# SMART PROJECT MITIGATION MEASURES

Mitigation Measures for each Resource area have been compiled. Each Resource Area Mitigation Measure Table includes all Mitigation Measures from the Final EIR (2006) followed any Mitigation Measures new to the Draft and Final Supplemental EIR (2008).

Environmental compliance measures from the Final EIR and Final SEIR are provided at the end of this document.

## Geology, Soils, and Seismicity

| FINAL EIR |
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| Mitigation Measure G-1: Implement erosion control Best Management Practices (BMP) such as settling basins, the covering of soil stockpiles, runoff diversions, silt fences, and dewatering sediment filtersocks. Site-specific measures shall be determined during pre-construction planning. |
| Mitigation Measure G-2: Implement properly designed restraint and shoring systems to avoid unstable excavations. The proper shoring design depends on the soil type, the extent of groundwater seepage, the height or depth of the excavation, the inclination of the excavation and the amount of time that the excavation will remain open. These factors can be developed during the geotechnical investigation and recommendations made to structural engineers responsible for the design. When excavations are made adjacent to sensitive structures (i.e. buildings of historic significance, equipment with little tolerance to settlement, or critical facilities and utilities), monitoring of ground surface and structures shall occur so that the amount of settlement or movement does not exceed acceptable levels. |
| Mitigation Measure G-3: Implement erosion control measures including hydro seeding or erosion control materials on areas that have been graded or disturbed. Additionally, maintain and repair drainage structures (e.g., culverts, drop inlets, etc.) on cut and fill slopes to minimize long term erosion. Licensed civil engineers shall develop properly designed stormwater runoff collection structures and finished contours for new stations, rail sidings, and earthwork to maximize long-term slope stability. |
| Mitigation Measure G-4: A site-specific geotechnical Investigation report shall be prepared as part of final project design, and its recommendations for seismic design parameters per UBC code shall be incorporated into the proposed project design. This report shall include an in-depth study of the regional seismicity and site-specific geologic conditions, including a probabilistic seismic hazard analysis that incorporates risk-based evaluations of exceedance of certain peak ground accelerations. Measures to reduce impacts would include ground improvement such as soil mixing, jet grouting, soil densification, pile supported structures, etc. The use of specific measures will depend on soil type and stratigraphy, which will be determined during final design. Implementation of geotechnical design recommendations shall be verified during construction by monitoring of construction activities by a qualified geotechnical consultant.<br>After any significant earthquake in the area resulting in felt shaking (also after major rainstorms), the constructed rail line should be immediately inspected. This inspection would be for possible damage and delineation of areas requiring temporary speed reductions, maintenance or more substantial repair work before resumption of train service. |
| Mitigation Measure G-5: Evaluation of fault rupture hazard shall be undertaken during subsurface geotechnical investigations as discussed in Mitigation Measure G-3 for this segment using guidelines specified in Special Publication 42 of CGS. The evaluation shall determine the specific design features that will be most appropriate for implementation. |
| Mitigation Measure G-6: Proper subsurface investigation shall be conducted in areas with liquefaction potential prior to construction as detailed in Mitigation Measure G-4. This investigation should include Standard Penetration Test borings, laboratory grain size analysis and liquefaction analysis. The subsurface investigation would identify the potential for liquefaction and identify design features to reduce the potential for liquefaction. Geotechnical design recommendations shall be incorporated into final project designs and verified during construction by monitoring of construction activities by a qualified geotechnical consultant. |
| Mitigation Measure G-7: Minimize slope disturbance by performing scaling of loose rock, and install rock fall netting, soil nails or rock bolts as necessary. Conduct geotechnical evaluations of slope stability, including static and pseudo-static analysis to determine factors of safety and whether mitigation measures such as buttressing, retaining walls slope or rock bolting are appropriate. Implementation of the recommendations for mitigating long-term landslide impacts shall be verified by monitoring of construction activities. |
| Mitigation Measure G-8: The project shall incorporate one of the following three measures to reduce the impact of expansive soils: (1) remove expansive soil and replace with select, non-expansive, engineered fill; (2) lime treatment of expansive soil; or (3) placement of structures on drilled piers or foundation elements founded on deeper, non-expansive bearing strata. |

## Geology, Soils, and Seismicity

Mitigation Measure G-9: Where corrosive soils are encountered, the project shall incorporate one or more of the following measures, as appropriate: epoxy coating of reinforcing steel, use of Type 5 Portland cement in structural concrete, or soil treatment to neutralize pH in the soil or reduce excessive chloride and sulfate concentrations in the soil.

## Water Resources

FINAL EIR

Mitigation Measure WR-1a: The proposed project shall comply with the National Pollutant Discharge Elimination System (NPDES) permit process which requires project applicants to file a Notice of Intent (NOI) and prepare and submit a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must contain a detailed mitigation plan for erosion and sediment control, including plans for implementing BMPs for the control of stormwater runoff, erosion and sedimentation. BMPs include structural treatment controls. Structural treatment controls are engineered facilities designed for the treatment of storm water runoff. They use infiltration, retention/detention and biofiltering techniques to remove pollutants. Vegetated swales and buffer strips, infiltration systems, bioretention systems, extended detention basins, ponds and constructed wetlands, media filtration systems, and oil/water separators are examples of structural treatment controls for storm water quality. The type of structural treatment controls will vary throughout the SMART corridor depending on local conditions.

Mitigation Measure WR-1b: The project shall comply with the requirements for a Streambed Alteration Agreement for those portions of the project that would be completed along the banks of various surface waterbodies.
In order for any work to be completed around the various surface waterbodies, Section 401 of the Clean Water Act would be applicable. Section 401 requires any applicant for a federal permit that conducts any activity that may result in a discharge of pollutants to first obtain a Water Quality Certification (WQC) from the State. As a condition of the project, 401 Certifications and Section 404 permits will be obtained. Section 404 of the Clean Water Act establishes programs to regulate the discharge of dredged and fill material in waters of the U.S., including wetlands.

Mitigation Measure WR-2: Design structures and other improvements on the site so as not to raise flood levels. Specific designs shall be based on site-specific hydrologic studies conducted during the final design stage of the proposed project. Said studies will be submitted to the State Water Resources Control Board and the two RWQCBs for review. When feasible, construction within the floodplain shall be avoided or minimized. When construction within the floodplain is unavoidable, efforts will be made to restore the floodplain, as necessary, to restore flood capacity.

