Appendix A – Figures

Figure 3 – Culvert Design
Figure 4 – Bridge Design
Figure 5 – Dewatering Plan

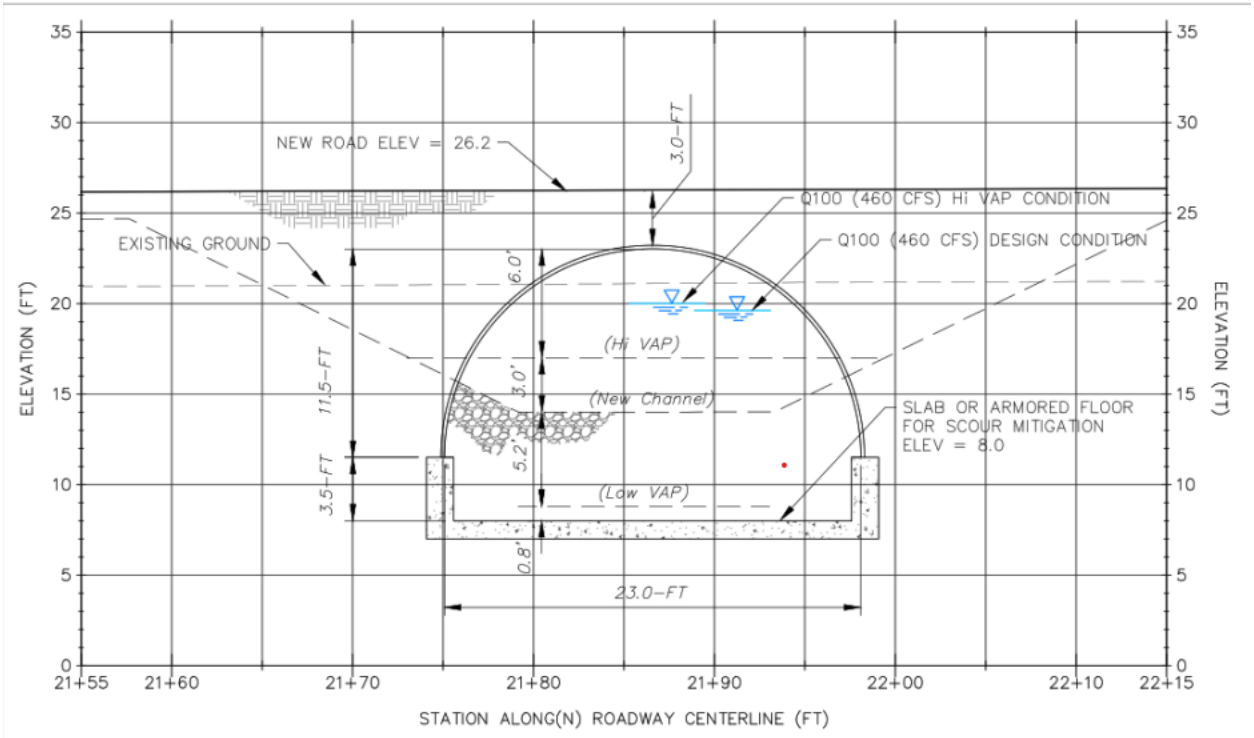


Figure 3. Culvert design cross section for Lower Bear Creek crossing at Lighthouse Road. Michael Love & Associates, 2022.

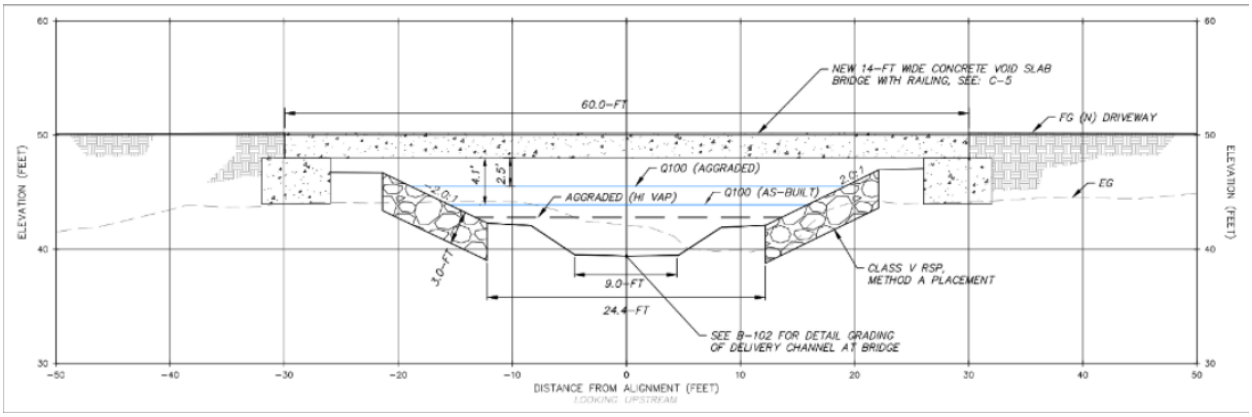
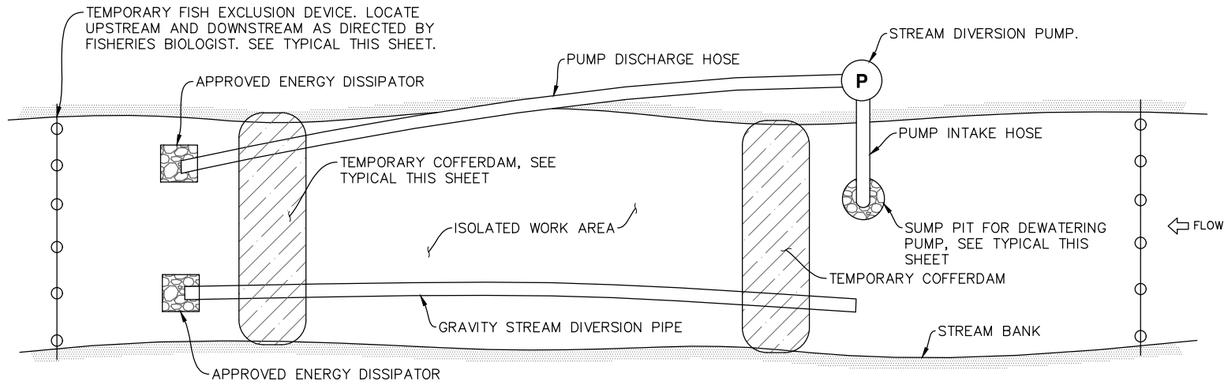
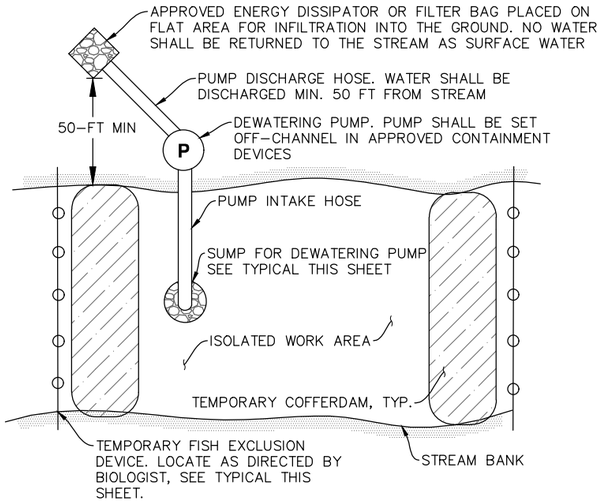


Figure 3. Bridge design cross section for Lower Bear Creek crossing at private drive. Michael Love & Associates, 2022.



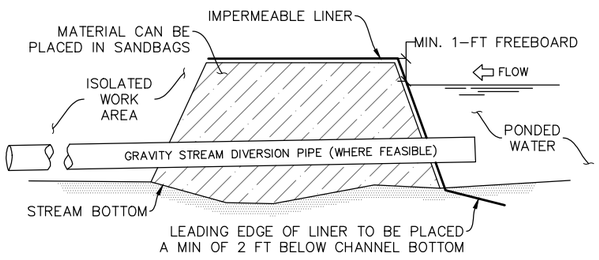
TEMPORARY CLEAR WATER DIVERSION

TYPICAL PLAN (NTS)



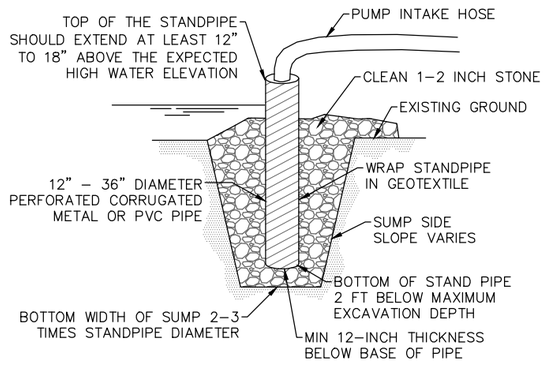
TEMPORARY NUISANCE AND DEWATERING MEASURES

TYPICAL PLAN (NTS)



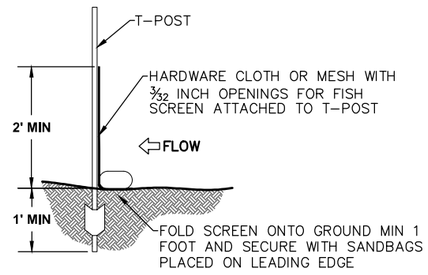
TEMPORARY COFFERDAM

TYPICAL PROFILE (NTS)



SUMP PIT

TYPICAL SECTION (NTS)



TEMPORARY FISH EXCLUSION DEVICE

TYPICAL PROFILE (NTS)

1 TYP **WATER MANAGEMENT**

TYPICAL

WATER MANAGEMENT

GENERAL

1. THE WATER MANAGEMENT FEATURES (E.G. COFFERDAMS) SHOWN IN THE CONTRACT DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL DESIGN A WATER MANAGEMENT APPROACH THAT MEETS ALL PERMIT AND OTHER CONSTRAINTS.
2. WATER MANAGEMENT SHALL INCLUDE THE EXISTING ALIGNMENT OF HOTELLING GULCH (EAST FORK).
3. THE OBJECTIVE OF WATER MANAGEMENT IS TO ISOLATE THE CHANNEL WORK SO THAT WORK IS COMPLETED IN DRY CONDITIONS. TO ACCOMPLISH THIS, THE CONTRACTOR MUST EMPLOY A CLEAR WATER DIVERSION SYSTEM AND A DEWATERING SYSTEM. THE CLEAR WATER DIVERSION SYSTEM BYPASSES CREEK WATER AROUND THE WORK AREA. THE DEWATERING SYSTEM REMOVES "NUISANCE" WATER (E.G. SEEPAGE) FROM WITHIN THE ISOLATED WORK AREA AND IS TREATED TO REMOVE SEDIMENT.
4. NO CONSTRUCTION ACTIVITIES ARE PERMITTED UNTIL A WATER MANAGEMENT PLAN HAS BEEN ACCEPTED.
5. FISH REMOVAL WILL BE CONDUCTED BY A BIOLOGIST PROVIDED BY THE CO. CONTRACTOR SHALL COORDINATE WITH BIOLOGIST DURING PLANNING AND IMPLEMENTATION OF DIVERSION AND DEWATERING ACTIVITIES.

PRODUCTS

COFFERDAM

1. MAY BE CONSTRUCTED USING NATIVE OR IMPORTED MATERIAL PLACED IN BAGS (E.G. SAND BAGS, SUPERSACKS). NO COFFERDAM MATERIAL MAY BE RELEASED TO THE CHANNEL AT THE COMPLETION OF THE CONSTRUCTION WITHOUT APPROVAL.
2. COFFERDAMS SHALL NOT BE OVERTOPPED.

