III. References

- National Marine Fisheries Service. 1996. Juvenile Fish Screen Criteria for Pump Intakes. National Marine Fisheries Service, Southwest Region.  
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- Saldi-Caromile, K., K. Bates, P. Skidmore, J. Barenti, D. Pineo. 2004. Stream Habitat Restoration Guidelines: Final Draft. Co- published by the Washington Departments of Fish and Wildlife and Ecology and the U.S. Fish and Wildlife Service. Olympia, Washington.

#### D. Description of Baseline Conditions

##### Baseline Conditions and Beneficial Management Activities

Baseline Conditions means the habitat conditions for the Covered Species on the Enrolled Property when NMFS approves this Site Plan Agreement. The Enrolled Property is within the Mid-Shasta Reach of the Agreement Area.

Elevated Baseline Conditions are certain Baseline Conditions improved as a result of certain Beneficial Management Activities. Elevated Baseline for this Site Plan Agreement is the improved flow conditions that will result from the following action: Moderate tailwater through

the Hay Field by implementing a lateral pipeline with risers along the east side of the fence as described in Section E.2.

Table 2 summarizes the Beneficial Management Activities required to maintain Baseline Conditions and to achieve Elevated Baseline Conditions on the Enrolled Property for the term of the Site Plan Agreement. Section E below describes the activities in more detail.

**Table 3- Summary of Beneficial Management Activities**

Habitat Parameter	Net Conservation Benefit Actions		
	Present Baseline (Maintain)	Elevated Baseline (Restore)	Other Beneficial Management Activities (Restore; Measures to Avoid and Minimize Impacts)
Hydrology/Water Quality	<p>-Maintain the existing Huseman second point of diversion that conserves an estimate 240 af compared to previous point of diversion as described in E.1.a.</p> <p>-Continue to manage tailwater production using existing collection and reuse system as described in E.1.a.</p>	<p>-Eliminate/Reduce Huseman tailwater through Hayfield by adding piped lateral on Eastside of field E.2.a.</p>	<p>-Participate in design and implement Nicoletti component of Huseman Ditch piping to reduce diversion volume. E.3.a</p> <p>-Participate in design and implementation of contributing spring source water for cold water refugia as part of a Huseman Piping exchange. E.3.a</p> <p>-Install soil moisture sensors throughout the ranch to improve water efficiency as a component of Huseman piping project described in Section E.3.a.</p> <p>-Participate in a reach-wide flow strategy as outlined in the Mid-Shasta Flow Strategy E.3.a</p> <p>-Manage fields to reduce tailwater returns from outside sources to reduce diversion as described in Section E.3.a.</p>

<p><b>Passage/Migration/Protection</b></p>	<p>-Maintain unimpeded fish passage conditions at the Huseman Diversion as described in Section E.1.b.</p> <p>-Maintain Huseman Ditch Fish Screen as described in Section E.1.b</p>		
<p><b>Instream Habitat Complexity</b></p>			<p>-Participate in seeking funding and implementation of habitat enhancement projects (LWD for bank stabilization) as shown on the attached Habitat Improvement Map (Appendix C) and as described in Section E.3.c.</p> <p>- Participate in seeking funding and implementation of habitat enhancement project to re-connect oxbow on southeast side of property as specified on Habitat Improvement Map and as described in Section E.3.c.</p> <p>-Implement beaver Best Management Practices as described in E.3.c.</p>

<b>Riparian Condition/Function</b>	<p>-Continue to perform yearly maintenance on existing riparian fencing as described in E.1.d.</p> <p>- Maintain existing watering lanes for stock water as described in Section E.1.d.</p>		<p>-Participate in seeking funding and implementation of riparian planting projects as described in Section E.3.d.</p> <p>-Participate in the development of and implementation of a UC Extension guided riparian grazing plan E.3.d</p> <p>- Provide additional watering lanes or install alternative stock watering systems depending on NRCS led evaluation which will be shared with CDFW and NOAA to reach a mutual conclusion for livestock watering. E.3.d.</p>
<b>Pasture Management</b>	<p>-Continue to utilize pasture rotation to avoid over grazing as described in E.1.f.</p>		<p>-Continue to utilize pasture rotation to avoid over grazing.</p>
<b>Assessments/Studies</b>	<p>- Continue to allow access for studies as described in Section E.1.g.</p>		<p>- Allow access for studies that support objectives of SHA and as approved by SHA and participant.</p>
<b>Supplementation</b>			<p>-Participate in the process allowing access for salmonid supplementation as described in Section E.3.h.</p>

## **E. Description of Beneficial Management Activities**

This section provides a detailed description of Conservation and Habitat Enhancement Activities to be implemented on the Enrolled Property for the benefit of the Covered Species.

### **E.1. Actions Required to Maintain Baseline Conditions**

This section and Figure 3 details the actions the Permittee will implement on the Enrolled Property to maintain Baseline Conditions. This includes any land and/or water management activities that are being implemented, or have been implemented on the Enrolled Property that benefit the Covered Species and will be maintained over the duration of the Agreement and this Site Plan Agreement.

