

5.8 HAZARDOUS MATERIALS

5.8.1 INTRODUCTION

An adverse effect related to hazardous materials would occur if the alternatives would: be located on a site that is included on a list of hazardous materials sites and, as a result, create a significant hazard to human health or the environment (from contaminated groundwater, soil, or soil and ballast reuse); create a potential hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; or emit hazardous emissions, or handle hazardous materials or waste, within ¼ mile of an existing or proposed school.

5.8.2 IMPACT DISCUSSION

Adverse effects from the hazardous materials sites identified in the database search and regulatory document review would primarily occur during the construction phase of the BEP and SVRTP alternatives. Adverse effects related to construction are discussed in Section 6.3.9 of Chapter 6, Construction.

The following is a summary of the potential adverse effects that could take place during operation of the alternatives. Since the operational effects are similar for the BEP and SVRTP alternatives, they are discussed together in this section.

No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed improvements in the SVRTC (see Section 2.6, Related Projects, for a list of these projects). The No Build Alternative projects would likely require consideration of hazardous materials exposure during construction and operation. Typically a worker health and safety plan would be prepared and adopted to prevent exposure of maintenance workers, control emissions of hazardous dusts, and safeguard off-site transport of hazardous materials. Additionally, a Phase 2 site assessment, Contaminant Management Plan, and associated permits could be required. Projects planned under the No Build Alternative would undergo separate environmental review to determine the potential for exposure to hazardous materials.

BEP and SVRTP Alternatives

Release sites, fuel pipelines, contaminants from railroad use, superfund sites, underground storage tanks without identified releases, large quantity and small quantity hazardous waste generators, and listed hazardous material sites were discussed in Section 4.8, Hazardous Materials.

This section identifies adverse effects of hazardous materials on human health and the environment that could occur during operation of the BEP and SVRTP alternatives from contaminated soil, ballast, and groundwater. Potential effects from hazardous materials use to surface water, under upset and accident conditions, and when in use near schools are also discussed.

Hazard to Human Health from Exposure to Contaminated Soil

During operations of the BEP and SVRTP alternatives, the potential for human exposure to existing contaminated soil would occur mainly during maintenance procedures, including dewatering of the tracks inside tunnel and retained cut segments. Areas of known and potential soil contamination are discussed in Section 4.8, Hazardous Materials. Adverse effects would be similar to those caused by soil contamination during construction, as described in Section 6.3.9 of Chapter 6, Construction, except that the potential severity of effects would be much less because the infrequent nature of subsurface maintenance would result in contact with much smaller volumes of contaminated soil.

As part of the BEP and SVRTP alternatives, a worker health and safety plan will be prepared and adopted to prevent exposure of maintenance workers, control emissions of hazardous dusts, and safeguard off-site transport of hazardous materials. Maintenance personnel who may be exposed to contaminated soils will be trained in accordance with the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) standard, follow a site-specific worker health and safety plan, and use proper personal protective equipment. Untrained workers and members of the public will be excluded from the area. Also, in accordance with best management practices, any contaminated soil encountered during BART operations will be segregated from clean material, covered while on-site to prevent dust generation or contaminated surface water runoff, and properly disposed off-site in compliance with all pertinent rules and regulations. Operation of the BEP and SVRTP alternatives will be in compliance with regulations and best management practices. The following mitigation measures would also protect human health and the environment during BEP or SVRTP alternative operation.

Mitigation Measure HM-1: Additional site-specific information will be collected and documented regarding hazardous materials use and hazardous waste generation for properties that would be acquired for ROW or support facilities for the BEP and SVRTP alternatives. Collection of information will include visual inspections of properties or portions of properties that were inaccessible during preparation of this environmental document. Regulatory agency files will be reviewed for these properties to confirm whether soil has been affected by any reported releases and/or whether the sites are within an area where excavation will occur during construction.

Mitigation Measure HM-2: A Phase Two site investigation will be completed for properties that would be acquired for ROW or support facilities for the BEP and SVRTP alternatives in areas where soil contamination is documented, where soil contamination is nearby, or where current information regarding the extent of soil contamination is inconclusive. A Site Sampling Plan will be developed and implemented prior to any investigation. The plan will include a description of the work to be performed, the laboratory analytical methods to be used, and any specific requirements and quality control information.