CLEAR WATER DIVERSION SYSTEM

1. GRAVITY SYSTEM IS PREFERRED. SYSTEM SHALL BE CAPABLE OF CONVEYING ALL OF THE STREAM FLOW, 24-HOURS PER DAY UNTIL AREA IS STABILIZED.
2. THE PIPE MATERIAL SHALL BE SELECTED FOR FLEXIBILITY AND DURABILITY TO ALLOW FOR THE OCCASIONAL RELOCATION DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL USE RESTRAINED PIPE JOINTS OR USE FITTINGS AND COUPLINGS THAT PREVENT SEPARATION OF PIPES.
4. THE CONTRACTOR HAS THE OPTION TO USE PUMPING INSTEAD OF GRAVITY FOR THE CLEAR WATER DIVERSION, BUT GRAVITY IS PREFERRED. IF GRAVITY IS NOT UTILIZED, PRESENT REASONS WITHIN THE WATER MANAGEMENT PLAN.
5. THE PUMP AND PUMPING APPARATUS USED FOR THE CLEAR WATER DIVERSION SHALL BE OF SUFFICIENT CAPACITY TO PUMP ALL THE STREAM FLOW ON A 24-HOUR BASIS.
6. THE CONTRACTOR SHALL PROVIDE BACKUP POWER AND PUMPING EQUIPMENT TO ASSURE THAT THE CLEAR WATER DIVERSION REMAINS FUNCTIONAL THROUGHOUT THE TIME PERIOD THAT THE CHANNEL IS ISOLATED.

DEWATERING SYSTEM

1. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, TOOLS, EQUIPMENT, FACILITIES AND SERVICES AS REQUIRED FOR PROVIDING THE NECESSARY DEWATERING WORK AND FACILITIES, AND PROVIDE BACKUP EQUIPMENT AS NECESSARY FOR REPLACEMENT AND FOR UNANTICIPATED EMERGENCIES.
2. NUISANCE WATER IS WATER WITHIN THE ISOLATED WORK AREA.
3. WATER REMOVED DURING DEWATERING SHALL NOT BE RETURNED DIRECTLY TO SURFACE WATERS AND SHALL BE TREATED IN ACCORDANCE WITH PERMITS.
4. REMOVAL OF NUISANCE WATER SHALL BE OPERATED 24-HOURS PER DAY TO MAINTAIN SUITABLE CONDITIONS IN THE WORK AREA, UNLESS APPROVED BY COR.
5. GAS PUMPS SHALL BE SET IN APPROVED CONTAINMENT DEVICES.

EXECUTION

1. NO WORK MAY BEGIN UNTIL THE CONTRACTOR'S WATER MANAGEMENT PLAN HAS BEEN APPROVED.
2. PRIOR TO ANY INSTALLATION OF WATER MANAGEMENT FACILITIES, THE FISH REMOVAL WORK MUST BE COMPLETED.
3. INSTALL WATER MANAGEMENT SYSTEMS PER THE APPROVED WATER MANAGEMENT PLAN.
4. REFER TO CONTRACT DRAWINGS FOR ADDITIONAL INFORMATION.
5. ONCE THE IN-CHANNEL WORK IS COMPLETED AND ACCEPTED, REMOVE WATER MANAGEMENT SYSTEMS PER THE APPROVED WATER MANAGEMENT PLAN AND AS DIRECTED.

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FISH AND AQUATIC ORGANISM MANAGEMENT

GENERAL

1. THE PROJECT AREA WILL LIKELY INCLUDE FISH AND OTHER AQUATIC SPECIES THAT NEED TO BE REMOVED PRIOR TO ANY IN-CHANNEL WORK, INCLUDING THE INSTALLATION OF WATER MANAGEMENT SYSTEMS. THE CONTRACTOR SHALL WORK WITH THE CONTRACT OWNER'S BIOLOGIST TO COORDINATE THE REMOVAL OF FISH AND OTHER SPECIES.
2. NO WORK MAY BE COMPLETED UNTIL THE WATER MANAGEMENT PLAN HAS BEEN APPROVED.

PRODUCTS

1. TEMPORARY FISH EXCLUSION DEVICE AS SPECIFIED.

EXECUTION

1. THE CONTRACTOR MUST COORDINATE WITH THE CONTRACT OWNER AND THEIR BIOLOGIST. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE CONTRACT OWNER AT LEAST ONE WEEK PRIOR TO NEEDING THE BIOLOGIST'S SERVICES.

Michael Love & Associates, Inc.
PO Box 4477 • Arcata, CA 95518 • (707) 822-2411
Mattole Salmon Group
PO BOX 188
Petrolia CA 95558

VERIFY SCALE
THIS BAR IS ONE INCH LONG AT FULL SCALE

Mattole Salmon Group
LOWER BEAR CREEK SLOUGH ENHANCEMENT PROJECT

WATER MANAGEMENT DETAILS

DATE	
SUBMITTAL	MAY 2022
DESIGN	65% DESIGN
DRAWN	AL / ML
SHEET	AL
	30 of 31
	G-100

Appendix B – Mitigation, Monitoring and Reporting Program

Mitigation, Monitoring and Reporting Program (MMRP)

CEQA, Section 21081.6 requires that a mitigation, monitoring and reporting program (MMRP) be adopted to ensure that mitigation measures are outlined and implemented. The MMRP specifies the environmental resource potentially impacted by the project, what the mitigation measures are to reduce significant impact, the entity responsible for each measure and when during the process it should be completed. Additionally, there is a column that will be filled out as each measure is completed. This MMRP addresses the Mattole Salmon Group's Lower Bear Creek Habitat Enhancement Project and is designed to ensure compliance with Public Resources Code 21081.6 during implementation. The proposed project is located in rural Humboldt County; the County of Humboldt Public Works Department is the Lead Agency under CEQA and has discretionary authority over the proposed project.

Mitigation Measure Number	Mitigation Measure	Monitoring, Enforcement and Reporting Responsibility	Implementation Timeframe	Compliance Record/Date
3.3 Air Quality				
AQ-1	**BMPs to Reduce PM_{10}:** - Any surfaces with exposed soil (e.g. staging areas, access roads, graded surfaces, excavation sites) will be watered at least once per day or as needed for dust suppression. - Construction vehicles will not exceed speeds of 15 miles per hour on unpaved roads. - Construction vehicles will work to minimize idling times of all vehicles and machinery	MSG, Construction contractor	During Construction	
3.4 Biological Resources				
BIO-1	**Protect Migratory, Special Status and Nesting Birds:** - There will be no night work or artificial lighting in the Project area. - Vegetation clearing shall occur outside the bird nesting season (Feb 1 to September 15). If vegetation removal occurs outside the bird nesting season, no further mitigation is necessary. If vegetation removal or construction work occur adjacent to suitable nesting habitat between February 1 and September 15, a qualified ornithologist shall conduct pre-construction surveys within the vicinity of the Project at minimum one-day pre-construction survey within the 7-day period prior to vegetation removal and ground-disturbing activities. - If active nests are detected within the construction footprint or up to 500 feet from construction activities, the ornithologist shall flag a buffer around each nest (assuming property access). Construction activities shall avoid nest sites until the ornithologist determines that the young have fledged or nesting activity has ceased. If nests are documented outside of the construction (disturbance) footprint, but within 500 feet of the construction area, buffers will be implemented as needed (buffer size	Mattole Salmon Group (MSG), Construction contractor	24 hours prior to construction, during construction	

	dependent on species). In general, the buffer size for common species will be determined on a case-by-case basis in consultation with the CDFW and, if applicable, with USFWS. Buffer sizes will take into account factors such as (1) noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity; (2) distance and amount of vegetation or other screening between the construction site and the nest; and (3) sensitivity of individual nesting species and behaviors of the nesting birds. An absolute minimum buffer size of 30 feet is recommended as a starting point of discussion for common species, with larger buffers expected for special status species and raptors. - If active nests are detected during the survey, the qualified ornithologist shall monitor all nests at least once per week to determine whether birds are being disturbed. Activities that might, in the opinion of the qualified ornithologist, disturb nesting activities (e.g., excessive noise), shall be prohibited within the buffer zone until such a determination is made. If signs of disturbance or distress are observed, the qualified ornithologist shall immediately implement adaptive measures to reduce disturbance. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed or nesting activity has ceased, placement of visual screens or sound dampening structures between the nest and construction activity, reducing speed limits, replacing and updating noisy equipment, queuing trucks to distribute idling noise, locating vehicle access points and loading and shipping facilities away from noise-sensitive receptors, reducing the number of noisy construction activities occurring simultaneously, and/or reorienting and/or relocating construction equipment to minimize noise at noise-sensitive receptors.			
BIO-2	**Protect Special Status Amphibians and Reptiles:** - By design, the Project will minimize disturbance in the wetted channel to the greatest extent possible. - No wetted channel construction activities will occur during the wet season when they would have the potential to impact sensitive amphibians and reptiles. - Contractors will minimize the potential for sediment runoff into Bear Creek and the Mattole River from on-site erosion by implementing BMPs related to sediment runoff.	MSG, Construction contractor	24 hours prior to construction, during construction	

	At the close of construction any disturbed areas will be revegetated with native plants and mulched. - A maximum of 24-hours prior to the start of construction, a qualified biologist will survey any portion of the wetted channel that falls within the Project footprint prior to the start of disturbance activities to detect and relocate amphibians and reptiles of conservation concern. The biologist will move any fish or amphibians that may be in work sites to suitable habitat outside of the Project footprint. The frequency of the need to re-survey will depend on survey results, duration of disturbance activities, weather conditions post-survey that may influence amphibian movement, and the timing of foothill yellow-legged frog movements into Bear creek form the lower Mattole River.			
BIO-3	**Protect Special Status Fish Species:** - The Mattole Salmon Group will initiate a formal consultation with National Marine Fisheries Service (NMFS) Section 7 of the Endangered Species Act (ESA). - Contractor shall thoroughly clean heavy equipment that will be in the stream channel. Prior to construction all heavy equipment will be inspected thoroughly for oil and fuel leaks and inspected routinely throughout the construction period. Refueling or oiling of any machinery will occur only within the staging area and with proper materials immediately available for spill cleanup. Contractor will develop and implement site-specific BMPs to minimize the risk of hazardous material contamination. Fuels and lubricants shall not be stored at the Project site after hours or on the weekends. - In the event of a spill, the local CDFW office shall be notified and consulted regarding clean-up procedures. Large spills should also be reported to the Office of Spill Prevention and Response, 1700 K Street, Suite 250 Sacramento, CA 95811, or report oil spills to 800-852-7550 or 800-OILS-91 - Instream construction will be limited to June 15 – October 31 to avoid working during wet season conditions. This specific timeframe will allow time for young-of-the-year salmonids to be mobile and decrease their risk to injury, allow downstream migration of smolts to be completed prior to channel disturbance and avoid construction during the rainy season when adult salmonids are entering freshwater to spawn. Construction activities will cease before October 31 with the presence of rain.	MSG, Construction contractor	Prior to construction, during construction	

	- A qualified biologist or Project partner will implement a fish screen capable of precluding movement of aquatic amphibians, fish and reptiles into the active areas of excavation or soil disturbance in the Bear Creek channel and check routinely throughout project duration to ensure proper function. The project will follow the Fish Screening Criteria for Salmonids (NMFS 1997), NOAA Restoration Center/Army Corps of Engineers programmatic biological opinion requirements. The fish screen should be check at a minimum of 2 times per week to ensure proper function by a qualified biologist. - No Project activities will allow the use of pesticides, herbicides, or rodenticides.			
BIO-4	**Protect S3 Vegetation Association:** - Project contractor will ensure that the minimum amount of vegetation will be cleared in order to carry out project activities such as staging and road building. - To ensure that the spread or introduction of invasive plants is avoided to the maximum extent possible, equipment shall be cleaned thoroughly of all dirt, mud and plant material prior to entering the work site. When feasible, invasive plants at the work site will be removed. - There will be no use of herbicide in or around the Project area. - Disturbed areas will be fully restored upon completion of construction. Cleared areas will be revegetated with native species, including species present in the S3 vegetation association. Planting techniques will follow guidelines put forth in Part XI of the California Stream Habitat Restoration Manual, including a 2:1 ratio (two individuals planted for every one removed) and an appropriate planting time frame (after December 1, or when sufficient rainfall has occurred, but in no case after April 1) to maximize seedling survival.	MSG, Construction contractor	During construction	
BIO-5	**Protect One- and Three-Parameter Wetland Habitat:**	MSG, Construction contractor	Prior to construction, during construction	