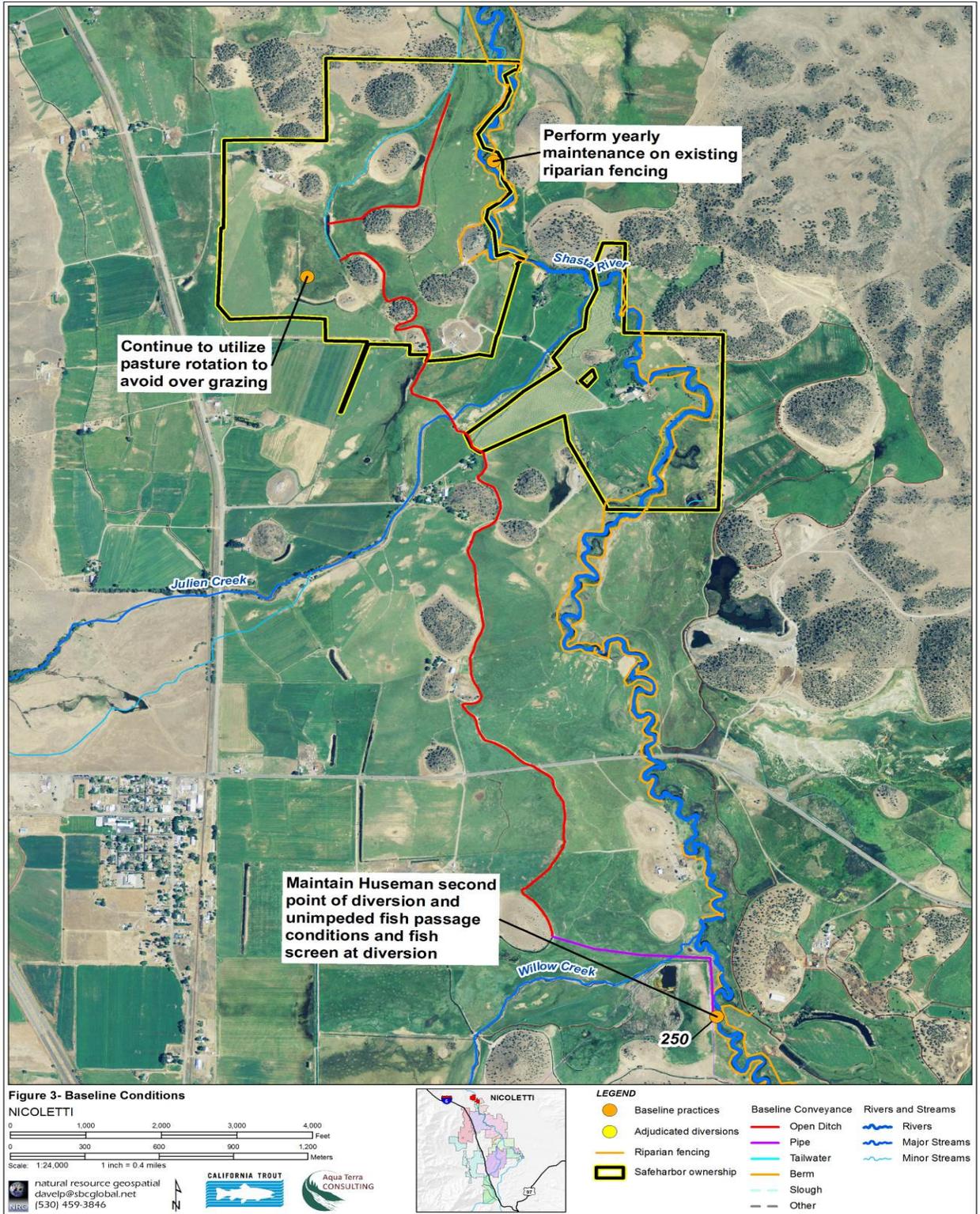


Figure 3. NB Ranches- Site Plan, Baseline Conditions

E.1.a. Hydrology/Water Quality

*Increased delivery and irrigation efficiencies:*

- Maintain the second Huseman point of diversion which was added 5.9 river miles downstream in 2012 of the original diversion point. The diversion was modified from a flashboard dam and gravity diversion to an on river pump diversion where sufficient flow and fish passage is provided at all times (minimum estimated by-pass at Huseman diversion is 30-40 cfs). The change in point of diversion conserved an estimated 240 acre feet compared to previous operation for NB Ranches.
- Continue to reduce and manage tailwater re-entering the Shasta River using existing collection and reuse systems that captures Shasta Water Users Tailwater.

E.1.b. Passage/Migration/ Diversion Screening

- Huseman has a compliant on-channel self-cleaning cone screen and no diversion structure that impedes fish passage. The diversion has a Streambed Alteration Agreement for operation of the screen and diversion intake. Permittee agrees to maintain the diversion facility and fish screen with the Huseman Ditch Association users.

E.1.c. Instream complexity

No activity proposed.

E.1.d. Riparian Condition/Function

*Riparian Grazing*

Riparian area grazing will occur during limited time periods during the spring and summer within the riparian area. Stubble height of 4-6" and impacts to woody vegetation will be identified as triggers when removing livestock from riparian area. Livestock will not have access to the riparian area after September 15<sup>th</sup> – April 15<sup>th</sup> to protect redds and habitat.

*Riparian Fencing*

- Riparian exclusion fencing has been installed throughout the Ranch except for the northern most section where approximately 1,600' is needed on the west side of the River. An additional 1,200' immediately south needs to be improved or replaced as well (also on west bank).
- The Permittee will repair or replace up to 25% of the existing riparian fencing if it is damaged or lost due to floods or other events. The Permittee does not accept the financial responsibility of repairing loss or damage of more than

25% of the existing riparian fencing but will work with agencies to secure funding to replace fencing.

*Crossings:*

- Maintain the existing bridge used for livestock and vehicles over the Shasta River west locate near the center of the ranch.
- Maintain existing wet livestock crossing located at north end of property
- Maintain two existing water lanes used for livestock watering. The watering lanes allow livestock access to water at the river. The site is limited by fencing panels (approx. 25' wide). Erosion is protected by installing/maintaining crushed rock at the sites.

E.1.e Substrate Quality

All measures designed to minimize sediment are related to maintaining substrate quality and summarized in this section. *The Participant will also implement measures specifically to substrate quality as summarized in section E.3.e.*

E.1.f Pasture Management

*Pasture Grazing Management*

- Rotation pasture management is utilized on pasture fields. Majority of the cattle are moved off-site during winter to allow for pasture recovery and limit impacts of annual grazing.
- provide more detail on riparian pasture grazing or refer to management plan.

E.1.g Assessment Studies

No activity

E.1.h Supplementation

No activity

**E.2. Actions Required to Achieve Elevated Baseline Conditions**

This section and Figure 4 details the actions the Permittee will implement on the Enrolled Property to achieve and maintain Elevated Baseline conditions. This includes any land and water management activities that will be implemented and maintained on the Enrolled Property to improve habitat conditions for the Covered Species for the duration of the Agreement and this Site Plan Agreement.

E.2.a Hydrology/Water Quality

Moderate amounts of tailwater occur on the property due to a swale through the Hay Field. The Permittee proposes to install a lateral pipeline with risers along the east side of the fence to control volume and coverage. The estimated 3,200' pipeline would reduce/eliminate up to 0.7 cfs of intermittent tail-water entering the Shasta River. The estimated schedule for this work is as follows: project design completed by 2020, apply for implementation grant funding 2021, implement piping project by 2023.

