APPENDIX 2-K: LIGHT MAINTENANCE FACILITY SITE SELECTION EVALUATION

- Part 1: LMF Site Selection Evaluation
- Part 2: Gilroy LMF Option Consideration and Elimination

APPENDIX 2-K PART 1: LMF SITE SELECTION EVALUATION

CALIFORNIA High-Speed Rail Authority

Memorandum

DATE: **May 4, 2020**

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SUBJECT: LMF SITE SELECTION EVALUATION: SAN FRANCISCO TO SAN JOSE PROJECT SECTION

I. INTRODUCTION

The light maintenance facility (LMF) located in the San Francisco to San Jose Project Section (SF-SJ Section) is one of three train maintenance facilities that will support the overall California High-Speed Rail (HSR) System. The High-Speed Rail Authority (Authority) has identified two sites for this LMF — Brisbane East and Brisbane West — to be carried forward for evaluation in the SF-SJ Project Section Draft Environmental Impact Report /Environmental Impact Statement (DEIR/S). This memorandum documents the reasons the Authority eliminated nine other potential sites located throughout the peninsula from further consideration for the LMF.

II. SUMMARY OF THE ALTERNATIVES EVALUATED IN THE EIR/EIS

On September 17, 2019, the Authority Board of Directors adopted staff's recommendation to select Alternative A as the preferred alternative. Under Alternative A, the LMF would be located within the City of Brisbane east of the Caltrain tracks at the Brisbane Baylands site (Brisbane East). Under Alternative B, the other alternative to be evaluated in the environmental review process, the LMF would be constructed west of the Caltrain tracks (Brisbane West) within the Brisbane Baylands.

The Brisbane Baylands sites would each satisfy the key engineering, financial, and operational considerations that guide the siting of an LMF. The Brisbane Baylands is one of the few vacant sites remaining within the San Francisco to San Jose corridor of a size sufficient to support the LMF, which allows for the development and operation of a facility without severe disruptions or changes to existing land uses. Moreover, the Brisbane sites provide feasible options for the construction and operation of the LMF. Each of the Brisbane LMF sites would affect areas under the jurisdiction of the Bay Conservation and Development Commission (BCDC).

III. NEED FOR LMF IN THE SF-SJ PROJECT SECTION

The HSR delivery approach has evolved through successive updates to the business plan, which is released every two years. The HSR system was initially envisioned as a fully dedicated two-track railroad through Northern California, with a dedicated four-track HSR system between San Francisco and San Jose. However, in 2012, the Authority proposed a "blended system" for the SF-SJ Section, which would primarily consist of a two-track system that would be shared by Caltrain and HSR.[1]

The Authority's 2016 Business Plan reaffirmed this blended system approach, however the plan indicated that San Jose Diridon would be a temporary terminal station for the Silicon Valley to Central Valley ("Valley to Valley" or "V2V") initial start of service.[2] Under this V2V approach, an LMF would be located in the San Jose to Merced Section. However, the V2V approach was modified in the 2018 Business Plan, which directed that initial service would be provided between San Francisco and Gilroy, followed by a

[1] Authority. 2012. *2012 Business Plan.*

[2] Authority. 2016. *2016 Business Plan.*

V2V connection to the Central Valley. This decision reaffirmed San Francisco as the terminal station city for the Northern California portion of the HSR system. With the terminal station located in San Francisco, the LMF was incorporated into the SF-SJ Section to serve the station (which will initially be located at Caltrain's 4th and King Station[3] and eventually relocated to the Salesforce Transit Center upon completion of the Downtown Extension project[4]).

IV. BACKGROUND: LMF FUNCTION AND DESIGN CRITERIA

The LMF is a critical component of the overall high-speed rail system. Light maintenance of the HSR trainsets, which will occur on a daily, monthly, and quarterly basis, will take place at the LMF. Maintenance activities include train washing, interior cleaning, wheel truing, testing, and inspections. These activities may occur between runs or as a pre-departure service at the start of the revenue day. Trains and crew will be dispatched from the LMF to the terminal facility to begin revenue service throughout the day. The LMF will also support a limited number of trainsets dispatched to the San Jose Diridon Station and will function as a service point for any trains in need of emergency services. The LMF will be in operation 24 hours per day, with four overlapping shifts of workers rotating in and out of the site.