	Project design will limit filling wetlands with dredged or fill material to the greatest extent possible. In cases where this cannot be avoided, the following mitigation measures will ensure minimal impact to wetlands in the Project area. - Prior to construction activities, the Project will obtain a USACE permit under Section 404 of the Clean Water Act, and a NCRWQCB permit under Section 401 of the Clean Water Act. The Project will also obtain a Lake and Streambed Alteration Agreement from CDFW prior to construction. - A thorough dewatering plan will be developed by the Mattole Salmon Group and the contractor and presented to regulatory agencies for review and acceptance at least 15 days prior to construction. - Staging and stockpiling areas will be at least 100 feet from any existing wetlands, and appropriate erosion control BMPs (silt fences, fiber rolls) will be installed between the staging areas and work zones to minimize any sediment runoff into wetlands. Any stockpiles expected to remain onsite throughout the rainy season will be properly protected from rain and wind by using tarps, silt fences, mulch and straw bales. - Areas disturbed by Project activities will be thoroughly revegetated and mulched upon Project completion so as not to cause any erosion. - Refueling of equipment will not occur within 100 feet of any wetland area. - Any monitoring, maintenance, and reporting required by the regulatory agencies (i.e., USACE, Regional Board, and CDFW) shall be implemented and completed pursuant to established criteria and/or schedules. All measures contained in Project permits or associated with agency approvals shall be implemented in a timely manner.			
3.5 Cultural Resources				
CR-1	**Inadvertent Discovery of Archaeological Material:** Prior to construction, a meeting shall be held with field contractors, where the protocols for inadvertent discovery (described in CR-2) will be communicated. If cultural materials for example: chipped or ground stone, historic debris, building foundations, or bone are	MSG, Construction contractor	Prior to construction, during construction	

	discovered during ground-disturbance activities, work shall be stopped within 66 feet of the discovery, per the requirements of CEQA (Revised Guidelines, Title 14 CCR 15064.5 (f)). Work near the archaeological finds shall not resume until a professional archaeologist, who meets the Secretary of the Interior's Standards and Guidelines, has evaluated the materials and offered recommendations for further action. Tribal representatives shall be notified. Implementation of Mitigation Measure CR-1 would reduce the potential impacts to a less than significant level during construction because a plan would be implemented to address discovery of unanticipated archaeological resources and to preserve and/or record those resources consistent with appropriate laws and requirements.			
CR-2	**Inadvertent Discovery of Human Remains:** If human remains are discovered during project construction, work will stop at the discovery location, within 66 feet, and any nearby area reasonably suspected to overlie adjacent to human remains (PRC, Section 7050.5). The Humboldt County Coroner will be contacted to determine if the cause of death must be investigated. If the Coroner determines that the remains are of Native American origin, it is necessary to comply with State laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (PRC, Section 5097). The Coroner will contact the NAHC. The descendants or most likely descendants of the deceased will be contacted, and work will not resume until they have made a recommendation to the landowner or the person responsible for the excavation work for means of treatment and disposition, with appropriate dignity, of the human remains and any associated grave goods, as provided in PRC, Section 5097.98.	MSG, Construction contractor	During construction	
3.6 Energy				
AQ-1	**BMPs to Reduce PM_{10}:** See above	MSG, Construction contractor	During construction	
3.7 Geology and Soils				
GEO-1	**Erosion Control:** - Construction will occur in late summer when flows are at their lowest and chances of precipitation are minimal. Heavy machinery will not be excessively operated in wetted channels.	MSG, Construction contractor	During construction, post-construction	

	- Stockpiling and staging areas will be isolated from the Project area by using silt fences, mulching, straw bales. - Disturbed areas will be revegetated with native plants and mulched to prevent loss of topsoil.			
GEO-2	**Inadvertent Discovery of Paleontological Remains:** If paleontological remains such as bones, teeth or fossils are discovered during construction activities will be required to give the site a 50-foot buffer and a professional paleontologist will be notified to document the discovery, evaluate the potential resource and determine its significance. The paleontologist will determine if work can continue in the area without further damaging the resource or recommend salvage of the resource. Any fossils collected from the area will be deposited in an accredited scientific institution where they will be properly curated and preserved.	MSG. Construction contractor	During construction	
3.9 Hazards and Hazardous Materials				
BIO-5	**Protect One- and Three-Parameter Wetland Habitat:** See above	MSG, Construction contractor	Prior to construction, during construction	
3.10 Hydrology and Water Quality				
BIO-2, BIO-3, BIO-5, GEO-1	**Protect Special Status Amphibians and Reptiles:** See above **Protect Special Status Fish Species:** See above **Protect One- and Three-Parameter Wetland Habitat**: See above **Erosion Control:** See above	MSG, Construction contractor	Prior to construction, during construction	
3.20 Wildfire				
FIRE-1	**Minimize Risks of Wildfire:** - During construction, all hazardous materials and construction equipment would be appropriately used and stored pursuant to applicable regulations. During operation, the Project would not house any pollutants within the Project Area that may be released if a wildfire occurred.	Construction contractor	During construction	

	- Firefighting equipment (bulldozer, excavator, fire extinguishers, and hand tools) will be on site during construction. The project is adjacent to the Mattole River, which could be available for use by helicopter or ground-based firefighting efforts. - Contractor shall ensure that vehicles and machinery are not parked in tall grass or any other location where heat from the exhaust system could ignite a fire.			

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Lower Bear Creek Habitat Enhancement

North Coast Air Basin, Annual

Appendix C –

CalEEMod Modeling Information and Results

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Residential	1.00	Dwelling Unit	0.00	0.00	3

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	93
Climate Zone	1			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Project involves channel realignment, raising County road and private drive, re-excavating lower Bear Creek channel.

Off-road Equipment - Construction crew will have two excavators.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading - Total of 4.3 graded acres. Material needed for grading is expected to be generated from excavation.

Trips and VMT - Crew will be residing near the project site for the duration of the project. No hauling will be required.

On-road Fugitive Dust - Paving is not a part of this project

Vehicle Trips - Area is defined as rural residential. Residential dwellings are not part of this project.

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Road Dust - Paving is not in project design.

Woodstoves - Restoration project area is defined as rural residential with no dwellings.

Consumer Products -

Area Coating -

Water And Wastewater - Restoration project does not include wastewater

Solid Waste - Restoration project does not generate solid waste

Mobile Land Use Mitigation -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	NumDays	0.00	25.00
tblConstructionPhase	NumDays	0.00	25.00
tblConstructionPhase	NumDays	0.00	35.00
tblConstructionPhase	NumDays	0.00	44.00
tblConstructionPhase	NumDays	0.00	50.00
tblConstructionPhase	NumDays	0.00	20.00
tblConstructionPhase	PhaseEndDate	6/16/2024	10/31/2025
tblConstructionPhase	PhaseEndDate	6/16/2024	7/18/2025
tblConstructionPhase	PhaseEndDate	6/16/2024	8/2/2024
tblConstructionPhase	PhaseEndDate	6/16/2024	10/31/2024
tblConstructionPhase	PhaseEndDate	6/16/2024	9/26/2025
tblConstructionPhase	PhaseEndDate	6/16/2024	8/30/2024
tblConstructionPhase	PhaseStartDate	6/17/2024	9/29/2025
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tblConstructionPhase	PhaseStartDate	6/17/2024	9/2/2024
tblConstructionPhase	PhaseStartDate	6/17/2024	7/21/2025
tblConstructionPhase	PhaseStartDate	6/17/2024	8/5/2024
tblGrading	AcresOfGrading	10.00	2.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblGrading	AcresOfGrading	25.00	2.30
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.0240	0.1897	0.3560			8.5400e-003	1.5822									
2025	0.0129	0.1174	0.1277			4.2900e-003	1.2503									
Maximum	**0.0240**	**0.1897**	**0.3560**			**8.5400e-003**	**1.5822**									

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.0240	0.1897	0.3560			8.5400e-003	1.5822									
2025	0.0129	0.1174	0.1277			4.2900e-003	1.2503									
Maximum	**0.0240**	**0.1897**	**0.3560**			**8.5400e-003**	**1.5822**									

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-17-2024**	**9-16-2024**	0.1454	0.1454
2	**9-17-2024**	**12-16-2024**	0.0582	0.0582
4	**3-17-2025**	**6-16-2025**	0.0010	0.0010
5	**6-17-2025**	**9-16-2025**	0.1108	0.1108
6	**9-17-2025**	**9-30-2025**	0.0135	0.0135
		Highest	0.1454	0.1454

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0630	1.3100e-003	0.0849			0.0109	0.0109									
Energy	0.0000	0.0000	0.0000			0.0000	0.0000									
Mobile	0.0000	0.0000	0.0000			0.0000	0.0000									
Waste						0.0000	0.0000									
Water						0.0000	0.0000									
Total	**0.0630**	**1.3100e-003**	**0.0849**			**0.0109**	**0.0109**									

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0630	1.3100e-003	0.0849			0.0109	0.0109									
Energy	0.0000	0.0000	0.0000			0.0000	0.0000									
Mobile	0.0000	0.0000	0.0000			0.0000	0.0000									
Waste						0.0000	0.0000									
Water						0.0000	0.0000									
Total	**0.0630**	**1.3100e-003**	**0.0849**			**0.0109**	**0.0109**									

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation I	Site Preparation	6/17/2024	8/2/2024	5	35	Prepare site, stockpile materials, clear vegetation
2	Grading I	Grading	8/5/2024	8/30/2024	5	20	Realign private driveway, reexcavate channel

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3	Bridge Construction	Building Construction	9/2/2024	10/31/2024	5	44	Construct bridge on private drivewau
4	Site Preparation II	Site Preparation	6/16/2025	7/18/2025	5	25	Prepare site, stockpile materials, clear vegetation
5	Grading II	Grading	7/21/2025	9/26/2025	5	50	Raise Lighthouse Road, reexcavate channel
6	Culvert Placement	Building Construction	9/29/2025	10/31/2025	5	25	Place culvert

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 2

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation I	Excavators	2	8.00	158	0.38
Grading I	Excavators	2	8.00	158	0.38
Grading I	Graders	1	8.00	187	0.41
Bridge Construction	Cement and Mortar Mixers	1	8.00	9	0.56
Bridge Construction	Excavators	2	8.00	158	0.38
Site Preparation II	Excavators	2	8.00	158	0.38
Grading II	Graders	1	8.00	187	0.41
Culvert Placement		0		158	0.38
Culvert Placement		0			

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation I	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading I	3	8.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Bridge Construction	3	1.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation II	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading II	1	3.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Culvert Placement	0	1.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation I - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust						0.0000	0.0000									
Off-Road	6.3100e-003	0.0491	0.1143			2.4200e-003	2.4200e-003									
Total	**6.3100e-003**	**0.0491**	**0.1143**			**2.4200e-003**	**2.4200e-003**									

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	5.7000e-004	3.8000e-004	3.9000e-003			1.0000e-005	0.7261									
Total	**5.7000e-004**	**3.8000e-004**	**3.9000e-003**			**1.0000e-005**	**0.7261**									

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust						0.0000	0.0000									
Off-Road	6.3100e-003	0.0491	0.1143			2.4200e-003	2.4200e-003									
Total	**6.3100e-003**	**0.0491**	**0.1143**			**2.4200e-003**	**2.4200e-003**									

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	5.7000e-004	3.8000e-004	3.9000e-003			1.0000e-005	0.7261									
Total	**5.7000e-004**	**3.8000e-004**	**3.9000e-003**			**1.0000e-005**	**0.7261**									

3.3 Grading I - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust						0.0000	1.0600e-003									
Off-Road	7.1600e-003	0.0696	0.0821			2.7300e-003	2.7300e-003									
Total	**7.1600e-003**	**0.0696**	**0.0821**			**2.7300e-003**	**3.7900e-003**									

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	5.2000e-004	3.5000e-004	3.5700e-003			1.0000e-005	0.6639									
Total	**5.2000e-004**	**3.5000e-004**	**3.5700e-003**			**1.0000e-005**	**0.6639**									