E.2.b Passage/Migration/Diversion screening

*The Participant will not implement any measures specifically to passage/migration/screening under elevated baseline, see section E.1.c and E.3.c.*

E.2.c. Instream Habitat Complexity

*The Participant will not implement any measures specifically to protect/improve instream habitat complexity under elevated baseline, see section E.3.c.*

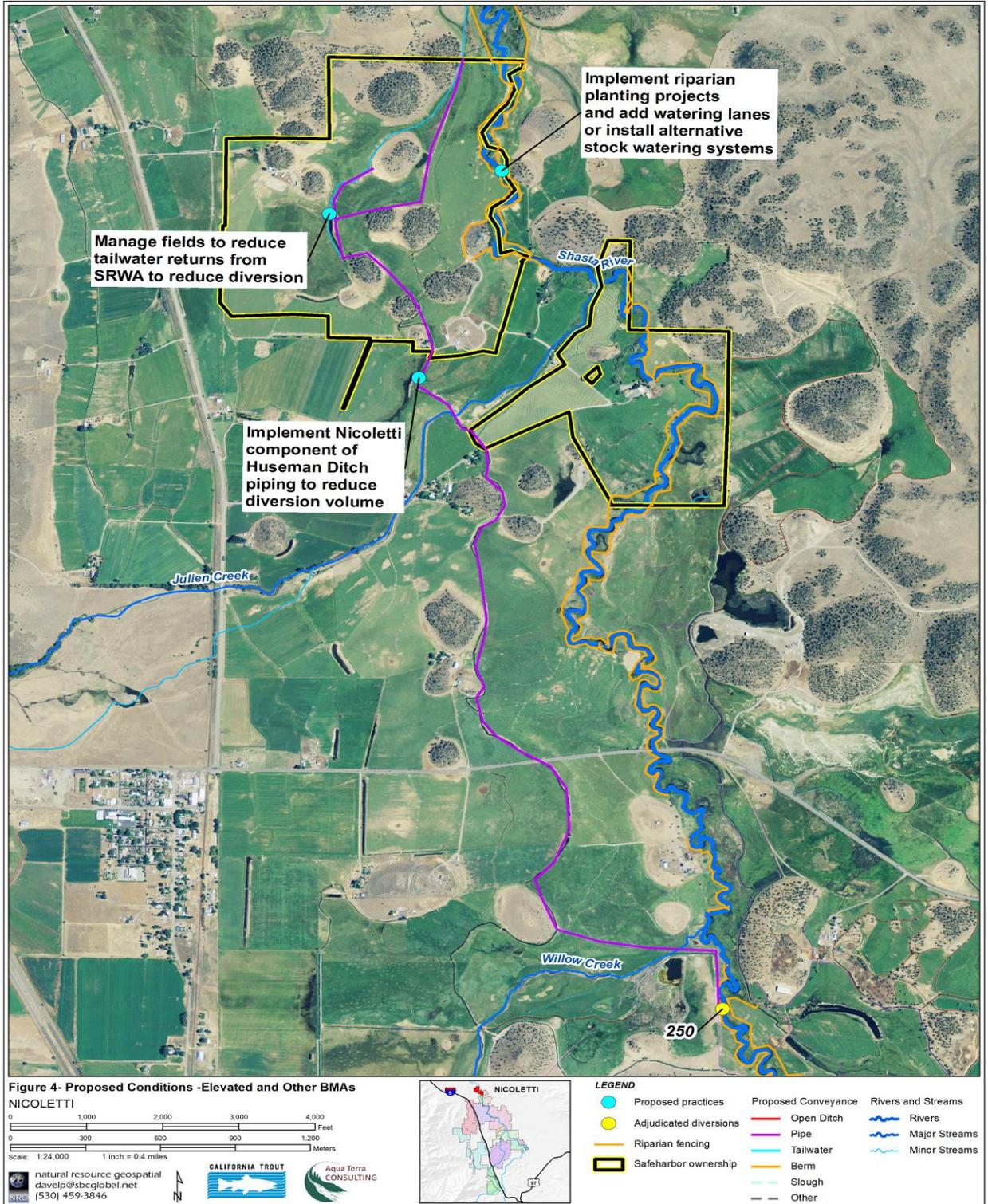


Figure 4. NB Ranches Site Plan - Proposed Conditions

E.2.d. Riparian Function

*The Participant will not implement any measures specifically to protect/improve riparian function under elevated baseline, see section E.1.d and E.3.d.*

E.2.e Substrate Quality

*The Participant will not implement any measures specifically to protect/improve substrate quality under elevated baseline, see section E.3.e.*

E.2.f. Pasture Management

*The Participant will not implement any measures specifically to protect/improve Pasture Management under elevated baseline, see section E.1.f.*

E.2.g Assessments/Studies

*The Participant will not implement any measures specifically to Assessments/Studies under elevated baseline, see section E.3.g.*

**E.3. Other Beneficial Land and Water Management Activities**

This section summarizes other land and water management activities that will be implemented by the Permittee on the Enrolled Property to benefit the Covered Species.

E.3.a. Hydrology/Water Quality

**Soil Moisture Monitoring**

The Permittee will install, utilize and maintain soil moisture sensors throughout the ranch under advisement with UC-Extension in order to inform irrigation water application and to assist the Permittee with making informed decisions around the crop water needs of the pastures. The purpose will be monitoring water application versus need for water in the soil profile. After consultation between the permittee and UC Extension, soil moisture sensors will be installed in different pastures, with sensors at different soil depths to monitor when irrigation is needed for particular pastures. The practice of monitoring soil moisture will assist landowner in knowing appropriate irrigation schedule and rotation to ensure adequate irrigation occurs while minimizing the possibility of overwatering or watering when ET rates are low. By fine tuning irrigation practices on the ranch, the potential for additional instream contributions from spring sources can be maximized. These additional instream contributions will be quantified after reviewing the soil moisture and irrigation data and included in the annual report.

**Increase delivery and irrigation efficiency:**

**Huseman Ditch:** The Permittee Commits to reevaluate existing conceptual design for a pipeline for Huseman Ditch, if conservation benefit is determined beneficial

by CDFW and NOAA using cost benefit analysis and water budget: Permittee will seek funds to implement a pipeline from the northern Rice Livestock property line to the end of the Huseman Ditch. NRCS has an engineered design for a piping project from the original diversion point for full diversion volume. Permittee and NRCS are investigating revising the design for existing POD including a reduced pipe size based on conserved water. In exchange for piping the from current POD to end of existing ditch, Huseman Ditch, including NB Ranches, will permanently reduce the maximum diversion volume from 11.9 cfs to 10.0 cfs for irrigation purposed. Reduced diversion will be verified through data recorded by a flow meter located in the discharge pipe of the diversion pumps. The flow meter and recorded data frequency will meet SWRCB Water Measuring and Reporting Standards.

