



**TABLE 4-1  
MITIGATION MONITORING AND REPORTING PLAN  
NCRA RUSSIAN RIVER DIVISION FREIGHT RAIL PROJECT**

Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
<b>AIR QUALITY</b>				
<b>Bakers Creek – Rehabilitation and Construction Activities</b>				
<b>Impact AQ-BC1:</b> The proposed project would generate dust and other criteria air pollutant emissions during rehabilitation activities. These activities may utilize gasoline and diesel power equipment.	<b>Mitigation AQ-BC1:</b> Gasoline and diesel powered equipment shall be used for relatively short periods and shall meet the applicable CARB emission standards. Dust mitigation shall also be employed as necessary and in accordance with air quality regulations and NCRA's BMPs.	NCRA NCRA's Contractors	Contractors will be provided with NCRA's BMPs and they will be responsible for implementing them. NCRA will inspect rehabilitation, maintenance, repair and construction activities to ensure that their BMPs are being appropriately implemented. NCRA will confirm that the equipment being used and the activities being conducted comply with the local air quality regulations and meet the applicable CARB regulatory requirements.	During rehabilitation, repair, maintenance and construction activities.
<b>Foss Creek – Rehabilitation and Construction Activities</b>				
<b>Impact AQ-FC1:</b> The proposed project would generate dust and other criteria air pollutant emissions during rehabilitation activities. These activities may utilize gasoline and diesel power equipment.	<b>Mitigation AQ-FC1:</b> Gasoline and diesel powered equipment shall be used for relatively short periods and shall meet the applicable CARB emission standards. Dust mitigation shall also be employed as necessary and in accordance with air quality regulations and NCRA's BMPs.	NCRA NCRA's Contractors	Contractors will be provided with NCRA's BMPs and they will be responsible for implementing them. NCRA will inspect rehabilitation, maintenance, repair and construction activities to ensure that their BMPs are being appropriately implemented. NCRA will confirm that the equipment being used and the activities being conducted comply with the local air quality regulations and meet the applicable CARB regulatory requirements.	During rehabilitation, repair, maintenance and construction activities.
<b>Black Point Bridge – Rehabilitation and Construction Activities</b>				
<b>Impact AQ-BP1:</b> The proposed project would generate dust and other criteria air pollutant emissions during rehabilitation activities.  Project related construction will be limited to the rehabilitation of the existing bridge electrical and mechanical systems. These activities may utilize gasoline and diesel power equipment.	<b>Mitigation AQ-BP1:</b> Gasoline and diesel powered equipment shall be used for relatively short periods and shall meet the applicable CARB emission standards. Dust mitigation shall also be employed as necessary and in accordance with air quality regulations and NCRA's BMPs.	NCRA NCRA's Contractors	Contractors will be provided with NCRA's BMPs and they will be responsible for implementing them. NCRA will inspect rehabilitation, maintenance, repair and construction activities to ensure that their BMPs are being appropriately implemented. NCRA will confirm that the equipment being used and the activities being conducted comply with the local air quality regulations and meet the applicable CARB regulatory requirements.	During rehabilitation, repair, maintenance and construction activities.
<b>Lombard Siding (MP 1.0 – MP 2.0) – Rehabilitation and Construction Activities</b>				
<b>Impact AQ-LS1:</b> Construction of the siding from MP 1.0 to MP 2.0 will include grading, placement of track ballast and clean fill, placement of 5,300 feet of new track, extending a culvert, reestablishing drainage ditches, widening an existing timber deck bridge, the embankment, and constructing culverts. The construction activities that will be necessary to construct the siding for the interchange with the Cal Northern line between MP 1.0 and MP 2.0, could cause an adverse air quality impact.	<b>Mitigation AQ-LS1:</b> Maintenance and construction activities related to the operations of the railroad will be conducted in accordance with air quality regulations and NCRA's BMPs.	NCRA NCRA's Contractors	Contractors will be provided with NCRA's BMPs and they will be responsible for implementing them. NCRA will inspect rehabilitation, maintenance, repair and construction activities to ensure that their BMPs are being appropriately implemented. NCRA will confirm that the equipment being used and the activities being conducted comply with the local air quality regulations and meet the applicable CARB regulatory requirements.	During rehabilitation, repair, maintenance and construction activities.
<b>Novato Consent Decree (MP 35.5 – MP 18.7)</b>				
<b>Impact AQ-NCD1:</b> Construction of the quiet zones would generate dust and other criteria air pollutant emissions from the use of gasoline and diesel powered equipment.	<b>Mitigation AQ-NCD1:</b> Construction activities and the use of gasoline and diesel powered equipment shall be used for relatively short periods and shall meet applicable CARB emission standards. Dust mitigation shall also be employed as necessary and in accordance with air quality regulations and NCRA's BMPs. Therefore, the impacts from these minor construction activities are	NCRA NCRA's Contractors	Contractors will be provided with NCRA's BMPs and they will be responsible for implementing them. NCRA will inspect rehabilitation, maintenance, repair and construction activities to ensure that their BMPs are being appropriately implemented. NCRA will confirm that the equipment being used and the activities being conducted comply with the local air quality	During rehabilitation, repair, maintenance and construction activities.



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	considered less than significant after mitigation.		regulations and meet the applicable CARB regulatory requirements.	
<b>Operations</b>				
<b>Impact AQ-OP1:</b> The routine and emergency maintenance activities that will be necessary to allow for safe and efficient operations of the railroad, such as bridge repair, brush cutting, and grade crossing signal maintenance, could cause an adverse air quality impact.	<b>Mitigation AQ-OP1:</b> Maintenance activities related to the operations of the railroad will be conducted in accordance with air quality regulations and NCRA's BMPs.	NCRA NCRA's Contractors	Contractors will be provided with NCRA's BMPs and they will be responsible for implementing them. NCRA will inspect rehabilitation, maintenance, repair and construction activities to ensure that their BMPs are being appropriately implemented. NCRA will confirm that the equipment being used and the activities being conducted comply with the local air quality regulations and meet the applicable CARB regulatory requirements. In addition, specific procedures for brushing and spraying will be implemented.	During rehabilitation, repair, maintenance and construction activities.
<b>BIOLOGICAL RESOURCES</b>				
<b>Bakers Creek – Rehabilitation and Construction Activities</b>				
<b>Impact BIO-BC1:</b> If conducted improperly, the transport and placement of clean fill and excavation activities may impact the stream habitat and water quality. The installation of the structure and fill placement will likely require operation of equipment within the creek channel and adjacent banks, which will temporarily disturb the sediments and vegetation. These activities may impact sensitive aquatic resources, and could also adversely affect other organisms and communities in the vicinity of work areas. The Biological Field Report (Appendix E) identifies key species and habitats in the area that should be protected. These activities will result in suspended sediments, and may directly injure organisms, bury or alter habitat features, or block migration of fish and invertebrates. The work activities could cause mortality, harm or disturbance to state- and federally-listed species, if they are present in or near work areas. Migratory passageways for adult or juvenile salmonids, including steelhead, could be temporarily blocked, depending on the final design grade and condition.	<p><b>Mitigation BIO-BC1a:</b> Activities in stream zones shall be conducted in conformance with permits and operations plans required by NCRWQB, CDFG, and other agencies. Work within the stream and riparian habitat areas will be conducted during the appropriate work window (dry season), which will be determined in consultation with CDFG, USFWS, and NOAA Fisheries. Bakers Creek is an intermittent stream, so the work window will likely occur during the summer months when the creek is dry, but regardless, shall be conducted in compliance with specific permit conditions.</p> <p><b>Mitigation BIO-BC1b:</b> A qualified biological monitor shall be present during critical rehabilitation work periods (e.g., grubbing and clearing, culvert installation, pouring concrete, placing rip-rap). If a listed or protected species is encountered, work shall be stopped immediately at that location, the appropriate agency or agencies (USFWS, NOAA Fisheries and/or CDFG) shall be notified. Work shall not resume at that location prior to the agencies' approval, or as agreed to in prior consultation with the agencies. All work shall be conducted in compliance with specific permit conditions.</p> <p><b>Mitigation BIO-BC1c:</b> While working in stream zones that harbor federal- or state-listed fish species, NCRA shall comply with all conditions and implement any protective measures, including work windows, determined in consultation with NOAA Fisheries and CDFG, and other agencies as appropriate. All work shall be conducted in compliance with specific permit conditions.</p>	NCRA RWQCB CDFG USFWS NOAA Fisheries NCRA Contractors	<p>NCRA will coordinate all permitting and agency consultation activities. NCRA will ensure that the appropriate permits and approvals have been obtained and the conditions are met.</p> <p>NCRA will either provide or ensure that a qualified biologist is present during critical rehabilitation work periods to monitor the activity.</p> <p>NCRA's contractors will be provided with NCRA's BMPs and the permit/approval conditions. NCRA will inspect the rehabilitation and construction activities on a routine basis to ensure that the BMPs and permit conditions are being implemented.</p>	During the rehabilitation of the Bakers Creek site.
<b>Impact BIO-BC2:</b> The timing of the rehabilitation work, if in an area not disturbed by noise and during breeding and nesting season (February 15 to September 15), may cause nest abandonment for species covered under the MBTA.  Rehabilitation activities could affect raptors and other birds nesting in	<b>Mitigation BIO-BC2:</b> Trees and shrubs in the construction zones shall be trimmed or removed between September 16 and February 14 to reduce potential impacts on nesting birds. If vegetation must be removed during the period from February 15 to September 15, a qualified biologist shall conduct pre-construction surveys for nesting birds. If an active nest is found, the bird shall be identified	NCRA USFWS CDFG NCRA Contractors	NCRA will ensure that either the trimming or removal of trees and shrubs is conducted outside of the nesting season or if that is not possible, NCRA will ensure that a qualified biologist conducts a pre-construction (trimming) survey. NCRA will ensure that based on the results of the survey, the appropriate actions are taken as described in the mitigation measure and	During the rehabilitation of the Bakers Creek site.