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust						0.0000	1.0600e-003									
Off-Road	7.1600e-003	0.0696	0.0821			2.7300e-003	2.7300e-003									
Total	**7.1600e-003**	**0.0696**	**0.0821**			**2.7300e-003**	**3.7900e-003**									

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	5.2000e-004	3.5000e-004	3.5700e-003			1.0000e-005	0.6639									
Total	**5.2000e-004**	**3.5000e-004**	**3.5700e-003**			**1.0000e-005**	**0.6639**									

3.4 Bridge Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.2600e-003	0.0701	0.1512			3.3700e-003	3.3700e-003									
Total	**9.2600e-003**	**0.0701**	**0.1512**			**3.3700e-003**	**3.3700e-003**									

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	1.4000e-004	1.0000e-004	9.8000e-004			0.0000	0.1826									
Total	**1.4000e-004**	**1.0000e-004**	**9.8000e-004**			**0.0000**	**0.1826**									

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.2600e-003	0.0701	0.1512			3.3700e-003	3.3700e-003									
Total	**9.2600e-003**	**0.0701**	**0.1512**			**3.3700e-003**	**3.3700e-003**									

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	1.4000e-004	1.0000e-004	9.8000e-004			0.0000	0.1826									
Total	**1.4000e-004**	**1.0000e-004**	**9.8000e-004**			**0.0000**	**0.1826**									

3.5 Site Preparation II - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust						0.0000	0.0000									
Off-Road	4.2000e-003	0.0307	0.0819			1.5000e-003	1.5000e-003									
Total	**4.2000e-003**	**0.0307**	**0.0819**			**1.5000e-003**	**1.5000e-003**									

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	3.8000e-004	2.4000e-004	2.5500e-003			0.0000	0.5187									
Total	**3.8000e-004**	**2.4000e-004**	**2.5500e-003**			**0.0000**	**0.5187**									

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust						0.0000	0.0000									
Off-Road	4.2000e-003	0.0307	0.0819			1.5000e-003	1.5000e-003									
Total	**4.2000e-003**	**0.0307**	**0.0819**			**1.5000e-003**	**1.5000e-003**									

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	3.8000e-004	2.4000e-004	2.5500e-003			0.0000	0.5187									
Total	**3.8000e-004**	**2.4000e-004**	**2.5500e-003**			**0.0000**	**0.5187**									

3.6 Grading II - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust						0.0000	1.2200e-003									
Off-Road	7.7500e-003	0.0861	0.0397			2.7700e-003	2.7700e-003									
Total	**7.7500e-003**	**0.0861**	**0.0397**			**2.7700e-003**	**3.9900e-003**									

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	4.6000e-004	2.9000e-004	3.0600e-003			1.0000e-005	0.6224									
Total	**4.6000e-004**	**2.9000e-004**	**3.0600e-003**			**1.0000e-005**	**0.6224**									

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust						0.0000	1.2200e-003									
Off-Road	7.7500e-003	0.0861	0.0397			2.7700e-003	2.7700e-003									
Total	**7.7500e-003**	**0.0861**	**0.0397**			**2.7700e-003**	**3.9900e-003**									

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	4.6000e-004	2.9000e-004	3.0600e-003			1.0000e-005	0.6224									
Total	**4.6000e-004**	**2.9000e-004**	**3.0600e-003**			**1.0000e-005**	**0.6224**									

3.7 Culvert Placement - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	8.0000e-005	5.0000e-005	5.1000e-004			0.0000	0.1037									
Total	**8.0000e-005**	**5.0000e-005**	**5.1000e-004**			**0.0000**	**0.1037**									

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000			0.0000	0.0000									
Vendor	0.0000	0.0000	0.0000			0.0000	0.0000									
Worker	8.0000e-005	5.0000e-005	5.1000e-004			0.0000	0.1037									
Total	**8.0000e-005**	**5.0000e-005**	**5.1000e-004**			**0.0000**	**0.1037**									

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000			0.0000	0.0000									
Unmitigated	0.0000	0.0000	0.0000			0.0000	0.0000									

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Residential	16.80	7.10	7.90	42.30	19.60	38.10	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

User Defined Residential	0.468989	0.066716	0.199622	0.149202	0.049639	0.009795	0.007015	0.009620	0.000731	0.000208	0.032721	0.001174	0.004569

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000									
Electricity Unmitigated						0.0000	0.0000									
NaturalGas Mitigated	0.0000	0.0000	0.0000			0.0000	0.0000									
NaturalGas Unmitigated	0.0000	0.0000	0.0000			0.0000	0.0000									

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Residential	0	0.0000	0.0000	0.0000			0.0000	0.0000									
Total		**0.0000**	**0.0000**	**0.0000**			**0.0000**	**0.0000**									

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Residential	0	0.0000	0.0000	0.0000			0.0000	0.0000									
Total		**0.0000**	**0.0000**	**0.0000**			**0.0000**	**0.0000**									

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use		Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	tons/yr	MT/yr			
User Defined Residential	0					
Total						

Mitigated

	Electricity Use		Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	tons/yr	MT/yr			
User Defined Residential	0					
Total						

6.0 Area Detail

6.1 Mitigation Measures Area

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0630	1.3100e-003	0.0849			0.0109	0.0109									
Unmitigated	0.0630	1.3100e-003	0.0849			0.0109	0.0109									

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000									
Consumer Products	0.0000					0.0000	0.0000									
Hearth	0.0628	1.2300e-003	0.0775			0.0109	0.0109									
Landscaping	2.2000e-004	9.0000e-005	7.4200e-003			4.0000e-005	4.0000e-005									
Total	**0.0630**	**1.3200e-003**	**0.0849**			**0.0109**	**0.0109**									

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000									
Consumer Products	0.0000					0.0000	0.0000									
Hearth	0.0628	1.2300e-003	0.0775			0.0109	0.0109									
Landscaping	2.2000e-004	9.0000e-005	7.4200e-003			4.0000e-005	4.0000e-005									
Total	**0.0630**	**1.3200e-003**	**0.0849**			**0.0109**	**0.0109**									

7.0 Water Detail

7.1 Mitigation Measures Water

		Total CO2	CH4	N2O	CO2e
Category	tons/yr	MT/yr			
Mitigated					

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated					

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use		Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr	MT/yr			
User Defined Residential	0 / 0					
Total						

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated

	Indoor/Outdoor Use		Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr	MT/yr			
User Defined Residential	0 / 0					
Total						

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

		Total CO2	CH4	N2O	CO2e
	tons/yr	MT/yr			
Mitigated					
Unmitigated					

Lower Bear Creek Habitat Enhancement - North Coast Air Basin, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed		Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr	MT/yr			
User Defined Residential	0					
Total						

Mitigated

	Waste Disposed		Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr	MT/yr			
User Defined Residential	0					
Total						

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix D – Lower Bear Creek Slough Channel Enhancement Background Report

MATTOLE SALMON GROUP

Lower Bear Creek Slough Enhancement Project

(*Lighthouse Road Improvement*)

Regulatory Background Report

Prepared by
Aldaron Laird
Environmental Planner
Greenway Partners

March 2022

Contents

Proposed Project

The Mattole Salmon Group's (MSG) proposed project (Alternative D design) involves enhancing off-channel habitat for over-wintering salmonids, maintaining access to private property, and public access to the coast via Lighthouse Road by reducing flooding in the project reach from Bear Creek. The project involves the diversion of Bear Creek's discharge to augment flow to Dogleg Pool and Middle Slough in the Mattole River estuary. The project will also relocate a private access road/driveway to accommodate the diversion of Bear Creek (Figure 1).

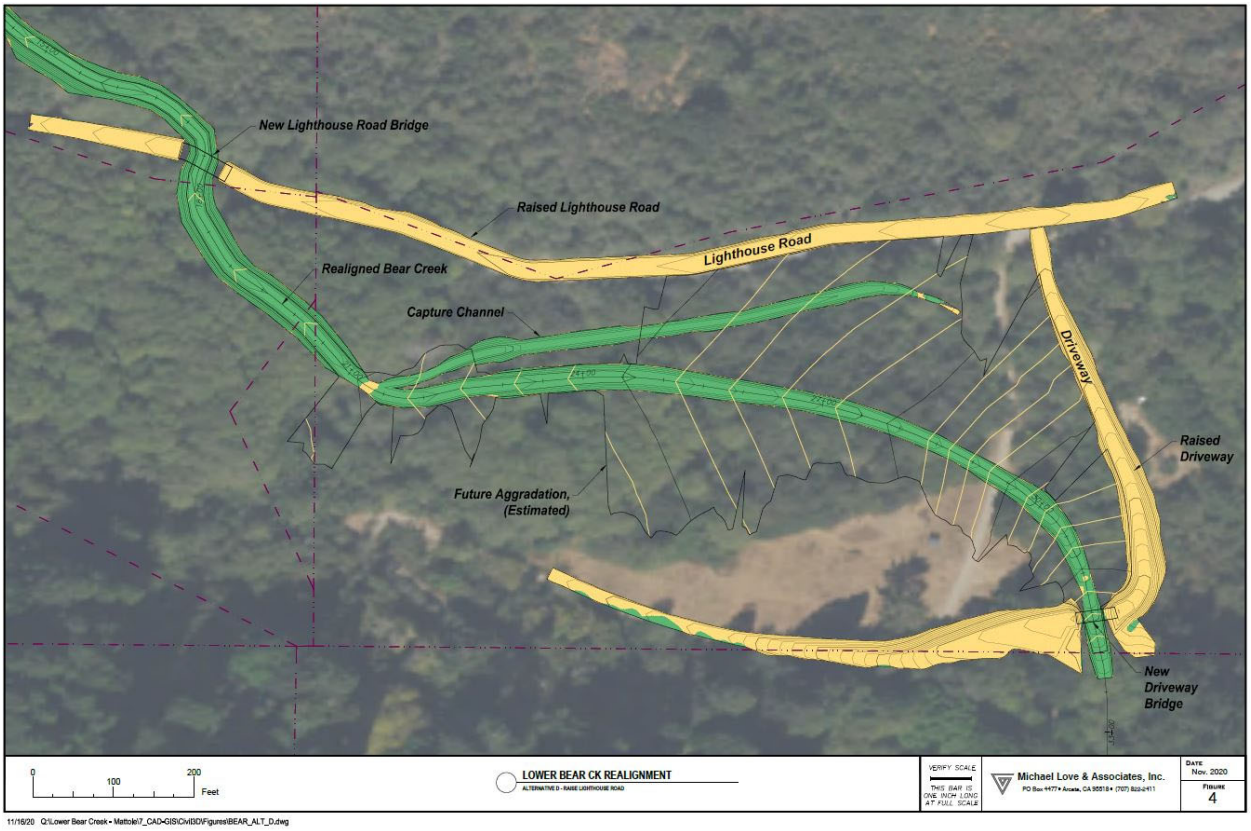

Figure 1. Proposed Bear Creek Slough Enhancement Project (Alternative D).

All areas that will be disturbed while building this project will be cleared of vegetation. A segment of an existing private access road/driveway will be raised in elevation and a new segment located to the east of Bear Creek requiring the installation of a bridge over the stream channel. Bear Creek as it exits steep upland topography will be diverted to traverse three private parcels, cross Lighthouse Road, traverse BLM property connecting to Dogleg Pool and discharging to Middle Slough in the Mattole River estuary. A secondary channel to Bear Creek will be constructed parallel to and south of Lighthouse Road. A bridge will be installed for the new Bear Creek stream crossing on Lighthouse Road, and an existing stream crossing on Lighthouse Road to the west of the new channel crossing will be replaced. Lighthouse Road in the project reach will be elevated three feet to reduce flooding from Bear Creek. Disturbed areas will be planted with appropriate vegetation.

Proposed Project Actions:

Private Property

- Limit vegetation clearing and construction activities to September 1 through February 28,
- Install and routinely check a fish screen capable of precluding movement of aquatic amphibians and fish into the active areas of excavation or soil disturbance,
- Have a qualified biologist survey any portion of the wetted channel prior to the start of disturbance activities to detect and re-locate any amphibians of conservation concern,
- Clear Riparian vegetation from excavation/fill and grading areas,
- Dewater areas to receive fill,
- Isolate work areas and install erosion control measures,
- Excavate/grade and construct new Bear Creek channel,
- Excavate and grade a secondary flow capture channel,
- Divert Bear Creek flows into the new channel,
- Raise elevation of a portion of an existing access road/drive, construct a new segment of the access road/driveway, and construct a bridge over Bear Creek,
- Raise Lighthouse Road a minimum of three feet,
- Use excess excavated material to fill and grade non-wetland open area west of existing access road/driveway,
- Revegetate disturbed areas,
- Post-construction enhancement monitoring plan documenting achievement of project goals, objectives, and performance standards.