Huseman Ditch use by NB Ranches, Inc.:

Current NB Ranches use:	1,477 afy
NB Ranches maximum use after piping project	1,209 afy
Volume conserved for instream benefit	268 afy

Spring Sources Contribution: In addition, NB Ranches will permanently cease diversion of two cold water springs (Rivers Edge Spring and Driveway Spring) and provide the spring water for instream benefit as a commitment for the pipeline. The combined spring water volume is estimated to be 0.3 cfs resulting in an additional 109 af provided for instream benefit as a condition of providing a pipeline for houseman ditch.

NB Ranches Cumulative Summary of water conserved for instream benefit: NB Ranches conserved volume of water from Huseman Ditch resulting from the project would be 268 acre feet year through conserved water. NB Ranches would release an additional 109 afy provided by the 0.3 cfs contribution of spring water calculated through irrigation season. The cumulative volume of water conserved by this site plan with NB Ranches is a minimum of 377 afy of instream benefit from 4/1-9/30 of each year.

Permittee will work with SWCG to add instream beneficial use as secondary benefit for water conserved by the proposed projects for Huseman Ditch through a Section 1707 or equivalent process. The project has been designed by NRCS but would require some revision to truncate the piping reach, determine pipe diameter and conduct necessary permitting. Rice Livestock Company, Inc. and Permittee are initiating re-design with NRCS currently. Rice Livestock and NB Ranches commit to seeking funds for design, permitting, installation of the pipeline and preparation of the 1707 petitions. Rice Livestock and NB Ranches intend to have the pipeline installed by the close of the 5th year of the Agreement and will meet with permitting agencies if funding is not obtained by that point.

### Comprehensive Flow Strategy

NB Ranches, through Huseman Ditch, will cooperate in the Mid- Shasta Flow Strategy. The Permittee commitments are defined below:

**Huseman Ditch:** Additional measure as a result of the piping project include:

- The Permittee will not irrigate from 4/1 to 4/5 (5 days) to aid in reducing rapid flow reduction that occurs on onset of irrigation season (100 af cumulative contribution).
- Beginning on 4/6, the Permittee will irrigate on a 15+- day rotation using approximately 1,300 afy.
- The Permittee is agreeable to reduce diversion by up to 50% for up to 5 days to provide late spring flow pulse to aid fish emigrating in the Shasta River, provided that a 7 day advanced notice is given (50 acre feet cumulative contribution).
- The Permittee will not irrigate from 9/25 to 9/30 (5 days) to aid in Adult Chinook and Adult Coho early migration that is impacted by late season diversion (100 af cumulative contribution).

Cumulative Huseman diversion reduction would be 250 acre feet provided during irrigation season. NB Ranch's proportional share of this diversion reduction is 84 acre feet per year.

- If using livestock water between October 1 and April 1, the Permittee and Rice Livestock Company, Inc. will reduce maximum diversion from 5.0 cfs to 4.0 cfs or less and limit days of operation to a maximum of 20 days or partial days per year. Maximum cumulative diversion for stock water during winter period will be 200 acre feet per year.

#### E.3.b. Passage/Migration/Diversion Screening

- Huseman Ditch: Maintain Huseman Ditch Self-Cleaning Fish Screen (Cone Screen) located at the current POD. A diversion structure is not needed at this site.

#### E.3.c. Instream complexity

##### *Habitat Complexity:*

- The Permittee will participate in planning and development of instream structures including woody debris structures, off-channel habitat and developing access to an existing oxbow as shown on Figure 5- Habitat Improvement Map located in the Appendices. The Permittee is willing to develop back-water rearing, if feasible, in this stretch of the Shasta River as

long as liabilities and impacts to ranching are not elevated. The Permittee will provide rock and trees to participate. The Permittee will participate in seeking design funds within the first three years of the Agreement and implementation funds within the first five years.

- Spring habitat development: In exchange for piping Huseman Ditch through Nicoletti property to current terminal pond, Permittee will allow cold water spring sources to be delivered to develop cold water over-summering habitat as well as overwintering habitat, including alcove development. Permittee will commit spring water through a 1707 petition or equivalent once the Huseman Ditch piping is implemented, estimated at 2023. Design and SWRCB approval, if necessary will occur within the first three years of the Agreement.

*Beaver Management:*

- Beaver dams have existed in the past and future occurrences will not be discouraged as described in the AMM section of the Agreement.

E.3.d. Riparian Condition/Function

*Riparian Planting:*

- The Permittee will allow and participate in riparian investigations and riparian planting programs but will not be held accountable for survival percentages or vigor. The Permittee will abide by interim grazing standards during riparian planting establishment as per the Grazing Management Plan developed for the Enrolled Property. The Permittee will seek funds and assist with implementation within the first five years of the Agreement.
- Permittee will work with UC Extension to develop and implement a Riparian Grazing Management Plan for riparian pastures. NB Ranches agrees to abide by the grazing plan upon development and mutual agreement. The estimated timeframe for Riparian Grazing Management Plan development is within one year of signing the Agreement.
- The Permittee will seek funds and participate in design for installation of additional watering lanes or install alternative stock watering systems to limit riparian access for livestock watering purposes. Permittee will work with NRCS to conduct an analysis to compare watering access sites compared to alternative stock watering sites located outside of the riparian area. NB Ranches will provide analysis to CDFW and NOAA within one year after signing of agreement and mutually conclude direction and timing of livestock watering approach.

E.3.e. Substrate Quality

- The Permittee will not disturb existing spawning habitat and will provide access for enhancement projects if determined feasible by the Parties.

E.3.f. Pasture Management

*Pasture Grazing Management*

- Rotation pasture management is utilized and will continue. A majority of the cattle are moved off-site during winter.

E.3.g. Assessment Studies

- The Permittee will review studies and survey proposals and will agree to provide access or otherwise participate on a case by case basis once proposals are reviewed.
- The Permittee is agreeable to providing access for water temperature and DO monitoring.
- The Permittee is agreeable to having PIT tag antennas on site.
- The Permittee will allow juvenile presence/absence surveys and juvenile tagging on the property if given 7 days' notice prior to survey efforts.

E.3.h. Supplementation:

The ranch commits to salmonid supplementation when proper protections against Incidental Take are in place through the Agreement and associated Permit.

