



3.9 PUBLIC FACILITIES AND SAFETY

This section evaluates the potential impacts on public facilities and safety and assesses their impact in relation to the operation of the railroad, rehabilitation activities associated with Bakers Creek, Foss Creek, Black Point Bridge, the new construction at Lombard Siding, and routine maintenance and repair activities associated with the operations of the railroad. The subsequent sections identifies, analyzes, and provides mitigations for impacts on safety related to public facilities, at-grade crossings, trail safety, collisions, train derailments, hazardous material releases and other incidents.

3.9.1 Regulatory Setting

The regulatory setting is based on the information that was available in 2008 when the March 9, 2009 DEIR was under preparation.

3.9.1.1 *Federal Regulations*

Federal Railroad Safety Act of 1970

This comprehensive law authorizes the Secretary of Transportation to prescribe regulations for all areas of railroad safety (supplementing existing rail safety statutes and regulations) and to conduct necessary research, development, testing, evaluation and training. This act is enforced by the FRA and the safety rules stated in this act govern tracks, locomotives, train cars, braking systems, operating practices, locomotive engineer certification, control of alcohol and drug use, and regulation of transportation of hazardous materials via rail. In addition, FRA promotes engineering improvements to crossings and sponsors research to improve warning devices and visibility at crossings.

Switching Operations Fatality Analysis Recommendations

In 1999, a Switching Operations Fatality Analysis (SOFA) was completed by FRA and representatives from other rail industry organizations. The analysis included five major findings and five accompanying recommendations that improve safety of operations. These recommendations will be incorporated into the operations plan for this rail line.



Code of Federal Regulations (CFR)

The CFR includes specific requirements pertaining to railway safety and emergency response. Title 49, Subtitle B, Chapter II, Part 200-268 in the CFR lists these rules and regulations and the most pertinent to freight rail operations include:

Part

- 209: Railroad Safety Enforcement Procedures – describes procedures employed by the FRA to enforce statutes and regulations related to railroad safety.
- 213: Track Safety Standards – prescribes minimum safety requirements for railroad track and applies to all standard gage track in the general railroad system of transportation.
- 214: Railroad Workplace Safety – prescribes minimum federal safety standards for the railroad workplace safety and applies to railroads that operate rolling equipment on track as part of the general railroad system of transportation.
- 215: Railroad Freight Car Safety Standards – prescribes minimum federal safety standards for railroad freight cars and applies to each railroad freight car in service on standard gage track of a railroad, or other standard gage track while the car is under the control of a railroad.
- 216: Special Notice and Emergency Procedures: Railroad Track, Locomotive and Equipment – identifies procedures that must be used for issuance of notifications and emergency orders pertaining to the condition and operation of equipment and track.
- 217: Railroad Operating Rules – requires that the FRA learn the condition of operating rules and practices with respect to trains and rail operations, and each railroad is required to instruct its employees in operating practices.
- 218: Railroad Operating Practices – prescribes the minimum requirements for railroad operating rules and practices.
- 219: Control of Alcohol and Drug Use – prescribes minimum federal safety standards for control of alcohol and drug use for the purpose of preventing accidents and casualties in railroad operations caused by impairment of employees by alcohol or drugs.



PUBLIC DRAFT

3.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

3.9 PUBLIC FACILITIES AND SAFETY

- 221: Rear End Marking Device: Passenger, Commuter and Freight Trains – prescribes minimum requirements governing highly visible marking devices for the trailing end of the rear car of all passenger, commuter and freight trains.
- 222: Use of Locomotive Horns at Public Highway-Rail grade crossings – provides for safety at public highway-rail grade crossings by prescribing standards for sounding locomotive horns when locomotives approach and pass through public highway-rail grade crossings. This part also provides standards for the creation and maintenance of quiet zones within which locomotive horns need not be sounded.
- 223: Safety Glazing Standards – provides minimum requirements for glazing materials in order to protect railroad employees and railroad passengers from injury as a result of objects striking the windows of locomotives, caboose and passenger cars.
- 224: Reflectorization of Rail Freight Rolling Stock – provides requirements to reduce highway-rail grade crossing accidents and deaths, injuries, and property damage resulting from those accidents, this part establishes the duties of freight rolling stock owners and railroads to progressively apply retroreflective material to freight rolling stock, and to periodically inspect and maintain that material.
- 225: Railroad Accidents/Incidents: Reports Classification and Investigations – requires railroads to submit to accident/incident and injury/illness reports to the FRA to provide them with accurate information concerning the hazards and risks that exist on the Nation's railroads FRA.
- 229: Railroad Locomotive Safety Standards – prescribes minimum federal safety standards for all locomotives except those propelled by steam power.
- 231: Railroad Safety Appliance Standards – prescribes minimum Federal safety standards for equipment used in a railroad.
- 232: Brake System Safety Standards for Freight and Other Non-Passenger Trains and Equipment; End-Of-Train Devices – prescribes federal safety standards for freight and other non-passenger train brake systems and equipment.
- 233: Signal Systems Reporting Requirements – prescribes reporting requirements for methods of train operation, block signal systems, interlockings,



traffic control systems, automatic train stop, train control, and cab signal systems, or other similar appliances, methods, and systems.