In 2009, the Authority published Technical Memorandum (TM) 5.3, *Summary Description of Requirements and Guidelines for: Heavy Maintenance Facility (HMF), Terminal Layup/Storage & Maintenance Facilities & Right-of-Way Maintenance Facilities,*[5] which described the facility size, design, and locational criteria to meet the functional requirements for a LMF serving a dedicated HSR corridor. Upon release of the 2012 Business Plan, the Authority released TM 5.1, *Summary of Requirements for O&M Facilities,*[6] in 2013 to reflect the blended service concept. TM 5.1, however, did not supplant the criteria specified in TM 5.3 for the LMF design. As such, the criteria set out in TM 5.3 continues to guide the planning and design of the LMF. These TMs are based on best practices and experience gained by other HSR system operators throughout the world and inform project design.

The following describes the LMF site design criteria that were incorporated into the design of the LMF at each of the 11 locations evaluated.

Site Size – The LMF sizing criterion is based on ridership projections and fleet size estimates sufficient to handle projected system growth to the year 2040, as identified in the Authority's 2018 Business Plan. Because the LMF is one of three maintenance facilities on the HSR system, the capacity of the yard needs to be of sufficient size to accommodate approximately one third of the total fleet size. Table 1 lists the components of an LMF necessary to support the Northern California HSR sections and the associated acreage, including the San Francisco terminal station (TM 5.1). An area of approximately 100 acres is required to accommodate all necessary components of an LMF (see Table 1).

Double-ended lead tracks – Lead tracks are necessary to allow trains entering the LMF to reduce speeds. Double-ended lead tracks enable trains to enter and leave the LMF from both ends (generally, north and south) of the facility. Single-ended track design (also known as a stub-ended track) would allow access to the LMF from the mainline tracks from one direction only. Although most trains would arrive from or travel to the terminal station to the north, using the northern lead tracks, southern lead tracks would be used for trains to access the site from the south.

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[3] The LMF and temporary terminal station at 4th and King Station are programmed into the Authority's 2018 Business Plan.

[4] *See* Transbay Joint Powers Authority's Final Supplemental Environmental Impact Statement/Environmental Impact Report for the Transbay Program Phase 2.

[5] Authority. 2009. Summary Description of Requirements and Guidelines for: Heavy Maintenance Facility (HMF), Terminal Layup/Storage & Maintenance Facilities & Right-of-Way Maintenance Facilities: TM 5.3. August 25.

[6] Authority. 2013. *Summary of Requirements for O&M Facilities.* Revised March 21, 2013.

Double-ended lead tracks are necessary to ensure efficiency and resiliency in the system by eliminating a risk of a single point of a failure at the LMF lead tracks. Double-ended lead tracks protect against this risk and provide for business continuity that is dependent upon reliable train service. Alternatively, a single-ended track design would pose operational challenges by requiring trains arriving from opposite directions to stop and reverse into the yard, thereby constraining operational capacity. Furthermore, train failure on a stub-ended facility would obstruct the movement of trains in or out of the LMF. The impact of such a failure could be significant, leading to considerable financial and reputational loss to the Authority due to insufficient trainsets available to meet timetables.

Table 1 LMF Design Criteria

Required Feature	Required Dimensions/Sizing
▪ Layover/storage tracks (10) ▪ Service/shop tracks (8)	▪ 1,400' L ▪ Capacity to hold 2 complete trainsets (double trainsets), each approximately 700' L ▪ Total of **60 acres** when combined with lead tracks
Shop floor area and office space	Minimum of **5 acres**
Parking	▪ Minimum of **5 acres** ▪ 150 parking spaces
Power substation (200' X 400'), cistern, ballast storage, materials storage, hazardous materials storage, materials recycling, emergency generators, and other miscellaneous buildings	Minimum of **15 acres**
Internal roadways and two-way circulation road	Total of **15 acres** when combined with the two-way circulation road
TOTAL	**100 ACRES**

The relative distance of the LMF to the terminal station and mainline track are also important determinants in the selection of potentially suitable LMF sites.

Proximity to terminal station – As identified in TM 5.3, the optimal location for the LMF would be within 1.5 - 3 miles of the San Francisco terminal station. Other locations further from the station were assessed given the scarcity of feasible sites within 3 miles of downtown San Francisco. With up to four HSR trains running per peak hour in each direction, the system has been designed to minimize the number and duration of "deadhead"[7] movements to avoid increased operations and maintenance costs, reduced track capacity and revenue train service, and environmental impacts. Close proximity to the terminal station also allows operators to respond more efficiently in emergencies, including midday incidents and train malfunctions.