## Hazardous Materials

FINAL EIR

Mitigation Measure HM-1: Samples of soil shall be submitted for analysis for phenol and creosol compounds if track shoulder re-grading or excavations associated with bridge improvements are undertaken. Sampling of soil will also be based on available historical information and/or previous sampling data sampling and analysis and will be modified to include other potential contaminants such as metals, petroleum hydrocarbons, polychlorinated biphenyls (PCB) and polynuclear aromatic hydrocarbons (PAH) where warranted. Samples of soil are recommended to be submitted for analysis for lead if improvements to the road crossings are required to determine if these compounds are present and have the potential to impact disposal or release to the environment. If phenol and creosol compounds or ADL are present in the soil, then preparation of a Site Mitigation Plan (SMP) will be required to address potential exposure of workers to impacted soil in order to comply with applicable waste handling and disposal regulations (if offsite disposal of soil is necessary). At a minimum, BMPs in the SMP should include provisions for excavation and grading of impacted soil, stockpiling and testing of contaminated soil, dust and odor control measures and health and safety requirements for working with impacted soil.

To comply with AB 939 requirements, which dictate guidance for source reduction, recycling and composting, and environmentally safe transformation and land disposal of solid wastes, railroad ties and steel that are replaced during construction of the project will be recycled or re-used as appropriate.

Mitigation Measure HM-2: Precautions, including sampling of soil and groundwater prior to work activities in the areas where proposed excavations are planned and preparation of a SMP, shall be implemented, where necessary. If naturally occurring asbestos is encountered, the project shall comply with the CARB Asbestos Airborne Toxic Control Measures regulation (17 CCR, Section 93105), which requires local air district review and approval of an asbestos dust mitigation plan. An Asbestos Dust Mitigation Plan must specify dust mitigation practices which are sufficient to ensure that no equipment or operation emits dust that is visible crossing the property line.

If contaminated materials are encountered during construction activities, the local Fire Certified Unified Program Agency (CUPA) will be notified immediately. A qualified environmental consultant shall monitor soil and air and dust emissions during construction activities in these locations to identify whether potential hazards exist and whether special handling of soil and groundwater is required. Specially trained workers can be utilized to handle contaminated soil/groundwater and SMP implementation measures (i.e., use of personal protective equipment) can be utilized to mitigate potential exposures to contaminated soil/groundwater and additional releases to the environment. Construction-related impacts of soil excavation and groundwater dewatering in contaminated areas can be mitigated through implementation of BMPs, such as conducting daily health and safety meetings to discuss planned work in areas where contaminated soil/groundwater could be encountered. Mitigation measures to protect the public include limiting access (i.e., fencing and site security) to the railroad corridor during construction activities and implementation of BMP measures to prevent offsite migration of contaminated soil and groundwater.

Mitigation Measure HM-3: Sampling activities shall be conducted in locations where asbestos containing materials or lead-based paint (LBP) are anticipated to identify whether potential hazards exist and whether special precautions to prevent workers from exposure to LBP or asbestos are necessary during bridge/overcrossing renovation and or/demolition. If friable asbestos materials are identified during bridge inspections, these materials shall be safely removed and properly disposed using procedures established by OSHA and the BAAQMD/NSCAPCD. Bridge workers shall be protected through the use of proper protective equipment. Standard procedures shall be used for capturing LBP during bridge cleaning (e.g., sand blasting) and preventing it from being released into the environment. Proper containment shall be employed for all bridge maintenance activities to prevent LBP from impacting the environment.

## Transportation

FINAL EIR

Mitigation Measure T-1: Mitigation at appropriate locations shall include restriping of existing roadways and traffic control improvements such as signal timing and phasing modifications, where appropriate (see also Mitigation Measure T-2).

Mitigation Measure T-2: The implementation of the proposed project signaling and communication system shall include coordination and integration with the adjacent traffic signals to allow for progression of other non-conflicting traffic movements. In addition, a grade crossing protection system shall be provided, which would include a hardware interconnection of the train detection system to the railroad crossing gates to allow the gates to stay up while the train is stopped at the station; the train operator would activate the crossing gates and flashers only when the train is ready to leave the station. Coordination and integration with the adjacent traffic signals in downtown Santa Rosa and Petaluma and the grade crossing protection system would minimize traffic impacts and reduce unnecessary delays and queues to less than significant.

## Transportation

FINAL SUPPLEMENTAL EIR – New Mitigation Measures

MM T-3 (Downtown Novato): SMART shall pay its fair share cost of signalizing Reichert Avenue/Grant Avenue and Railroad Avenue/Grant Avenue intersections when they meet standard warrants for a traffic signal in the future.

MM T-4: (Downtown Novato) The City of Novato may restrict parking on nearby streets, either using a time limit, or a residential parking permit program to discourage people from using city streets for park-and-ride purposes.

MM T-3 (Hamilton): SMART shall pay its fair share cost of signalizing the Highway 101 northbound ramp at Nave Drive and the southbound ramp at Alameda del Prado, at such time as signal warrants and/or traffic engineering studies indicate this action would be desirable. Signalization would be subject to Caltrans approval.

MM T-5 (Hamilton) SMART shall pay its fair share cost of mitigating impacts on the intersection of Main Gate Road and Nave Drive. Mitigation would consist of adding a northbound right turn arrow (known as an "overlap phase") to serve northbound right turn traffic (Nave Drive right turn into Main Gate Road); and lengthening the existing northbound right turn lane to a length appropriate to serve the traffic demand.

## Noise and Vibration

FINAL EIR

Mitigation Measure N-1: In order to reduce construction noise at nearby receptors, the following noise abatement measures shall be implemented for construction contracts:

- When practical, construction operations shall not occur between 7:00 p.m. and 7:00 a.m. or on weekends or holidays in residential areas.
- Each internal combustion engine shall be equipped with a muffler of a type recommended by the manufacturer.

Other measures to reduce noise levels that may be implemented where appropriate include:

- Turning off construction equipment during prolonged periods of non-use.
- Requiring contractors to maintain all equipment and train their equipment operators to increase efficiency of operation.
- Locating stationary noise-generating equipment away from noise-sensitive receptors such as residences.

Mitigation Measure N-3: Install a solid barrier at the Windsor Station to separate the park-and-ride lot from residential uses.

Mitigation Measure N-4: Construct a noise barrier or enclosure of the vehicle lay-up area at the Cloverdale Maintenance Facility.

Mitigation Measure N-5: Limit the use of train horns and other audible warning devices by installing crossing controls that meet Federal Railroad Administration (FRA) requirements and obtain Quiet Zone designations for crossings along the corridor. Local jurisdictions may apply to the FRA for designation as a Quiet Zone, where audible warning devices are not required.