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vegetation or adjacent to work areas. Trimming or removal of vegetation could destroy or disturb active nests. Equipment noise, vibration, lighting and other human-related disturbance could disrupt nesting, feeding or other life cycle activities, and could cause nest abandonment or nesting failure. Because active nests of most bird species are protected by the federal MBTA and Section 3503 of the California Fish and Game Code, any disturbance could be significant.	to species and the approximate distance from the closest work site to the nest estimated. No additional measures need be implemented if active nests are more than the following distances from the nearest work site: (a) 300 feet for raptors; or (b) 75 feet for other non-special-status bird species. If active nests are closer than those distances to the nearest work site and there is the potential for destruction of a nest or substantial disturbance to nesting birds due to work activities, a plan to monitor nesting birds during construction shall be prepared and submitted to the USFWS and CDFG for review and approval. Disturbance of active nests shall be avoided until it is determined that nesting is complete and the young have fledged.  If rehabilitation work is likely to occur during the nesting season of cliff swallows (March 1 to July 31), the area shall be periodically inspected for swallow nests by a qualified monitor prior to the onset of rehabilitation work efforts. As appropriate, nests shall be knocked down by a biologist only prior to being one-third completed. Inspection of structures shall start in late February. All work shall be conducted in compliance with specific permit conditions.		per regulatory agency requirements.  NCRA will ensure that their staff/contractors implement NCRA's BMPs. NCRA will inspect the activities on a routine basis to verify compliance.	
<b>Impact BIO-BC3:</b> Use of heavy equipment other than on-rail equipment and the storage of materials and supplies could cause damage to sensitive vegetation and wildlife habitat within temporary work areas.  Operation of vehicles and equipment in temporary construction access and staging areas, parking of vehicles and placement of equipment and materials in temporary laydown and storage areas could remove or crush vegetation, damage tree roots, compact soil, or collapse animal burrows. Accidental spill or release of a hazardous material could potentially harm wildlife and impair the recruitment and establishment of on-site vegetation (please refer to Section 3.6, Hazardous Materials). Temporary work areas would be located mostly in ruderal and developed areas, but may overlap small portions of other upland plant communities including oak woodland, mixed scrub, and non-native grassland. Construction-related impacts on common plant communities would be less than significant. However, impacts on wildlife in work areas could be considered significant if they interfere substantially with wildlife movement, impede the use of breeding sites, or conflict with local policies that protect wildlife species and habitats.	<b>Mitigation BIO-BC3:</b> Construction access, staging, storage, and parking areas shall be located on ruderal or developed areas. Vehicle travel adjacent to wetlands and riparian areas shall be limited to existing roads and designated access paths. Sensitive natural communities outside of the proposed project work area (i.e., wetlands, waters, riparian zones and oak woodlands) shall be conspicuously marked in the field to minimize impacts on these communities, and work activities shall be limited to outside the marked areas. Workers shall be educated on the potential impacts and measures that will be taken to avoid work in sensitive areas. Qualified biologists shall identify sensitive biological resources and monitor rehabilitation activities to assure successful implementation of NCRA's BMPs. All work shall be conducted in compliance with specific permit conditions.	NCRA US Army COE CDFG RWQCB NCRA Contractors	NCRA will identify wetlands and other waters of the United States which could be impacted in or near the construction area and consult, as necessary, with the regulatory agencies.  NCRA will ensure that the appropriate permits and approvals are obtained prior to work activities.  NCRA will ensure that a qualified biologist monitors the activities that could potentially cause significant impact on sensitive biological resources.  NCRA will ensure that their staff/contractors implement NCRA's BMPs and permit/approval conditions. NCRA will inspect the activities on a routine basis to verify compliance.	During the rehabilitation of the Bakers Creek site.
<b>Impact BIO-BC4:</b> There could be temporary disturbance of wetlands/waters of the United States at the Bakers Creek site.  Construction activities could impact wetlands and other waters at the rehabilitation work site. Operation of vehicles and equipment in these areas could adversely affect wetland and stream habitat by disrupting soil and damaging or removing wetland and riparian vegetation. Ground disturbance and other activities within and adjacent to stream zones could result in increased erosion, water turbidity and sediment transport into waterways.	<b>Mitigation BIO-BC4:</b> Upon completion of the rehabilitation work at the site, all temporarily disturbed natural areas (if any), including stream banks, shall be returned to original contours and in accordance with the permit conditions. Affected wetlands, stream banks or stream channels shall be stabilized prior to the rainy season and/or prior to reestablishing flow. For wetland areas, the top six inches of native topsoil shall be stockpiled and replaced following work. Wetland and riparian vegetation shall be reestablished as appropriate. All work shall be conducted in compliance with specific permit conditions.	NCRA US Army COE USFWS CDFG NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a routine basis to verify compliance.	During the rehabilitation of the Bakers Creek site.
<b>Impact BIO-BC5:</b> The proposed work at Bakers Creek could result in the introduction or spread of noxious weeds in the vicinity of the rehabilitation area.	<b>Mitigation BIO-BC5:</b> During work activities, the following NCRA's BMPs shall be implemented to reduce the spread of exotic invasive plants in the rehabilitation site work areas as follows:	NCRA NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a routine basis to verify compliance.	During the rehabilitation of the Bakers Creek site.



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Proposed work activities could inadvertently spread existing populations of invasive weeds and/or introduce new species from contaminated sources. Invasive plants could be introduced or spread at any time of year by transfer of seeds or plant fragments on vehicles and heavy equipment; through erosion control practices such as placement of hay bales, seeding or mulching; and during planting of landscaping or reestablishment of natural vegetation within the right-of-way. Because this could conflict with policies to limit the spread of invasive weeds, this impact is potentially significant.	<ul style="list-style-type: none"> <li>Avoid vehicle travel through weed-infested areas at the site.</li> <li>Avoid soil disturbance and the removal of existing vegetation (exotic or native) during construction activities.</li> <li>Use only certified weed-free straw and mulch or weed-free fiber roll barriers or sediment logs.</li> <li>Use only certified weed-free native seed mixes and native plants that are appropriate to the pre-existing or adjacent natural habitat for revegetation.</li> </ul>			
<p><b>Impact BIO-BC6:</b> The proposed rehabilitation work at Bakers Creek could result in the loss of individuals or habitat of special-status plant species.</p> <p>Rehabilitation work at Bakers Creek could potentially affect Clara Hunt's milkvetch and/or Colusa layia, a listed special-status species. The Clara Hunt's milkvetch and Colusa layia have the potential to occur in non-native grasslands or oak woodlands similar to those in the Bakers Creek rehabilitation sites. Although surveys conducted in potential habitat for Clara Hunt's milkvetch and Colusa layia did not detect these species, protocol surveys have not been completed at the site.</p>	<p><b>Mitigation BIO-BC6:</b> Prior to rehabilitation, a plant survey shall be conducted in any unaltered vegetated area that will be disturbed, pursuant to protocols established in consultation with appropriate agencies prior to the initiation of work activities. All work shall be conducted in compliance with specific permit conditions.</p>	<p>NCRA USFWS CDFG NCRA Contractors</p>	<p>NCRA will ensure that prior to construction activities, a plant survey has been conducted in any unaltered or previously disturbed vegetated areas that will be impacted by the construction activities. The survey will be conducted by a qualified biologist.</p> <p>NCRA will consult with the appropriate regulatory agencies and obtain the necessary permits and approvals.</p> <p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a routine basis to verify compliance.</p>	<p>During the rehabilitation of the Bakers Creek site.</p>
<b>Foss Creek – Rehabilitation and Construction Activities</b>				
<p><b>Impact BIO-FC1:</b> The transport and placement of clean fill material and rip-rap may impact the stream habitat and water quality. The installation of the structure and fill placement will likely require operation of equipment within the creek channel and adjacent banks, which will temporarily disturb the sediments and vegetation. The installation of sheet piles will require the use of a pile driver, which can generate significant noise levels and underwater sound pressure levels.</p> <p>These activities will result in suspended sediments and elevated noise and sound pressure levels, which may directly injure organisms, bury or alter habitat features, or block migration of fish and invertebrates. The work activities could cause mortality, harm or disturbance to state- and federally-listed species, if they are present in or near work areas. Migratory passageways for adult or juvenile salmonids, including steelhead, could be temporarily or permanently blocked, depending on the final design grade and condition.</p>	<p><b>Mitigation BIO-FC1a:</b> Activities in stream zones shall be conducted in conformance with permits and work plans required by NCRWQB, CDFG, and other agencies. Work within the stream and riparian habitat areas will be conducted during the appropriate work window (dry season), which will be determined in consultation with CDFG, USFWS, and NOAA Fisheries. In addition, work shall implement the BMPs identified for these projects. All work shall be conducted in compliance with specific permit conditions.</p> <p><b>Mitigation BIO-FC1b:</b> A qualified biological monitor shall be present during critical rehabilitation work periods (e.g., grubbing and clearing, culvert installation, sheet pile installation, pouring concrete, placing rip-rap). If a listed or protected species is encountered, work shall be stopped immediately at that location, the appropriate agency or agencies (USFWS, NOAA fisheries and/or CDFG) shall be notified. Work shall not resume at that location prior to the agencies' approval, or as agreed to in prior consultation with the agencies. All work shall be conducted in compliance with specific permit conditions.</p> <p><b>Mitigation BIO-FC1c:</b> While working in stream zones that harbor federal- or state-listed fish species, NCRA shall comply with all conditions and implement any protective measures, including work windows, determined in consultation with NOAA Fisheries and CDFG, and other agencies as appropriate. All work shall be conducted in compliance with specific permit conditions.</p> <p><b>Mitigation BIO-FC1d:</b> A vibrating hammer will be used, instead of a drop hammer, to install all sheet piles. The vibration method minimizes noise levels and disturbance to wildlife. This method is also preferred by resource agencies as a means to avoid harmful</p>	<p>NCRA NCRWQCB CDFG USFWS NOAA Fisheries NCRA Contractors</p>	<p>NCRA will coordinate all permitting and agency consultation activities. NCRA will ensure that the appropriate permits and approvals have been obtained and the conditions are met.</p> <p>NCRA will either provide or ensure that a qualified biologist is present during critical rehabilitation work periods to monitor the activity.</p> <p>NCRA's contractors will be provided with NCRA's BMPs and the permit/approval conditions. NCRA will inspect the rehabilitation and construction activities on a routine basis to ensure that the BMPs and permit conditions are being implemented.</p>	<p>During the rehabilitation of the Foss Creek site.</p>