Federal Property

- Limit vegetation clearing and construction activities to September 1 through February 28,
- Install and routinely check a fish screen capable of precluding movement of aquatic amphibians and fish into the active areas of excavation or soil disturbance,
- Have a qualified biologist survey any portion of the wetted channel prior to the start of disturbance activities to detect and re-locate any amphibians of conservation concern,
- Clear Riparian vegetation from excavation/fill and grading areas,
- Dewater areas to receive fill,
- Isolate work areas and install erosion control measures,
- Excavate/grade and construct new Bear Creek channel,
- Divert Bear Creek flows into Dogleg Pool and Middle Slough,
- Construct a bridge as a new stream crossing for the relocated Bear Creek on Lighthouse Road,
- Replace and enlarge an existing stream crossing on an un-named tributary on Lighthouse Road,
- Raise Lighthouse Road a minimum of 3 feet,
- Revegetate disturbed areas.

- Post-construction enhancement monitoring plan documenting achievement of project goals, objectives, and performance standards.

Regulatory Review

Regulatory Compliance Issues:

The lower Bear Creek Slough enhancement project involves private property, County right-of-way, and federal property. Permit conditions of approval run with the land, for example stream crossings (culvert) maintenance is the Permittee's (landowner) responsibility. Regulatory compliance on private property is the most inclusive of applicable regulatory statutes and on federal property the least encumbered as local and state statutes do not apply. It may be necessary to proceed on two parallel regulatory compliance tracks, for actions on: 1) private property, and 2) federal property (Figure 2).

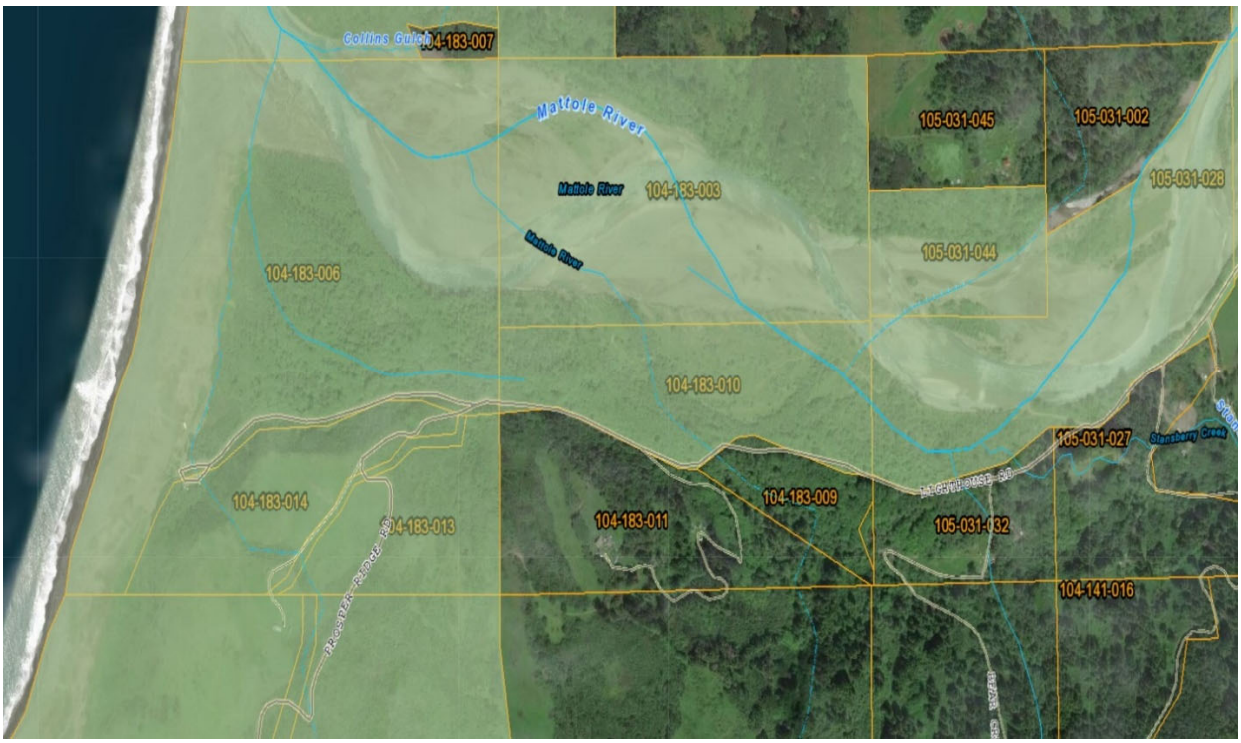

Figure 2. Humboldt County assessor parcels and public (shaded) and private lands on lower Mattole River.

In 2005, the Bureau of Land Management received Coastal Commission concurrence of its Resource Management Plans' consistency determination (CD). BLM's aquatic habitat improvement projects in the lower Mattole River and estuary, including its Middle Slough activities are like work described in its previous CD and negative determinations (ND). The MSG's proposed Bear Creek enhancement project activities on BLM property may also be able to be covered by BLMs previous CD and ND. BLM also secured a Nationwide Permit (NWP 27) from the U.S. Army Corps of Engineers for its aquatic

habitat improvement projects in the lower Mattole River and estuary. It may be possible to cover the proposed Bear Creek enhancement project activities on BLM property if BLM's NWP is still in force, similarly for BLMs Water Quality Certification from the North Coast Regional Water Quality Control Board, and the National Marine Fisheries Service's not likely to adversely affect determination for coho salmon, chinook salmon, and steelhead trout.

Conversion of protected water types is allowed but the "no-net" loss of waters of the state and U.S. will apply. Nearly the entire project footprint is within "state retained" jurisdiction (Coastal Commission), therefore project approval is subject to compliance with policies/regulations in Chapter 3 of the California Coastal Act (Figure 3). The Commission's approval of nearly all the proposed project's actions is crucial, as is the California Department of Fish and Wildlife, and U.S. Army Corps of Engineers

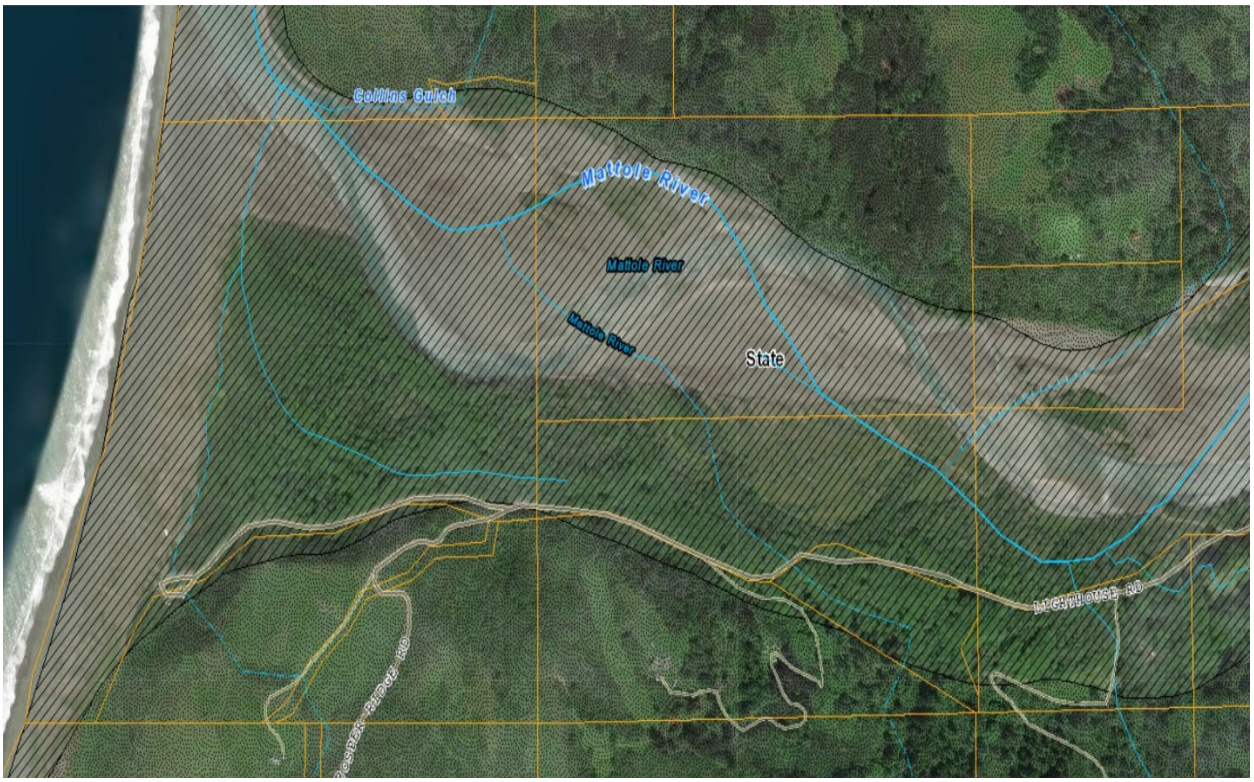

Figure 3. California Coastal Act state retained jurisdiction areas (shaded).

Regulatory Jurisdictions:

Local:

- Humboldt County:
  - Public Works Department-proposed actions in County right-of-way, may require an encroachment permit.
  - Planning Department-proposed actions in Agricultural Exclusive Zone will require a Conditional Use Permit with special consideration likely for

proposed actions in the area designated Prime Agricultural Soils; a Coastal Development Permit for activities outside of state retained jurisdiction on private property; and a Special Permit in Stream Management Areas.
    - Building Department-Floodplain Development Certification for activities in FEMA's 100-year Flood Zone. *[Does this apply on Federal land?]*

State:

- Coastal Commission:

Activities on private property in state retained jurisdiction areas will require a Coastal Development Permit (CDP) from the Coastal Commission, and on federal property Commission concurrence with a Consistency Determination or Negative Determination. Activities on private property outside of the state retained jurisdiction in the County's Local Coastal Program jurisdiction will require a CDP from the County unless the County agrees to consolidate the CDP with the Commission's issuance of a single CDP for both jurisdictions.

Staging and stockpiling areas shall be at least 150 feet from coastal waters, drainage courses, and all wetlands. The proposed design will need to comply with the following sections in Chapter 3:

    - *Section 30231 Biological Productivity:*
      The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.
    - *Section 30233 Diking, Filling or Dredging Wetlands:*
      (a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:
      (6) Restoration purposes.
    - Section 30241 Prime Agricultural Land; Maintenance in Agricultural Production:
      The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas' agricultural economy…

- State Lands Commission:
    - A lease may be required, if the County does not have one for activities in their right-of-way on Lighthouse Road if they are located on State Sovereign lands. A boundary study may be required, if one has not

already been prepared, to determine if State Sovereign Lands are involved in the area selected for construction of a bridge on Lighthouse Road. *[Does this apply on Federal land?]*

- Department of Fish and Wildlife:

Activities will likely be limited to protect aquatic and riparian species between July 1 or possibly August 31 (without nesting survey) and October 31.