**F. Effective Date and Duration of the Site Plan and Agreement**

The Template Safe Harbor Agreement, Site Plan Agreement and Permit take effect when signed by the Participants/Permittees, NMFS, and CDFW. The Template Safe Harbor Agreement, Site Plan Agreement and Permit have a term of 20 years, which may be extended by mutual written consent of the Participants/Permittees, NMFS, and CDFW as stipulated in the Agreement. One (1) year prior to end of term of the Template Safe Harbor Agreement, Site Plan Agreement and Permit, the Participant/Permittees, NMFS, and CDFW will meet to decide whether to extend the term of the Template Safe Harbor Agreement, Site Plan Agreement and Permit.

**G. Monitoring and Reporting (who, what, when, where)**

**G.1. Avoid and Minimization Monitoring Commitments**

The Permittee agrees to the following AMMs and Monitoring actions:

Covered Activity	NB Ranch -AMM	AMM Monitoring Technique
<b>Irrigation Management</b>	A1 A2	All maintenance of instream diversion structures shall be monitored as follows: -Log of what in-water work had occurred and what minimization measures were implemented will be included in the Annual SHA report -When construction or repair work is being done, three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 <a href="http://www.fs.fed.us/pnw/pubs/gtr526/">http://www.fs.fed.us/pnw/pubs/gtr526/</a> or an annual agency inspection can be requested.
<b>Irrigation Maintenance</b>	B1 B2 B3 B4 B5 B6 B7 B8	All maintenance of instream irrigation facilities shall be monitored. Following are some examples of protocols:  -Log of maintenance activities carried out within the calendar year be included in the yearly SHA report.
<b>Riparian Grazing Management</b>	C1 C2 C3	Riparian grazing management shall be monitored as follows: -Three to five permanent photo point stations will be established and marked at locations within each riparian pasture designed to show both vegetation changes before and after seasonal grazing activities, and long-term trends. Photo points shall be established using USDA Forest Service Photo Point Monitoring Handbook, 2002 <a href="http://www.fs.fed.us/pnw/pubs/gtr526/">http://www.fs.fed.us/pnw/pubs/gtr526/</a> . Digital

		<p>photographs will be taken at each photo point station once per year for trend monitoring, and before and after riparian pasture grazing takes place for annual implementation reporting.</p> <p>-Maintain a log of grazing activities carried out within the calendar year and include in the yearly Site Plan monitoring report. At a minimum, the log will include the following information: beginning and end dates of riparian pasture grazing; number of animals, monitoring practices during the riparian grazing period, and management actions taken as a result of monitoring results including management cues used to determine the time to move livestock out of the riparian pasture.</p> <p>-NMFS and CDFW may initiate periodic inspection of grazed riparian pastures to ensure riparian grazing management plan is effective.</p> <p>--NMFS, CDFW, or a qualified party, approved by CDFW or NMFS, may conduct redd surveys to determine the need for livestock restrictions in streams. In the event surveys indicate redds are not present, then livestock access will follow the procedures described in riparian grazing management plan.</p>
<b>Fence Maintenance</b>	D1 D2	-A short description of fence maintenance activities will be included in the annual report template.
<b>Road Maintenance</b>	E2 E3	-A short description of annual road maintenance activities will be included in the annual report.
<b>Crossing Maintenance</b>	F1 F2	- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 <a href="http://www.fs.fed.us/pnw/pubs/gtr526/">http://www.fs.fed.us/pnw/pubs/gtr526/</a>
<b>Herbicide/Fertilizer/Pesticide Use</b>	G1 G2 G3 G4 G5	- Participant commits to log use of herbicide, fertilizer and pesticide activities carried out within the calendar year be included in the annual report.
<b>Flood Repair</b>	H1 H2	- Participant shall take photographs of the emergency site repairs and a detailed description of the repairs to be included in the annual report.

**G.2 Implementation and Effectiveness Monitoring Commitments**

The Permittee agrees to the following monitoring actions:

<b>Habitat Parameter</b>	<b>NB Ranch-Net Conservation Benefit Actions</b>	<b>Implementation Monitoring Technique</b>	<b>Effectiveness Monitoring Commitment? Technique?</b>
<b>Hydrology/Water Quality</b>	<p>-Maintain the existing Huseman second point of diversion that conserves an estimate 240 af compared to previous point of diversion as described in E.1.a.</p> <p>-Continue to manage tailwater production using existing collection and reuse system as described in E.1.a.</p> <p>-Eliminate/Reduce Huseman tailwater through Hayfield by adding piped lateral on Eastside of field E.2.a.</p> <p>-Participate in design and implement Nicoletti component of Huseman Ditch piping to reduce diversion volume. E.3.a</p> <p>Participate in design, implementation, and protection of contributing spring source water for cold water refugia as part of a Huseman Piping exchange. E.3.a</p> <p>Install, maintain and utilize soil moisture</p>	<p>- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 documenting functioning diversion, pipeline improvements and spring source enhancements.</p> <p>-Soil Moisture sensor data</p>	<p>- Diversion monitoring station will be maintained and operated as designed. Provide yearly data.</p>

	<p>sensors throughout the ranch to improve water efficiency as a component of Huseman piping project described in Section E.3.a.</p> <p>Participate in a reach-wide flow strategy as outlined in E.3.a</p> <p>-Manage fields to reduce tailwater returns from outside sources to reduce diversion as described in Section E.3.a.</p>	-	
<b>Passage/Migration/Screening</b>	<p>-Maintain unimpeded fish passage conditions at the Huseman Diversion as described in Section E.1.b.</p> <p>-Maintain Huseman Ditch Fish Screen as described in Section E.1.b</p>	<p>- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 documenting fish passage and fish screen.</p> <p>-Water measuring protocol that is in concurrence with SB88 of diversion, submit diversion data.</p>	
<b>Instream Habitat Complexity</b>	<p>-Will participate in implementation of habitat enhancement projects (LWD for bank stabilization) as shown on the attached Habitat Improvement Map and as described in Section E.3.c.</p> <p>- Will participate in the implementation of habitat enhancement projects (re-connect oxbows) as specified on Habitat Improvement Map and as described in Section E.3.c.</p>	<p>- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002 Habitat improvements</p>	