- 234: Grade Crossing Signal System – imposes minimum maintenance, inspection, and testing standards for highway-rail grade crossing warning systems. This part also prescribes standards for reporting failures of such systems and identifies actions that must be taken by railroads when such warning systems malfunction.
- 236: Rules, Standards, and Instructions Governing the Installation, Inspection, Maintenance, and Repair of Signal and Train Control Systems, Devices, and Appliances – imposes standards for installation, maintenance, inspection, and repairing signals and control systems.
- 240: Qualification and Certification of Locomotive Engineers – prescribes minimum federal safety standards for the eligibility, training, testing, certification and monitoring of all locomotive engineers to ensure that only qualified persons operate a locomotive or train.

Tunnels

Tunnels used for these rail operations need to comply with the National Fire Protection Association's (NFPA) Code 130: Standard for Fixed Guideway Transit and Passenger Rail Systems (www.nfpa.org).

3.9.1.2 State Regulations

California Public Utilities Commission (CPUC)

CPUC has regulatory and safety oversight over railroads in the state. The CPUC utilizes certified inspectors and coordinates with the FRA to ensure that railroads comply with federal railroad safety regulations. The responsibility is divided among three programs within the Consumer Protections and Safety Division. The CPUC investigates railroad accidents and responds to safety related injuries. The CPUC is an active participant in Operation Lifesaver. The following are CPUC General Orders which address rail safety:



- No. 72-B: Rules governing the construction and maintenance of crossings at-grade of railroads with public streets, roads and highways in the State of California.
- No. 75-D: Regulations governing the protection of crossings at-grade of roads, highways and streets with railroads in the State of California.
- No. 88-B: Rules for altering public railroad-highway grade crossings.
- No. 135: Rules governing the occupancy of public grade crossings by railroads.

3.9.1.3 *Industry Guidelines and Related Programs*

General Code of Operating Rules (GCOR)

The GCOR is a set of operating rules for railroads in North America developed by the General Code Committee, a group comprised of representatives from the railroad industry. The GCOR is used by every Class I railroad west of the Mississippi River, most of the Class II railroads, and many Short-line railroads. The GCOR rules are intended to enhance railroad safety. The rules cover employee responsibilities, signaling equipment, procedures for safe train movement, dealing with accidents and other topics that directly and indirectly affect railroad safety. Some railroads modify the GCOR rules to suit their specific operations. The GCOR (5th edition, April 3, 2005) will be used to govern the freight operations for this rail line. Subsequent versions will be used as revisions are made in future editions.

Association of American Railroads (AAR) Interchange Rules

The interchange of rail cars will be performed in accordance with the rules published by AAR in the *Office Manual of the AAR Interchange Rules* and the *Field Manual of Interchange Rules for Railroad Cars*. In the event where there is an interchange of intermodal equipment, the interchange will comply with the rules defined in the *AAR Intermodal Interchange Rules Including Billing and Repair Procedures (effective January 1, 2007)*.

Operation Lifesaver (Safety Program for At-Grade Rail Crossings)

Operation Lifesaver (www.oli.org) is an international, non-profit education and awareness program dedicated to ending tragic collisions, fatalities and injuries at highway-rail grade



crossings and on railroad right-of-way. First established in 1972, it is sponsored by federal, state, and local government agencies, as well as highway safety organizations and the railroad industry.

NCRA Trail Projects on the NWP Line Rights-of-Way: Designs, Construction, Safety, Operations and Maintenance Guidelines (Adopted May 13, 2009)

The NCRA guidelines are intended to provide minimum standards and general requirements for the design, construction, safety, operations and maintenance of Rails-with-Trails on the NWP line right-of-way in a manner that is compatible with the safe operation of NCRA's owned and used railroad right-of-ways and with rail capacity needs. These guidelines seek to balance NCRA's and its contractor operators' legal mandate to provide safe and efficient transportation to the public with the public's desire for trails. These guidelines set out the procedures to be followed by public agencies proposing trails.

The NCRA guidelines provide a process for a public agency to request or sponsor a Rails-with-Trails project. The public agency shall undertake a comprehensive feasibility analysis of the project and appropriate environmental review. When a Rails-with-Trails project is considered by NCRA for joint use in the railroad right-of-way, it shall be considered only in the context of NCRA and its operators' highest priorities of operating safe and efficient current and future rail service in the NWP transportation corridor.

The feasibility analysis shall describe the setting, the relationship to local planning documents, need for the project, land ownership, railroad activity present and future and other information necessary to determine the feasibility. As part of the feasibility study, environmental concerns shall be analyzed pursuant to local, state and federal environmental laws.

The public agency shall also develop and submit a public safety plan that includes insurance and indemnification of NCRA and its operator, engineering, maintenance standards, trespassing and crime prevention, public education, informal signage, incident management and other safety related concerns.

The design of the project shall be consistent with the Caltrans "Highway Design Manual", Chapter 1000, "Bikeway Planning and Design".