  - Streambed Alteration Agreement possible covered activities:
    [Private property and County right-of-way]
    - Clear Riparian and/or wetland vegetation for the new Bear Creek and capture channels, stream crossings, and placement of road fill.
    - Survey for fish, amphibian and reptile and relocation prior to dewatering.
    - Dewater open water/emergent wetlands/groundwater in construction areas.
    - Excavate/grade and construct Bear Creek Debris Berms in Bear Creek.
    - Excavate/grade new Bear Creek and capture channels through riparian and wetlands to Dogleg Pool.
    - Place fill/grade on an existing section of a private access driveway/road and construct a new section road in possible riparian/wetlands areas.
    - Construct a bridge across Bear Creek on private driveway/access road.
    - Place fill/grade and increase elevation of Lighthouse Road.
    - Excavate/grade/construct new bridge on Lighthouse Road.
    - Replace existing stream crossing on Lighthouse Road.
    - Divert Bear Creek flows to Dogleg Pool and Middle Slough.
  - Restoration Management Permit: Only required if a take of a state covered species is likely, possible covered activities:
    [Private property and County right-of-way]
    - Clearing Riparian and/or wetland vegetation for the new Bear Creek and capture channels, stream crossings, and placement of road fill.
    - Aquatic species relocation.
    - Dewatering open water/emergent wetlands/groundwater in construction areas.
    - Augment freshwater inflow to Dogleg Pool and Middle Slough.
- North Coast Regional Water Quality Control Board
  - Water Quality Certification, possible covered activities:
    - BMPs for erosion, sediment, and turbidity control shall be implemented and in place at commencement of, during, and after any ground clearing activities or any other project activities that could result in erosion or sediment discharges to surface water.
    - Clear Riparian and/or wetland vegetation for the new Bear Creek and capture channels, stream crossings, and placement of road fill.

        - Dewater open water/emergent wetlands/groundwater in construction areas.
        - Excavate/grade and construct Bear Creek Debris Berms in Bear Creek.
        - Excavate/grade new Bear Creek and capture channels through riparian and wetlands to Dogleg Pool.
        - Place fill/grade on an existing section of a private access driveway/road and construct a new section road in possible riparian/wetlands areas.
        - Construct a bridge across Bear Creek on private driveway/access road.
        - Place fill/grade and increase elevation of Lighthouse Road.
        - Excavate/grade/construct new bridge on Lighthouse Road.
        - Replace existing stream crossing on Lighthouse Road.
        - Divert Bear Creek flows to Dogleg Pool and Middle Slough.

Federal:

- US Army Corps of Engineers:
    - Nationwide Permits: Proposed project activities would likely qualify for authorization under NWP 3 Maintenance (Lighthouse Road and private access road activities) and NWP 27 Aquatic Habitat Restoration and Enhancement (Bear Creek diversion, channel excavation/grading, stream crossings, road flood protection, and revegetation).
- US Fish and Wildlife Service
    - Endangered Species Act Section 7 Consultation
    - Biological Opinion-Incidental Take Permit
        - The project will clear Riparian and wetland vegetation and divert/dewater an existing stream channel, increase flows to Dogleg Pool and Middle Slough potentially involving disturbance/displacement/relocation of: Willow Flycatcher, Western Pond Turtles, Yellow-Legged Frog, and lamprey, and possibly protected plant species.
- National Marine Fisheries Service
    - ESA Section 7 and Essential Fish Habitat Consultation
    - Biological Opinion-Incidental Take Permit and Conservation Measures
        - The project will clear Riparian and wetland vegetation and divert/dewater an existing stream channel, increase flows to Dogleg Pool and Middle Slough potentially involving disturbance/displacement/relocation of salmonids.

Environmental Setting

Vegetation

Special Status Plant Survey Results Lower Bear Creek Slough Enhancement Project (Lighthouse Road Improvement) (Jen Kalt 2021).

Potential Regulatory Issues:

1. Vegetation types in regions of the state that are already classified, or types with basic levels of identification have been assigned Global and State Rankings based on the NatureServe's Network Core Methodology (2021). Projects with the potential to impact rare types (S1-S3) are required to prepare an Environmental Impact Report by CEQA Guidelines Section 15065(a)(1), since they may have a significant effect on the environment.
2. There is one S3 vegetation type in the project's area of potential effects: The plant association characterized as *Alnus rubra / Salix lasiolepis / Rubus* spp. (Sawyer et al. 2009). This plant association type dominates the majority of the project footprint. Although the Red Alder Forest Alliance is not ranked as rare, all of the associations in this alliance are classified as S3 (VegCAMP, 2021). Reduction in spatial extent of plant association characterized as *Alnus rubra / Salix lasiolepis / Rubus* spp., may necessitate mitigation at a minimum of 1:1 ratio.

No Special Status plants encountered within the project area. The project area is dominated by a Special Status Natural Community (*Alnus rubra / Salix lasiolepis/ Rubus* spp. (Sawyer et al. 2009) which is ranked S3 on the VegCAMP State rarity ranking (2021).

The project is located on the Petrolia USGS quadrangle in the Mattole River watershed along Lighthouse Road in Petrolia, Humboldt County, California on private parcels adjacent to the County right-of-way along Lighthouse Road. The elevation of the project site ranges from approximately 20 to 160 feet above mean sea level. The project site includes Lower Bear Creek, its current and former streambed and streambanks, the County road and private driveways, and areas for stockpiling spoils. Vegetation within the project site are best described as *Alnus rubra* (red alder) Forest, Bigleaf Maple Forest, and Wild Oats and Annual Brome Grasslands (Sawyer et al. 2009; Appendix B). The majority of the project site is occupied by vegetation in the *Alnus rubra* (red alder) Forest Alliance (Sawyer et al. 2009) and is dominated by even-aged stands of red alder with willows and scattered black cottonwoods (Figure 1).

Figure 1. *Alnus rubra* (red alder) Forest Alliance occupies the majority of the project site.

The tree canopy in this area is continuous and is dominated by even-aged stands of red alder with willows and scattered large black cottonwoods. Areas immediately adjacent to Lighthouse Road and the private driveway are dominated by stinging nettle, cow parsnip, and poison hemlock, with a variety of non-native grasses and herbaceous plants.

The shrub layer is sparse to intermittent, and is dominated by California blackberry, thimbleberry, and large patches of slough sedge in depressions that retain water throughout much of the year. The herbaceous layer is open to continuous, and is dominated by stinging nettle, slough sedge, and ferns. The plant association is best characterized as *Alnus rubra / Salix lasiolepis / Rubus* spp. (Figure 2).

Figure 2. The understory within the majority of the project site is dominated by California blackberry, thimbleberry, and large patches of slough sedge.

Upstream from the disturbed area associated with the residence and driveway, a narrow riparian area along the banks of Bear Creek supports red alder, bigleaf maple, California bay, and willow (cover photo). This vegetation type best described as Bigleaf Maple Forest (Sawyer et al. 2009).

The landscape upslope and adjacent to the project site is dominated by the *Pseudotsuga menziesii* (Douglas-fir) Forest & Woodland Alliance (Sawyer et al. 2009). Vegetation types within the project site are show in Appendix B.

Appendix B. Map of vegetation types within the Lower Bear Creek Slough Enhancement Project site.

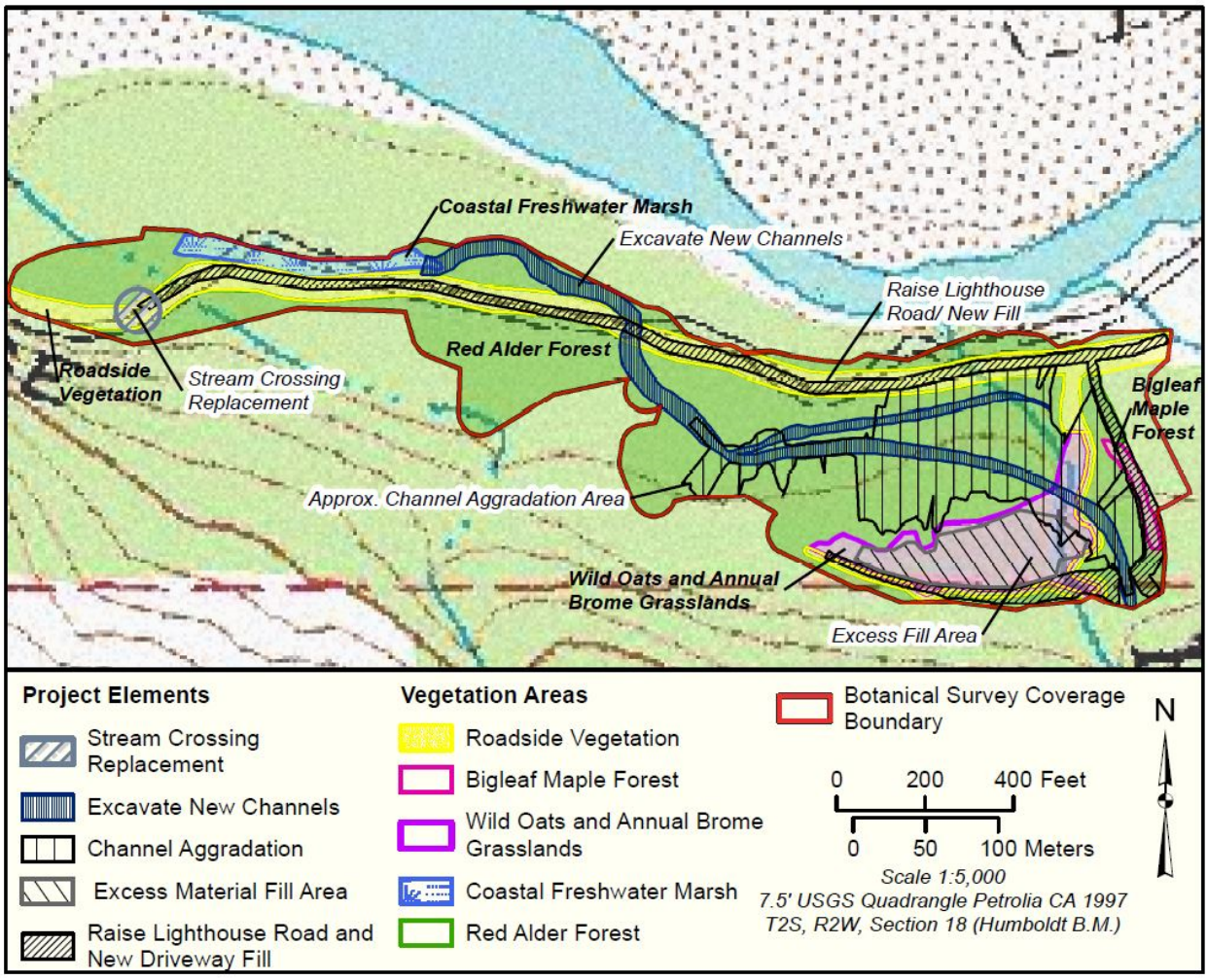

Figure 3. Disturbed flat west of the private driveway.

A disturbed flat west of the private driveway is dominated by grasses and Italian thistle (Figure 3). This vegetation type is best described as Wild Oats and Annual Brome Grasslands (Sawyer et al. 2009)

Vegetation types in regions of the state that are already classified, or types with basic levels of identification have been assigned Global and State Rankings based on the NatureServe's Network Core Methodology (2021). Projects with the potential to impact rare types (S1-S3) are required to prepare an Environmental Impact Report by CEQA Guidelines Section 15065(a)(1), since they may have a significant effect on the environment.

There is one S3 vegetation type in the project's area of potential effects: The plant association characterized as *Alnus rubra / Salix lasiolepis / Rubus* spp. (Sawyer et al. 2009). This plant association type dominates the majority of the project footprint. Although the Red Alder Forest Alliance is not ranked as rare, all of the associations in this alliance are classified as S3 (VegCAMP, 2021).

Although temporary impacts will likely occur as a result of project activities, the project will enhance habitat by creating off-channel salmonid habitat, restoring a more natural hydrologic channel, replacing a road culvert, and replanting disturbed areas with native vegetation.

No further botanical surveys are recommended prior to project activities unless the project footprint is expanded or modified.

Wildlife

Biological Scoping Report for Channel Restoration on Lower Bear Creek (Keith Slauson 2021)

Potential Regulatory Issues:

1. Impacting aquatic amphibian species in the wetted channel and adjacent areas with cover objects (logs, large cobble/rocks) and damp soil underneath.
2. Avoid conducting all activities that will result in the removal of modification of vegetation or generate substantial noise to outside the spotted owl (1 March to 31 August) and passerine bird (1 May to 15 August) nesting seasons avoid impacts to native nesting birds.
3. No pesticides, herbicides, or rodenticides can be used at any time during the development of or during ongoing operations of the proposed project.
4. Pre-project disturbance surveys may be required.