## Energy

FINAL EIR

Mitigation Measure E-1: Implement energy conservation measures during construction such as:

- Using energy efficient measures at rail stations, such as solar panels;
- Reducing idling of trucks delivering construction material;
- Consolidating material delivery; and
- Scheduling material delivery during off-peak hours, to allow trucks to travel without traffic and at fuel-efficient speeds (45–55 mph).

## Biological Resources

FINAL EIR

Mitigation Measure BR-1a: Construction access, staging, storage, and parking areas shall be located on ruderal or developed lands to the extent possible. 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 (including suitable buffer zones) to minimize impacts on these communities, and work activities shall be limited to outside the marked areas. The minimum distances for these buffer zones will be determined for each site during consultation with the appropriate resource agencies.

Mitigation Measure BR-1b: Qualified biologists shall monitor construction activities that could potentially cause significant impacts on sensitive biological resources. A worker education program shall be developed and presented to all construction personnel before they start work on the proposed project. The program shall summarize relevant laws and regulations that protect biological resources, discuss sensitive habitats and special-status species with the potential to occur in the work zone, explain the role and authority of the biological monitors and review applicable avoidance and minimization measures to protect sensitive species and habitats.

Mitigation Measure BR-2a: In-stream construction shall be confined to the dry or low-flow season of April 15 to October 15. During in-stream construction, dewatered areas and temporary culverts shall be limited to the minimum area necessary. Pumps used for dewatering shall have agency-approved fish screens installed to minimize intake of fish into pumps. Diversion structures shall be left in place until all in-stream work is completed. Temporary culverts and all construction materials and debris shall be removed from the affected area prior to reestablishing flow and prior to the rainy season.

Mitigation Measure BR-2b: A qualified biological monitor shall be present during critical construction periods (e.g., grubbing and clearing, culvert installation, pouring concrete) in all streams and wetland areas. If a listed or protected species is encountered, work shall be stopped immediately at that location, the appropriate agency or agencies US Fish & Wildlife Service (USFWS), National Oceanic Atmosphere Administration (NOAA), Fisheries and/or California Department of Fish & Game (CDFG) shall be notified, and work shall not resume at that location prior to the agencies' approval, or as agreed to in prior consultation with the agencies.

Mitigation Measure BR-2c: Upon completion of the proposed project, all temporarily disturbed natural areas, including stream banks, shall be returned to original contours to the extent feasible. 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 should be stockpiled and replaced following work. Wetland and riparian vegetation shall be reestablished as appropriate.

Mitigation Measure BR 3a: To the extent feasible, trees and shrubs in the construction zones shall be trimmed or removed between September 1 and January 31 to reduce potential impacts on nesting birds. If vegetation must be removed during the period from February 1 to August 31, a qualified wildlife 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 (for California clapper rail and California black rail see Mitigation Measure BR-12). 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 construction 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 to the extent possible until it is determined that nesting is complete and the young have fledged.

Mitigation Measure BR-3b: If construction is likely to occur during the nesting season of cliff swallows (March 1 to July 31), bridges shall be periodically inspected for swallow nests by a qualified biologist prior to the onset of bridge demolition and/or new bridge construction. Nests shall be knocked down by a biologist prior to being one-third completed. Inspection of the bridges shall start in late February. Alternative methods to prevent cliff swallow nesting on the bridge may be used with prior approval by the CDFG.

## Biological Resources

Mitigation Measure BR-4: During construction activities, the following measures shall be implemented to the extent feasible to reduce the spread of exotic (non-native) invasive plants in temporary work areas and throughout the project corridor:

- Minimize vehicle travel through weed-infested areas.
- Minimize soil disturbance and the removal of existing vegetation (non-native [FEIR uses the word exotic rather than non-native] or native) to the extent feasible during construction activities.
- Use only certified weed-free straw and mulch or weed-free fiber roll barriers or sediment logs.
- Use only certified weed-free native seed mixes and native plants that are appropriate to the pre-existing or adjacent natural habitat for revegetation. [Not applicable to the Downtown Novato station site or other urban sites where there is no existing natural habitat]
- Monitor all erosion-control and revegetation sites for weed infestations at least twice yearly during the growing season, for at least three years after construction.
- At sites where restoration is required, remove pre-existing invasive species, such as *Arundo donax*, that are growing in the right-of-way.

Mitigation Measure BR-5a: To replace impacted wetlands, a habitat restoration plan shall be developed and implemented to enhance wetland and riparian habitats in undeveloped portions of the right-of-way. Habitat shall be restored or replaced at a minimum 1:1 ratio of acres of these habitats permanently impacted. The ratio of 1:1 would be appropriate for mitigating relocation of a seasonal ditch, where the new ditch would be constructed on-site and parallel to the existing ditch. Many of these ditches provide minimal function, and there would be minimal temporal loss if the replacement ditch is constructed first. Replacement ratios of 3:1 would be appropriate for off-site mitigation of fill of high-quality wetlands such as vernal pools or coastal salt marsh.

Restoration efforts shall focus on areas where current conditions are degraded due to erosion, unstable slopes or abundance of invasive exotic plant species. Elements of the plan could include slope stabilization, control of invasive weeds, and reestablishment of appropriate native vegetation. Performance standards that are accepted by the resource agencies for site revegetation shall be specified in the plan. These standards could include a minimum 80 percent success rate of plants reestablished or acres restored. The restored areas shall be monitored for a minimum of three years and remedial measures taken, such as replanting vegetation or enhancing additional areas, if the performance standards are not met.

Preliminary reviews of the SMART project corridor have identified 12 sites, covering 3.2 acres, where conditions appear to be suitable for vernal pool restoration and/or enhancement. These sites are located between MP 51- MP 63. They are dominated with herbaceous vegetation, underlain with poorly draining soils, adjacent to compatible land uses, and within 6 miles of the pools that would be affected.

At these sites, individual site prescriptions would be developed based on specific soil and hydrologic conditions. Further investigations would confirm underlying soils, map local hydrology and identify potential watershed areas. These data would then be used to first prioritize all of the sites for enhancement or pool creation, and then develop site specific prescriptions on the highest ranking sites up to the area required to mitigate vernal pool impacts associated with the project. Site-specific prescriptions would quantify and delineate grading and landshaping requirements to recreate or enhance ponded conditions.

Grading would follow the site prescriptions and take place during the dry season. The pools would then be inoculated with material from the pools that would be filled during project construction, but before the raining season. Annual vegetation monitoring would take place for at least three years until the mitigation sites achieve adequate cover with species typical of vernal pools.