Proximity to mainline tracks – Minimizing the distance between the LMF and the main track is important to reducing costs associated with track infrastructure, minimizing travel time between the mainline track and the LMF, and avoiding or reducing potential effects on existing land uses and environmental resources. The longer the lead track required to access the mainline (> 0.25 mile), the greater the operational inefficiencies caused by deadhead miles.

[7] "Deadhead miles" refers to the non-revenue movement of trains.

V. SITE SCREENING CONSIDERATIONS

In addition to design criteria and proximity to the terminal station and mainline tracks, the Authority considered the following in its evaluation of the suitability of the alternative LMF sites:

Factors Regarding the Feasibility of a Potential Site

- Availability and Regionally Important Facility or Use: A potential site is unavailable if its development would conflict with regionally important use or facility, such as airports, that cannot be feasibly relocated.
- Circulation Elements: A potential site is unavailable if its development would cause severe impacts to a major circulation element, including blocking vehicular access to a freeway or rail transit system or severing a major arterial such that there would be no opportunity for replacement of that arterial and the resulting detour would substantially impede traffic circulation.
- Section 4(f) Resources: Each site was evaluated to determine whether its development would potentially constitute a use of a Section 4(f) property. In light of the availability of feasible and prudent avoidance alternatives, a site that involved the use of a 4(f) resource was considered not to be feasible.
- Cost: Cost of the LMF includes the acquisition and development of the site, including land and development costs associated with the lead tracks and other related infrastructure, including the relocation, reconfiguration, and addition of roadways or freeways. A site is considered infeasible from a cost standpoint if its estimated cost would be unreasonable relative to the estimated cost of the LMF at the location identified in the Board-selected preferred alternative, East Brisbane.

Other Factors

- Aquatic and Biological Resources: Impacts to aquatic and biological resources were evaluated for each site to determine whether impacts to those resources would be substantially greater than the preferred alternative.
- Cultural Resources: Impacts to cultural resources were evaluated for each site to determine whether impacts to those resources would be substantially greater than the preferred alternative.
- Land uses: Each site was evaluated to determine whether its development would cause substantial impacts to an existing land use, including by dividing an existing community.
- Environmental Justice: Each site was evaluated with respect to the potential that the development of an LMF would result in disproportionately high and adverse environmental effects to low-income, minority, and tribal populations.