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	effects to fish species that have been observed during the use of drop hammers. <b>Mitigation BIO-FC1e:</b> Sheet piles will be located above the mean high water level of the creek.			
<b>Impact BIO-FC2:</b> The timing of the rehabilitation work at the site, if in an area undisturbed by noise and during breeding and nesting season (February 15 to September 15), may cause nest abandonment for species covered under the MBTA.  Rehabilitation activities could affect raptors and other birds nesting in vegetation or on bridges in or adjacent to work areas. Trimming or removal of vegetation could destroy or disturb active nests. Equipment noise, vibration, lighting and other human-related disturbance could disrupt nesting, feeding or other life cycle activities, and could cause nest abandonment or nesting failure. Structure-nesting species such as cliff swallows could have their nests disturbed and breeding success compromised. Because active nests of most bird species are protected by the federal MBTA and Section 3503 of the California Fish and Game Code, any disturbance could be significant.	<b>Mitigation BIO-FC2:</b> Trees and shrubs in the construction zones shall be trimmed or removed between September 16 and February 14 to reduce potential impacts on nesting birds. If vegetation must be removed during the period from February 15 to September 15, a qualified biologist shall conduct pre-construction surveys for nesting birds. If an active nest is found, the bird shall be identified to species and the approximate distance from the closest work site to the nest estimated. No additional measures need be implemented if active nests are more than the following distances from the nearest work site: (a) 300 feet for raptors; or (b) 75 feet for other non-special-status bird species. If active nests are closer than those distances to the nearest work site and there is the potential for destruction of a nest or substantial disturbance to nesting birds due to work activities, a plan to monitor nesting birds during construction shall be prepared and submitted to the USFWS and CDFG for review and approval. Disturbance of active nests shall be avoided until it is determined that nesting is complete and the young have fledged.  If rehabilitation work is likely to occur during the nesting season of cliff swallows (March 1 to July 31), the area shall be periodically inspected for swallow nests by a qualified monitor prior to the onset of rehabilitation work efforts. As appropriate, nests shall be knocked down by a biologist prior to being one-third completed. Inspection of structures shall start in late February. Alternative methods to prevent cliff swallow nesting on structures may be used with prior approval by the CDFG.  All work shall be conducted in compliance with specific permit conditions and NCRA's BMPs.	NCRA USFWS CDFG NCRA Contractors	NCRA will ensure that either the trimming or removal of trees and shrubs is conducted outside of the nesting season or if that is not possible, NCRA will ensure that a qualified biologist conducts a pre-construction (trimming) survey. NCRA will ensure that based on the results of the survey, the appropriate actions are taken as described in the mitigation measure and per regulatory agency requirements.  NCRA will ensure that their staff/contractors implement NCRA's BMPs. NCRA will inspect the activities on a routine basis to verify compliance.	During the rehabilitation of the Foss Creek site.
<b>Impact BIO-FC3:</b> Use of heavy equipment other than on-rail equipment and the storage of materials and supplies could cause damage to sensitive vegetation and wildlife habitat within temporary work areas.  Operation of vehicles and equipment in temporary construction access and staging areas, parking of vehicles and placement of equipment and materials in temporary laydown and storage areas could remove or crush vegetation, damage tree roots, compact soil, or collapse animal burrows. Accidental spill or release of a hazardous material could potentially harm wildlife and impair the recruitment and establishment of onsite vegetation (please refer to Section 3.6, Hazardous Materials). Temporary work areas would be located mostly in ruderal and developed areas, but may overlap small portions of other upland plant communities including oak woodland, mixed scrub, and non-native grassland. Construction-related impacts on common upland plant communities would be less than significant. However, impacts on wildlife in work areas could be considered significant if they interfere substantially with wildlife movement, impede the use of breeding sites, or conflict with local policies that protect wildlife species and habitats.	<b>Mitigation BIO-FC3a:</b> Construction access, staging, storage, and parking areas shall be located on ruderal or developed lands. Vehicle travel adjacent to wetlands and riparian areas shall be limited to existing roads and designated access paths. Sensitive natural communities (i.e., wetlands, waters, riparian zones and oak woodlands) shall be conspicuously marked in the field to minimize impacts on these communities, and work activities shall be limited to outside the marked areas. Workers shall be educated on the potential impacts and measures that will be taken to avoid them. NCRA has developed BMPs to avoid or minimize these potential impacts. Identification of sensitive biological resources and monitoring by a biologist will assure successful implementation of NCRA's BMPs. All work shall be conducted in compliance with the site specific permits.  <b>Mitigation BIO-FC3b:</b> Qualified biologists shall monitor rehabilitation activities that could potentially cause significant impacts on sensitive biological resources. All rehabilitation	NCRA US Army COE USFWS CDFG RWQCB NCRA Contractors	NCRA will identify wetlands and other waters of the United States which could be impacted in or near the construction area and consult, as necessary, with the regulatory agencies.  NCRA will ensure that the appropriate permits and approvals are obtained prior to work activities.  NCRA will ensure that a qualified biologist monitors the activities that could potentially cause significant impact on sensitive biological resources.  NCRA will ensure that their staff/contractors implement NCRA's BMPs and permit/approval conditions. NCRA will inspect the activities on a routine basis to verify compliance.	During the rehabilitation of the Foss Creek site.



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	activities shall be conducted in accordance with NCRA's BMPs.			
<p><b>Impact BIO-FC4:</b> There could be temporary disturbance of wetlands/waters of the United States at the Foss Creek site.</p> <p>Construction activities could impact wetlands and other waters at the rehabilitation work site. Operation of vehicles and equipment in these areas could adversely affect wetland and stream habitat by disrupting soil and damaging or removing wetland and riparian vegetation. Ground disturbance and other activities within and adjacent to stream zones could result in increased erosion, water turbidity and sediment transport into waterways. Oil, gas and other pollutants could also be released into water bodies (please refer to Section 3.6, Hazardous Materials).</p>	<p><b>Mitigation BIO-FC4:</b> Upon completion of the rehabilitation work at the site, all temporarily disturbed natural areas (if any), including stream banks, shall be returned to original contours. Affected wetlands, stream banks or stream channels shall be stabilized prior to the rainy season and/or prior to reestablishing flow. For wetland areas, the top six inches of native topsoil shall be stockpiled and replaced following work. Wetland and riparian vegetation shall be reestablished as appropriate. All work shall be conducted in compliance with specific permit conditions.</p>	<p>NCRA US Army COE USFWS CDFG NCRA Contractors</p>	<p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a routine basis to verify compliance.</p>	<p>During the rehabilitation of the Foss Creek site.</p>
<p><b>Impact BIO-FC5:</b> The proposed work at Foss Creek could result in the introduction or spread of noxious weeds in the project corridor.</p> <p>Proposed work activities at Foss Creek could inadvertently spread existing populations of invasive weeds and/or introduce new species from contaminated sources. Invasive plants could be introduced or spread at any time of year by transfer of seeds or plant fragments on vehicles and heavy equipment; through erosion control practices such as placement of hay bales, seeding or mulching; and during planting of landscaping or reestablishment of natural vegetation within the right-of-way. Because this could conflict with policies to limit the spread of invasive weeds, this impact is potentially significant.</p>	<p><b>Mitigation BIO-FC5:</b> During work activities, the following NCRA BMPs shall be implemented to reduce the spread of exotic invasive plants in the rehabilitation site work areas as follows:</p> <ul style="list-style-type: none"> <li>Minimize vehicle travel through weed-infested areas at the site.</li> <li>Minimize soil disturbance and the removal of existing vegetation (exotic or native) during construction activities.</li> <li>Use only certified weed-free straw and mulch or weed-free fiber roll barriers or sediment logs.</li> <li>Use only certified weed-free native seed mixes and native plants that are appropriate to the pre-existing or adjacent natural habitat for revegetation.</li> </ul> <p>All work shall be conducted in compliance with specific permit conditions.</p>	<p>NCRA NCRA Contractors</p>	<p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a routine basis to verify compliance.</p>	<p>During the rehabilitation of the Foss Creek site</p>
<p><b>Impact BIO-FC6:</b> The proposed rehabilitation work at Foss Creek could result in the loss of individuals or habitat of special-status plant species.</p> <p>Rehabilitation work at Foss Creek could potentially affect Clara Hunt's milkvetch and/or Colusa layia, a listed special-status species. The Clara Hunt's milkvetch and Colusa layia have the potential to occur in non-native grasslands or oak woodlands similar to those in the Foss Creek rehabilitation sites. Although surveys conducted in potential habitat for Clara Hunt's milkvetch and Colusa layia did not detect these species, protocol surveys have not been completed at the two sites.</p>	<p><b>Mitigation BIO-FC6:</b> Prior to rehabilitation, a plant survey shall be conducted in any vegetated area that will be disturbed, pursuant to protocols established in consultation with appropriate agencies prior to the initiation of work activities. All work shall be conducted in compliance with specific permit conditions.</p>	<p>NCRA USFWS CDFG NCRA Contractors</p>	<p>NCRA will ensure that prior to construction activities, a plant survey has been conducted in any unaltered or previously disturbed vegetated areas that will be impacted by the construction activities. The survey will be conducted by a qualified biologist.</p> <p>NCRA will consult with the appropriate regulatory agencies and obtain the necessary permits and approvals.</p> <p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a routine basis to verify compliance.</p>	<p>During the rehabilitation of the Foss Creek site</p>
<b>Black Point Bridge – Rehabilitation and Construction Activities</b>				
<p><b>Impact BIO-BP1:</b> The timing of the rehabilitation work at the site, if in an area undisturbed by noise and during breeding and nesting season (February 15 to September 15), may cause nest abandonment for species covered under the MBTA.</p> <p>Rehabilitation activities could affect raptors and other birds nesting in vegetation or on bridges in or adjacent to work areas. Equipment noise, vibration, lighting and other human-related disturbance could disrupt nesting, feeding or other life cycle activities, and could cause nest abandonment or nesting failure. Structure-nesting species such as cliff</p>	<p><b>Mitigation BIO-BP1:</b> If an active nest is found on the bridge or in the vicinity of the work site, the bird shall be identified to species and the approximate distance from the closest work site to the nest estimated. No additional measures need be implemented if active nests are more than the following distances from the nearest work site: (a) 300 feet for raptors; or (b) 75 feet for other non-special-status bird species. If active nests are closer than those distances to the nearest work site and there is the potential for destruction of a nest or substantial disturbance to nesting birds due to work activities, a plan to monitor nesting birds during construction shall</p>	<p>NCRA USFWS CDFG NCRA Contractors</p>	<p>NCRA will ensure that either the trimming or removal of trees and shrubs is conducted outside of the nesting season or if that is not possible, NCRA will ensure that a qualified biologist conducts a pre-construction (trimming) survey. NCRA will ensure that based on the results of the survey, the appropriate actions are taken as described in the mitigation measure and per regulatory agency requirements.</p> <p>NCRA will ensure that their staff/contractors implement</p>	<p>During the rehabilitation of the Black Point Bridge.</p>