Rails-with-Trails shall be designed along the outer edges of the NWP line right-of-way adjacent to the property line, to the extent feasible. Rails-with-Trails projects shall be designed to maximize the setback between the centerline of the track and the edge of the trail. The designs should incorporate best practices from the most current safety studies available, such as U.S. Department of Transportation, 2002, *Rails-with-Trails: Lessons Learned* and the *Rails-with-Trails Report* from the Rails-to_Trails Conservancy (2002). Final setbacks for proposed trails will be reviewed and approved by NCRA on a case-by-case basis based upon the local public agencies engineer's report and safety plan.

NCRA shall have exclusive authority to approve, deny or approve with conditions, any proposals made by any public agency.

3.9.2 Environmental Setting

The environmental setting is based on the information that was available in 2008 when the March 9, 2009 DEIR was under preparation.

3.9.2.1 Schools

The presence of schools and/or day care facilities within close proximity of the rail line poses a safety issue as children may be present within the rail line right-of-way and may be present at at-grade crossings. The following school information discusses the specifics of the close proximity school sites and general school district information within the counties of train operation.

The rail line crosses four counties: Napa, Sonoma, Marin and Mendocino. Each county has an associated Office of Education and multiple school districts. The following summarizes school site information within ½ mile of the project area by County.

In Napa County the proposed project is located within the Napa Valley Unified School District (NVUSD). The NVUSD consists of 32 public schools with enrollment of approximately 17,000 students (www.nvUSD.k12.ca.us.com). Of the 32 schools within the NVUSD one elementary school, Napa Junction Elementary School is located within ½ mile of the project area.



PUBLIC DRAFT

3.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

3.9 PUBLIC FACILITIES AND SAFETY

In Sonoma County there are 40 school districts, consisting of 177 schools with an enrollment of approximately 71,400 students (Sonoma County Office of Education, 2007). Of the 177 schools, 152 are K-12 schools, while the remaining schools include alternative schools and charter schools. In addition, Sonoma County has three colleges/universities.

Thirty-one of these schools are located within ½ mile of the project area. Of these, the following six schools are located within 500 feet of the proposed project: San Antonio Continuation in Petaluma, Valley Oaks Elementary School and High School in Petaluma, Windsor Christian Elementary School and High School in Windsor and Foss Creek Elementary School in Healdsburg.

In Marin County there are 19 school districts, consisting of 77 schools with an enrollment of approximately 28,700 students (Marin County Office of Education, 2007). Of the 77 schools, 45 are elementary schools (Grades K-8), 11 are middle schools (Grades 6-8), 8 are high schools (Grades 9-12), 3 are continuation schools, 6 are alternative schools and 4 are charter schools. In addition, Marin County has two colleges, College of Marin and Dominican University.

Two Marin County schools are located within ½ mile of the project area, none are located within 500 feet.

In Mendocino County there are 12 school districts, consisting of 76 schools with an enrollment during the 2005-2006 year of approximately 14,068 students (Mendocino County Office of Education, 2007). Of the 76 schools, 22 are elementary schools, 7 are elementary/middle schools, 9 are middle schools, 5 are middle/high schools, 22 are high schools, 4 are K-12 schools, and 7 are charter schools. In addition, Mendocino County has two colleges, Mendocino College and College of the Redwoods.

Thirteen Mendocino County schools are located within ½ mile of the project area, three of the thirteen are located within 500 feet: Willits Junior – Senior High School in Willits, Willits Center Mendocino College in Willits, and San Hendrin High School in Willits.



3.9.2.2 *Hospitals*

If a train accident involving vehicles, humans, or other train incidents occur along the rail line, the following is a list hospitals that are located within Napa, Sonoma, Marin and Mendocino counties that would be available to assist in the event of an emergency.

Napa County

Queen of the Valley Hospital
1000 Trancas Street
Napa, California 94558

Sonoma County

Healdsburg General Hospital
1375 University Avenue
Healdsburg, California 95448

Sutter Medical Center
3325 Chanate Road
Santa Rosa, California 95404

Santa Rosa Memorial Hospital
1165 Montgomery Drive
Santa Rosa, California 95405

Petaluma Valley Hospital
400 N. McDowell Boulevard
Petaluma, California 94954

Kaiser Foundation Hospital
401 Bicentennial Way
Santa Rosa, California 95403

Warrack Medical Center
2449 Summerfield Road
Santa Rosa, California 95405

Sonoma Valley Hospital
347 Andrieux Street
Sonoma, California 95476

Palm Drive Hospital
501 Petaluma Avenue
Sebastopol, California 95472

Marin County

Marin General Hospital
250 Bon Air Road
Greenbrae, California 94904

Kaiser Hospital
99 Monticello Road
San Rafael, California 94903

Novato Community Hospital
180 Rowland Way
Novato, California 94945

Mendocino County

Ukiah General Hospital
1120 S. Dora Street
Ukiah, California 95482

Memorial Hospital
1 Madrone Street
Willits, California 95490



3.9.2.3 *Fire and Emergency Services*

There are local fire stations throughout the proposed project corridor that provide fire and emergency services within Napa, Sonoma, Mendocino and Marin counties (See Table 3.9-1). These facilities would respond to emergency calls associated with the rail line.

