Mitigation Monitoring and Reporting Plan

Humboldt Bay Regional Spartina Eradication Plan

Mitigation	Implementing Responsibility	Monitoring Responsibility	Timing
MITIGATION AV-1: Post Educational Signs. Educational signs shall be posted in areas where public use is high. The signs will explain Spartina's ecological impacts and describe the project. Increased public understanding of the project will improve the public's reaction to the temporary adverse change to the scenic marsh vista.	Coordinating Entity Project Manager	Coordinating Entity Project Manager	Beginning of first treatment season and each treatment season thereafter
MITIGATION AV-2: Limit covering. In any given area that is visible from a public vantage point, including roads, highways and other areas of relatively high public use, covering shall be limited to 0.5 acres.	Coordinating Entity Project Manager	Coordinating Entity Project Manager	During control
 MITIGATION AQ-1: Dust Control. Apply dust control measures where treatment methods may produce visible dust clouds and where sensitive receptors (i.e., houses, schools, hospitals) are located within 500 ft of the treatment site. The following dust control measures shall be included: Suspend activities when winds are too great to prevent visible dust clouds from affecting sensitive receptors; and Limit traffic speeds on any dirt access roads to 15 mi per hour. 	Spartina control contractor	Coordinating Entity Project Manager	During control
MITIGATION AQ-2: Smoke and Ash Emissions. The Management Area is within NCUAQMD Smoke Management Zones 1 and 2. Therefore, for prescribed burns, notification of and coordination with NCUAQMD and a local fire agency shall happen well in advance, prior to initiating the burn. Depending upon the quantity of material to be burned, the District APCO may request that a burn authorization number be obtained prior to ignition. On a project specific basis, a burn permit may be required with NCUAQMD to address potential issues with smoke and as a component of a smoke management plan, if deemed necessary. Additional notification to the local fire agency and/or department may also be required as deemed appropriate by the APCO. The following shall be conducted as a part of this mitigation measure:	Coordinating Entity Project Manager	Coordinating Entity Project Manager	At least one month before initiating burns
• Initiate consultation with the District APCO by calling (707) 443-3093 (or the current phone number) to determine if the following would be required for the site specific project:			
 Burn authorization number, 			

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 Burn permit, and/or Smoke management plan, as well as Consultation with additional agencies such as the local fire agency and/or department. If the treatment is occurring within the jurisdiction of a local fire agency and/or department, initiate consultation well in advance, prior to the initiating the burn. 			
MITIGATION BIO-1: Minimize Effects of Mechanical Spartina Removal Methods to Special Status Fish Species. On a project specific basis, a habitat analysis shall be done to determine if special status fish species have the potential to occur. If they could occur, then surveys may be done to establish that these species are absent, using protocols approved by USFWS or NMFS. If such surveys are not conducted, then the species will be assumed present. If special status fish species are present, then <i>Spartina</i> control methods will be selected that minimize potential impacts. To minimize erosion effects, control methods that are most likely to cause erosion (i.e., grinding, tilling, disking and digging/excavating) will not occur within 15 ft of any aquatic habitat containing special status fish species, but this distance could be increased depending on site specific conditions, such as soil stability and bank slopes. Additionally, amphibious vehicles will not contact the channel substrate where special status fish species are present and the vehicles will be operated in such a manner that they avoid causing erosion into the channels. Furthermore, no flooding will be conducted in areas where special status fish species are present. Treatments that do not involve ground disturbance, such as top mowing, crushing, chemical treatment and covering will be the only methods used in close proximity (e.g., within 15 ft) to special status fish species. This mitigation measure is intended to avoid take as defined by the ESA and California ESA.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Habitat analysis to be conducted at least one month before treatment