**TABLE 4-1  
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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
swallows could have their nests disturbed and breeding success compromised. Because active nests of most bird species are protected by the federal MBTA and Section 3503 of the California Fish and Game Code, any disturbance could be significant.	<p>be prepared and submitted to the USFWS and CDFG for review and approval. Disturbance of active nests shall be avoided to the extent possible until it is determined that nesting is complete and the young have fledged.</p> <p>If rehabilitation work is likely to occur during the nesting season of cliff swallows (March 1 to July 31), the area shall be periodically inspected for swallow nests by a qualified monitor prior to the onset of rehabilitation work efforts. As appropriate, nests shall be knocked down by a biologist prior to being one-third completed. Inspection of structures shall start in late February. Alternative methods to prevent cliff swallow nesting on the bridge may be used with prior approval by the CDFG.</p>		NCRA's BMPs. NCRA will inspect the activities on a routine basis to verify compliance.	
<b>Lombard Siding (MP 1.0 – MP 2.0) – Rehabilitation and Construction Activities</b>				
<b>Impact BIO-LS1:</b> The siding from MP 1.0 to MP 2.0 is located in an area occupied primarily by wetlands and open grasslands. The construction activities of the siding for the interchange with the Cal Northern line between MP 1.0 and MP 2.0, could cause an adverse impact to biological resources. Construction of the new siding will be conducted in accordance with NCRA's BMPs, but will impact sensitive habitats due to the filling of 0.2 acres of seasonal wetlands and loss of 0.69 acres of mudflat habitats.	<b>Mitigation BIO-LS1:</b> The wetlands and mudflats will be fully evaluated and confirmed in coordination with permitting and resource agencies. Losses of the habitats will be mitigated by creation of an equivalent habitat at a 1:1 ratio, or other compensatory mitigation determined appropriate by the permitting agencies.	NCRA US Army COE USFWS CDFG NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a routine basis to verify compliance.	During the construction of Lombard Siding.
<b>Novato Consent Decree (MP 35.5 – MP 18.7)</b>				
<b>Impact BIO-NCD1:</b> There could be disturbance of wetlands/waters of the United States during construction if additional intersections of the NWP Line requiring quiet zone improvements are identified by the regulatory agencies.  Construction activities could impact wetlands and other waters at the quiet zone sites. Operation of vehicles and equipment in these areas could adversely affect wetland and stream habitat by disrupting soil and damaging or removing wetland and riparian vegetation. Ground disturbance and other activities within and adjacent to stream zones could result in increased erosion, water turbidity and sediment transport into waterways.	<b>Mitigation BIO-NCD1:</b> Local jurisdictions and state and federal agencies shall be consulted prior to work in wetlands to ascertain any requirements to protect wetlands. Work shall be conducted in compliance with any specific permit requirements, and NCRA's BMPs. Upon completion of the construction work at the site, all temporarily disturbed natural areas (if any), including stream banks, shall be returned to original contours and in accordance with the permit requirements. Affected wetlands, stream banks or stream channels shall be stabilized prior to the rainy season and/or prior to reestablishing flow. For wetland areas, the top six inches of native topsoil shall be stockpiled and replaced following work. Wetland and riparian vegetation shall be reestablished as appropriate.	NCRA US Army COE USFWS CDFG NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the construction of the quiet zones and other NCD activities.
<b>Impact BIO-NCD2:</b> Use of heavy equipment other than on-rail equipment and the storage of materials and supplies could cause damage to sensitive vegetation and wildlife habitat within temporary work areas.  Operation of vehicles and equipment in temporary construction access and staging areas, parking of vehicles and placement of equipment and materials in temporary laydown and storage areas could remove or crush vegetation, damage tree roots, compact soil, or collapse animal burrows. Temporary work areas would be located mostly in ruderal and developed areas, but may overlap small portions of other upland plant communities including oak woodland, mixed scrub, and non-native grassland. Construction-related impacts on common plant communities would be less than significant. However, impacts on wildlife in work areas could be considered significant if they interfere substantially with wildlife movement, impede the use of breeding sites, or conflict with local policies that protect	<b>Mitigation BIO-NCD2:</b> Construction access, staging, storage, and parking areas shall be located on ruderal or developed areas. Vehicle travel adjacent to wetlands and riparian areas shall be limited to existing roads and designated access paths. Sensitive natural communities outside of the proposed project work area (i.e., wetlands, waters, riparian zones and oak woodlands) shall be conspicuously marked in the field to minimize impacts on these communities, and work activities shall be limited to outside the marked areas. Workers shall be educated on the potential impacts and measures that will be taken to avoid work in sensitive areas. Qualified biologists shall identify sensitive biological resources and monitor rehabilitation activities to assure successful implementation of NCRA's BMPs. All work shall be conducted in compliance with specific permit conditions.	NCRA NCRA Contractors	<p>NCRA will ensure that construction activities are located on ruderal or developed lands and that sensitive natural communities outside of the proposed work area are conspicuously marked. NCRA will ensure that the workers are educated on potential impacts and proper work activities.</p> <p>NCRA will ensure that the appropriate permits and approvals are obtained prior to work activities.</p> <p>NCRA will ensure that a qualified biologist monitors the activities that could potentially cause significant impact on sensitive biological resources.</p> <p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and permit/approval conditions. NCRA will inspect the activities on a routine basis to verify compliance.</p>	During the construction of the quiet zones and other NCD activities.



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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
wildlife species and habitats.				
<b>Impact BIO-NCD3:</b> Additional intersections requiring quiet zone improvements that may be required by regulatory agencies may be located in areas now occupied by wetlands. Some wetlands, particularly those on the railroad right-of-way created as a result of deferred maintenance of drainage swales, may require filling to construct quiet zone improvements.	<b>Mitigation BIO-NCD3:</b> The wetlands shall be fully evaluated and confirmed in coordination with permitting and resource agencies. Losses of the habitats will be mitigated by creation of an equivalent habitat at a 1:1 ratio, or other compensatory mitigation determined appropriate by the permitting agencies.	NCRA US Army COE USFWS CDFG NCRA Contractors	NCRA will coordinate any work that may potentially impact wetlands with the appropriate regulatory agencies and if required, NCRA will mitigate the loss of wetland habitats as determined appropriate by the agencies.	During the construction of the quiet zones and other NCD activities.
<b>Impact BIO-NCD4:</b> Safety fencing between MP 29.5 to MP 25.9 may restrict the migration of sensitive species across the railroad right-of-way.	<b>Mitigation BIO-NCD4:</b> Plans for the fencing shall be reviewed by a qualified biologist. If it is ascertained that sensitive species are in the area, and that the fence could create a significant impact through the impedance of their migration, appropriate measures shall be incorporated into the fence design to mitigate the impact by allowing unrestricted migration across the right-of-way.	NCRA	NCRA shall work with a qualified biologist to ascertain whether there is a potential impact on the migration of sensitive species and if so, implement a mitigation measure to allow for unrestricted migration.	During the construction of the quiet zones and other NCD activities.
<b>Operations</b>				
<b>Impact BIO-OP1:</b> Initially resuming railroad operations if in an area undisturbed by noise and during the breeding and nesting season, (February 15 to September 15), may cause nest abandonment for bird species covered under the MBTA.  Operational activities could affect raptors and other birds nesting in vegetation or on bridges in or adjacent to the rail corridor. The introduction of noise, vibration, and lighting associated with trains running along the line during nesting season could disrupt nesting, feeding or other life cycle activities, which could cause nest abandonment or nesting failure. Additionally, structure-nesting species such as cliff swallows could have their nests disturbed and breeding success compromised. Active nests of most bird species are protected by the federal MBTA and Section 3503 of the California Fish and Game Code.	<b>Mitigation BIO-OP1:</b> To reduce potential impacts to breeding and/or nesting birds, the rehabilitation brushing activities shall occur between September 16 and February 14, or a time frame to be developed in coordination with a qualified biologist who shall have identified nest locations of species covered under the MTBA.	NCRA	NCRA will work with a qualified biologist to reduce potential impacts to breeding and/or nesting birds.	During operations.
<b>Impact BIO-OP2:</b> Maintenance and repair activities associated with the operations of the railroad could result in disturbance to stream zones, special-status species and/or nesting birds during railway maintenance activities.  Routine and emergency maintenance and repair activities at stream crossings (e.g. repair of flood-damaged crossing structures or slide-prone portions of the railroad grade) could temporarily affect stream zones and associated fish and wildlife species in the vicinity of work areas. These activities could cause ground disturbance in stream channels and banks and could affect water quality by increasing turbidity, sedimentation or discharging oil, gas or other pollutants into watercourses. Use of herbicides for vegetation control, particularly near wetlands and watercourses, could have adverse effects on fish and wildlife species. Individual fish or wildlife, including special-status species, could be harmed or temporarily displaced by these activities. Maintenance vehicles and equipment and trimming of vegetation could disturb nesting birds and other animals that occur within, or move through, the corridor. Nesting birds are protected by federal MBTA and the CFGC, and special-status species are of concern to the resource agencies.	<b>Mitigation BIO-OP2a:</b> NCRA has developed BMPs to protect habitat and species which shall be implemented during all maintenance and repair activities (Appendix A). The resource agencies will be consulted to develop additional appropriate protective measures, if necessary.  <b>Mitigation BIO-OP2b:</b> To minimize impacts to aquatic resources, if herbicides are applied during weed maintenance the activities shall be conducted in accordance with herbicide spraying procedures outlined in the NCRA's BMPs.	NCRA US Army COE USFWS CDFG RWQCB NCRA Contractors	NCRA will ensure that their BMPs are appropriate and that they are properly implemented by their staff/contractors.	During operations.