Hazard to Human Health and Environment from Exposure to Reused Soil and Ballast

Contaminated soil and ballast may be reused to fill in retained fill structures (see Section 6.3.9 of Chapter 6, Construction). Existing ballast that may be contaminated with materials such as lead and arsenic could be reused for the BART trackbed. Reuse of these materials could cause water contamination, or human health affects depending on the concentration of the contaminants and the location of reused materials.

Soil and ballast could be reused as fill for retained fill structures. Ballast from the UPRR ROW could be reused for the BART trackbed. As previously mentioned in Section 4.8, Hazardous Materials, the soil and ballast in the UPRR ROW is anticipated to have high levels of arsenic and lead. According to soil testing data as discussed in Section 4.8, Hazardous Materials, shallow soil evidenced potential for total or extractable arsenic and lead levels that could result in classification of the soil as hazardous waste in California.

An evaluation of the potential reuse of soil and ballast is included in the Contaminant Management Plan, discussed in Section 4.8.4 of Chapter 4, Affected Environment. The evaluation includes an assessment of the risks to human health and the environment to determine appropriate reuse criteria. However, it should be noted that soil and ballast reuse is not required, or may not be an option due to geotechnical reasons or other site characteristics. Excess material would be disposed of in accordance with applicable laws and regulations.

The reuse criteria vary depending on the chemical concentrations in the material and the manner in which the soil or ballast would be reused, as potential threats to human health and the environment depend on who or what is in the vicinity of the reused material. For example, if the material would be reused near a stream, regulatory levels appropriate for the protection of water quality and biological resources must be considered. If the material would be reused near a residential area or in an area of potential groundwater use, other criteria must be considered such as the U.S. Environmental Protection Agency, Region 9, Preliminary Remediation Goals, or the RWQCB's Environmental Screening Levels, respectively. Regardless of the criteria considered, the most protective criteria would be selected as the reuse standard for that particular reuse. The Contaminant Management Plan includes the following five reuse scenarios for soil and ballast listed in anticipated order of lowest to highest acceptable chemical concentrations:

- **Unrestricted Off-Site Reuse:** soil or ballast could be reused in an offsite area without restriction, including residential uses or near a stream or shallow groundwater.
- **Unrestricted On-Site Reuse:** soil or ballast could be reused in an onsite area, specifically including areas near a stream or shallow groundwater.
- **Reuse in Stations and Facilities:** soil and ballast could be reused in areas where a relatively large number of people are present (such as stations and maintenance facilities) but not near a stream or shallow groundwater.
- **Reuse in ROW:** soil or ballast could be reused in areas where relatively few people are present for relatively short periods of time, but not near a stream or shallow groundwater.
- **Reuse in Encapsulation:** soil or ballast could be reused in engineered encapsulations (under barriers or other structures and covered on all exposed sides by clean material). Encapsulations would not be placed within 50 feet of a stream or within 5 feet of groundwater.

The majority of ballast contains arsenic levels that meet reuse standards for encapsulation. Compliance with regulatory criteria and the Containment Management Plan would ensure that reuse of soil and ballast containing hazardous materials would not become a risk to human health and the environment. Therefore, adverse operational effects related to soil and ballast reuse are not anticipated.

Hazard to Human Health from Exposure to Contaminated Groundwater

Three types of operational effects to human health and the environment could occur from contaminated groundwater. Contaminated groundwater may enter the retained cuts and tunnel through cracks and accumulate inside the retained cut and tunnel structures, affecting the health of maintenance workers during dewatering and maintenance activities. Secondly, dewatering of contaminated groundwater could spread water contamination to other areas of the environment, creating an adverse effect on the environment. Lastly, below grade facilities of the BEP and SVRTP alternatives could alter flow patterns of existing contaminated groundwater flows. This could raise the groundwater table, thereby increasing the potential for exposure, or spread contaminated groundwater to areas where it could be detrimental to human health (such as drinking water). These adverse environmental effects are discussed below.

Health Effects from Contaminated Groundwater Accumulation and Dewatering

Some contaminated groundwater may enter retained cuts and tunnels through cracks in the walls. This contaminated water could accumulate inside the retained cut and tunnel structures. Human contact with contaminated groundwater would be likely only during extremely infrequent maintenance events in wet tunnels or saturated soil outside

concrete U-walls or tunnels where contaminated groundwater has accumulated. Known areas of groundwater contamination with the potential to affect the BEP and SVRTP alternatives in this manner are discussed in Section 4.8, Hazardous Materials, in Tables 4.8-1 and 4.8-2.