In Napa County, the Napa County Office of Emergency Services (OES) works with County departments, State agencies, and community groups to handle major disasters that affect County residents. In the event of a disaster, an Emergency Operations Center (EOC) is setup and staffed with trained professionals who coordinate all communications, logistics, resources, and recovery programs. Within the project area the American Canyon Fire District's jurisdiction covers the city itself and a large unincorporated area surrounding the city limits. The District would also receive assistance from other Napa County Fire Districts and the CDF.

In Sonoma County, the Sonoma County Department of Emergency Services (SCDES) coordinates fire service activities in the unincorporated area of Sonoma County (County Service Area #40). In addition, the SCDES completes the following: advises the Board on fire service issues, assists with disaster/emergency response planning, responds to emergency incidents, and reviews program and policy matters with the Board of Supervisors. The SCDES responds to emergency incidents as part of the Hazardous Materials Response Team, Fire Investigation Task Force, EOC staff and for fire ground supervision, along with local fire agencies and CDF. In addition, CDF responds to State Responsibility Areas wildland fires within the county (County of Sonoma, Department of Emergency Services, 2007).

In Marin County, the Marin County Fire Department has jurisdiction in most of unincorporated area within Marin County. In addition, most of the fire protection districts have aid agreements, allowing districts to receive mutual assistance during emergency incidents.

Mendocino County is serviced by the Mendocino Fire Protection District. This District is made up of multiple fire stations throughout the county.



PUBLIC DRAFT

3.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

3.9 PUBLIC FACILITIES AND SAFETY

**Table 3.9-1
Fire Stations Within One Mile of the Proposed Project Area**

Fire Departments	Locations	Within 1/2 Mile of Project	Within 1 Mile of Project
Napa County			
American Canyon Fire District	255 James Road, American Canyon		Yes
Sonoma County			
Cloverdale Fire Protection District	116 Broad Street, Cloverdale (obtains assistance from CDF)	Yes	
Dry Creek/Sotoyome: City of Healdsburg Fire Department	601 Healdsburg Avenue, Healdsburg	Yes	
Windsor Fire Protection District #1	8200 Old Redwood Highway, Windsor	Yes	
Windsor Fire Protection District #2	444 Windsor River Road, Windsor	Yes	
Rincon Valley Fire Protection District	91 Middle Rincon Road, Santa Rosa	Yes	
Santa Rosa Fire Department #1	955 Sonoma Avenue, Santa Rosa		Yes
Santa Rosa Fire Department #3	3311 Coffey Lane, Santa Rosa		Yes
Rohnert Park Fire Services Division #1	500 City Hall Drive, Rohnert Park	Yes	
Rohnert Park Fire Services Division #3	435 Southwest Boulevard, Rohnert Park	Yes	
Rancho Adobe Fire Protection District	1 East Cotati Avenue, Cotati	Yes	
City of Petaluma Fire Department #2	1001 N. McDowell Boulevard, Petaluma		Yes
City of Petaluma Fire Department #3	831 S. McDowell Boulevard, Petaluma		Yes
Petaluma Fire Department	198 D Street, Petaluma	Yes	
RLS Fire Protection	5610 Skylane Boulevard, Santa Rosa	Yes	
Geyserville Fire Protection District	PO Box 217, Geyserville	Yes	
Marin County			
Novato Fire Protection District #1	7025 Redwood Boulevard, Novato	Yes	
Novato Fire Protection District #4	319 Enfrente Drive, Novato	Yes	
Novato Fire Protection District #5	5 Bolling Drive, Novato	Yes	
Mendocino County			
CDF & Fire Protection	17501 North Highway 101, Willits		Yes
Little Lake Fire Protection District	74 East Commercial Street, Willits	Yes	
Ukiah Fire Department	300 Seminary Avenue, Ukiah	Yes	
Ukiah Valley Fire District	1500 South State Street, Ukiah	Yes	
Hopland Fire District	PO Box 386, Hopland	Yes	



3.9.2.4 Police

In case of a train related incident the local police services would respond to assist with public safety and incident control. Napa, Sonoma, Marin and Mendocino counties have county sheriff offices as well as local police departments within the cities along the project area. Depending upon the location of the incident that would require police support, the local police or sheriffs department would respond. In some cases both departments would respond.

Napa County

The proposed project is located north of the City of American Canyon. Presently, police services in American Canyon are contracted through the Napa County Sheriff's Department (NCSO). The NCSO office in American Canyon is located at 2185 Elliott Drive approximately 2 miles south of the proposed project. The American Canyon branch of the NCSO consists of 18 deputies, 3 sergeants, 2 police technicians and 1 captain, who acts as the Chief of Police assigned to American Canyon.

Sonoma County

The Sonoma County Sheriff's Department (SCSD) serves the unincorporated area of Sonoma County and is the primary law enforcement agency for the Cities of Windsor and Sonoma. The SCSD provides law enforcement, court security services, and detention services within the county (www.sonomasheriff.org). The SCSD headquarters are located at 2796 Ventura Avenue in Santa Rosa, which is located approximately ½ mile from the project area. The following are specific police departments located within Sonoma County which may respond to an emergency incident associated with the rail line (See Table 3.9-2).