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<p><b>Impact BIO-OP3:</b> Bridge maintenance activities within the water (for example, pile splicing, repairs to drifting piles, or pile replacement) may impact sensitive fish species and other sensitive wildlife resources. Maintenance work activities that could cause excessive underwater noise impacts, such as pile driving, could harm or disturb fishes including steelhead, Chinook and coho salmon, and Sacramento split tail. These activities would be temporary and confined to a relatively small area, and would potentially affect only a small number of individuals of these species. Maintenance activities could alter river flow or hinder fish passage.</p>	<p><b>Mitigation BIO-OP3a:</b> All work shall be conducted in compliance with specific permit conditions and NCRA's BMPs.</p> <p><b>Mitigation BIO-OP3b:</b> A vibrating hammer will be used to install any piles necessary for rehabilitation activities. A vibrating hammer, when compared to drop hammers or other methods of pile installation, has been demonstrated to minimize noise levels and underwater sound pressure levels. In the event that any other work activities cause excessive noise that could harm fish species, protective measures shall be developed in coordination with CDFG and NOAA Fisheries so that noise levels are either reduced or the impacts are avoided or minimized in some other manner. NCRA's BMPs will also be implemented to avoid or minimize potential impacts. All work shall be conducted in compliance with specific permit conditions.</p>	<p>NCRA US Army COE USFWS CDFG NCRA Contractors</p>	<p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.</p> <p>NCRA will use vibrating hammers to install any piles necessary for rehabilitation/repair activities.</p>	<p>During operations.</p>
<b>CULTURAL RESOURCES</b>				
<i>Bakers Creek – Rehabilitation and Construction Activities</i>				
<p><b>Impact CR-BC1:</b> During rehabilitation activities at Bakers Creek, which involves the replacement of the existing culvert with a concrete arch structure and back filled with new material to reconstruct the embankment to prior conditions, a previously unidentified cultural resource may be found during excavation.</p>	<p><b>Mitigation CR-BC1:</b> If a cultural resource is identified during rehabilitation activities, all work shall be stopped and a qualified specialist with knowledge in the specific cultural resource shall be present to monitor the site. Workers shall be trained to identify cultural resources in accordance with state agency approved BMPs as outlined in the agency approved operations plans required by the Environmental Consent Decree.</p>	<p>NCRA NCRA Contractors</p>	<p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.</p> <p>NCRA will ensure that their staff/contractors are trained to identify cultural resources and if any are identified NCRA shall stop work and bring in a qualified specialist.</p>	<p>During the rehabilitation activities at Bakers Creek.</p>
<i>Foss Creek – Rehabilitation and Construction Activities</i>				
<p><b>Impact CR-FC1:</b> During rehabilitation activities of the Foss Creek bank, involving the construction of a retaining wall system to prevent future erosion, a previously unidentified cultural resource may be found during excavation.</p>	<p><b>Mitigation CR-FC1:</b> If a cultural resource is identified during rehabilitation activities, all work shall be stopped and a qualified specialist with knowledge in the specific cultural resource shall be present to monitor the site. Workers shall be trained to identify cultural resources in accordance with state agency approved BMPs as outlined in the agency approved operations plans required by the Environmental Consent Decree.</p>	<p>NCRA NCRA Contractors</p>	<p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.</p> <p>NCRA will ensure that their staff/contractors are trained to identify cultural resources and if any are identified NCRA shall stop work and bring in a qualified specialist.</p>	<p>During the rehabilitation activities at Foss Creek.</p>
<i>Black Point Bridge – Rehabilitation and Construction Activities</i>				
<p><b>Impact CR-BP1:</b> Rehabilitation of the Black Point Bridge may cause a substantial adverse change in the significance of this historical resource via the proposed mechanical and electrical system improvements to update its operation from a manual swing mechanism to mechanical automation.</p>	<p><b>Mitigation CR-BP1:</b> Plans for automation shall be submitted to the SHPO to ensure consistency with the Secretary of Interior's Standards for the Treatment of Historic Properties.</p>	<p>NCRA SHPO NCRA Contractors</p>	<p>NCRA shall submit their plans to the SHPO and conduct the activities in accordance with the SHPO's requirements.</p>	<p>During the rehabilitation of the Black Point Bridge.</p>
<i>Lombard Siding (MP 1.0 – MP 2.0) – Rehabilitation and Construction Activities</i>				
<p><b>Impact CR-LS1:</b> During construction of the new siding at MP 1.0 – MP 2.0, near Lombard, a previously unidentified cultural resource may be discovered.</p>	<p><b>Mitigation CR-LS1:</b> If a cultural resource is identified during construction activities, all work shall be stopped and a qualified specialist with knowledge in the specific cultural resource shall be present to monitor the site. Workers shall be trained to identify</p>	<p>NCRA NCRA Contractors</p>	<p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.</p>	<p>During the rehabilitation and construction activities at Lombard Siding.</p>



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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
	cultural resources in accordance with state agency approved BMPs as outlined in the agency approved operations plans required by the Environmental Consent Decree.		NCRA will ensure that their staff/contractors are trained to identify cultural resources and if any are identified NCRA shall stop work and bring in a qualified specialist.	
<b>Novato Consent Decree (MP 35.5 – MP 18.7)</b>				
<b>Impact CR-NCD1:</b> During construction of quiet zone, a previously unidentified cultural resource may be discovered.	<b>Mitigation CR-NCD1:</b> If a cultural resource is identified during construction activities, all work shall be stopped and a qualified specialist with knowledge in the specific cultural resource shall be present to monitor the site. Workers shall be trained to identify cultural resources in accordance with state agency approved BMPs as outlined in the agency approved operations plans required by the Consent Decree.	NCRA NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.  NCRA will ensure that their staff/contractors are trained to identify cultural resources and if any are identified NCRA shall stop work and bring in a qualified specialist.	During the rehabilitation and construction activities associated with the NCD.
<b>Operations</b>				
N/A				
<b>GEOLOGY, SOILS, AND SEISMICITY</b>				
<b>Bakers Creek – Rehabilitation and Construction Activities</b>				
<b>Impact GEO-BC1:</b> Fill material may be released to Bakers Creek if not placed and managed properly during construction, leading to siltation at the site and downstream from the site.	<b>Mitigation GEO-BC1a:</b> Operations plans and BMPs for construction and the management of earthen materials shall be implemented during the rehabilitation activities. These BMPs include storm water control measures such as silt fences, contractor training for work in sensitive areas, and project controls to prevent the spill of excess soil from the embankment as it is being constructed.  <b>Mitigation GEO-BC1b:</b> Planning and construction activities shall be conducted in coordination with the appropriate permitting agencies, and adhere to permitting requirements.	NCRA NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation activities at Bakers Creek.
<b>Foss Creek – Rehabilitation and Construction Activities</b>				
<b>Impact GEO-FC1:</b> Fill material may be released to Foss Creek if not placed and managed properly during rehabilitation activities, leading to siltation at the site and downstream from the site.	<b>Mitigation GEO-FC1a:</b> Agency approved operations plans and BMPs for construction and the management of earthen materials shall be implemented during the rehabilitation activities. These BMPs shall include storm water control measures such as silt fences, contractor training for work in sensitive areas, and project controls to prevent the spill of excess soil from the embankment as it is being constructed.  <b>Mitigation GEO-FC1b:</b> Planning and construction activities shall be conducted in coordination with the appropriate permitting agencies, and adhere to permitting requirements.	NCRA NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation activities at Foss Creek.
<b>Lombard Siding (MP 1.0 – MP 2.0) – Rehabilitation and Construction Activities</b>				
<b>Impact GEO-LS1:</b> If not controlled, conducted in dry weather, or improperly engineered, grading operations and the resulting new siding may leave the site to be susceptible to erosion from surface runoff.	<b>Mitigation GEO-LS1a:</b> Agency approved operations plans and BMPs for construction and the management of earthen materials shall be implemented during the rehabilitation activities. These BMPs shall include storm water control measures such as silt	NCRA NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation and construction activities at Lombard Siding.



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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
	fences, contractor training for work in sensitive areas, and project controls to prevent the spill of excess soil from the embankment as it is being constructed.  <b>Mitigation GEO-LS1b:</b> Planning and construction activities shall be conducted in coordination with the appropriate permitting agencies, and adhere to permitting requirements.			
<b>Novato Consent Decree – Rehabilitation and Construction Activities</b>				
N/A				
<b>Operations</b>				
<p><b>Impact GEO-OP1:</b> Parts of the rail line are susceptible to erosion from surface runoff, particularly sloping areas adjacent to drainage swales, creeks and rivers that feed the Russian, Napa, and Petaluma Rivers.</p> <p>The rail line is most susceptible to impacts where it is located against hill slopes and runoff flows to the tracks. If the rail embankment has not been graded properly or the drainage system (ditches and culverts) has not been properly engineered or maintained, water can pond and run off the slope, causing severe erosion.</p> <p>Embankment fill slopes leading to bridge crossings are more susceptible to long-term erosion. Portions of the alignment in northern Marin County and southern Sonoma County cross marshlands, and are adjacent to creeks and bridge crossings. In general, these areas are stable; however, flooding caused by high storm runoff coupled with high tides can cause localized erosion and loss of fill beneath the rail bed.</p> <p>Debris that accumulates against bridge piles in creeks may impede flow and dam the creek. This may cause water to rise to the level of the embankment, overtop, and severely erode the rail line.</p> <p>In addition, portions of the proposed project may be subject to landslides and slope movement that could cause damage to the rail line and bridges.</p> <p>The hill areas north of Cloverdale are susceptible to landslides and slope movement. These slopes are inherently unstable due to weak underlying materials, or due to over steepening or loading of existing stable slopes. Along the rail line, several areas have been identified with these conditions including the slopes immediately adjacent to tunnels along the line, which presently exhibit rockfalls and shallow slumping.</p>	<p><b>Mitigation GEO-OP1:</b> Drainage ditches, culverts, embankments, and the entire rail line shall be regularly inspected and maintained and immediately after significant storms. Inspections shall be performed in accordance with AREMA standards, FRA regulations, and NCRA operation plans.</p>	<p>NCRA NCRA Contractors</p>	<p>NCRA will ensure that their staff/contractor's inspection and maintenance procedures/plan are in accordance with AREMA, FRA and agency approved operation plans. NCRA will ensure that the inspection and maintenance activities are appropriately implemented. NCRA shall conduct routine inspections to confirm that the appropriate inspection and maintenance activities are being conducted.</p>	<p>During operations.</p>
<p><b>Impact GEO-OP2:</b> The rail line and bridges are susceptible to significant ground shaking and liquefaction from earthquakes that could damage the line. In addition, the rail line could be damaged by displacement where active faults cross the line along the Lombard to Novato segment and in Bakers Creek (Figure 3.4-2). Potential impacts vary based on a number of factors including distance to the epicenter, magnitude of the earthquake, duration of ground shaking, nature of the underlying soils, and the construction of the structures.</p>	<p><b>Mitigation GEO-OP2:</b> Operations shall be stopped and the rail line and bridges shall be immediately inspected after a significant earthquake. Inspections shall be performed in accordance with AREMA standards, FRA regulations, and the NCRA operation plans.</p>	<p>NCRA NCRA Contractors</p>	<p>NCRA will ensure that operations are stopped and the line inspected after a significant earthquake.</p> <p>NCRA will ensure that their staff/contractor's inspection and maintenance procedures/plan are in accordance with AREMA, FRA and agency approved operation plans. NCRA will ensure that the inspection and maintenance activities are appropriately implemented. NCRA shall conduct routine inspections to confirm that the appropriate inspection and maintenance activities are being conducted.</p>	<p>During operations.</p>