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MITIGATION BIO-2: Minimize Noise Effects. Breeding special status birds could be present based on habitat and time of year. The breeding season is generally October through mid-August. On a project specific basis, a habitat analysis shall be done to determine if special status bird species have the potential to occur. If the habitat would support special status birds, and if eradication is planned to occur when these birds may be breeding, then surveys will be done to establish that these species are absent, using protocols approved by USFWS. If such surveys are not conducted, then the species will be assumed present. Response of birds to noise varies by species as well as site specific factors including ambient noise levels, topography and vegetation. A limit of 60 dB reaching breeding songbirds has recently been advocated for the by the California Department of Fish and Wildlife (see ICF Jones and Stokes 2009). For the purpose of this PEIR, if breeding birds are known or assumed present within close proximity to <i>Spartina</i> control activities than actions will be taken to ensure that ≤ 60 dB reaches the breeding area. Actions may include the use of sound measuring devices to determine the range of noise production and limit <i>Spartina</i> control methods accordingly (i.e., use quieter methods near breeding special-status birds).	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Habitat analysis to be conducted at least 1 month before treatment. Breeding bird survey to be conducted no more than one week prior to treatment. Delineation of exclusion zones prior to treatment.
MITIGATION BIO-3: Avoid Northern Harrier and Short-Eared Owl Nests. The breeding season is March-August for northern harriers (Loughman and McLandress 1994) and March-July for short-eared owls (Gill 1977). If Spartina control activities are planned to occur during these periods (i.e., between March-August) then a qualified biologist will assess whether there is potential nesting habitat for northern harrier or short-eared owls. If there is potential habitat, it will be avoided or a qualified biologist will survey the potential habitat immediately prior to Spartina control work and if nests are found then a minimum 300 ft buffer zone will be delineated. The buffer zone will be avoided by Spartina control workers and equipment.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Habitat analysis to be conducted at least 1 month before treatment. Breeding bird survey to be conducted no more than one week prior to treatment. Delineation of exclusion zones prior to treatment.
MITIGATION BIO-4: Minimize Impacts to Special Status Plant Species. On a site specific basis, a habitat analysis shall be done to determine if special status plant species have the potential to occur. If they could occur, then surveys may be done to establish that these species are absent, using protocols approved by CDFW. If such surveys are not conducted, then the species will be assumed present. If special status plant species are present, then Spartina control methods will be selected that avoid or minimize	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Surveys for annuals in the spring immediately prior to treatment. For perennials, surveys may occur in the prior year. Delineation of exclusion areas and worker training prior to treatment.

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potential impacts. Staked locations of special status plant populations or special status plant habitat shall be recorded, and field crews on foot or in vehicles shall be instructed to avoid and protect special status plant populations or plant habitat. Impact to the endangered dune plants beach layia and Humboldt Bay wallflower will be avoided by selecting access routes that do not contain these plants. For Humboldt Bay owl's clover and Point Reyes bird's beak, avoidance is determined not to be necessary because temporary effects during <i>Spartina</i> control are mitigated by the explosive increase in population that has been demonstrated after <i>Spartina</i> control (Pickart 2012). For other annual special status plants such as Western sand spurrey, avoidance shall occur by using only treatment methods that are highly selective; for example heavy equipment will not be operated where these plants or their habitat occur. For perennial plants such as Lyngbye's sedge, a qualified botanist shall stake out locations of special status plants and provide training to control crews to ensure that they minimize impacts to these plants. If special status plant populations or habitat occur near the high tide line, wrack and large deposits of mown <i>Spartina</i> shall be removed during the growing season. Special status plant populations shall be covered with fabric adjacent to areas sprayed with herbicide, or spray-drift barriers made of plastic or geo textile (aprons or tall silt fences) shall be installed. If accidental exposure to spray drift occurs, affected plants shall be thoroughly washed with silt-clay suspensions. To avoid trampling of special status plant species, in areas where frequent access will occur, paths shall be marked and used that avoid special status plant species to the maximum extent possible.			
MITIGATION BIO-5: Avoid Impacts to Eelgrass. Workers removing Spartina in areas with the potential for eelgrass shall be trained to recognize eelgrass and the mudflats that are habitat for eelgrass. Training shall be conducted by a qualified biologist. Only methods that avoid physical disturbance to eelgrass plants shall be used in close proximity to eelgrass, such as top mowing and excavation. With this mitigation measure, there will be no impact to eelgrass.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Training prior to treatment. Exclusion during treatment.
MITIGATION BIO-6: Reduce Noise near Marine Mammals. If marine mammals are present within 200 ft of <i>Spartina</i> control operations, then methods which cause relatively high levels of noise (i.e., brushcutters, the Marsh Master and airboats) shall not be used. Other methods which do not generate a relatively high level of noise can be used.	Spartina control contractor	Coordinating Entity Project Manager	During treatment