Marin County

The Marin County Sheriff's Department (MCSO) is responsible for crime prevention and law enforcement in unincorporated areas of Marin County. The MCSO is divided into three bureaus which govern the individual divisions and units: administrative and support service bureau, detention services bureau and the field services bureau. The MCSO is located at 3501 Civic Center Drive #145 in San Rafael, California.



PUBLIC DRAFT

3.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

3.9 PUBLIC FACILITIES AND SAFETY

The City of Novato Police Department is organized into multiple divisions: Crime Prevention, Investigations, Patrol, Technical Services and Traffic. The police department’s office is located at 909 Machin Avenue in Novato, within approximately one mile of the project area.

Mendocino County

The Mendocino County Sheriff’s Office (MCSO) is directly responsible for providing general law enforcement services to the unincorporated areas of the county, approximately 69% of county residents. Jurisdiction for coroner’s investigations and the service of civil process extends countywide, including within the four incorporated cities (www.co.mendocino.ca.us/sheriff). The MCSO is located at 501 Low Gap Road, Ukiah, California. In addition to the MCSO the City of Ukiah and the City of Willits has independent police departments to respond to emergency incidents. The City of Ukiah Police Department is located at 300 Seminary Avenue, Ukiah, California and the City of Willits Police Department is located at 125 E. Commercial Street #150, Willits, California.

**Table 3.9-2
City Police Departments Within
One Mile of the Proposed Project Area**

Police Departments	Locations	Within ½ Mile of Project	Within 1 Mile of Project
City of Cloverdale	112 Broad Street, Cloverdale	Yes	
City of Healdsburg	238 Center Street, Healdsburg	Yes	
Town of Windsor	9291 Old Redwood Highway, Windsor	Yes	
City of Santa Rosa	965 Sonoma Avenue, Santa Rosa		Yes
City of Rohnert Park	500 City Hall Drive, Rohnert Park	Yes	
City of Cotati	203 West Sierra, Cotati	Yes	
City of Petaluma	969 Petaluma Boulevard, Petaluma		Yes
City of Novato	909 Machin Avenue, Novato		Yes
City of Ukiah	300 Seomaru Avenue, Ukiah	Yes	



3.9.3 Rail Safety

3.9.3.1 Safety Data

The following is a summary of the reported accidents/incidents for the counties associated with the proposed project, as well as, safety statistics for the State of California and the United States.

Tables 3.9-3 through 3.9-8 present multiple indicators that were used to measure rail safety: grade crossings accidents in California and the United States; accidents per railroad line within project counties; and accidents for trains compared to truck accidents on the highways within the United States.

Table 3.9-3 illustrates the total number of train incidents/accident reports for a given railroad within Napa, Sonoma, Marin and Mendocino counties including derailments and highway-rail incidents.

**Table 3.9-3
Freight Railroad Accident/Incident Reports (1997-2007) by
Rail Company Within the Four Project Counties**

County / Railroad (# of incidents)	Total Number of Reports	Derailments	Highway-Rail Incidents*	Collisions	Fatal Injuries
Napa – California Northern RR (6)	6	1	2	0	0
Sonoma – Union Pacific RR (3) and Northern Pacific RR (1)	4	0	1	0	0
Marin	0	0	0	0	0
Mendocino – Union Pacific RR (6)	6	3	0	0	0

Source: <http://safetydata.fra.dot.gov/officeofsafety/>

* Highway-Rail Incidents are those incidents which occur at an intersection of a rail line and a public highway.



Tables 3.9-4 and 3.9-5 illustrates the number of incidents, derailments, collisions, and highway-rail incidents for all trains (including freight and passenger trains) and freight trains only. The information compares California vs. United States statistics for the above referenced incidents/accidents. The ten year average percent line indicates the percentage of California incidents/accidents compared to that of the total United States incidents for all train and for freight trains. The data shows that the percentage of incidents/accidents for all trains is similar to that for freight trains within California when compared to the total number within the United States. The overall percentage is relatively low to the number of total trains.

**Table 3.9-4
California vs. US Accident/Incident Reports (1998-2007)
All Trains (Including Freight and Passenger)**

Year	Total Number of Accidents/Incidents*		Derailments		Collisions		Highway-Rail Incidents	
	CA	US	CA	US	CA	US	CA	US
1998	163	2,518	19	280	0	31	29	610
1999	182	2,838	19	329	0	31	43	605
2000	196	2,808	21	342	3	41	30	634
2001	165	2,818	28	410	0	31	29	570
2002	172	2,340	26	344	0	26	23	496
2003	162	2,377	21	346	2	33	32	547
2004	143	2,499	23	411	3	35	24	552
2005	152	2,311	24	409	1	38	25	472
2006	137	2,103	24	327	1	33	26	465
2007	133	1,966	17	304	2	25	31	504
Average %**	6.5		6.3		3.5		5.3	

Source: <http://safetydata.fra.dot.gov/officeofsafety/>

* Total number of incidents is the sum of train accidents, crossing accidents and other accidents/incidents.