Little groundwater would be expected to be encountered during the operation of the BEP and SVRTP alternatives. For the tunnel portion of the SVRTP Alternative, the vertical profile of the two tunnel bores would range from near the surface at each portal to depths of approximately 75 feet below ground surface (to the top of tunnel). Due to this depth, it is unlikely that hazardous materials would be encountered during routine maintenance activities of the tunnel.

Human contact with contaminated groundwater will be minimized by thoroughly dewatering the area throughout U-wall repairs. However, during dewatering or in the tunnels and retained cuts despite dewatering, contaminated groundwater could affect the health of maintenance workers. Maintenance personnel who may be exposed to contaminated water will be trained in accordance with the OSHA HAZWOPER standard, follow a site-specific health and safety plan, and use proper personal protective equipment. Untrained workers and members of the public will be excluded from the area during dewatering and maintenance activities. Mitigation measures HM-3 and HM-4, similar to HM-1 and HM-2 previously mentioned as addressing affects from soil contamination, would apply to groundwater contamination as stated below. These mitigation measures would further identify (or quantify) adverse construction effects, groundwater management procedures, and worker health and safety needs that would be above and beyond the measures already included in the Contaminant Management Plan (see Section 6.3.9 of Chapter 6, Construction).

Mitigation Measure HM-3: Additional site-specific information will be collected and documented regarding hazardous materials use and hazardous waste generation for properties that would be acquired for ROW or support facilities for the BEP and SVRTP alternatives. Regulatory agency files will be reviewed for these properties to confirm whether groundwater has been affected by any reported releases and/or whether the sites are within an area where excavation during construction would encounter groundwater.

Mitigation Measure HM-4: A Phase Two site investigation will be completed for properties that would be acquired for ROW or support facilities for the BEP and SVRTP alternatives in areas where groundwater contamination is documented, where groundwater contamination is nearby, or where current information regarding the extent of groundwater contamination is inconclusive. A Site Sampling Plan will be developed and implemented prior to any investigation. The plan will include a description of the work to be performed, the laboratory analytical methods to be used, and any specific requirements and quality control information.

Effects on the Environment during Dewatering

Accumulated water, including contaminated water, inside BART tunnel and retained cut segments will be pumped out on a regular basis. During operational dewatering, contaminated water could spread to other areas of the environment. To avoid the spread of harmful levels of contamination, prior to starting regular discharges from each pump station, the chemical content of the water will be tested and National Pollutant Discharge Elimination System (NPDES) permits or industrial wastewater discharge permits will be obtained and waste discharge requirements established. The discharge of any water from dewatering activities would comply with NPDES and/or municipal separate storm sewer systems (MS4) permit requirements as required by law. If necessary, each pump station collecting contaminated water will be equipped with a properly designed, operated, maintained, and monitored treatment system appropriate for the contaminants detected at that location.

Since the discharge of contaminated water would be in compliance with necessary NPDES or MS4 permits, no mitigation is warranted.

Disruption of Flow Patterns and Spread of Groundwater Contamination

Implementation of retained cuts could alter groundwater flow directions and pathways which could result in the spread of existing sources of contaminated groundwater and the rise of the water table. This change could increase human exposure to contaminated groundwater. Known areas of groundwater contamination with the potential to affect the BEP and SVRTP alternatives are in Section 4.8, Hazardous Materials, in Tables 4.8-1 and 4.8-2.

As discussed in Section 4.8, Hazardous Materials, an area of specific concern for the spread of contaminated groundwater lies south of Curtis Avenue to south of Trade Zone Boulevard. This is an area of known groundwater contamination along a proposed retained cut for both the BEP and SVRTP alternatives. In this location there are two alignment options: Retained Cut Long and Retained Cut Intermediate. In this area, groundwater is affected with residual petroleum hydrocarbons from the former Ford Automobile Assembly Plant site between STA 337+00 and 348+00 and chlorinated solvents from Jones Chemical and North American Transformer sites between STA 350+00 and 360+00. Possible contact between of the BART alignment and sources of contaminated groundwater in the area east of the Great Mall would depend on the alignment option chosen.