The proposed restoration project consists of re-routing the portion of the Bear Creek channel that approaches and crosses the road to connect it to a historical slough channel on the river side of the road. The project also includes raising the elevation of the road prism to reduce the likelihood for flooding over the roadway (Figure 2). The project parcels lies on a north facing slope and is mainly riparian forest dominated by Red alder (*Alnus rubra*) and willow (*Salix* sp.).

Figure 2. Existing location of lower Bear Creek channel and proposed restoration project for the re-alignment of lower Bear Creek channel and adjacent private roadway; located 3.5 miles southwest of Petrolia, Humboldt County, California.

Species addressed in this assessment include all animal and plant species legally protected pursuant to the California and Federal Endangered Species Acts (CESA and FESA, respectively), California's "Fully Protected Species" statutes (California Department of Fish and Game (CDFG) codes 3503.5, 3505, 3511, 4700, 5050 and 5515), and the California Environmental Quality Act (CEQA). This assessment utilizes three elements: 1) queries of state and federal agency databases for species occurrence in the biological assessment area for the proposed project 2) an assessment of current habitat conditions to support species of conservation concern in the biological assessment area for the proposed project and 3) a site visit to the existing project area to evaluate habitat conditions and detect species present during the site visit. The California Natural Diversity Database (CNDDB), the Biogeographic Information Observation System (BIOS), and the northern spotted owl database (Gould 1997) for the project region were queried for the occurrence of species of conservation concern in the proposed project region. The proposed project region is defined as the 9-quadrangle area centered on the Arcata north quadrangle and also includes: Cape Mendocino, Capetown, Taylor Peak, Petrolia, Buckeye Mtn., Bull Cr., Cooksie Creek, Shrubrick Peak and Honeydew. The CNDDB and BIOS were queried in May of 2021, and a current official list of federally threatened, endangered, or candidate species for the proposed project region was obtained in May of 2021. Finally, this assessment also considered any other species listed on the California Department of Wildlife's (CDFW) special animals list (CDFW 2019) that are known to occur in the project region, based on additional literature and/or habitat

conditions, that were not identified by during the database queries. All species of conservation concern identified in these queries, habitat assessments, and during site visits are included in Appendix 1. I visited the proposed project site and evaluated the habitat conditions for terrestrial and aquatic wildlife species on four occasions from 21st of June through the 16th of August 2020 (Figures 2).

CNDDB Database Query—A total of 27 animal species of conservation concern were identified in the CNDDB database query. The animal species included 5 species of amphibian, 6 species of birds, 1 species of insect, 8 mammals, 1 mollusk, 4 species/runs of fish, and 1 reptile (Table 1). Thirteen additional bird species were considered based on their known occurrence in the existing project area (Table 1; Hunter et al. 2005). Five additional mammal species were also considered based on their potential occurrence in the proposed project area. Fifteen animal species of conservation concern were considered to have the potential for negative effects from the existing project activities (Table 1). Seven aquatic species, including 4 amphibians and 4 fish species/stocks, have the potential for direct effects of working in the channel while they are present and/or indirect effects of sedimentation of habitat for one or more life stages (Table 1). Four species of raptors have the potential for negative effects due to the presence of suitable nesting habitat within the proposed project area (Table 1). Four riparian habitat associated birds, including the western yellow-billed cuckoo and willow flycatcher, have the potential to be negatively affected due to the presence of suitable habitat within the proposed project area.

Recommended Biological Surveys Conditional for Project Approval

1. One-year protocol level surveys for Willow flycatcher to determine occupancy status and presence of any activity centers within 300 feet of proposed project site.

2. One-year protocol level surveys for Western yellow-billed cuckoo to determine occupancy status and presence of any activity centers within 300 feet of proposed project site.

3. Concurrent with flycatcher and cuckoo surveys, conduct spot mapping for any sensitive riparian nesting species, including yellow-breasted chat and yellow warbler, to determine potential nest locations with the proposed project area.

4. Search for any hawk or owl nests within 300 feet of the proposed project area.

5. Survey the areas with suitable habitat for sensitive amphibians to determine occupancy within the project footprint.

Results of Recommended Surveys

Willow Flycatcher—Two protocol surveys were conducted on the 21st of June (survey period 2) and the 12th of July (survey period 3) in 2020. No Willow flycatchers were detected during these surveys.

Western Yellow-billed Cuckoo—Four protocol surveys were conducted on the 21st of June, 12th and 26th of July, and the 16th of August in 2020. No cuckoos were detected during these surveys.

Foothill Yellow-legged Frog—Visual encounter surveys along the wetted channel above the road during the July and August 2020 bird surveys resulted in the detection of multiple adults. This suggests that lower Bear Creek likely supports wintering and seasonal migration habitat for these frogs to move into and out of the Mattole River for the breeding season.

Pacific Tailed Frog—Surveys further up lower Bear Creek for occupancy of trailed frogs was hampered on both survey occasions in 2020 due to the presence of several loose dogs who approached the surveyor and acted aggressively. Fortunately, the presence of this species further up the creek channel had been confirmed from other individuals that had surveyed the area previously. This suggests that lower Bear Creek supports tailed frogs and is likely a breeding location.

Recommended Avoidance, Minimization and Mitigations Measures Conditional for Project Approval

1. Minimize the potential for impacting aquatic amphibian species in the wetted channel and adjacent areas with cover objects (logs, large cobble/rocks) and damp soil underneath.

    A. Implement a fish screen capable of precluding movement of aquatic amphibians and fish into the active areas of excavation or soil disturbance on the Bear Creek channel. Routinely check the screen throughout the duration of the project to ensure proper function.

    B. Have a qualified biologist survey any portion of the wetted channel prior to the start of disturbance activities to detect and re-locate any amphibians of conservation concern. Specifically search suitable habitats for the presence of adult or larval tailed frogs, southern torrent salamanders, foothill yellow-legger frogs, and northern red-legged frogs where disturbance will occur.

2. Avoid conducting all activities that will result in the removal of modification of vegetation or generate substantial noise to outside the spotted owl (1 March to 31 August) and passerine bird (1 May to 15 August) nesting seasons avoid impacts to native nesting birds.

3. Avoid conducting all activities within wetted channels during the wet season when they have the potential to impact one or more fish species of conservation concern.

4. Minimize the potential for sediment run off into Bear Creek and the Mattole River from on-site erosion by implementing or improving best management practices for all channel, road prism alternation, or any ongoing maintenance needed to support the proposed project.

5. No pesticides, herbicides, or rodenticides can be used at any time during the development of or during ongoing operations of the proposed project.

6. Re-vegetate all areas with a similar composition of native plants. Eradicate all invasive non-native plant species that become established after any or all restoration activities in the proposed project area.

Plan and Budget for Monitoring During Proposed Project Activities

Fish and Amphibian Screen-A qualified biologist or qualified project partner will install a fish screen up-channel from the portion of Bear creek where the wetted channel will be impacted by the proposed project activities. After installation, all downstream habitat should be searched to re-locate any species life stages dependent on flowing water upstream of the screen or to other suitable habitats. The fish screen should be check at a minimum of 2 times per week to ensure proper function by a qualified biologist. Installation of the fish screen and post install downstream surveys will likely require a maximum of one 10-hour day of a qualified biologist's time.

Pre-disturbance Amphibian Surveys-During any phase of the project where wetted channel, adjacent moist channel-side habitats or other habitats capable of supporting any of the 4 amphibian species of concern identified in Table 1, will be disturbed and amphibians present could be adversely impacted a qualified biologist will need to conduct surveys to detect and re-locate any and all amphibian species found. Re-location should occur higher up in Bear creek or to suitable habitats adjacent to the project area disturbance footprint. The initial first pre-disturbance amphibian survey should be done immediately prior to the start of habitat disturbance activities and will likely require 8-10 hours to be completely surveyed by a qualified biologist. This initial survey can be combined with the installation of the fish screen to be most cost effective. The frequency of the need to re-survey will depend on survey results, duration of disturbance activities, weather conditions post-survey that may influence amphibian movement, and the timing of foothill yellow-legged frog movements into Bear creek form the lower Mattole river. Single surveys at the start of each work week where disturbance activities will occur is recommended until the afore mentioned conditions can be evaluated and integrated into a fully informed plan.

Fisheries

Bear Creek and Dogleg Pool Fisheries and Habitat information (Nathan Queener, Mattole Salmon Group 2022)

Bear Creek

Bear Creek is currently not accessible to anadromous fish except during very rare extreme flow events, due to a lack of surface flow connection between the stream and the mainstem Mattole River. It is currently estimated that a Mattole River flow of at least

30,000 cfs (a ~1.5 yr recurrence flow) would be necessary to allow adult salmonids to enter the creek.

No surveys of Bear Creek for juvenile salmonids have been conducted since 2009, due to the low likelihood of fish entering the stream with the current channel configuration. From 2007-2009 snorkel surveys were conducted annually in May or June, and again in September. In May 2007 one juvenile steelhead was observed in Bear Creek upstream from Lighthouse Rd. Residents of the property through which the stream flows observed additional juvenile steelhead in a 200' reach of the stream in June and July. No fish were observed during any other surveys during this period.

Prior to 2007, there are anecdotal accounts of juvenile coho and steelhead in the Bear Creek channel, and the observation of a spawning adult coho salmon in 1993.

In its current configuration, there is a maximum 600' of channel upstream of Lighthouse Rd that offers potential spawning and rearing habitat, if flows were sufficient to allow fish access. Channel gradient ranges from 2-5%, and then steepens quickly at the upstream end to >10%, with multiple 3-4' channel steps that limit further upstream access. Current spawning habitat is very poor, with highly embedded, angular gravels. Rearing habitat is also poor due to a lack of pool depth, large woody cover, and the confined nature of the channel due to the stream being straightened and confined by levees multiple times between 1975 and the mid-1990s. In March of 2019 a large debris flow in a storm event aggraded the leveed channel, and caused the stream to avulse to the east, where it currently flows across a sparsely vegetated alluvial fan.

In 2007-2009 temperature probes were deployed in Bear Creek upstream from Lighthouse Rd during the summer months. Water temperatures were cool and suitable for salmon and steelhead, with a maximum week average temperature over the three summers of 14.4 degrees C.

Surface flow is perennial at the southern extent of this reach, where Bear Creek exits an inner gorge and flows over the upstream edge of the alluvial fan. Surface flow on the alluvial fan gradually retreats upstream during the spring and summer, and in dry years all but the upstream most ~100' of this channel has no surface flow by late summer.

Dogleg Pool

This ~500' long feature is immediately north of Lighthouse Rd, west and downstream of Bear Creek. Over the last decade, during some high flow periods the Dogleg is connected to the slough system downstream and the mainstem Mattole, but for most of the year the feature is an isolated pool, with maximum depths of 3-4' during the wet season, shrinking to <1' during the summer. Some surface water does remain in the Dogleg Pool throughout the summer.

This off-channel pool occupies a depression that was the main river channel in the 1970s and early 1980s. In the winter of 1982-83 the river thalweg migrated to the north, and this feature, as well as associated relict channels to the west provided off-channel/slough habitat at winter storm flows and when estuary/lagoon water levels were

high. The channel gradually became vegetated with alder and willow, and sediment deposition built up the alluvial terrace to the West, North, and East of the feature. By the mid-1990s the Dogleg Pool was isolated from the main river channel and inaccessible to fish except with bankfull or greater flood events, due to the effects of sediment deposition, and channel incision occurring as a result of the meter of uplift caused by the 1992 Cape Mendocino earthquakes.

In 2014 the first phase of excavation of the Middle Slough to the northwest of the Dogleg Pool greatly increased the hydrologic window under which fish were able to access the Dogleg Pool by removing a berm of sediment that had blocked fish access to the relict channel. Following this project in 2014 fish access to the Dogleg was possible at mainstem flows of approximately 6,500 cfs at the Petrolia gaging station, a 5% exceedance flow. Between fall of 2014 and early 2016 fish access to the Dogleg became possible under slightly lower flows as a greater amount of water from Bear Creek storm flows went west into the Dogleg in response to sediment deposition in the previous Bear Creek channel. From 2016 to February of 2019 surface flow was observed connecting the Dogleg to the Middle Slough at flows as low as 2500 cfs at the Petrolia gage, a 15% exceedance flow, although slightly higher flows would likely be necessary for upstream passage by juvenile fish to provide sufficient depth with suitable velocities.