Mitigation Measure BR-5b: In the event that habitat restoration and enhancement within the right-of-way is insufficient to compensate for all wetland losses resulting from the proposed project, SMART shall provide additional, off-site compensation as needed to achieve a minimum 1:1 replacement ratio for affected wetland areas.

## Biological Resources

Mitigation Measure BR-6: This measure addresses impacts on both individual trees and oak woodland habitat. A qualified arborist shall conduct a tree survey within the project corridor, prior to ground-disturbing activities, to identify trees that would be removed or potentially affected by the proposed project and trees that can be avoided. Where it is feasible to avoid protected trees, keep vehicles and mechanical equipment outside the dripline of these trees. In areas where oaks or other protected trees cannot be avoided, replace trees removed with the same native tree species at a minimum 3:1 ratio, or as required by applicable ordinance(s). SMART shall conduct monitoring for ten years following planting to verify that trees have successfully reestablished.

Prior to construction, an oak woodland restoration plan shall be developed and provided to CDFG for concurrence. The plan shall include the total acreage of temporary and permanent impacts to all oak woodland habitat. Areas shall be mapped using aerial photographs and provided to CDFG for concurrence. All temporary and permanently disturbed areas shall be mitigated at a 1:1 ratio for creation and preservation of new oak woodlands or a 3:1 ratio for preservation of existing habitat. To ensure a successful creation effort, all mitigation plantings shall be monitored and maintained (including irrigation as necessary) for ten years. At the end of the ten-year monitoring program, the canopy cover shall equal or exceed percent cover mapped at the disturbed sites. If the cover requirements are not meeting these goals, SMART is responsible for replacement planting, additional watering, weeding, invasive exotic eradication, or any other practice, to achieve these requirements. All replacement plants shall be monitored with the same requirements for ten years after planting. An annual status report on the mitigation shall be provided to CDFG by December 31 of each year for the first 5 years and a final report at year ten. This report shall include the percent cover of each species (relative abundance) and average height of both tree and shrub species for each separate area planted. The number of each species of plants installed, an overview of the revegetation effort, and the method used to assess these parameters shall also be included. Photos from designated photo stations shall be included. Sites should be maintained in perpetuity and managed under an approved management plan.

Mitigation Measure BR-7: In non-urban areas of the corridor that are not directly adjacent to Highway 101 and where a safety structure or wall is proposed to be installed between the proposed bicycle/pedestrian pathway and railway, intermittent gaps shall be placed along the barrier to allow passage of wildlife. These gaps shall be at least three feet wide, extending from ground level to the top of the structure, and be spaced no farther apart than every quarter-mile where feasible within existing or potential wildlife movement corridors along the right-of-way. In addition to gaps, wildlife tunnels shall be installed at appropriate locations to facilitate the movement of animals across the safety structure. Gaps and tunnels shall be located in the following areas:

- Rural lands between Cloverdale and northern Santa Rosa where the right-of-way is at least 0.25 mile from Highway 101; and
- Between Main Gate Road (MP 23.6) and Smith Ranch Road (MP 21.0) in Marin County.

Gaps shall also be placed on both sides of bridge crossings of Mark West Creek and other major non-urban stream corridors to enable wildlife passage through these areas. Gaps shall not be located in or adjacent to urban or residential areas. To facilitate movement of amphibians and other small wildlife across the safety structure, its design shall include openings at the bottom that are approximately 2 inches in diameter.

Mitigation Measure BR-8a: Within three years prior to project construction activities that could affect vernal pool habitats in the Santa Rosa Plain, conduct the botanical survey protocol for federally endangered plant species in the Santa Rosa Plain. The protocol would require two years of botanical surveys, three times over the impact area each year, to determine possible impacts on Sonoma sunshine, Burke's goldfields, Sebastopol meadowfoam and many-flowered navarretia. For other sensitive plant species, plant surveys shall be conducted as needed to supplement those conducted in 2003 and pursuant to established agency protocols. Prior to construction, botanical survey results shall be provided to CDFG and USFWS for concurrence.

Mitigation Measure BR-8b: In the event that populations or individuals of sensitive plant species are found in the project corridor, the following measures shall be implemented:

- Sensitive plant species that are found within the right-of-way but not where construction would occur shall be protected by installing temporary plastic fencing outside the population perimeter with "Sensitive Habitat Area" signs posted on the outside of the fence. Monitoring shall occur during and following construction to insure compliance with plant protection.
- To the extent feasible, sensitive plant locations shall be avoided during final project design. Where it is not feasible to avoid sensitive plant locations within the project corridor and the affected species is a non-listed annual that is sensitive pursuant to CEQA, seed collection and transplanting is proposed in suitable areas of the right-of-way outside of proposed construction.
- If an affected sensitive plant is a non-listed perennial, native plant nursery propagation is proposed as well as right-of-way planting outside of construction areas. All planting sites would be chosen for their suitability for the species being planted at that site.
- All sensitive plant restoration and planting sites shall be protected as described in bullet point one above and monitored for five years.
- Potential impacts on state- or federally listed species would necessitate consultation with the CDFG and/or USFWS and

mitigation meeting the resource agency requirements. This could include off-site mitigation and mitigation bank investments, similar to those that have been established in the Santa Rosa Plain. Any retention areas would be held and managed in perpetuity under agency-approved management plans.

Mitigation Measure BR-9a: For work in stream zones (DEIR Table 3.9-5) that harbor federal or state-listed salmonid fish, SMART shall consult with NOAA Fisheries and CDFG and Implement protection measures specified in consultation with those agencies.

Mitigation Measure BR-9b: In streams that harbor state- or federally listed salmonid fish species, in-stream work shall not start before July 1 and shall be completed by October 15, unless otherwise approved by appropriate agencies.

Mitigation Measure BR-10a: For areas where construction would occur within the range of the California tiger salamander in Sonoma County (i.e., non-urban areas between Windsor and Penngrove), SMART will comply with the Santa Rosa Plain Conservation Strategy and shall consult with the USFWS and CDFG to obtain authorization for activities that could affect this species and implement all applicable protection measures specified through this consultation. Protection measures shall be focused on locations where California tiger salamander habitats have been identified within and adjacent to the right-of-way and where California tiger salamander could potentially be affected as determined in consultation with the USFWS. Protection measures could include, but would not be limited to, the following:

- Where impacts on potential CTS breeding habitats can be avoided, establish site-specific exclusion zones to protect these areas. Install temporary plastic fencing around the exclusion areas with "Sensitive Habitat Area" signs posted and clearly visible on the outside of the fence.
- Where it is not feasible to avoid work within or adjacent to potential CTS breeding sites, limit work in these areas to the period from June 1 to October 14 or when the ponds are dry.
- From October 15 to May 31 within potential CTS dispersal habitat, minimize operation of proposed project vehicles and equipment at night off pavement during rain events and within 24 hours following rain events, and check under vehicles parked overnight off pavement before moving them.