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MITIGATION CR-1: Worker Awareness. Workers shall be made aware of the potential of uncovering artifacts or human remains, and instructed to cease work should any artifacts or human remains be found, and to contact the California Native American Heritage Commission (CNAHC), National Crime Information Center and/or County Coroner as appropriate. When treatment is allowed to begin again, areas identified as potentially having artifacts will be treated with methods that do not disturb the soil, such as top mowing, crushing and chemical treatment.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Training prior to treatment. Response to artifacts or remains during treatment
MITIGATION CR-2: Site Specific Planning for Artifacts. Site specific planning will include a consultation with the Wiyot Tribe to determine the likelihood that artifacts are present. If there are indications that artifacts are likely to be found, soil disturbing methods shall be avoided.	Coordinating Entity Project Manager	Coordinating Entity Project Manager	Planning at least one month prior to treatment
<i>MITIGATION CR-3: Site Specific Planning for Human Remains.</i> If, during site specific planning, indications are that human remains are likely to be found (e.g., based on literature or communications with representatives from a Tribe), soil disturbing methods shall not be used until the remains are located and properly removed. If the coroner determines that the remains may be Native American, the coroner will contact CNAHC. CNAHC staff will notify the most likely descendants of the deceased. The descendants may, with permission of the land owner or representative, "inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods" (Public Resources Code Section 5097.98). The descendants must make their recommendations within 48 h of being contacted by CNAHC. The land owner will insure that the area within the immediate vicinity of the remains is not further disturbed or damaged until the land owner and the most likely descendants have "discussed and conferred" reasonable options.	Coordinating Entity Project Manager	Coordinating Entity Project Manager	Planning at least one month prior to treatment
MITIGATION GS-1/WQ-5: Erosion Control. Spartina control methods which directly impact the soil (i.e., grinding, tilling, disking, digging and excavation) shall not be conducted on salt marsh areas that are within 15 ft of a salt marsh edge that is directly exposed to wave action. Other control methods can be used in these areas. This mitigation measure only applies to salt marsh edges along Humboldt Bay proper where wave action is relatively	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	During treatment

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high, not attached sloughs/channels nor the Eel River or Mad River estuaries. Future research may reveal that control methods that directly impact the soil do not result in a significant level of erosion and that this mitigation is not necessary.			
MITIGATION HHM-1: Worker Injury from Accidents Associated with Manual and Mechanical Non-native Spartina Treatment. A health and safety plan shall be developed to identify and educate workers engaged in Spartina removal activities. Appropriate safety procedures and equipment, including hearing, eye, hand and foot protection, and proper attire, shall be used by workers to minimize risks associated with manual and mechanical treatment methods. Workers shall receive safety training appropriate to their responsibilities prior to engaging in treatment activities.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Planning at least one month prior to treatment. Training prior to treatment.
MITIGATION HHM-2: Accidents Associated with Release of Chemicals and Motor Fuel. Contractors and equipment operators on site during treatment activities will be required to have emergency spill cleanup kits immediately accessible. If fuel storage containers are utilized exceeding a single tank capacity of 660 gallons or cumulative storage greater than 1,320 gallons, a Hazardous Materials Spill Prevention Control and Countermeasure Plan (HMSPCCP) would be required and approved by the NCRWQCD. The HMSPCCP regulations are not applicable for chemicals other than petroleum products; therefore, the contractor shall prepare a spill prevention and response plan for the specific chemicals utilized during treatment activities. This mitigation is intended to be carried-out in conjunction with Mitigation WQ-2.	Spartina control contractor	Coordinating Entity Project Manager	Planning at least one month prior to treatment. Implementation during treatment.
Mitigation HHM-3: Worker Health Effects from Herbicide Application. Appropriate health and safety procedures and equipment, as described on the herbicide or surfactant label, including PPE as required, shall be used by workers to minimize risks associated with chemical treatment methods. Mixing and applying herbicides shall be restricted to certified or licensed herbicide applicators	Spartina control contractor	Coordinating Entity Project Manager	During treatment
MITIGATION HHM-4: Avoid Health Effects to the Public and Environment from Herbicide Application. For areas targeted for application of herbicides that are within 500 ft of human sensitive receptors (i.e., houses, schools, hospitals), prepare and implement an herbicide drift management plan to reduce the	Coordinating Entity Project Manager and Spartina control	Coordinating Entity Project Manager	Planning at least one month prior to treatment. Implementation during treatment.