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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
<b>Impact GEO-OP3:</b> Fill material may be released to streams, creeks, and rivers if not placed and managed properly during repair of culverts or embankments that may be damaged during earthquakes or storms, leading to siltation at the site and downstream from the site.	<p><b>Mitigation GEO-OP3a:</b> Agency approved operations plans and BMPs for maintenance activities and the management of earthen materials shall be implemented during the rehabilitation activities. These BMPs shall include storm water control measures such as silt fences, contractor training for work in sensitive areas, and project controls to prevent the spill of excess soil from the embankment as it is being constructed.</p> <p><b>Mitigation GEO-OP3b:</b> Routine maintenance and repair activities shall be conducted in coordination with the appropriate permitting agencies, and adhere to permitting requirements.</p>	NCRA NCRA Contractors	<p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.</p> <p>NCRA will ensure that their staff/contractors conduct the appropriate inspection and maintenance activities in accordance with the regulatory agency requirements.</p>	During operations.
<b>GROWTH INDUCING IMPACTS</b>				
<i>Rehabilitation and Construction Activities</i>				
N/A				
<i>Operations</i>				
N/A				
<b>HAZARDOUS MATERIALS</b>				
<i>Bakers Creek – Rehabilitation and Construction Activities</i>				
<b>Impact HM-BC1:</b> There is the potential that hazardous materials and waste could be mismanaged during the rehabilitation activities and potentially impact the surrounding resources.	<b>Mitigation HM-BC1:</b> NCRA's BMPs for the management of hazardous materials and waste shall be implemented during the rehabilitation activities. If fill material is required, it shall be derived from a permitted quarry or certified as clean fill.	NCRA NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation of Bakers Creek.
<i>Foss Creek – Rehabilitation and Construction Activities</i>				
<b>Impact HM-FC1:</b> There is the potential that hazardous materials and waste could be mismanaged during the rehabilitation activities and potentially impact the surrounding resources.	<b>Mitigation HM-FC1:</b> NCRA's BMPs for the management of hazardous materials and waste shall be implemented during the rehabilitation activities. If fill material is required, it shall be derived from a permitted quarry or certified as clean fill.	NCRA NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation of Foss Creek.
<i>Black Point Bridge – Rehabilitation and Construction Activities</i>				
<b>Impact HM-BP1:</b> There is the potential that hazardous materials and waste could be mismanaged during the rehabilitation activities and potentially impact the surrounding resources.	<b>Mitigation HM-BP1:</b> NCRA's BMPs for the management of hazardous materials and waste shall be implemented during the rehabilitation activities.	NCRA NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation of Black Point Bridge.
<b>Impact HM-BP2:</b> Rehabilitation activities (paint removal) at Black Point Bridge may impact fish and wildlife by introducing lead-based paint into the Petaluma River.	<b>Mitigation HM-BP2:</b> Unless tested and shown to be free of lead-based paint, paint removal shall be conducted in accordance with the Cal/OSHA Construction Standard (which lists prohibited activities and proper work practices). The CDFG shall be consulted in order to obtain and comply with any permitting requirements. Engineering controls that will prevent LBP from being released to the environment shall be implemented.	NCRA Cal/OSHA CDFG NCRA Contractors RWQCB USFWS	<p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.</p> <p>NCRA shall consult with CDFG in order to comply with any permitting requirements.</p>	During the rehabilitation of Black Point Bridge.



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NCRA RUSSIAN RIVER DIVISION FREIGHT RAIL PROJECT**

Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
<b>Lombard Siding (MP 1.0 – MP 2.0) – Rehabilitation and Construction Activities</b>				
<b>Impact HM-LS1:</b> Construction of the siding from MP 1.0 to MP 2.0 will include minor grading, placement of track ballast and clean fill, placement of 5,300 feet of new track, extending a culvert, reestablishing drainage ditches, widening an existing timber deck bridge, the embankment, and constructing culverts. There is the potential that hazardous materials and waste could be mismanaged during the construction of the new siding at Lombard.	<b>Mitigation HM-LS1:</b> NCRA's BMPs for the management of hazardous materials and waste shall be implemented during the construction activities. If fill material is required, it shall be derived from a permitted quarry or certified as clean fill.	NCRA NCRA Contractors DTSC	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation and construction of the Lombard Siding.
<b>Novato Consent Decree (MP 35.5 – MP 18.7)</b>				
<b>Impact HM-NCD1:</b> There is the potential that hazardous materials and waste could be mismanaged during the rehabilitation activities and potentially impact the surrounding resources.	<b>Mitigation HM-NCD1:</b> NCRA's BMPs for the management of hazardous materials and waste shall be implemented during the rehabilitation activities.	NCRA NCRA Contractors DTSC	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation and construction activities associated with the NCD.
<b>Operations</b>				
<b>Impact HM-OP1:</b> Spills and releases may occur during fueling and light running maintenance and repair activities.	<b>Mitigation HM-OP1:</b> NCRA's BMPs shall be implemented and shall include safe pre-determined fueling areas, spills and overtopping prevention procedures, and requirements for secondary containment such as drip pans or equivalent impervious ground covering.	NCRA NCRA Contractors DTSC	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance. NCRA will notify DTSC in the event of a spill.	During operations.
<b>Impact HM-OP2:</b> Spraying herbicides along the rail line for weed abatement may cause impacts on and off the railroad right-of-way.	<b>Mitigation HM-OP2:</b> NCRA's BMPs shall be implemented. These BMPs shall include selection of a licensed and experienced spraying contractor, use of herbicides authorized for use by the local permitting agencies, the use of alternative brush control measures as feasible, prohibition of spraying within 20 feet of a water course, and compliance with a general operating permit (waste discharge requirements) as required by the NCRWQCB.	NCRA NCRA Contractors RWQCB	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During operations.
<b>Impact HM-OP3:</b> There is the potential that hazardous materials and waste could be mismanaged during routine maintenance and repair activities such as bridge, culvert, grade crossing signal, or track maintenance.	<b>Mitigation HM-OP3:</b> Maintenance activities shall be conducted in accordance with NCRA's BMPs and applicable permits.	NCRA NCRA Contractors DTSC	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During operations.
<b>LAND USE AND PLANNING</b>				
<b>Rehabilitation and Construction Activities</b>				
N/A				
<b>Operations</b>				
N/A				
<b>NOISE</b>				
<b>Rehabilitation and Construction Activities</b>				
N/A				



**TABLE 4-1  
MITIGATION MONITORING AND REPORTING PLAN  
NCRA RUSSIAN RIVER DIVISION FREIGHT RAIL PROJECT**

Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
<b>Operations</b>				
Train Noise				
<p><b>Impact N-OP1:</b> Airborne train noise generated by rail operations will exceed FTA/FRA and local jurisdictional impact criteria where houses are present immediately adjacent to the rail right-of-way.</p> <p>Noise exposure generated by proposed project freight train operations is expressed in terms of the noise exposure contour information presented in Appendix H. Based on this data, the proposed project would be expected to produce at least a moderate level of impact at noise-sensitive uses directly adjacent to the tracks.</p> <p>No mitigation measures that would reduce the impact to a less than significant level are known or recommended at this time. Therefore, this impact is considered significant and unavoidable.</p>	None	N/A	N/A	N/A
Warning Horn Noise				
<p><b>Impact N-OP2:</b> Warning horn noise generated by rail operations will exceed FTA/FRA and local jurisdictional impact criteria at vehicle crossings.</p> <p>The proposed project-related noise impact increases substantially near grade crossings due to the use of train warning horns. Along some sections of the line, there is the potential for severe impact contours near residential uses that are within approximately 700 feet of the tracks (Category 2).</p> <p>The application of quiet zones is not included as a part of this proposed project except within a 6.3 mile stretch of trail/road roughly between MP 28.5 and MP 21.9. The potential application of quiet zones along portions of the proposed project corridor would help to reduce the number of people potentially impacted by the train warning horn. However, quiet zones would not mitigate noise exposure to a less than significant level. Noise exposure produced by freight train events without the warning horn would still produce a moderate noise exposure impact at many residential uses within approximately 375 feet of the tracks, with severe impacts within approximately 150 feet of the tracks in some sections.</p> <p>The removal of warning horns cannot be considered as a possible mitigation since that would significantly increase the impact to safety at many crossings and would violate FRA safety regulations. Neither NCRA nor its operator is willing to accept the liability from decreased safety associated with the removal of warning horns, and the cost to construct quiet zones exceeds project funding.</p> <p>No mitigation measures that would reduce the impact to a less than significant level are known or recommended at this time. Therefore, this impact is considered significant and unavoidable.</p>	None	N/A	N/A	N/A
Freight Train Vibration				
<p><b>Impact N-OP3:</b> Groundborne vibration generated by rail operations will</p>	None	N/A	N/A	N/A