Mitigation Measure BR-10b: If permanent loss of occupied or potential CTS breeding habitat cannot be avoided, compensation shall be provided through protection and enhancement of CTS habitat within the right-of-way, purchase of off-site mitigation credits, and/or contribution to regional conservation and recovery efforts for the species as determined in consultation with the USFWS and CDFG.

Mitigation Measure BR-11: A qualified biologist shall conduct a pre-construction survey for NWPT no more than 14 days prior to construction in suitable aquatic habitats within the project corridor, including stream crossings, drainage ditches, and culverts. A combination of visual and trapping surveys may be performed with authorization from the CDFG. If this species is found near any proposed construction areas, impacts on individuals and their habitat shall be avoided to the extent feasible. If occupied habitat can be avoided, an exclusion zone shall be established around the habitat and temporary plastic fencing shall be installed around the buffer area with "Sensitive Habitat Area" signs posted and clearly visible on the outside of the fence. If avoidance is not possible and the species is determined to be present in work areas, the biologist with approval from CDFG may capture turtles prior to construction activities and relocate them to nearby, suitable habitat out of harm's way (e.g., upstream or downstream from the work area). Exclusion fencing should then be installed if feasible to prevent turtles from re-entering the work area. For the duration of work in these areas the biologist should conduct monthly follow-up visits to monitor effectiveness.

Mitigation Measure BR-12: For areas where the construction activities would occur within or adjacent to salt marsh or brackish marsh habitats, consult with the USFWS and CDFG to determine locations where salt-marsh harvest mouse, California clapper rail and California black rail could potentially be affected by the proposed project. All applicable protection measures specified through consultation with these agencies would be implemented during project construction. Protection measures could include, but would not be limited to, the following:

- A qualified biological monitor shall be present during all work activities in or adjacent to salt marsh and brackish marsh habitats between Petaluma and Novato.
- In areas where one or more of these species is determined to be potentially affected, work activities shall be confined to the existing railroad grade to the extent feasible. Staging, access and parking areas shall be located outside of salt marsh and brackish marsh habitats.
- Avoidance measures for SMHM could include installation of temporary exclusion barriers to prevent SMHM from entering work areas during construction. For California clapper rail and California black rail, protection measures could include avoiding work activities during the nesting season (March 1 to July 31) within 300 feet of areas identified as suitable nesting habitat for these species.
- If any of these species is detected during work activities, work shall be stopped immediately at that location and the USFWS and/or CDFG shall be contacted within two working days. Work shall not resume at that location until authorization is obtained from the USFWS and CDFG (for the SMHM and California clapper rail) or from the CDFG (for the California black rail), unless prior approval has been granted by these agencies.

## Biological Resources

Mitigation Measure BR-13: A qualified biologist shall conduct a pre-construction survey for bats at bridges that have sufficient thermal cover for bat roosting, abandoned buildings and old structures prior to demolition or construction at these sites. Bats should be determined to be absent or flushed from roost locations prior to demolition of buildings. If flushing of bats from buildings is necessary, it shall be done by the biologist during the non-breeding season from October 1 to March 31. When flushing bats, structures shall be moved carefully to avoid harming individuals, and torpid bats given time to completely arouse and fly away. During the maternity season from April 1 to September 30, prior to building demolition or construction, a qualified biologist shall determine if a bat nursery is present at any sites identified as potentially housing bats. If an active nursery is present, disturbance of bats shall be avoided until the biologist determines that breeding is complete and young are reared.

Mitigation Measure BR-14: A qualified biologist shall conduct monitoring surveys to assess wildlife collision impacts along the entire corridor at least two times a year, once during spring and once during fall, for the first three years of train operation. The results shall be reported to the CDFG and, if federally listed or migratory bird species are affected, to the USFWS. If the CDFG or USFWS determines that collision impacts are excessive or adverse effects on federal- or state-protected species (including listed species, migratory birds and raptors) are occurring, remedial measures (e.g., redesign of structures and gaps) shall be developed and implemented in consultation with these agencies.

Mitigation Measure BR-15a: SMART shall consult with the resource agencies (USFWS, NOAA Fisheries and CDFG) to develop habitat and species protection measures for scheduled and emergency maintenance activities to minimize impacts on wetlands, streams, riparian habitats, and special-status species.

Mitigation Measure BR-15b: For all herbicide applications during right-of-way maintenance, herbicides shall be used only according to label directions, applications shall be confined to within the right-of-way and appropriate BMPs shall be followed to prevent uncontrolled release of chemicals. Only aquatic-approved herbicides shall be used for vegetation control adjacent to open water and wetland habitats.

FINAL SUPPLEMENTAL EIR - New Mitigation Measures

MM BR-16 (Ignacio Wye): Design the Ignacio Wye Station to avoid on-site wetlands. [NO LONGER APPLICABLE, AS SITE IS BEING DROPPED FROM FURTHER CONSIDERATION.]

MM BR-17 (Hamilton): Design the Hamilton Station to avoid on-site wetlands

## Visual Resources

FINAL EIR

Mitigation Measure V-1: SMART shall install temporary fencing where views from adjacent residences are adversely affected during construction. These areas shall be identified in greater detail during design review and the type of temporary fencing selected, as part of the design review. Fencing materials would remain in place until finish work has been completed.

Mitigation Measure V-2: Fixture types, cut off angles, shields, lamp arm extensions, and pole heights will be determined, in consultation with the local jurisdictions.

Mitigation Measure V-3: To reduce the adverse visual impacts of the proposed bicycle/pedestrian safety structures where there is no intervening landscaping or structures such as existing privacy fencing, the safety structure associated with bicycle/pedestrian pathway shall be designed to fit in contextually with adjacent nearby fencing via the use of different materials or landscaping. SMART shall work with local jurisdictions and property owners to select the structure that minimizes visual impacts and provides additional vegetation or other design elements to integrate the safety structure to a greater extent into the viewshed while providing adequate safety.

Mitigation Measure V-4: To reduce adverse visual impacts should the soundwall be placed to immediately west of the residences, Caltrans should consult with the local jurisdiction and property owners to select a design that minimizes the visual impacts and provides design elements to integrate the structure to a greater extent into the viewshed while meeting Caltrans noise wall standards and maximizing the noise reduction afforded by the structure.