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 possibility of chemical drift into populated areas. The Plan shall include the elements listed below. To minimize risks to the public, mitigation measures for chemical treatment methods related to timing of herbicide use, area of treatment, and public notification, shall be implemented by entities engaging in treatment activities as identified below: Coordinate herbicide applications with the County Agricultural Commissioner. Identify nearby sensitive areas (e.g., houses, schools, hospitals) and/or areas that have non-target vegetation that could be affected by the herbicide and provide advanced notification. Establish buffer zones to avoid affecting sensitive receptors. Identify the type of equipment and application techniques to be used in order to reduce the amount of small droplets that could drift into adjacent areas. Consult with herbicide manufacturer for proper application instructions and warnings. Herbicide shall not be applied when winds are below 3 mile per hour or in excess of 10 mi per hour or when inversion conditions skil (consistent with Supplemental California Manufacturer Labeling), or when wind could carry spray drift into inhabited areas. This condition shall be strictly enforced by the implementing entity. Herbicide applications should not be conducted when surface-based inversions are present. Refer to Section 4.7. Air Quality, for discussion on inversions would be obtained. Signs shall be posted at and/or near any public trails, boat launches, or other potential points of access to herbicide application sites a minimum of one week prior to treatment. Application of herbicides shall be avoided near areas where the public is likely to contact water or vegetation. At least one week prior to application, signs informing the public of impending herbicide treatment shall be posted at prominent locations within a conservative 500-foor radius of treatment sites where sensitive receptors. No surfactants containing no	contractor		
MITIGATION HHM-5: Health Effects to Workers, the Public and the Environment Due to Accidents Associated with Chemical Spartina Treatment. Appropriate	Coordinating Entity Project	Coordinating Entity Project	Planning at least one month prior to treatment.
health and safety procedures and equipment shall be used to minimize risks	Manager and	Manager	Implementation during

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associated with <i>Spartina</i> treatment methods, including exposure to or spills of fuels, petroleum products, and lubricants. These shall include the preparation of a health and safety plan, a spill contingency plan, and if threshold onsite storage values are exceeded, an HMSPCCP.	Spartina control contractor		treatment.
MITIGATION HHM-6/WQ-4: Assess existing contamination. For projects where ground disturbance methods (such as digging or excavation) or imazapyr application are considered, a preliminary assessment shall be performed to determine the potential for contamination in sediments prior to initiating treatment. The preliminary assessment shall include (1) review of existing site data and (2) evaluation of historical site use and/or proximity to possible contaminant sources. If the preliminary assessment finds a potential for historic sediment contamination, an appropriate sediment sampling and analysis guide shall be followed and implemented, or soil contamination shall be assumed to be present. If contaminants with a known potential for synergistic effects with imazapyr are present or assumed to be present at levels higher than background levels that would result in synergistic effects, an alternative treatment method (that shall not disturb sediment or apply imazapyr) will be implemented, such as repeated top-mowing, or the project shall apply to the Regional Water Board for site-specific Waste Discharge Requirements (WDRs). If contaminants raise concerns for potential impacts from ground disturbance but not from synergistic effects due to imazapyr application, treatment methods that shall not disturb sediment (e.g., top mowing or imazapyr application) shall be used, or the specific project shall apply to the Regional Water Board for site-specific WDR. If significant contamination that warrants site cleanup is identified, sampling information shall be provided to the U.S. Environmental Protection Agency or other appropriate authority.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Planning at least one month prior to treatment. Implementation during treatment.
MITIGATION WQ-1: Managed Herbicide Control. Herbicides shall be applied directly to plants and at low or receding tide to minimize the potential application of herbicide directly on the water surface, as well as to ensure proper dry times before tidal inundation. Herbicides shall be applied by a certified applicator and in accordance with application guidelines and the manufacturer label. The Control Program shall obtain coverage under the statewide General NPDES Permit for the Discharge of Aquatic Pesticides for	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Obtain permit coverage prior to treatment. Implementation during treatment.

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Aquatic Weed Control in Waters of the United States (SWRCB 2004). The specific measures that will be required are not known at this time.			
<i>MITIGATION WQ-2: Minimize Herbicide Spill Risks.</i> Herbicides shall be applied by or under the direct supervision of trained, certified or licensed applicators. Herbicide mixtures shall be prepared by, or under the direct supervision of trained, certified or licensed applicators. Storage of herbicides and surfactants on or near project sites shall be allowed only in accordance with a spill prevention and containment plan approved by the NCRWQCD; on- site mixing and filling operations shall be confined to areas appropriately bermed or otherwise protected to minimize spread or dispersion of spilled herbicide or surfactants into surface waters. This mitigation is intended to be carried out in conjunction with Mitigation HMM-2.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Planning at least one month prior to treatment. Implementation during treatment.
<i>MITIGATION WQ-3: Minimize Fuel and Petroleum Spill Risks.</i> Fueling operations or storage of petroleum products shall be maintained off-site, and a spill prevention and management plan shall be developed and implemented to contain and clean up spills. Transport vessels and vehicles, and other equipment (e.g., mowers) shall not be serviced or fueled in the field except under emergency conditions; hand-held gas-powered equipment shall be fueled in the field using precautions to minimize or avoid fuel spills within the marsh. For example, gas cans will be placed on an oil drip pan with a PIG® Oil-Only Mat Pad placed on top to prevent oil/gas contamination. Only vegetable oil-based hydraulic fluid will be used in heavy equipment and vehicles during <i>Spartina</i> control efforts. When feasible, biodiesel will be used instead of petroleum diesel in heavy equipment and vehicles during <i>Spartina</i> control efforts. Other, specific BMPs shall be specified as appropriate to comply with the Basin Plan and the other applicable Water Quality Certifications and/or NPDES requirements. This mitigation is intended to be carried out in conjunction with Mitigation HMM-2 in order to reduce potential impacts to less than significant level.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Planning at least one month prior to treatment. Implementation during treatment.
MITIGATION WQ-6: Designate Ingress/Egress Routes. Designated ingress/egress routes shall be established at control sites to minimize temporarily disturbed areas. Where areas adjacent to staging and stockpile areas are erosion prone, the extent of staging and stockpile areas shall be minimized by flagging their boundaries. An erosion/sediment control plan (ESCP) shall be developed for erosion prone areas outside the treatment	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Routes shall be established during planning, at least one month prior to treatment. Implementation during treatment.