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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
<p>impact exceed FTA/FRA impact criteria along some parts of the rail line.</p> <p>It is expected that adjacent uses with high sensitivity to groundborne vibration (Category 1) could be impacted by the proposed project train operations if they are within 225 feet of the tracks. Likewise, residential uses (Category 2) could be impacted by vibration produced by the proposed project freight trains within 100 feet of the tracks, and institutional uses (Category 3) could be impacted if they are within 70 feet of the tracks. For the proposed project, it is believed that a significant number of residential uses lie within 100 feet of the rail tracks, and may be impacted by long-term operations of the proposed project freight trains.</p> <p>No mitigation measures that would reduce the impact to a less than significant level are known or recommended at this time. Therefore, the project-related impact regarding groundborne vibration from long-term freight train operations is considered significant and unavoidable.</p>				
<p><b>Impact N-OP4:</b> Groundborne vibration generated by rail operations may impact historic structures such as train depots located within many of the towns and cities along the rail line.</p>	<p><b>Mitigation N-OP4:</b> The SHPO shall be consulted and recommendations shall be implemented if it is found to have a significant impact on historic structures.</p>	<p>NCRA SHPO NCRA Contractors</p>	<p>NCRA shall consult with to identify potential concerns with groundborne vibrations and historical resources. NCRA shall implement the requirements identified by the SHPO.</p>	<p>During operations.</p>
<p><b>Impact N-OP5:</b> Routine repair activities such as bridge, grade crossing signals, and track maintenance could introduce groundborne vibration into the surrounding areas. Based on the reference levels for equipment and a reduction of -6 VdB per doubling of distance from the construction equipment source(s), daytime construction vibration levels could impact residential structures (Category III) at distances of no more than 90 feet from the source(s).</p>	<p><b>Mitigation N-OP5:</b> Ongoing maintenance activities will be short-term and temporary and conducted in accordance with NCRA's BMPs. For situations where residences are within 90 feet of the maintenance activities, alternative techniques will be used to minimize groundborne vibration, if feasible.</p>	<p>NCRA NCRA Contractors</p>	<p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.</p>	<p>During operations.</p>
<b>PUBLIC FACILITIES AND SAFETY</b>				
<i>Rehabilitation and Construction Activities</i>				
N/A				
<i>Operations</i>				
<p><b>Impact PFS-OP1:</b> The proposed project could result in the creation of a hazardous condition (i.e. pedestrian/train conflicts), with regard to safety of the public and schools.</p> <p>There are 47 schools located within ½ mile of the project area, including 9 schools located within 500 feet. The proximity of these schools to the rail line presents a potential for rail-related accidents involving school children.</p>	<p><b>Mitigation PFS-OP1:</b> In order to educate the communities with school children within close proximity to the rail line, NCRA and its operator shall work with Operation Lifesaver to accomplish this task. Operation Lifesaver is a nationwide, non-profit information safety program dedicated to educating the public on how to reduce collisions, injuries and fatalities at at-grade rail crossings. This is a free service to create awareness, especially to children, of the hazards that may occur on railroad property and at at-grade crossings.</p> <p>In addition, standard safety measures shall be employed including fencing and other physical safety structures, signage, and other physical impediments designed to promote safety and minimize pedestrian/train accidents.</p>	<p>NCRA NCRA Contractors</p>	<p>NCRA will ensure that communities with school children within close proximity to the rail line will be educated as to the safety concerns and precautionary measures.</p> <p>NCRA will employ standard safety measures to promote safety.</p>	<p>During operations.</p>



**TABLE 4-1  
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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
<b>Impact PFS-OP2:</b> The proposed project could result in at-grade crossing collisions.	<b>Mitigation PFS-OP2:</b> All at-grade crossings shall have the FRA-required safety guards as required by regulations. The crossing safety devices shall be routinely inspected and maintained in accordance with FRA regulations. Horns will be used as required to increase awareness of an approaching train. Train lights will be used at night time to increase visual awareness.	NCRA NCRA Contractors	NCRA will ensure that the agency approved safety devices have been installed at at-grade crossings.  NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During operations.
<b>Impact PFS-OP3:</b> A train derailment or flying debris could impact people using bike or pedestrian paths along the railroad.	<b>Mitigation PFS-OP3a:</b> The procedures identified in the NCRA Trail Projects on the NWP Line Rights-of-Way: Designs, Construction, Safety, Operations and Maintenance Guidelines" shall be implemented. These guidelines require that any public agency requesting a trail along the rail shall submit feasibility, safety studies and environmental compliance.  <b>Mitigation PFS-OP3b:</b> NCRA's operator shall comply with all applicable CPUC and FRA regulations which enumerate rules, instructions, and training to promulgate safe operation.	NCRA Public agencies NCRA Contractors	NCRA will ensure that the procedures identified in their trail guidelines are implemented.  NCRA will ensure that their operator follow all applicable CPUC and FRA regulations.  NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During operations.
<b>Impact PFS-OP4:</b> If it is determined that the freight trains need to be operated at night, the proposed project could impact the residences directly adjacent to the tracks due to the locomotive headlights, causing a disturbance in sleep patterns.  Locomotive headlights are considered necessary for safety reasons and are required by FRA regulations. The impact associated with locomotive headlights would be of a short duration due to the rapid passing of the train along the track.  No mitigation measures that would reduce the impact to a less than significant level are known or recommended at this time. Therefore, this impact is considered significant and unavoidable.	None	N/A	N/A	N/A
<b>TRANSPORTATION</b>				
<i>Rehabilitation and Construction Activities</i>				
<i>Bakers Creek – Rehabilitation and Construction Activities</i>				
N/A				
<i>Foss Creek – Rehabilitation and Construction Activities</i>				
N/A				
<i>Black Point Bridge – Rehabilitation and Construction Activities</i>				
N/A				
<i>Lombard Siding (MP 1.0 – MP 2.0) – Rehabilitation and Construction Activities</i>				
N/A				
<i>Novato Consent Decree (MP 35.5 – MP 18.7)</i>				





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MITIGATION MONITORING AND REPORTING PLAN  
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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
<b>Impact T-NCD1:</b> Traffic delays may occur during the construction of quiet zone improvements roughly between MP 28.5 and MP 21.9.	<b>Mitigation T-NCD1:</b> The appropriate construction permits shall be obtained from the City of Novato. As part of the permit approval process, a traffic control plan shall be prepared and implemented. Construction activities shall be conducted outside of peak commute hours.	NCRA City of Novato NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During rehabilitation and construction activities associated with the NCD.
<b>Operations</b>				
<b>Impact T-OP1.</b> Traffic queue lengths at the intersections shown in Table 3.10-7 could exceed the available storage area (roadway space available for vehicles to wait) in the opening year of NCRA freight operations, causing traffic to back up across the at-grade crossing upstream from the traffic signal.	<b>Mitigation T-OP1:</b> In cooperation with local jurisdictions, interconnects between traffic signals and train crossing signals shall be installed to preempt normal signal operations and allow queues to clear before the train crosses.	NCRA Local Jurisdictions NCRA Contractors	NCRA will ensure that the appropriate interconnects between traffic signals and train crossing signals are installed.	During operations.
<b>Impact T-OP2:</b> Road blockages due to NCRA freight operations could interfere with movement of emergency service vehicles near the rail line.  In response to concerns about the implications of potential emergency vehicle delays at grade-crossings for the SMART project, SMART interviewed operations professionals with other agencies in the Bay Area that provide passenger/commuter or freight rail service were interviewed. Persons contacted included: Robert Doty, Director of Rail Transportation at Caltrain, Brian Schmidt, Director of Rail Services at Altamont Commuter Express (ACE), David Kutrosky, Deputy Director of Finance and Planning with the Capitol Corridor, and Bill Capps, Service Planning Manager with the Valley Transportation Authority (VTA).  All four agency representatives stated that emergency vehicle delays created by rail service had not presented significant issues or problems in the jurisdictions through which they operate. All four also confirmed that there is currently no mechanism that would allow trains to yield to emergency vehicles at grade crossings.  These agency representatives, however, did suggest that a key step to minimize the possibility of delay due to passenger train service was to ensure, through station design, that trains "fit" and do not block existing streets when they dwell at stations. For freight service it is assumed that trains would not be stopping at sidings that block crossing streets.  With respect to emergency vehicles dispatched from fire stations, the larger cities along the proposed project corridor right-of-way, including Novato, Petaluma, Rohnert Park, and Santa Rosa, all have multiple (ranging from three to eight) fire stations with at least one on each side of the railroad tracks. This distributed approach to fire service coverage, and in some cases paramedic services as well, minimizes the probability of these emergency responders needing to cross tracks and potentially encountering a grade-crossing delay.	<b>Mitigation T-OP2:</b> The emergency services operations that would be affected by the proposed project shall be provided with an emergency hotline to NCRA's operator's dispatcher so that trains can be stopped or held back in the event of an emergency.	NCRA Local Jurisdictions NCRA Contractors	NCRA will ensure that the appropriate communication with emergency services is implemented.	During operations.
<b>WATER RESOURCES</b>				
<b>Bakers Creek – Rehabilitation and Construction Activities</b>				
<b>Impact WR-BC1:</b> During construction for rehabilitating the railway at the Bakers Creek site, construction activities will require the transport, placement of fill, and structural features that could potentially result in	<b>Mitigation WR-BC1a:</b> The proposed project shall comply with the NPDES permit process which requires project applicants to file a NOI and prepare and submit a construction SWPPP to the	NCRA RWQCB	NCRA will consult with the appropriate regulatory agencies and obtain the necessary permits and approvals.  NCRA will ensure that their staff/contractors implement	During the rehabilitation of Bakers Creek.