	-Implement beaver Best Management Practices BMPs as described in E.3.c.		
<b>Riparian Condition</b>	<p>-Continue to perform yearly maintenance on existing riparian fencing as described in E.1.d.</p> <p>-Participant will maintain existing watering lanes for stock water as described in Section E.1.d.</p> <p>-Will participate in riparian planting projects as described in Section E.3.d.</p> <p>-Participant will work with UC Extension to develop and implement riparian grazing plan E.3.d</p> <p>-Participant will provide additional watering lanes or install alternative stock watering systems to limit riparian access for watering purposes E.3.d.</p>	<p>- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002</p> <p>To document riparian grazing area, and crossing and stockwater systems in proper function.</p>	<p>-Survival rates of riparian planting will be reported by Shasta Valley RCD or other implementing organization for a minimum period of 3 years after planting occurs or term will be stipulated by the grants utilized for implementation.</p>
<b>Substrate Quality</b>	-Participant commits to maintain all riparian fencing as described in Section E.1.e.	<p>- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002</p> <p>To document fence maintenance.</p>	
<b>Pasture Management</b>	-Participant will continue to utilize pasture rotation to avoid over grazing as described in E.1.f.	- Three to five photo points using USDA Forest Service Photo Point Monitoring Handbook, 2002	

		To document pasture condition.	
<b>Assessment/Studies</b>	<ul style="list-style-type: none"> <li>- Continue to allow access for studies as described in Section E.1.g.</li> <li>- Allow access for studies as described in Section E.3.g.</li> </ul>	-Reports of studies will be written/summarized/obtained and provided in the annual report	<ul style="list-style-type: none"> <li>-Access to maintain existing pit tag array and trap and tag fish as deemed feasible by agency staff</li> <li>-Juvenile surveys for presence absence and for capturing and PIT tagging fish with 7 day notification of landowner.</li> </ul>
<b>Supplementation</b>	-The Participant will allow access for salmonid supplementation as described in Section E.3.h.		

**H. Annual Report and Adaptive Management**

The Participant will complete the Annual Report Form, attached in Appendix D, yearly and reported as stipulated in the Agreement.

**I. Regulatory Assurances**

Upon execution of this Agreement by the Parties, and the satisfaction of all other applicable legal requirements, NMFS will issue a permit under Section 10(a)(1)(A) of the ESA to assure the Permittee may incidentally take Covered Species, in accordance with the Site Plan and Agreement, as a result of Routine Land Use and Beneficial Management Activities as described in each Agreement, and except where such Routine Land Use would result in the diminishment or non-achievement of the Baseline and/or Elevated Baseline Conditions established for the enrolled property. This assurance depends on the Permittee maintaining the Baseline and/or achieving the Elevated Baseline Conditions set forth in the Site Plan, complying fully with the Agreement and their Site Plan, and so long as the continuation of Routine Land Use and Beneficial Management Activities would not be likely to result in jeopardy to Covered Species or the adverse modification or destruction of their designated critical habitat. NMFS provides no assurances with regard to any action that may affect Non-Covered species, including the take of Non-Covered Species and the adverse modification or destruction of their designated critical habitat.

**J. Signatures of NMFS, CDFW and the Permittee**

\_\_\_\_\_  
**Permittee**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**NMFS**

\_\_\_\_\_  
**Date**

**SEPARATE SIGNATURE BLOCK FOR CDFW:**

By signing the Template Safe Harbor Agreement CDFW expresses its expectation that the Agreement along with a Permittee’s Site Plan Agreement signed by NMFS, and the NMFS ESP, could meet the requirements of section 2089.22 of the California Fish and Game Code with respect to the particular property described in the Site Plan Agreement. However, CDFW will not make such determination until reviewing that Site Plan Agreement signed by NMFS and the NMFS ESP.

\_\_\_\_\_  
**CDFW**

\_\_\_\_\_  
**Date**

**Appendix A -Landowner Deed**

Insert Deed for property

## Appendix B: Water Rights Verification

### Huseman Ditch -Shasta River Decree & Statements of Water Use from Novy-Rice-Zenkus Riparian Diversion

124: EDSON AND FOULKE COMPANY, a corporation, and MANUEL DE SOZA,  
are entitled to divert from the natural flow of Shasta  
River, through the Edson and Foulke Company Grenada Ditch,

(a) during the period between April first and October first  
of each year,

11.90 CUBIC FEET PER SECOND--PRIORITY APRIL 1, 1885,  
or as much thereof as they directly apply to beneficial use for  
stock watering purposes and for the irrigation of the lands here-  
inafter described in this paragraph;

(b) during the period between October first of each year  
and April first of the succeeding year,

5.00 CUBIC FEET PER SECOND--PRIORITY APRIL 1, 1885,  
or as much thereof as they directly apply to beneficial use for  
stock watering purposes;

all of said water to be diverted from said Shasta River at a point  
(designated on Division of Water Rights Map as Diversion 250) which  
bears approximately S. 82° 30' W., approximately 1260 feet distant  
from the north quarter corner of Sec. 6, T. 43 N., R. 5 W., M.D.B. &  
M., being within the NE $\frac{1}{4}$  NW $\frac{1}{4}$  of said Sec. 6, and all of said water  
to be used upon the following described lands:

0.8 ac.

23.1 acres in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ , Sec. 11, T. 44 N., R. 6 W., M.D.B. & M.
0.7 acre in the NW $\frac{1}{4}$ SW $\frac{1}{4}$ , Sec. 11, T. 44 N., R. 6 W., M.D.B. & M.
7.8 acres in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ , Sec. 11, T. 44 N., R. 6 W., M.D.B. & M.
26.3 acres in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ , Sec. 11, T. 44 N., R. 6 W., M.D.B. & M.
23.6 acres in the NW $\frac{1}{4}$ NE $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
32.8 acres in the SW $\frac{1}{4}$ NE $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
14.8 acres in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
27.0 acres in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
14.7 acres in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
0.8 acre in the SW $\frac{1}{4}$ NW $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
34.0 acres in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
14.8 acres in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
13.5 acres in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
14.8 acres in the NE $\frac{1}{4}$ SE $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
32.5 acres in the NW $\frac{1}{4}$ SE $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
27.9 acres in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ , Sec. 14, T. 44 N., R. 6 W., M.D.B. & M.
4.3 acres in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
29.5 acres in the NW $\frac{1}{4}$ NE $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
36.6 acres in the SW $\frac{1}{4}$ NE $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
11.3 acres in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
16.2 acres in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
9.5 acres in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
5.5 acres in the SE $\frac{1}{4}$ SW $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
20.4 acres in the NE $\frac{1}{4}$ SE $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
21.5 acres in the NW $\frac{1}{4}$ SE $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
29.7 acres in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
31.4 acres in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ , Sec. 23, T. 44 N., R. 6 W., M.D.B. & M.
0.5 acre in the SW $\frac{1}{4}$ SW $\frac{1}{4}$ , Sec. 24, T. 44 N., R. 6 W., M.D.B. & M.
3.5 acres in the SW $\frac{1}{4}$ NE $\frac{1}{4}$ , Sec. 25, T. 44 N., R. 6 W., M.D.B. & M.
5.3 acres in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ , Sec. 25, T. 44 N., R. 6 W., M.D.B. & M.
2.3 acres in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ , Sec. 25, T. 44 N., R. 6 W., M.D.B. & M.
20.6 acres in the SW $\frac{1}{4}$ NW $\frac{1}{4}$ , Sec. 25, T. 44 N., R. 6 W., M.D.B. & M.
11.6 acres in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ , Sec. 25, T. 44 N., R. 6 W., M.D.B. & M.
<u>2 569.8 acres--Total.</u>