## Historic Resources

FINAL EIR

Mitigation Measure HR-1: Exclusionary plastic mesh fencing shall be installed and maintained to prohibit equipment from impacting the structure. [applies to historic Healdsburg station turntable]

Mitigation Measure HR-2: Any new street furniture, train platform, or shelters shall be sympathetic to the local historic character, and landscaping spatial patterning, and be designed in concert with the Santa Rosa Community Development Department City Cultural Heritage Board. The City's historic district fencing guidelines shall be consulted in the proposed bicycle/pedestrian pathway designs. [applies to Santa Rosa Railroad Square Station site]

Mitigation Measure HR-3: Any proposed rehabilitation, changes, alterations and additions shall comply with City of Petaluma policy, which requires conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings. These guidelines shall be consulted for any proposed street furniture and construction of the two proposed train platforms. [applies to Petaluma Station]

Mitigation Measure HR-4: Prior to construction, a report shall be prepared by a professional architectural historian and shall be accompanied by requisite sets of large format camera Historic American Landscape Survey (HALS) Level II black-and-white 8-by-10 inch archival quality prints produced by a professional photographer. A minimum of twenty views shall be documented (five landscape perspectives at one-mile intervals, trestle profiles, culvert profiles, and telephone pole alignments) and two sets of prints, plus the report, shall be sent to the California State Library in Sacramento and the Petaluma Museum. The report and accompanying photography would provide a permanent record of this section of the former NWP track and right-of-way. This record would preserve the historic information and context for this section of track. [applies to historic trackwork – MP 31.3 to 36.7]

Mitigation Measure HR-5: The following shall be conducted prior to any rehabilitation effort: a report shall be prepared by a professional architectural historian and shall be accompanied by requisite sets of large format camera Historic American Engineering Record (HAER) Level II black-and-white 8-by-10 inch archival quality prints taken by a professional photographer. A minimum of twelve views shall be documented (two profiles, two centerline shots, four abutment shots, and four engineering details) and two sets of prints shall be sent to the California State Library in Sacramento and the Healdsburg Museum. Measured drawings shall be prepared of the structure under the supervision of a qualified architectural historian. After this effort, the bridge shall be rehabilitated using Secretary of the Interior Guidelines and Standards. The new concrete members shall be colored to match the existing metal to lower the visual impacts to less than significant levels. [applies to Russion River bridge and Haystack Bridge – for Haystack, a set of prints and drawings to be sent to the Petaluma Museum.]

Mitigation Measure HR-6[applies to Haystack Bridge]: Advertisements shall be placed in local newspapers, and historical advocacy groups that may be interested in acquiring the bridge shall be contacted. Arrangements shall be made for the relocation of the historic structure with its subsequent rehabilitation and adaptive re-use at its new site, including compliance with all State Historic Building Code requirements. Should efforts to relocate the structure fail, one or more of the following actions should be implemented to mitigate the loss:

1. Commemoration of the structure with an enclosed display of text and photos designed by a local professional historical consultant to be placed on the passenger cars at the primary entrance, or alternatively at the Petaluma Station.
2. Salvage of significant materials of the historic structure for conservation in a historical display located at the former bridge site.
3. Incorporation of the historic structure's operator's cab and truss system into the design of the new bridge.

Mitigation Measure HR-7: Where tall safety structures are required in close proximity to historic resources, design safety structures similar to the surrounding historical landscape. For example, structures should be built with similar materials (e.g., horizontal wooden planks and vertical wooden posts near historic wooden structures or brick near historic brick buildings). Adjacent property owners and local government shall be consulted about the design details of the safety structures and landscaping, safety structures should be consistent with applicable local historic preservation policies and guidelines.

## Archeological Resources

FINAL EIR

Mitigation Measure AR-1: Because of the high probability for the presence of historic or prehistoric artifact deposits, an Extended Phase I archaeological study is recommended at these sites (listed in DEIR, page 3-264) in locations where ground disturbances are planned. If an archaeological site is discovered, additional fieldwork (Phase II testing) may be required to establish site boundaries and determine each site's eligibility for listing on the National Register of Historic Places (NRHP). If a site is determined to be eligible, consultation shall be initiated with the State Historic Preservation Officer (SHPO) and other appropriate consulting parties to either avoid the site or to develop a data recovery plan.

Extended Phase I archaeological testing is generally comprised of a series of systematically placed vertical holes that are slightly wider than the width of a shovel blade. Shovel test pits are typically excavated to sterile subsoil or the maximum practical depth to which soil material can be removed by shovel, usually just over a meter. During excavation, care is taken that soil strata are recognized and artifacts from each stratum are bagged separately. A profile is then produced and soils are classified by type and Munsell colors.

Mitigation Measure AR-2: Archaeological and Native American monitoring is recommended in this area because subsurface historic and possibly prehistoric archaeological deposits could be impacted by construction. [applies to Coast Miwok ethnographic village north of Cotati, Downtown Novato and Hamilton station sites]

Mitigation Measure AR-3: If construction personnel locate buried cultural materials, work shall be halted or shifted to another area and a qualified archaeologist shall be contacted to determine proper treatment of the find.

Mitigation Measure AR-4: Trackwork shall be avoided or undertaken in a manner to avoid ground disturbance beyond the current track limits (e.g., by undertaking construction from the existing track) in the most culturally sensitive railroad segments. The Federated Indians of Graton Rancheria have asked that any archaeological site identified within those boundaries be depicted as an "environmentally sensitive area" on railroad maps. Furthermore, maintenance trucks shall avoid driving through this area until boundary definition, evaluation and site capping is completed at the site within the railroad right-of-way. If it is not possible to avoid impacts along this railroad segment, boundary definition would also be warranted at each site to determine if trackwork has the potential to impact the sites.

Avoidance of all ground disturbances that could create impacts is recommended at the following sites: two historic foundations; a buried concrete wall within the railroad right-of-way; a prehistoric site north of Pennegrove; and a prehistoric site south of San Rafael at Simms. If avoidance is not feasible, then the sites would require evaluation for NRHP/CRHR eligibility. [applies to 11 sites from Marin/Sonoma County line to Haystack Bridge, south of Petaluma]

Mitigation Measure AR-5: Of the five bridges and trestles located between MP 31 to MP 37, the open deck trestle between MP 35 and MP 36 should be avoided. If the trestle needs to be replaced, then archaeological site determination (Extended Phase I testing), Phase II eligibility testing, and possible data recovery would be required. The remaining four bridges would require monitoring by a qualified archaeologist and a Native American monitor. Archaeological sites near bridges located at MP 85 and between MP 43 to MP 44 would require boundary definition. If the sites would be impacted by bridgework, then evaluation would be required prior to bridge removals.