** This number is the approximate average percentage within California of total accidents, derailments, collisions and highway-rail incidents compared to the number of incidents within the United States.



**Table 3.9-5
California vs. US Accident/Incident Reports (1998-2007)
Freight Trains Only**

Year	Total Number of Accidents/ Incidents*		Derailments		Collisions		Highway-Rail Incidents	
	CA	US	CA	US	CA	US	CA	US
1998	133	1,985	18	272	0	25	26	585
1999	149	2,190	17	323	0	30	35	565
2000	133	2,156	20	327	1	38	22	591
2001	115	2,098	24	390	0	27	23	527
2002	116	1,764	25	328	0	24	19	459
2003	106	1,710	21	328	2	31	20	483
2004	86	1,837	20	394	1	32	15	503
2005	107	1,702	22	397	1	38	20	432
2006	95	1,549	22	315	1	31	14	422
2007	90	1,463	16	295	2	23	21	461
Average %**	6.1		6.1		2.6		4.2	

Source: <http://safetydata.fra.dot.gov/officeofsafety/>

* Total number of incidents is the sum of train accidents, crossing accidents and other accidents/incidents.

** This number is the approximate average percentage within California of total accidents, derailments, collisions and highway-rail incidents compared to the number of incidents within the United States.

3.9.3.2 At-Grade Crossing Safety

There are currently a variety of at-grade crossing safety devices along the railroad. The following is a summary of typical safety devices used at railroad at-grade crossings.

Active devices put temporary barriers to prevent vehicles from passing the railroad with duration determined by the speed and length of the train. Active control devices at at-grade railroad/roadway crossings inform motorists of the presence of trains at or approaching the crossing through the use of flashing lights and gates. Typical active devices are two-quadrant gate systems, four-quadrant systems, full crossing closures and horizontally mounted alternate flashing lights. Where the speed of trains is 20 miles per hour or greater, their signals will flash for a minimum of 20 seconds before the train arrival at the crossing. Devices that use sensors or video monitoring for detecting vehicles being trapped at the grade crossing and applying a tolerable deceleration to the train can be considered as active devices.



Passive devices require the vehicle driver’s direct attention and ability to understand the meaning of signs and signals. Passive control systems include advance warning systems, railroad crossing signs, crossing illumination used to identify and direct drive and pedestrian attention to the at-grade railroad crossing, pavement markings, and “DO NOT STOP ON TRACK” or “STOP” sign.

As mentioned in the above Section 3.9.1.1 (Federal Regulations), Operation Lifesaver is an organization which is a nationwide public education program dedicated to reducing crashes at rail crossings. This information was obtained from www.transportation.njit.edu and www.oli.org (Operation Lifesaver).

3.9.3.3 Highway Accident Data Involving Truck and Automobiles

The following information was obtained by researching truck accident data throughout the United States, as well as, within California. The information was obtained from the National Highway Traffic Safety Administration (NHTSA), the National Center of Statistics and Analysis (NCSA) and the Fatality Analysis Reporting System (FARS).

Table 3.9-6 illustrates the number of large truck crashes and non-large truck accidents within the United States from the years 1996 to 2000. The information is broken into single vehicle accidents and multiple vehicle accidents.

**Table 3.9-6
Fatal Crashes by Truck and Crash Types
(1996-2000)**

Truck Type	Crash Types		
	Single Vehicle	Multiple Vehicles	Total
Large Truck Crashes	4,057	18,628	22,685
Non-Large Truck Crashes	100,747	63,042	163,789
Total	104,804	81,670	186,474

Source: NHTSA, NCSA, FARS

Table 3.9-7 illustrates the number of fatal accidents by combination trucks and single unit trucks and the percentage totals within California for all accidents.



**Table 3.9-7
Large Trucks Involved In Fatal Crashes by
Truck Type In California (1996-2000)**

Combination Trucks		Single Unit Trucks	
No. Vehicles	% Total	No. Vehicles	% Total
1,337	7.2	484	8.0

Source: NHTSA, NCSA, FARS

Table 3.9-9 illustrates the number of fatal accidents per 1,000 miles of roadway and the annual rate per 1,000 miles.

**Table 3.9-8
Fatal Truck Involvements Per 1,000 Miles of
Public Road Length In California (1996-2000)**

No. Vehicles	Public Road Length	Annualized Rate/1,000 Miles
1,783	166,973	2.1

Source: NHTSA, NCSA, FARS

In a report issued by the NCSA it was concluded that just over half of all large truck fatalities occur on non-divided 2-lane roadways. A speed limit of 55 miles per hour or higher, poor weather, and a curved road significantly increased the odds of both a rollover and a jackknife for large trucks.

In 2001, the Federal Motor Carrier Safety Administration (FMCSA) issued a report, "Large Truck Crash Overview", which stated that of all the people killed in motor vehicle crashes in 2001, 12% (5,082) died in crashes that involved a large truck. In addition, another 131,000 people were injured in crashes involving large trucks. In 2001, large trucks drove 7% of all vehicle miles traveled and made up 3% of all registered vehicles in the United States. In motor vehicle crashes, large trucks represented: 8% of vehicles in fatal crashes; 2% of vehicles in injury crashes; and 4% of vehicles in property-damage only crashes.