In large storms in late February of 2019 debris flow deposition on the Bear Creek alluvial fan forced Bear Creek flow to the east, decreasing flow to the Dogleg and decreasing the period of connectivity with the Middle Slough and mainstem Mattole, again requiring flows of greater than 5,000-6,000 cfs

In the summer of 2020 Phase 3 of the Middle Slough excavation lowered the channel elevation between the Dogleg Pool and Middle Slough, again allowing for surface flow connection at Mattole River flows of ~2500 cfs.

Fish surveys have been conducted rarely in the Dogleg Pool due to the generally poor water clarity, due to algal growth and runoff from the graveled surface of Lighthouse Rd, and the brief hydroperiod during which it is connected to the mainstem Mattole. During nighttime snorkel surveys in February of 2016 a 1+ steelhead parr and 50 threespine stickleback were observed. In March of 2017 no fish were observed, although visibility was poor, <1 m. On 5/2/2019 an eDNA sample taken from the Dogleg Pool showed the presence of DNA from steelhead, indicating the presence of at least a single individual in the feature.

In 2020 and 2021 Red-legged frog tadpoles and threespine stickleback have been observed in the Dogleg Pool.

Below from Appendix F, North Coast Watershed Assessment Program Mattole River Watershed Synthesis Report, 2003:

Table 37. Summary of available stream data in the Western Subbasin other than 1990s CDFG stream surveys.

Comments are taken from the various data sources. 1990s CDFG Stream Surveys are summarized in the Condensed Tributary Reports Section of the CDFG Appendix.

Tributary	Source	Date	General Comments	Fish Comments	Habitat Comments	Barrier Comments	Management Recommendations
(Lower) Bear Creek	Coastal Headwaters Association Survey	1981-1983	In late July 1982, creek dry below Lighthouse road culvert	During survey, few fry and yearling steelhead trout noted; One coho salmon fry positively identified through minnow trapping; Historically supported small runs of coho salmon and steelhead trout; According to one long-term resident, Chinook salmon not known to utilize Bear Creek for spawning	Spawning potential fair; Rearing habitat limited	Culvert not a passage problem at high water; 12ft high falls/cascade 0.4 miles upstream from mouth	

Text below from 2005 Mattole Watershed Plan:

Bear Creek

Bear Creek is part of a complex of cold seeps, springs and small streams that flow from the south valley wall. These water sources maintain temperatures in the 58 to 64 degree range and flow into a well-covered channel along the south bank. In August of 2004, there were pools of 58° standing water in these channels (MSG 2004). At present, the seeps no longer connect to Bear Creek and the result is insufficient summer volume to maintain connectivity to the mainstem.

Bear Creek is closest to the ocean of the south bank fish-bearing tributaries in the Mattole. In l975, a landowner diverted it to run directly to the then mainstem channel in order to convert riparian alder forest to pasture. Instead of following

its former 2,000-foot channel along the south valley wall into the "South Slough," Bear Creek now runs directly north and under Lighthouse Road, emerging onto the floodplain terrace. Here, vast sediment deposits have raised elevations such that the stream assumes a different meander during every major storm. At this writing, it runs in the dirt track that vehicles use to reach the eastern end of the estuarine area. Coho have been observed spawning in Bear Creek as recently as 1993. Steelhead still spawn in the short reach between the culvert at Lighthouse Road and the beginning of the steep gorge.

Lower Bear Creek Project Summary

Mattole Salmon Group

June 3, 2021

Bear Creek is a small (<1 sq mile drainage area) tributary flowing into the Mattole River just upstream of the Mattole estuary. This stream is often referred to as Lower Bear Creek to differentiate it from the much larger Mattole tributary near Ettersburg. It drains forested north-facing hillslopes, and exits a steep inner gorge onto the historical floodplain of the Mattole River 500' south of the current location of Lighthouse Road.

Historically, the route of Bear Creek and the Mattole River across the river's floodplain changed with winter storm flows. This process of channel migration created a mosaic of side channels and wetlands, and is thought to have provided high-quality rearing habitat for juvenile salmon and steelhead in these channels and at the upper limit of tidal influence in the Mattole estuary. With the establishment of Lighthouse Road as a year-round thoroughfare this channel migration ceased. In the 1970s a straight channel was excavated from where Bear Creek leaves the canyon straight north to a culvert under Lighthouse Road. In the subsequent decades multiple landowners and the County used heavy equipment to keep Bear Creek flowing in this channel, which offered little habitat for salmon and steelhead, and was typically connected to the river only in high flow events. With greater scrutiny from regulatory agencies in the past several decades this channel clearance ceased, and the excavated channel and culvert gradually filled in with sediment, with increasing amounts of stormflow from Bear Creek flowing spilling out of the channel and flowing both east and west. In the spring of 2019, a large flow event completely filled this excavated channel and this deposition pushed the main course of Bear Creek to the East, where most of the flow sinks into the forested floodplain. Only during winter stormflows is there a surface flow connection to the river, in multiple locations over Lighthouse Road.

The current configuration of Bear Creek has little benefit for native fish and amphibians, and also results in frequent flooding of Lighthouse Road that impedes vehicle passage and threatens to erode and gully the road surface. The Mattole Salmon Group and project partners are currently engaged in a project to plan and design a channel route

for Bear Creek across the floodplain that enhances habitat for salmon and steelhead, improves landowner access to property and residences, and improves public safety and access along Lighthouse Road in the vicinity of Bear Creek.

Cultural

Cultural Resource Investigation Report for the Lower Bear Creek Slough Enhancement Project Petrolia, Humboldt County, California (Melinda Salisbury and James Roscoe, Roscoe and Associates (2021)

Potential Regulatory Issues:

1. If potential archaeological or paleontological resources are encountered during project subsurface construction activities or geotechnical testing, all work within 50 ft of the find shall be stopped, and a qualified archaeologist shall be contacted to evaluate the find, determine its significance, and identify any required mitigation. The applicant shall be responsible for implementing the mitigation prior to construction activities being re-started at the discovery site.
2. If project related geotechnical excavations become necessary, as a result of final design, and those excavations are to be more than one ft deep, then the THPOs of each local native American tribe, as noted above, will be contacted and given the date and time of excavations so that a cultural monitor may be present to observe for the presence of buried archaeological materials.

Confidential Information

This report contains confidential information. Archaeological and other heritage resources can be damaged or destroyed through uncontrolled public disclosure of information regarding their location. Any information regarding the nature and location of archaeological sites should not be disclosed to unauthorized persons.

This information is exempt from the Freedom of Information Act pursuant to 16 U.S.C. 470w-3 (National Historic Preservation Act) and 16 U.S.C. § 470hh (Archaeological Resources Protection Act) and California State Government Code, Section 6254.10.

In 2020 and 2021, Roscoe and Associates (RA) conducted a cultural resources investigation of the Lower Bear Creek Slough Enhancement Project, currently proposed in southwestern Humboldt County, California. The project is located on both private property and lands administered by the Bureau of Land Management, and will be implemented along Bear Creek, near its confluence with the Mattole River, approximately 3.5 miles south-west of Petrolia. The project is being funded by a Fisheries Restoration Grant from the California Department of Fish and Wildlife.

Greenway Partners requested the investigation to assist the grantee, Mattole Salmon Group, in satisfying the environmental requirements specified in the California Environmental Quality Act (CEQA) and its guidelines with regard to historical and tribal cultural resources (California Public Resources Code (PRC) Section 21084.1, CA AB52 Chapter 532 (2014)) as well as the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470f), and its implementing regulations regarding historic properties. For the purposes of this document, the terms "project area" and "area of potential effect (APE)", will be used interchangeably.

In order to complete this investigation, RA conducted a review of regional archaeological and ethnogeographic literature, and historical maps; a project area record conducted by the California Historical Resources Information System's Northwest Information Center (NWIC) in Rohnert Park California; correspondence with local Native American tribal representatives; and a pedestrian field survey. The RA consultants who completed the investigation meet the Secretary of Interior's Professional Qualifications Standards for Archaeology (Title 36 Code of Federal Regulations Part 61, and 48 Federal Regulation 44716). James Roscoe, M.A., oversaw all aspects of the investigation. Derby McLaughlin assisted Mr. Roscoe with the field survey and Melinda Salisbury B.A. assisted with preparation of this report.

Regional ethno-geographic research indicates that the APE lies within the traditional territory of the Mattole People. Ethnographers of the southern Athabascans note that a seasonal round was followed; spending winters in their primary villages in the major river valleys and going into the hills in summer to hunt and gather seasonal plant foods. Spring and fall brought them to the major streams for the salmon runs. Elsasser (1978) notes that fish were the primary food resource for the Sinkyone and their neighbors, the Mattole. Indian Charlie, a Sinkyone informant for Goddard, provided a partial list of 42 villages on the Mattole River and the coast, which was synthesized by Baumhoff (1958). Known Mattole archaeological sites in the vicinity of the APE are generally located to the west, along the coastline.

The NWIC record search revealed that portions of the APE have been included in two previous cultural resource investigations, however no cultural resources were identified by these studies (S-042049| Rich et al. 2003, and S-051527| Roscoe and Raskin 2015. No resources have been found within the direct APE; two resources are present within 0.5 miles. The Mattole Lumber Company Wharf and Railroad (P-12- 001174) is documented 0.17 miles north of, and across the river from, the APE. This resource has reportedly been largely destroyed (Greenway 1997). The early 20$_{th}$-century Clark Barn (P-12-001173) is documented 0.30 miles north of the APE.

RA also requested information regarding previous archaeological research in the APE from the Bureau of Land Management, Arcata Field Office. On June 15, 2020, Archaeologist, Sharyl Kinnear-Ferris, MA, provided two documents for review. An Environmental Assessment (EA)/Initial Study (IS) for restoration projects at the mouth of the Mattole River (Ruddy 2018) and a Cultural Resources Report for the Lower Mattole River Projects (Kinnear-Ferris 2018). The Kinnear-Ferris 2018 study encompasses portions of the current APE and found that the previously documented Mattole Lumber

Company Wharf and Railroad (P-12-001174), no longer demonstrates physical integrity, likely as a result of being buried by huge mud slides during particularly large storm events. This site has been evaluated as not eligible to the NRHP.

Mr. Roscoe corresponded with Erika Cooper M.A., the Tribal Historic Preservation Officer (THPO) for the Bear River Band of Rohnerville Rancheria, throughout the investigation. On June 10, 2020, RA sent a letter to Ms. Cooper with the project map, and on June 11, Mr. Roscoe followed up with a phone call to discuss the status of the project and the negative findings of the field survey. Mr. Roscoe left a voice message and correspondence is ongoing, though no concerns regarding the project have arisen thus far.

Archaeologists, James Roscoe M.A. and associate Derby McLaughlin conducted a pedestrian field survey of the APE on May 21, May 22, and July 3, 2020 to identify and record resources that could be affected by implementation of the project. Nathan Queener, Salmonid Population Monitoring Coordinator for Mattole Salmon Group guided the surveyors to each location slated for restoration. Mr. Roscoe and Ms. McLaughlin surveyed a total of approximately 21.5 acres, covering the entire APE, and utilizing systematic parallel and zig-zag transect methods. Despite adequate survey conditions, no archaeological deposits buildings or structures that would qualify as historical or unique archeological resources (CEQA Guidelines Sections 15064.5 (a) and 21083.2 (g)) and no tribal cultural resources (in California Public Resources Code Section 21074), were identified within the proposed APE during this investigation. In addition, no historic properties were identified in the APE (NHPA of 1966, as amended (16 USC 470f), and it’s implementing regulations).

Appendix E – Basis of Design Report & 65% Design Plans

The Basis of Design Report and Design Plans were completed by Michael Love & Associates. Supporting work including the Geotechnical Investigation and Structure Selection memos from SHN are also found in this document. The entire file is rather large,105MB, and can be downloaded in its entirety from the following link:

www.h2odesigns.com/Mattole/LBC_Basis_of_Design_65prct.pdf