**NOVY-ZENKUS-RICE RIPARIAN DIVERSION: RICE LIVESTOCK REPORTED  
PROPORTIONAL USE**

**SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2017**

Primary Owner: RICE LIVESTOCK COMPANY

Statement Number: S022755

Date Submitted: 06/27/2018

- |                             |                |
|-----------------------------|----------------|
| 1. Water is used under      | Riparian Claim |
| 2. Year diversion commenced | 1900           |

**3. Purpose of Use**

- |   |                    |
|---|--------------------|
| Irrigation                                      |                    |
| Stockwatering                                   | 200 pair           |
| Fish and Wildlife Protection and/or Enhancement | duck/goose habitat |

**Irrigated Crops**

	<b>Multiple Crops</b>	<b>Area Irrigated (Acres)</b>	<b>Primary Irrigation Method</b>
Pasture	No	108	Surface (example: flood)

**4. Changes in Method of Diversion**

**Special Use Categories**

- |  |    |
|--|----|
| C1. Are you using any water diverted under this right for the cultivation of cannabis? | No |
|--|----|

**5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used**

<b>Month</b>	<b>Rate of diversion (CFS)</b>	<b>Amount directly diverted (Acre-Feet)</b>	<b>Amount diverted or collected to storage (Acre-Feet)</b>	<b>Amount beneficially used (Acre-Feet)</b>
January	0	0	0	0
February	0	0	0	0
March	4	226	0	226
April	4	226	0	226
May	4	226	0	226
June	4	226	0	226
July	4	226	0	226
August	4	226	0	226
September	4	226	0	226



M1. Briefly describe the measurement device or method Aqua Calc

M2. Nickname

M3. Type of device / method Other: Aqua Calc

M4. Device make Aqua Calc

M5. Serial number 12110021

M6. Model number

M7. Approximate date of installation

M8. Additional info

M9. Approximate date the measuring device was last calibrated or the measurement method was updated 05/01/2015

M10. Estimated accuracy of measurement

M11. Description of calibration method

M12. Describe the maintenance schedule for the device/method

Information for the person who last calibrated the device or designed the measurement method

M13. Name Tim Beck

M14. Phone number

M15. Email

M16. Qualifications of the individual A person trained and experienced in water measurement and reporting (this may include the diverter or the diverter's agent)

M17. License number and type for the qualified individual above and/or any other relevant explanation

M18. Type of data recorder device / method

M19. Data recorder device make

M20. Data recorder serial number

M21. Data recorder model number

M22. Data recorder units of measurement

M23. Frequency of data recording

M24. Additional data recorder info

M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted No

M26. I report my diversion or storage date by telemetry to the following website

M27. I have attached additional information on the method I used to calculate the volume of water

M28. Describe any documents related to this measurement device or method that are attached to this water use report

### 8. Conservation of Water

Are you now employing water conservation efforts? Yes

a. Describe any water conservation efforts you have initiated Ditch repair and maintenance

Amount of water conserved

b. I have data to support the above surface water use reductions due to conservation efforts. No

### 9. Water Quality and Wastewater Reclamation

Are you now or have you been using reclaimed water from a wastewater treatment

a. facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes? No

Amount of reduced diversion

Type of substitute water supply

b. Amount of substitute water supply used

I have data to support the above surface water use reductions due to the use of a substitute water supply

### 10. Conjunctive Use of Surface Water and Groundwater

a. Are you now using groundwater in lieu of surface water? No

Amount of groundwater used

b. I have data to support the above surface water use reductions due to the use of groundwater.

### Additional Remarks

This division is shared by 3 water users.

### Attachments

File Name	Description	Size
-----------	-------------	------

No Attachments

### Contact Information of the Person Submitting the Form

First Name	Brian
------------	-------

Last Name

Rice

Relation to Water Right

Diverter of Record

The information in the report is true to the best of his/her knowledge and belief

Yes

## Appendix C: Riparian Grazing Management Plan

### NB RANCHES

#### Riparian Prescribed Grazing Management Recommendations

Prepared by  
Josh Davy

### RIPARIAN GRAZING MANAGEMENT PLAN

#### Riparian Area Description

Located 1.2 miles NE of the town Grenada, CA NB Ranch spans approximately 2.25 miles of the Shasta River that runs through the ranch. Currently all but ~1000 feet of the Shasta River is fenced off for livestock grazing. Livestock water is limited to water gaps or water crossings.

#### Goals and Objectives

- Use livestock to control excessive herbaceous growth
- Improve or maintain quantity and/or quality of forage for grazing and browsing animals' health and productivity.
- Improve or maintain desired species composition, structure, and /or vigor of plant communities.
- Improve or maintain riparian and/or watershed function.
- Improve or maintain the quantity, quality or connectivity of food and/or cover available for wildlife.

#### Riparian Grazing and Weed Management Recommendations

Prolonged exclusion of grazing the riparian area has resulted in noxious and poisonous weed development reducing the vegetative quality of the riparian area. Poison hemlock species (*Conium maculatum*), Teasel (*Dipsacus fullonum*), and Nightshade (*Solanum* spp) has been observed throughout the Shasta River where livestock have been excluded from grazing.