**TABLE 4-1  
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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
erosion, increased sedimentation and possibly alterations to stream flows.	<p>RWQCB. The SWPPP will contain a detailed mitigation plan containing BMPs for erosion and sediment control. Typical BMPs may include the use of silt fencing, temporary or permanent retention or detention basins, check dams, buffer strips adjacent to streams, and other similar devices or methods.</p> <p><b>Mitigation WR-BC1b:</b> The proposed project shall comply with all requirements necessary for a Streambed Alteration Agreement from the California Department of Fish and Game.</p> <p><b>Mitigation WR-BC1c:</b> The proposed project design for this site shall adhere to the guidelines for fish passage set forth by the California Department of Fish and Game and the National Marine Fisheries Service. These agencies shall be consulted with prior to finalization of the design to assure success and minimize potential impacts.</p> <p><b>Mitigation WR-BC1d:</b> The proposed project shall comply with the WDRs issued by the RWQCBs.</p>	<p>CDFG National Marine Fisheries USFWS NCRA Contractors</p>	NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	
<b>Impact WR-BC2:</b> Rehabilitation activities could cause adverse impacts on surface waters through the release of hydrocarbons and similar pollutants. During construction, the operation of equipment and vehicles in close proximity to surface water bodies could result in accidental discharges of oil or other contaminants into streams.	<b>Mitigation WR-BC2:</b> Construction activities shall be restricted to the approved work window (dry season) as designated by the regulatory agencies. NCRA shall implement procedures, BMPs, and monitoring programs as required by the regulatory agencies.	<p>NCRA NCRA Contractors</p>	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation of Bakers Creek.
<b>Foss Creek – Rehabilitation and Construction Activities</b>				
<b>Impact WR-FC1:</b> During construction for rehabilitating the railway at the Foss Creek site, construction activities will require the transport, placement of fill, and placement of structural features that could potentially result in erosion, increased sedimentation and possibly alterations to stream flows.	<p><b>Mitigation WR-FC1a:</b> The proposed project shall comply with the NPDES permit process which requires project applicants to file a NOI and prepare and submit a construction SWPPP to the RWQCB. The SWPPP will contain a detailed mitigation plan containing BMPs for erosion and sediment control. Typical BMPs may include the use of silt fencing, temporary or permanent retention or detention basins, check dams, buffer strips adjacent to streams, and other similar devices or methods.</p> <p><b>Mitigation WR-FC1b:</b> The proposed project shall comply with all requirements necessary for a Streambed Alteration Agreement from the California Department of Fish and Game and the WDRs from the RWQCB.</p> <p><b>Mitigation WR-FC1c:</b> The proposed project design for this site shall adhere to the guidelines for fish passage set forth by the CDFG and the NMFS. These agencies shall be consulted with prior to finalization of the design to assure success and minimization of potential impacts.</p> <p><b>Mitigation WR-FC1d:</b> The proposed project shall comply with the WDRs issued by the RWQCBs.</p>	<p>NCRA RWQCB CDFG National Fisheries USFWS NCRA Contractors USACE</p> <p style="text-align: center;">Marine</p>	<p>NCRA will consult with the appropriate regulatory agencies and obtain the necessary permits and approvals.</p> <p>NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.</p>	During the rehabilitation of Foss Creek.



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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
<b>Impact WR-FC2:</b> Rehabilitation activities could cause adverse impacts on surface waters through the release of hydrocarbons and similar pollutants. During construction, the operation of equipment and vehicles in close proximity to surface water bodies could result in accidental discharges of oil or other contaminants into streams.	<b>Mitigation WR-FC2:</b> Construction activities shall be restricted to the approved work window (dry season) as designated by the regulatory agencies. NCRA shall implement procedures, agency approved BMPs, and monitoring programs as required by regulatory agencies.	NCRA NCRA Contractors	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation of Foss Creek.
<b>Black Point Bridge – Rehabilitation and Construction Activities</b>				
N/A				
<b>Lombard Siding (MP 1.0 – MP 2.0) – Rehabilitation and Construction Activities</b>				
<b>Impact WR-LS1:</b> The siding from MP 1.0 to MP 2.0 is located in an area that is partially occupied by wetlands. Construction of the new siding and ongoing maintenance activities related to the operations of the railroad will be conducted in accordance with NCRA's BMPs, but will impact sensitive habitats due to the filling of 0.2 acres of seasonal wetlands and loss of 0.69 acres of mudflat habitats.	<b>Mitigation WR-LS1:</b> The wetlands and mudflats will be fully evaluated and confirmed in coordination with permitting and resource agencies. Losses of the habitats will be mitigated by creation of an equivalent habitat at a 1:1 ratio, or other compensatory mitigation determined appropriate by the permitting agencies.	NCRA US Army COE RWQCB CDFG USFWS NCRA Contractors	NCRA shall consult with the appropriate regulatory agencies in regards to the potential impact to wetlands and losses of wetland habituate will be mitigated as determined appropriate by the agencies.	During the rehabilitation and construction of Lombard Siding.
<b>Impact WR-LS2:</b> During construction of the siding from MP 1.0 to MP 2.0, construction activities will require the transport, placement of fill, and placement of structural features that could potentially result in erosion and increased sedimentation.	<b>Mitigation WR-LS2a:</b> The proposed project shall comply with the NPDES permit process which requires project applicants to file a NOI and prepare and submit a construction SWPPP to the RWQCB. The SWPPP will contain a detailed mitigation plan containing BMPs for erosion and sediment control. Typical BMPs may include the use of silt fencing, temporary or permanent retention or detention basins, check dams, buffer strips adjacent to streams, and other similar devices or methods.  <b>Mitigation WR-LS2b:</b> The proposed project shall comply with all requirements necessary from the CDFG and the WDRs from the RWQCB.	NCRA RWQCB CDFG NCRA Contractors	NCRA will consult with the appropriate regulatory agencies and obtain the necessary permits and approvals.  NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation and construction of Lombard Siding.
<b>Impact WR-LS3:</b> Rehabilitation activities could cause adverse impacts on surface waters through the release of hydrocarbons and similar pollutants. During construction, the operation of equipment and vehicles in close proximity to surface water bodies could result in accidental discharges of oil or other contaminants into wetlands.	<b>Mitigation WR-LS3:</b> NCRA shall implement procedures, agency approved BMPs, and monitoring programs as required by the regulatory agencies.	NCRA RWQCB CDFG USFWS NCRA Contractors	NCRA will consult with the appropriate regulatory agencies and obtain the necessary permits and approvals.  NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation and construction of Lombard Siding.
<b>Novato Consent Decree (MP 35.5 – MP 18.7)</b>				
<b>Impact WR-NCD1:</b> There could be disturbance of wetlands/waters of the United States during construction of quiet zone improvements if additional intersections of the NWP Line requiring quiet zone improvements are identified by the regulatory agencies.  Construction activities could impact wetlands and other waters at the quiet zone sites. Operation of vehicles and equipment in these areas could adversely affect wetland and stream habitat by disrupting soil and damaging or removing wetland and riparian vegetation. Ground disturbance and other activities within and adjacent to stream zones could result in increased erosion, water turbidity and sediment transport into waterways.	<b>Mitigation WR-NCD1:</b> Local jurisdictions and state and federal agencies shall be consulted prior to work to ascertain any requirements to protect water resources. Work shall be conducted in compliance with any specific permit requirements, and the NCRA BMPs. Upon completion of the construction work at the site, all temporarily disturbed natural areas (if any), including stream banks, shall be returned to original contours and in accordance with the permit requirements. Affected wetlands, stream banks or stream channels shall be stabilized prior to the rainy season and/or prior to reestablishing flow.	NCRA US Army COE RWQCB CDFG USFWS NCRA Contractors	NCRA will consult with the appropriate regulatory agencies and obtain the necessary permits and approvals.  NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During the rehabilitation and construction activities associated with the NCD.



**TABLE 4-1  
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Potential Impact	Mitigation Measure	Responsibility for Implementation & Overseeing Agencies	Method for Compliance	Timing of Compliance
<b>Operations</b>				
<b>Impact WR-OP1:</b> Water crossings could become clogged with debris that could reduce drainage capacity and cause structural failure of culverts or bridges. This debris could impede water flow within a designated 100-year flood plain. Inadequate drainage could also cause excessive erosion that could compromise the railroad embankment in the vicinity of the crossings.	<b>Mitigation WR-OP1:</b> NCRA's BMPs, Operations Plans and monitoring programs shall be implemented. These plans and procedures outline routine maintenance of the rail line which shall include regular inspection and clearing of debris at stream crossings. Routine inspection and debris removal will help prevent clogging and deterioration of drainage facilities. Maintaining adequate drainage will reduce the risk of flooding that can occur when surface water accumulates behind clogged culverts and/or bridges, resulting in a long-term beneficial effect. Proper maintenance will also prevent damage to bridge and water control structures, and help prevent erosion of the railroad embankment and adjacent upland areas.	NCRA NCRA Contractors RWQCB	NCRA will ensure that their staff/contractors implement NCRA's BMPs, Operating Plans, monitoring programs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During operations.
<b>Impact WR-OP2:</b> Routine maintenance activities could temporarily increase surface erosion, sedimentation and stream flow alterations due to temporary work performed in the water.	<b>Mitigation WR-OP2a:</b> Routine maintenance activities shall comply with any applicable NPDES permit process requirements. If applicable, a NOI and construction SWPPP shall be prepared and submitted to the RWQCB. The SWPPP will contain a detailed mitigation plan containing BMPs for erosion and sediment control.  <b>Mitigation WR-OP2b:</b> Routine maintenance activities shall adhere to the guidelines for fish passage set forth by the CDFG and the NMFS. When working in water, these agencies shall be consulted with prior to finalization of the design to assure success and minimization of potential impacts.  <b>Mitigation WR-OP2c:</b> Routine maintenance activities shall comply with any applicable WDRs issued by the RWQCBs.	NCRA RWQCB CDFG NMFS USFWS NCRA Contractors	NCRA will consult with the appropriate regulatory agencies and obtain the necessary permits and approvals.  NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.	During operations.
<b>Impact WR-OP3:</b> Routine maintenance activities occurring in water at bridges or culverts could cause adverse impacts on surface waters through the release of hydrocarbons and similar pollutants. During maintenance activities, the operation of equipment and vehicles in close proximity to surface water bodies could result in accidental discharges of oil or other contaminants into streams.	<b>Mitigation WR-OP3:</b> Accidental spills from routine maintenance activities shall be avoided by implementing NCRA's BMPs and Operations Plans. The BMPs and/or plans incorporate exclusion zones adjacent to streams and other bodies of water, and specific procedures for spill containment and cleanup in the event of an accident. Protocols shall be followed for oversight and inspection of construction activities to assure compliance with the operations plans.	NCRA NCRA Contractors RWQCB	NCRA will ensure that their staff/contractors implement NCRA's BMPs and the permit/approval conditions. NCRA will inspect the activities on a regular basis to verify compliance.  The RWQCB will be notified in the event of a release to soil, surface water, or groundwater.	During operations.