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area where greater than 1/4 acre of ground disturbance may occur as a result of ingress/egress, access roads, staging and stockpile areas. The ESCP shall be developed by a qualified professional and identify BMPs for controlling soil erosion and discharge of treatment-related contaminants. The ESCP shall be prepared prior to any treatment activities, and implemented during construction.			
<i>MITIGATION WQ-7: Removal of Wrack.</i> During site specific planning, tidal circulation will be visually assessed. In areas with relatively low tidal circulation, it will either be assumed that DO levels are depressed or monitoring will be conducted to determine if DO levels are depressed. In treatment areas located within or adjacent to waters known or expected to have depressed DO, if wrack is generated during the treatment process, the wrack shall be removed from the treatment area subject to tidal inundation or mulched finely and left in place.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Identification of areas of concern during planning, at least one month prior to treatment. Implementation during treatment.
MITIGATION WQ-8: Approval of Structures in Floodplains. Temporary structures used to impound water for submerging <i>Spartina</i> including but not limited to earthen dikes, cofferdams, inflatable dams, geotextile tubes or concrete ecology blocks that are proposed for placement in a regulatory FEMA flood zone shall be reviewed and approved by the local floodplain administrator prior to placement.	Coordinating Entity Project Manager	Coordinating Entity Project Manager	Approval prior to treatment
MITIGATION LU-1: Use Certified Herbicide Applicators. Herbicides will only be applied by certified applicators.	Spartina control contractor	Coordinating Entity Project Manager	During treatment
MITIGATION LU-2: Compliance Monitors. Applicators shall be assigned a compliance monitor who observes that spray does not reach agricultural fields.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	During treatment
MITIGATION LU-3: Mechanical Methods near Agriculture . If crops (including aquaculture crops such as oysters and clams) are growing in the vicinity of spraying, such that these crops would be more difficult to sell even if herbicides are undetectable, mechanical methods of treatment shall be selected.	Coordinating Entity Project Manager	Coordinating Entity Project Manager	During planning, at least one month prior to treatment

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MITIGATION LU-4: Posting Notices and Limiting Access. Public safety shall be ensured by posting notices and limiting access during treatment periods. Public notice shall be posted at the entrances of public lands, at trailheads, and on the websites of agencies responsible for the public lands, such as HBNWR. If members of the public access lands during treatment, the field supervisor shall have the authority to ask them to leave for their safety.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	Post notices one week prior to treatment. Monitor public access during treatment.
MITIGATION LU-5: Do not treat Spartina during peak public use periods: Although public use is minimal in the salt marshes where Spartina primarily occurs, there is some use, particularly by waterfowl hunters. Spartina treatment will not occur in waterfowl hunting areas during periods of time when hunters are active. If other peak periods of public use are identified in Spartina infested areas then control efforts will also avoid these time periods.	Coordinating Entity Project Manager	Coordinating Entity Project Manager	During treatment
MITIGATION N-1: Use Relatively Quiet Brushcutters. All brushcutters shall be new and quieter models, with noise not exceeding 90 dB.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	During treatment
MITIGATION N-2: Selective Use of the Marsh Master. Avoid treatment that uses the Marsh Master, if residential receptors are within 800 ft.	Coordinating Entity Project Manager	Coordinating Entity Project Manager	During planning, at least one month prior to treatment
MITIGATION N-3: Limit Hours of Operation. Within 3,200 ft of homes, hours of operation shall be within times that residents would be the least disturbed, as in during work and school hours, and avoiding early morning or early evening.	Coordinating Entity Project Manager and Spartina control contractor	Coordinating Entity Project Manager	During treatment