Management controls/options for treating weed species include one tool or combination of tools that can be used to accomplish the goal including the following:

- Mechanical
- Chemical
- Grazing

#### Recommended season of grazing

***In general, the Permittee should defer grazing livestock in the reach at the start of each season until average forage growth reaches 8 - 10 inches in height. Livestock grazing should cease in each area when the average stubble height is 3 to 4 inches. Leaving adequate forage protects soil, improves water quality and provides adequate wildlife cover.***

Smaller areas within fenced riparian zones will follow the same grazing prescription as mentioned above, with the exception of grazing bouts being targeted with higher stock densities per bout than the general pasture area (>0.5-1 AU/acre). Stock densities should be set high enough to achieve target removal levels within 1-3 days in smaller areas. The intent being that high densities of animals, at the correct timing, can break up thatch, trample weedy species, encourage uniform consumption, and allow quick removal for desirable species recovery. Correct timing of targeted riparian area grazing can occur any time soils are not saturated and will avoid periods when salmonid spawning and emergence is occurring. To achieve these goals, timing would generally be between May 1 and November 1, with adjustments as needed to avoid impacts to spawning, emergence, and saturated soils.

### ***Monitoring***

Monitoring will be based on the goals of the ranch and purpose of the practice. The ranch may select which methodology to utilize. Monitoring locations will be chosen based on representative samples of the stream. Methodologies may vary but typical subjects of monitoring include but are not limited to:

- Forage Production
- Line Point Intercept
- Dry Weight Rank and Comparative Yield
- Photo Monitoring
- Stubble Height
- Canopy Cover
- Robel Pole
- Belt Transect
- Step Point

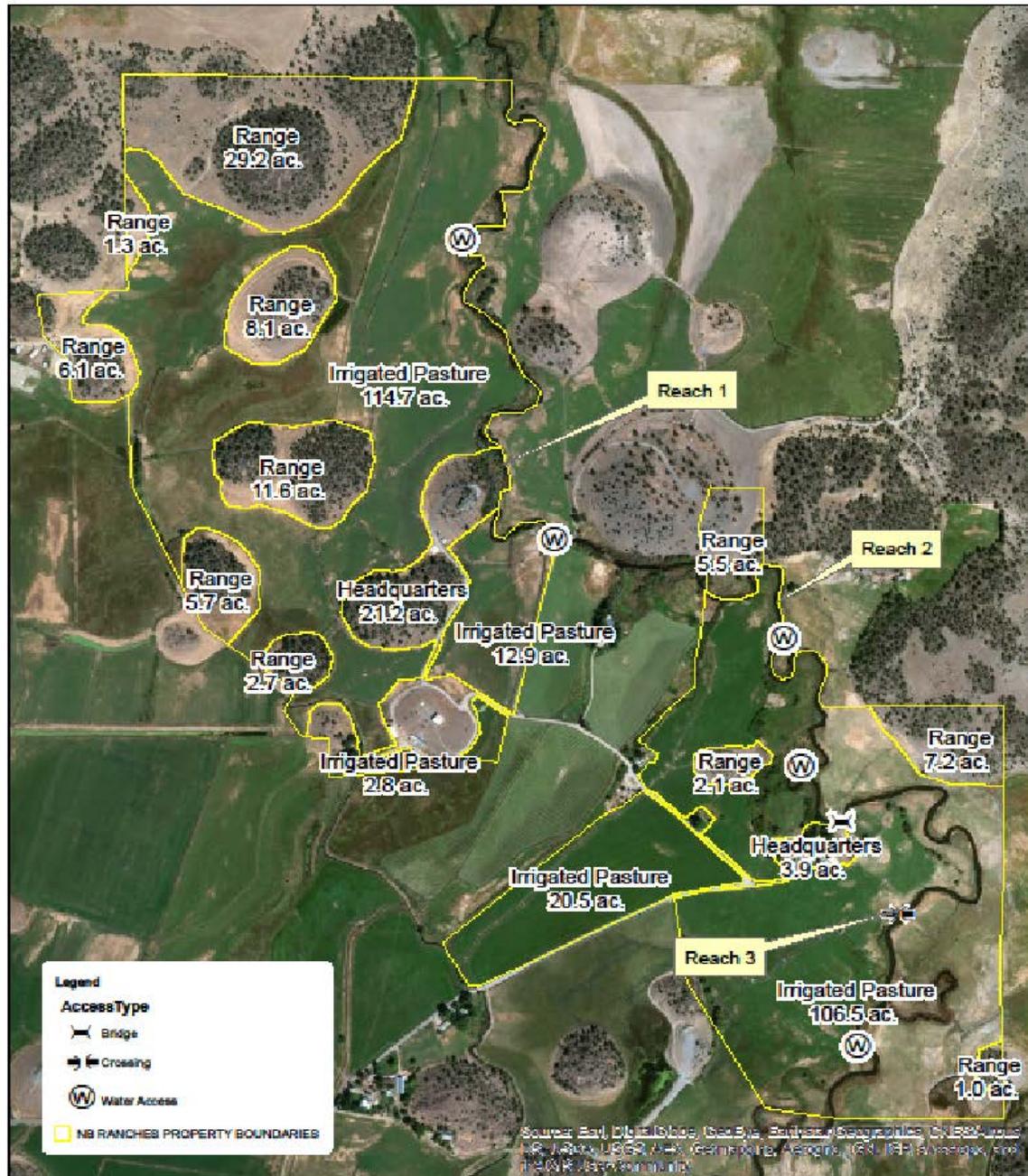
In general, bank stability and recruitment of riparian vegetation are the most pressing issue facing riparian management. For this reason, grazing decisions will be focused on stubble height measurements that will be used as triggers to guide Permittee when to move cattle so that adequate forage cover remains to protect soils and water quality. Adequate above ground cover ensures below ground rooting capacity for stabilization. Secondly, photo monitoring will be used to assist in general evaluation of soil stability and potential woody plant recruitment which assists in bank and soil stabilization and can influence stream temperatures. Permanent marking poles, or posts, will be used to help in visual appraisal of bank sluffing and canopy cover changes over time. These should be easily identifiable and included in each photo site. If annual photo monitoring yields noticeable differences in either of these metrics, modification of grazing timing, stocking rate, or applicability will be evaluated and practices will be modified. Likewise, if no differences in bank stabilization, canopy cover or woody plant recruitment are measured, then current practices will continue.

Secondarily, though also very important, is the cessation of weedy species. In low diversity weedy or bunch grass areas photo monitoring will also be used to show general trends. If diversity appears to increase, alternative methods such as step point can reflect these shifts in

more detail. Though the frequency of this monitoring is not likely necessary in intervals less than 3-5 years unless rapid shifts are noticed in photo monitoring.

# NB RANCHES

Date: 3/1/2018



# Appendix D -Habitat Improvement Map