3.9.3.4 *Rails-with-Trails Safety*

Rails-with-Trails (RWT) describes any shared use path or trail located on or directly adjacent to an active railroad corridor. Communities interested in improving conditions for bicycling and walking see rail corridors as prime opportunities. Rail corridors often offer scenic, unbroken stretches along rivers and scenic areas. The alternative is typically a busy roadway without bicycle lanes. Thus communities increasingly look to utilize railroad corridors to provide safe, shared use paths.

Railroad companies continue to improve their technological safety, including active warning devices, train lighting, and track monitoring. The railroad industry created Operation Lifesaver to educate the public about the dangers of disregarding crossing safety equipment. Railroad companies are concerned that the addition of adjacent trails to the railroad track will erode safety by attracting people close to railroad operations (Rails-with-Trails: Lessons Learned, DOT, August 2002).

In order to address this safety concern, NCRA has developed and will implement "Trail Projects on the NWP Line Rights-of-Way: Designs, Construction, Safety, Operations and Maintenance Guidelines" (adopted May 13, 2009). Proposed trails will be reviewed and approved by NCRA on a case-by-case basis based up the local public agencies engineer's report and safety plan, which shall demonstrate that no significant safety impact will occur, or if it might occur that such impact is identified as an overriding consideration.

NCRA shall have exclusive authority to approve, deny or approve with conditions, any proposals made by any public agency.

3.9.4 Impacts and Mitigation Measures

This section describes the potential environmental impacts on the proposed project related to safety. A description is provided of the criteria used to determine the level of significance for potential impacts. Mitigation measures are described for any impacts that are considered to be significant. Any significant impacts that cannot be mitigated to a less than significant level will be described.



3.9.4.1 *Significance Criteria*

Project-related effects on safety were considered significant when these impacts would result in the following conditions:

- A hazardous condition (i.e. pedestrian/train conflicts) is created with regards to the safety of the public and schools;
- An increased response time for emergency vehicles and personnel;
- Impair, or interfere with, the adopted plans for either emergency response or emergency evacuation;
- Derailment;
- At-grade crossings; and
- Hazardous material releases along the rail line.

3.9.4.2 *Impact Assessment Methodology*

Impacts for train and truck accidents were assessed by reviewing published data and qualitatively determining whether safety along the line will be positively or negatively compromised. Potential safety issues at schools and public facilities were assessed by site visits during hy-rail trips. Impacts on emergency vehicles were assessed through the traffic analysis presented in Section 3.10.

3.9.4.3 *Impact and Mitigation Measures*

Rehabilitation and Construction Activities

Bakers Creek

Bakers Creek is located in a rural area. As a result, the rehabilitation activities at this site will not result in a significant impact to public facilities or the safety of the public.

Foss Creek

Foss Creek is located in a rural area. As a result,, the rehabilitation activities at this site will not result in a significant impact to public facilities or the safety of the public.



Black Point Bridge

Black Point Bridge spans the Petaluma River and is located within the river. Any closure of the bridge to marine traffic will be notified through the Coast Guard in accordance with standard procedures as established by the Coast Guard. During construction, the bridge will open to traffic with 30 minutes notice. As a result, the rehabilitation activities at this site will not result in a significant impact to public facilities or the safety of the public.

Lombard Siding (MP 1.0 – MP 2.0)

Lombard Siding is located in a rural area. As a result, the rehabilitation activities at this site will not result in a significant impact to public facilities or the safety of the public.

Novato Consent Decree (MP 35.5 – MP 18.7)

Improvements required by the Novato Consent Decree include establishing quiet zones involving improvements at fourteen or more crossings, welding of rails, fencing as required for safety, and landscaping to reduce the effects of glare from trains running after dusk. The existing crossings identified in the Novato Consent Decree include six paved public roads, six private crossings, and two pedestrian or trail crossings. An unspecified number of additional crossings may also be required or recommended by the regulatory agencies (see Section 2.0, Project Description, for specific descriptions and mile posts).

The crossings are either developed (paved roads) or unpaved roads and trails where the ground has been disturbed by vehicular or pedestrian traffic. Specific improvements at crossings include construction of short mountable medians, 3-foot wide medians, quad gates, short pedestrian gates and swing gates. Except for part of a 200 feet median strip that extends off of the railroad right-of-way at Hanna Ranch Road, road improvements, gates, and signage will be constructed on existing roads or disturbed areas adjacent to the crossings.

Fencing will be established on both sides of the track from north of Rush Creek Place to south of Hanna Ranch Road. Most of this part of the railroad line runs through the urban district of Novato.



PUBLIC DRAFT

3.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

3.9 PUBLIC FACILITIES AND SAFETY

Landscaping type and location will be determined by the City of Novato during a simulation of an engine running down the tracks. Because the purpose of the landscaping is to prevent glare to residents and businesses along the rail line, it is likely that all landscaping will be established in disturbed undeveloped areas.