Implementation of the Retained Cut Long option would construct the BART alignment in a long retained cut starting from South of Curtis Avenue, continuing past the Great Mall and underneath Montague Expressway, Capitol Avenue, and Trade Zone Boulevard, and ending south of Trade Zone Boulevard (STA 337+00 to 411+00). As discussed in Section 4.8, Hazardous Materials, in Table 4.8-1, along this portion of the alignment,

groundwater is affected with residual petroleum hydrocarbons from the former Ford Automobile Assembly Plant site between STA 337+00 and 348+00 and chlorinated solvents from Jones Chemical and North American Transformer sites between STA 350+00 and 360+00.

The Retained Cut Intermediate Option (STA 354+00 to 411+00) would transition the BART alignment into a retained cut south of the beginning of the retained cut proposed under the Retained Cut Long Option. This option would avoid the contaminated area from the Ford Automobile Assembly Plant site, but would be located along the contaminated area from the Jones Chemical and North American Transformer sites.

As previously discussed groundwater flow directions and pathways may be affected by BART retained cut and tunnel structures including the retained cut options south of Curtis Avenue to south of Trade Zone Boulevard. To minimize this effect, highly permeable preferential flow pathways (i.e., highly permeable gravel channels) will be constructed directly beneath the U-wall sections, as described in Section 6.3.9 of Chapter 6, Construction. Since U-walls would be designed to minimize interruption of groundwater flow directions and pathways, no mitigation is warranted.

Contamination of Surface Water from Routine use of Hazardous Materials

Surface water contamination may result from contact between rainwater and hazardous materials used in the operation of BART trains and facilities, such as lubricants and hydraulic fluids.

During operation of the BEP or SVRTP alternative, lubricants and hydraulic fluids, may drip onto the BART tracks and accumulate over time. Rainfall would wash off exposed chemicals, creating contaminated stormwater runoff. This runoff would eventually combine with other surface waters, spreading contamination which could adversely affect the environment.

The magnitude of these releases is expected to be similar to the releases seen on the existing operating sections of BART and would not result in adverse effects requiring mitigation beyond implementing ordinary safety practices. Furthermore, as previously discussed, the discharge of any water from dewatering activities would comply with NPDES and MS4 permit requirements. Compared to surface water contamination from highway runoff for the automobiles and buses that the BEP and SVRTP alternatives would replace, their net effect to surface water quality is expected to be beneficial.

Human Health Hazards from Accidents Involving Hazardous Materials Release

Operation of the BEP and SVRTP alternatives would include the use, handling, and storage of hazardous materials. Degreasers, lubricants, cleaning solutions, solvents, paints, and miscellaneous petroleum products may be used for maintenance activities. Accidental improper use, storage, or disposal of these materials could result in health risks to maintenance workers using or in the vicinity of the hazardous materials.

The use, transport, and disposal of hazardous materials would be in compliance with federal, state, and local regulatory requirements. Furthermore, all BART operations would be conducted in accordance with a properly prepared, approved, and adopted worker health and safety plan. Therefore adverse effects to human health from accidental improper use, storage, or disposal of hazardous materials are not anticipated. No further mitigation is required.

Handling of Hazardous Materials Near a School

As discussed in Section 4.3, Community Services and Facilities, there is one elementary school in Milpitas, six elementary schools in San Jose, and two high schools in San Jose within ¼ mile of the proposed BART alignment. Two universities, one in San Jose, and one in Santa Clara are also near the proposed alignment.

BART is a passenger train and will not transport hazardous substances. The routine use of hazardous materials, as previously discussed, would not result in effects to human health and the environment since the use, transport, and disposal of hazardous materials would be in compliance with federal, state, and local regulatory requirements and all BART operations would be conducted in accordance with a properly prepared, approved, and adopted worker health and safety plan. No adverse effects to schools from handling hazardous materials would occur from implementation of the BEP or SVRTP alternatives. No mitigation is required.

5.8.3 CUMULATIVE IMPACTS

Effects related to human health and the environment from exposure to hazardous materials in the soil are site specific, not cumulative in nature. Cumulative water quality effects are discussed in Section 5.15, Water Resources. Effects on air quality, including those cumulative in nature are discussed in Section 5.1, Air Quality.