Mitigation Measure AR-6: If ground disturbances are planned and staging areas cannot be avoided, an archaeologist shall be present for all grading or other ground disturbing activities planned in the staging area. In the vicinity of the staging areas near Ignacio, if ground disturbances are planned, an archaeologist and Native American monitor should be present for all grading or other ground disturbing activities planned in the staging area.

| Cultural Resources |
| --- |
| FINAL SUPPLEMENTAL EIR – New Mitigation Measures |
| MM CR-1 (Downtown Novato Station Site): Prior to SMART obtaining federal permits or federal funding, SMART shall seek determination from the SHPO of eligibility of the Novato Passenger Depot. If the SHPO determines the building to be eligible for the NRHP, any proposed rehabilitation, changes, alterations and additions to the Downtown Novato Passenger Depot and site shall comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings (Weeks and Grimmer 1995). These guidelines shall be consulted for any proposed street furniture and for construction of the proposed train platforms and other train-related structures (such as shelters and ticket vending machines). |
| MM CR-3 (Downtown Novato and Hamilton Station Sites): Because of the possibility of the presence of historic or prehistoric artifact deposits, an Extended Phase I archaeological study is recommended at this site in locations where ground disturbances are planned. The purpose of the Extended Phase I study is to establish the presence or absence of an archaeological deposit within an area that may be impacted as a result of project implementation. Extended Phase I archaeological testing is generally comprised of a limited series of systematically placed excavation units in the area of potential impacts.<br>If an archaeological deposit is identified during the Extended Phase I archaeological excavation, additional fieldwork (Phase II testing) may be required to establish site boundaries and evaluate the deposit for it's potential for eligibility for listing in the NRHP/CRHR. If a site is determined to be eligible, consultation shall be initiated with the SHPO and other appropriate consulting parties to either avoid impacts to the site or to develop and implement a data recovery plan (Phase III). |

## ENVIRONMENTAL COMPLIANCE MEASURES

The following table includes the Environmental Compliance Measures presented in the Final EIR (both Construction and Operational measures) followed by the new Environmental Compliance Measures presented in the Final Supplemental EIR.

## Environmental Compliance Measures

### Construction

Require contractor to develop and implement construction phasing/sequencing and traffic management plans to minimize traffic impacts during construction. This plan will include: defining each construction operation, approximate duration, and necessary traffic controls to maintain access for vehicles; limiting off-site construction-related hauling and movement of heavy equipment to daytime hours and off-peak travel demand periods; providing alternative access and notice of detours to local neighborhoods; encouraging construction workers to use public transportation and carpool in areas where limited parking is available.

Confine construction access, mainline track reconstruction and construction of new sidings to existing right-of-way, where possible.

Conduct additional special-status plant surveys prior to project implementation, consistent with California Department of Fish & Game (CDFG) requirements.

Consult with the Regional Water Quality Control Board (RWQCB) and CDFG, as necessary, regarding stream crossings and minimization of impacts on water quality and biological resources.

Repair in place small and medium size railroad bridges and replace or rehabilitate existing structures such as bridges within the original footprint, to minimize the physical effects at water crossings, on the floodplain and any surrounding sensitive biological areas.

Use of appropriate controls for pollution prevention during servicing and fueling of construction vehicles including:

- Perform fueling and servicing only in designated areas located as far as practicable from stream zones and wetland areas.
- When fueling, do not "top off" tanks.
- Carry spill containment kits in all construction vehicles.
- Use a secondary containment such as a drain pan or drain cloth when fueling to catch spills.
- Train all project construction personnel and subcontractors in proper fueling, servicing, and clean-up procedures.
- Report all fluid spills immediately.
- Store hazardous materials as far as practical from stream zones and wetland areas.
- Develop and implement a contingency plan for possible leaks and spills of hazardous materials.

Surface water runoff from affected areas would be dispersed in accordance with the measures required under a SWPPP from the RWQCB and under a Standard Urban Storm Water Mitigation Plan (SUSMP) as developed by the City of Santa Rosa and County of Sonoma.

Develop a Stormwater Pollution Prevention Plan (SWPPP) for construction activities in or adjacent to waterways or wetlands, best management practices (BMPs) shall be implemented to minimize erosion and sedimentation. BMPs would include the following types of activities:

- Control sheet flow and run off from all disturbed areas using ditches, berms, weed free wattles, straw bales, and silt fencing.
- Cover or stabilize loose soil and exposed slopes prior to the onset of rainy season and any time that rain is forecast within 24 hours.
- Use geo textile fabric or protective mats where feasible to minimize ground damage where vehicle travel through wetlands or other saturated soil areas cannot be avoided in temporary work areas.
- Apply gravel to a depth of three inches to access roads used during the rainy season.
- Install silt fencing and fiber rolls around soil and gravel stockpiles between October 15 and April 15 to prevent sedimentation in nearby watercourses and wetlands.
- Hydroseed disturbed areas before October 15 with a mixture of native and non-invasive plants that provide protection from erosion. The seed mixtures should be developed for each site based on local conditions.
- Stabilize stream banks prior to October 15 with riprap, native plantings, willow wattles or other biotechnical slope stabilization techniques.

## Environmental Compliance Measures

Implement air quality BMPs such as the following measures, where appropriate:

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials or require that all trucks to maintain at least two feet of freeboard.
- Sweep streets as required (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.
- Use cleanest available engines, including alternative-fueled construction equipment when feasible.
- Minimize equipment idling time.
- Maintain properly tuned equipment.

Conduct a worker orientation program prior to and during construction activities to summarize relevant laws and regulations that protect historic resources and review applicable avoidance and minimization measures to protect resources.

Have a qualified cultural resources monitor present for grading or other ground disturbing activities planned in areas of potential archaeological sensitivity.

Ensure proper design of restraint and shoring systems in order to prevent unstable excavations.

Use "green building" materials where practical.

Avoid construction noise in early and late hours.

Work with local jurisdictions and transit providers in the preparation and administration of the construction phasing/sequencing and traffic management plan.