Sound is an important element to public safety on railroads. Sounds that are received by receptors along the track include the engine horn and warning bells at crossings. The chatter of wheels on the rail is also an important component of the audio signal received along the track that alerts persons to the oncoming train. The establishment of quiet zones in the Novato area could potentially impact public safety because persons in vehicles and pedestrians will not be warned by a horn or the chatter reduced by the welding of the rails. Pedestrians at crossings, walking or riding on public bike paths along the rail line and not restricting their presence to the path, or those unlawfully walking along the rail line within the railroad right-of-way, may all be surprised by a train because the normal audio signals associated with a train are not present. Automobiles waiting for a train at a gated crossing, may decide to drive around the gate to cross the rail line in front of an oncoming train.

To reduce the potential safety impact, the proposed project includes the implementation of safety features such as quad gates, fencing, signage, and medians as specified in the Novato Consent Decree. It also includes the design of quiet zone safety features in accordance with California Public Utilities Commission rules, including but not limited to: No. 72-B: Rules governing the construction and maintenance of crossings at-grade of railroads with public streets, roads and highways in the State of California; No. 75-D: Regulations governing the protection of crossings at-grade of roads, highways and streets with railroads in the State of California; and No. 88-B: Rules for altering public railroad-highway grade crossings. Regulations require that if the locomotive engineer sees a hazardous condition in the railroad right-of-way, such as a car or pedestrian in the crossing footprint or on the track at any location, they have the authority to blow the horn.

NCRA is currently consulting with the California Public Utilities Commission, Federal Railroad Administration, and City of Novato to determine the Supplemental Safety Measures required at the quiet zones to assure compliance with federal regulations relating to quiet zones (including but not limited to CFR Title 49, Subtitle B, Chapter II, Part 200-268, particularly Part 222 and 229: Use of Locomotive Horns at Public



Highway-Rail grade crossings, Final Rule, 2006, that provides standards for the creation and maintenance of quiet zones within which locomotive horns are not required to be sounded). Once the consultation is completed, and the FRA "risk calculator" is updated, NCRA will be collaborating with SMART officials to coordinate efforts and determine the final supplemental safety measures required. After that point, NCRA will begin the design process. As a result, safety impacts associated with the elimination of horns and other traditional warning devices in the Novato area are considered to be less-than-significant.

Operations

The potential impact of the proposed project on the demand of emergency vehicles was considered less than significant. Emergency vehicles and/or personnel will not have to be increased to respond to potential train accidents/incidents.

The potential of derailments in general is not considered significant. Most derailments occurred within the yard or at switching areas, not in largely populated areas. The fact that trains will not be hauling hazardous materials minimizes the potential impact associated with a derailment. However, the impacts associated with a potential derailment alongside a bike or pedestrian trail or a Rails-with-Trails pathway, combined with the potential for small debris or particles from a train car or the ground is considered a potentially significant concern. Accordingly, NCRA has developed trail approval procedures that must be adhered to in order for a public agency to obtain an approval from NCRA to build a trail. The public agency requesting a trail project must submit a report and safety plan. A positive safety impact associated with Rails-with-Trails is that the availability of trails along the rail right-of-way may decrease the number of pedestrians and bicyclists from the congested roadways.

An increase in the response of emergency vehicles may result from train traffic passing through at-grade crossings. Due to the minimal number of trains and the relatively short delays that have been identified at intersections (see Section 3.10: Transportation), this issue is considered less than significant. For the same reason, it was determined that there will be no significant impairment to the implementation of emergency response plans or evacuation plans.



The proposed project will provide an alternative transportation option to trucking for commercial merchandise, freight, and/or solid waste across the four-county area. One train car can haul the equivalent load of up to four large trucks. Therefore, in a single day of operation, the proposed project could remove more than 800 large trucks from the roads and highways in the four-county area.

The current capacity constraints on the existing highways and road result in congestion issues. There is an absence of four-lane highways and freeways connecting US Highway 101 with Interstate Highway 80. Sections of US Highway 101 are limited to two lanes with many curves.

Removing a portion of large diesel trucks in the proposed project area would result in a beneficial impact due to a reduction of truck collisions with passenger vehicles.

Impact PFS-OP1: 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.

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. ***[Less Than Significant with Mitigation Measure PFS-OP1]***

Mitigation PFS-OP1: 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.

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.

Impact PFS-OP2: The proposed project could result in at-grade crossing collisions. ***[Less Than Significant with Mitigation Measure PFS-OP2]***



Mitigation PFS-OP2: 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.

Impact PFS-OP3: A train derailment or flying debris could impact people using bike or pedestrian paths along the railroad. ***[Less Than Significant with Mitigation Measure PFS-OP3a and PFS-OP3b]***

Mitigation PFS-OP3a: 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.

Mitigation PFS-OP3b: NCRA’s operator shall comply with all applicable CPUC and FRA regulations which enumerate rules, instructions, and training to promulgate safe operation.

Impact PFS-OP4: 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. ***[Significant and Unavoidable]***



PUBLIC DRAFT

3.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

3.9 PUBLIC FACILITIES AND SAFETY

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