## Operation

### Security/Public Safety

In advance of start-up operations, SMART will designate an Emergency Response Coordinator to develop and implement a coordinated Emergency Preparedness Plan in consultation with local emergency responders. It will also hire a Public Safety Assessment (PSA) consultant to assist in the preparation of the plan which will include measures to address fire, safety, health, and security emergencies. SMART will submit the Emergency Preparedness Plan to the Federal Railroad Administration (FRA) for approval prior to initiation of passenger rail service. The Emergency Preparedness Plan will:

- Establish chain of command that assigns responsibilities of railroad personnel and acknowledges authority of emergency responders.
- Delineate functions and responsibilities for railroad operating personnel and control center personnel.
- List telephone numbers of railroad personnel and emergency responders who must be notified in the event of an accident, in milepost order.
- Develop criteria for determining whether an emergency exists and requires assistance from emergency responders.
- Establish procedures for notifying emergency responders and defining incident responsibility.
- Establish communication protocol between train and dispatcher, emergency responders, and within train based on chain of command, role and responsibilities of conductor.
- Address care and evacuation of passengers.
- Address joint operations with other railroads sharing right-of-way.
- Develop a construction safety plan aimed at fire prevention.

Incorporate security enhancements into SMART's capital and operating plans. Such improvements include security design considerations for vehicles and stations, on-going personnel and passenger awareness training sessions, alternative back up external communications capabilities, and in-vehicle public address systems.

Provide system security for railway operations, either in-house or by contract. Contracted services could include local police, county sheriff's personnel or private security personnel. Fare inspectors would also be part of system security and provide additional surveillance to deter crime.

## Environmental Compliance Measures

Implement training per the FRA rule of railroad personnel and those who interact with the railroad in emergency situations, including police, fire and heath emergency responders. A required training session for non-railroad personnel includes briefings in railroad and passenger train operations, right-of-way safety issues, equipment, forcible entry and evacuation, train crew personnel, hazards, emergency exits, grade crossings, and bridges and tunnels.

Request the US Department of Homeland Security (DHS) to conduct a comprehensive vulnerability assessment of the proposed project corridor.

Adhere to state and federal regulations to promote public safety and discourage trespassing. Standard safety measures include fencing, signage, and other physical impediments at appropriate locations designed to promote safety and minimize pedestrian/train accidents. In addition, appropriate set back for bicycle/pedestrian pathway, safety structure between bicycle/pedestrian pathway and rail tracks and use of heavy DMU vehicles compatible with freight trains.

In order to educate the community, and school children in particular, about safety issues around the rail tracks, work with Operation Lifesaver.[1] Operation Lifesaver is a nationwide, non-profit information safety program dedicated to educating the public on how to reduce crashes, injuries, and fatalities at at-grade rail crossings and on railroad rights-of-way. This free public service creates awareness of the hazards that may occur on railroad property and at at-grade crossings in particular. Operation Lifesaver has developed an outreach education program specifically for children. SMART proposes to sponsor in-school education in advance of start-up of the project.

Gate and lock all tunnels at dusk for security and safety purposes.

To address safety issues, maintain clearly defined access for non-motorized modes during construction. Where roadways and sidewalks are impassable for bicycles and pedestrians, sign and maintain safe alternate routes and pathways during construction. Coordinate with Marin and Sonoma counties, local jurisdictions, fire and police departments, and transit providers.

Inspect the line during and after major storm and/or flooding events.

## Aesthetics

Consult with adjacent property owners and local governments about the design details of the safety structures and landscaping along the rail right-of-way.

Consult with local jurisdictions regarding rail station designs to ensure visual compatibility.

Design station and facility lighting to avoid light and glare on residential areas and to protect nighttime views.

Use drought tolerant native species for proposed landscaping/screening and use recycled water for landscaping requirements, where feasible.

## Traffic

Implement an interconnected and adaptive traffic signal sequencing and coordination system in downtown San Rafael to minimize vehicle delay (see Section 3.6, Transportation).

Implement roadway improvements at 3rd and Hetherton (addition of dual southbound right-turns), as an option, in the Downtown San Rafael Station area to minimize traffic congestion (see Section 3.6, Transportation).

Implement traffic signal timing and sequencing and a grade crossing protection system adjacent to downtown Petaluma and Santa Rosa Railroad Square stations to provide coordination and integration of the train detection system with adjacent traffic signals to minimize delays and allow for progression of other non-conflicting traffic movements (see Section 3.6, Transportation).

Work with each city/town's traffic engineer to evaluate the need for traffic signal timing and sequencing and a grade crossing protection system at intersections adjacent to station locations to minimize delay, and implement if warranted (see Section 3.6, Transportation).

## Water Quality/ Biological Resources

Utilize the bicycle/pedestrian pathway as maintenance access for the railway to minimize disturbance of biological resources and adjacent properties.

Develop bio-filtration swales or other appropriate pollutant runoff controls to accommodate surface runoff from the rail improvements, stations, maintenance facility, and park-and-ride facilities, where appropriate.

[1] Operation Lifesaver, available: http://www.oli.org/.

## Environmental Compliance Measures

Develop and implement a habitat restoration plan, in consultation with appropriate agencies, to replace sensitive habitat and trees within the project right-of-way, where feasible.

Coordinate with the Sonoma County Water Agency (SCWA) regarding modifications to bridges and culverts and other construction activities adjacent to SCWA facilities.

Install signage along the bicycle/pedestrian pathway, where appropriate, to discourage disturbance of sensitive habitats. Signs shall explain the importance of local habitat, wildlife, and legal requirements to stay on the path.

### Air Quality

Implement control measures for $NO_x$ and diesel particulate matter, which include: use of advanced emission control technology (high-efficiency catalytic after-treatments, such as catalyzed diesel particulate filters, selective catalytic reduction systems, NOx adsorbers, or equivalent) and use of ultra low sulfur (15 ppm) fuel.

Limit train idling to 15 minutes in all locations, except the maintenance facility shop where an emissions collection hood is utilized (see Section 3.5.6). .

Strongly consider use of biodiesel and hybrid engine alternatives.

### Noise

Assist local jurisdictions in Implementing FRA "quiet zones" where permissible to reduce use of train horns (See Section 3.7 Noise). Supplementary safety measures required for Quiet Zones are included in project funding, if such measures are approved by the FRA.

Use timber crossties and switch ties (instead of concrete) and continuous welded rail for reduction in noise/vibration.

### Geology/Slope Stability

In areas with slopes, develop properly designed stormwater runoff collection systems and finished contours for new stations, rail sidings, and earthwork to maximize long-term slope stability.

## Final Supplemental EIR

### Cultural Resources

Historic Resources at Downtown Novato Station Site: Any new street furniture, train platforms, light fixtures, shelters or ticket vending machines shall be designed to be sympathetic to the local historic character, landscaping/spatial patterning, and designed in consultation with the City of Novato.

### Biological Resources

The construction plan for station sites shall contain detailed provisions for the protection of existing mature oak trees and these provisions shall be conveyed to all construction personnel.