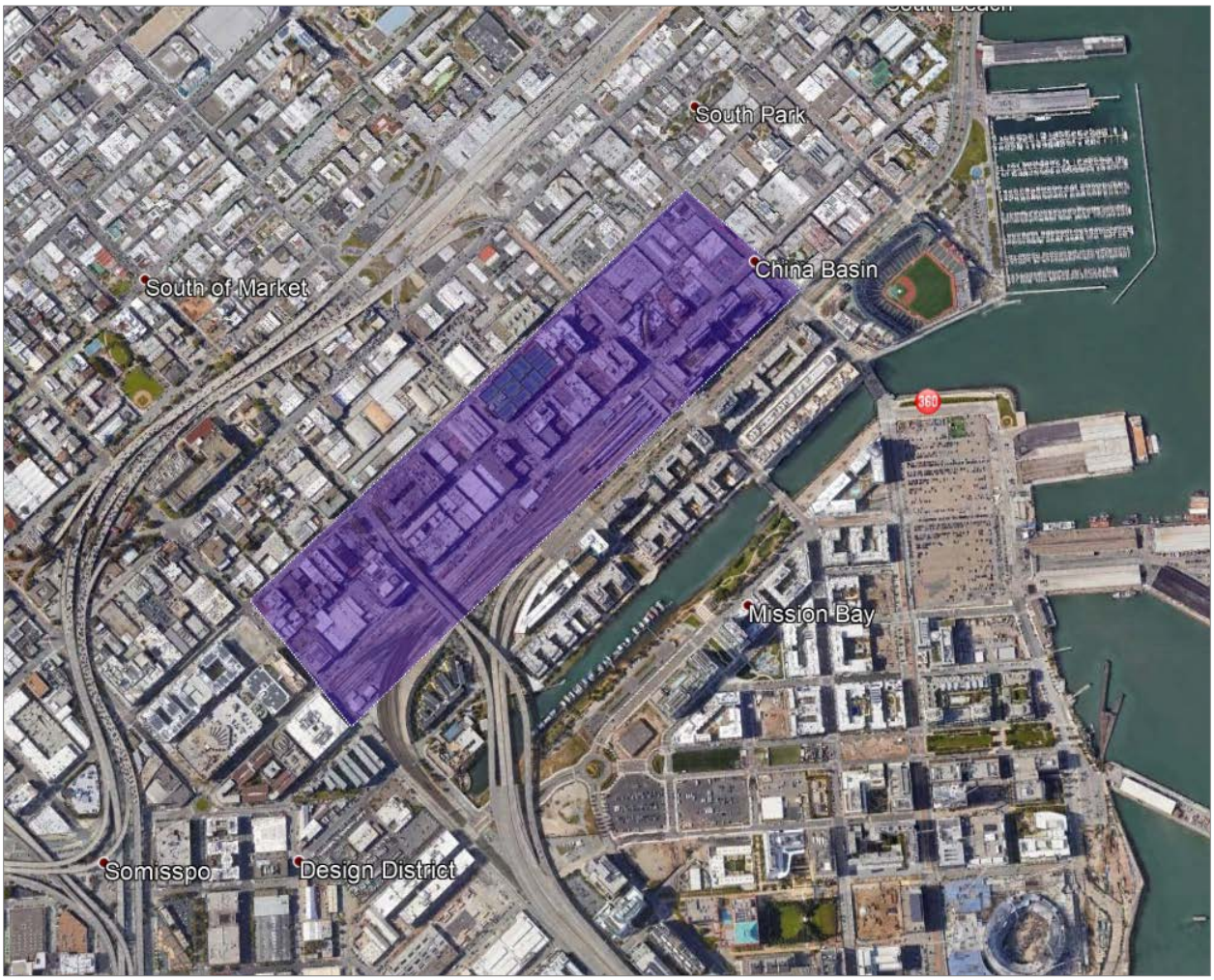
VI. NINE POTENTIAL LMF SITES ELIMINATED FROM CONSIDERATION

As discussed in detail below, the Authority determined that nine of the 11 sites considered for LMF do not warrant further evaluation in the DEIR/S because they are not available or capable of being done in light of cost, logistics, and other factors affecting the feasibility of the site.

A. San Francisco Yard

The San Francisco Yard is located at the temporary terminal 4th and King Station, owed by Caltrain. The site is surrounded by dense urban neighborhoods, commercial development, port facilities, and a Major League baseball stadium. For many years, the City of San Francisco has evaluated this land for even greater development around the 4th and King Station. This area of San Francisco is a point of heavy vehicular movements, as freeways I-280 terminates at this location onto King Street and 6th Street. To the north, freeway I-80 also has several entrance/exit ramps at 8th Street, 7th Street, 5th Street, 4th Street, and 2nd Street. At approximately 2 miles from Salesforce Transit Center, the San Francisco Yard is sufficiently proximate to the terminal facility. It would also be sufficiently close to the mainline tracks. The

LMF would be a double ended facility here, with trains coming in from the south, and going north to the Salesforce Transit Center.



Site Feasibility

- *Availability/Regionally Important Use*: The San Francisco Yard is an integral part of a regionally important transportation use. The loss of this Caltrain station would cause substantial impacts to critical transportation infrastructure of regional importance. Furthermore, the siting of the LMF at San Francisco Yard would require the relocation of the Caltrain station to a nearby location, which would trigger many of the same practicability considerations for Caltrain as are discussed in this memorandum concerning the LMF.
- *Circulation impacts*: The placement of the LMF at San Francisco Yard would substantially impede existing circulation patterns in a major urban area. Construction of the LMF would sever major arterial roadways, including, 3rd and 4th Streets, which connect the South of Market area to the Mission Bay, Bayview, and Hunters Point neighborhoods and connect the Third Street light rail line to the Embarcadero and Central Subway lines. Townsend Street, which provides access to the Caltrain station, would be closed and disruption to the I-280/Sixth Street on/off-ramp would likely occur. These changes would add significant time for vehicular traffic to access I-280 from South of Market. The San

Francisco Yard, therefore, would not be a feasible site in light of the severity of these impacts on circulation.

- *Section 4(f):* As noted, the development of the San Francisco Yard, including its surrounding areas, would likely adversely impact cultural resources. In the event these properties are found to be historic under Section 106 and slated for demolition to construct the LMF, they may be determined to be a Section 4(f) use, which could render the site unavailable.
- *Cost*: The San Francisco Yard is located in the rapidly developing South of Market district of San Francisco, which comprises some of the most expensive real estate in the country. The cost of acquiring approximately five blocks of land surrounding the rail yard, much of which is occupied by recently developed mixed-use mid to high rise buildings, would amount to approximately $3 billion, which is approximately 5 times the cost of the preferred alternative and is the most costly of the sites considered. As such, the costs associated with the acquisition of this site would not be reasonable.

Other Factors

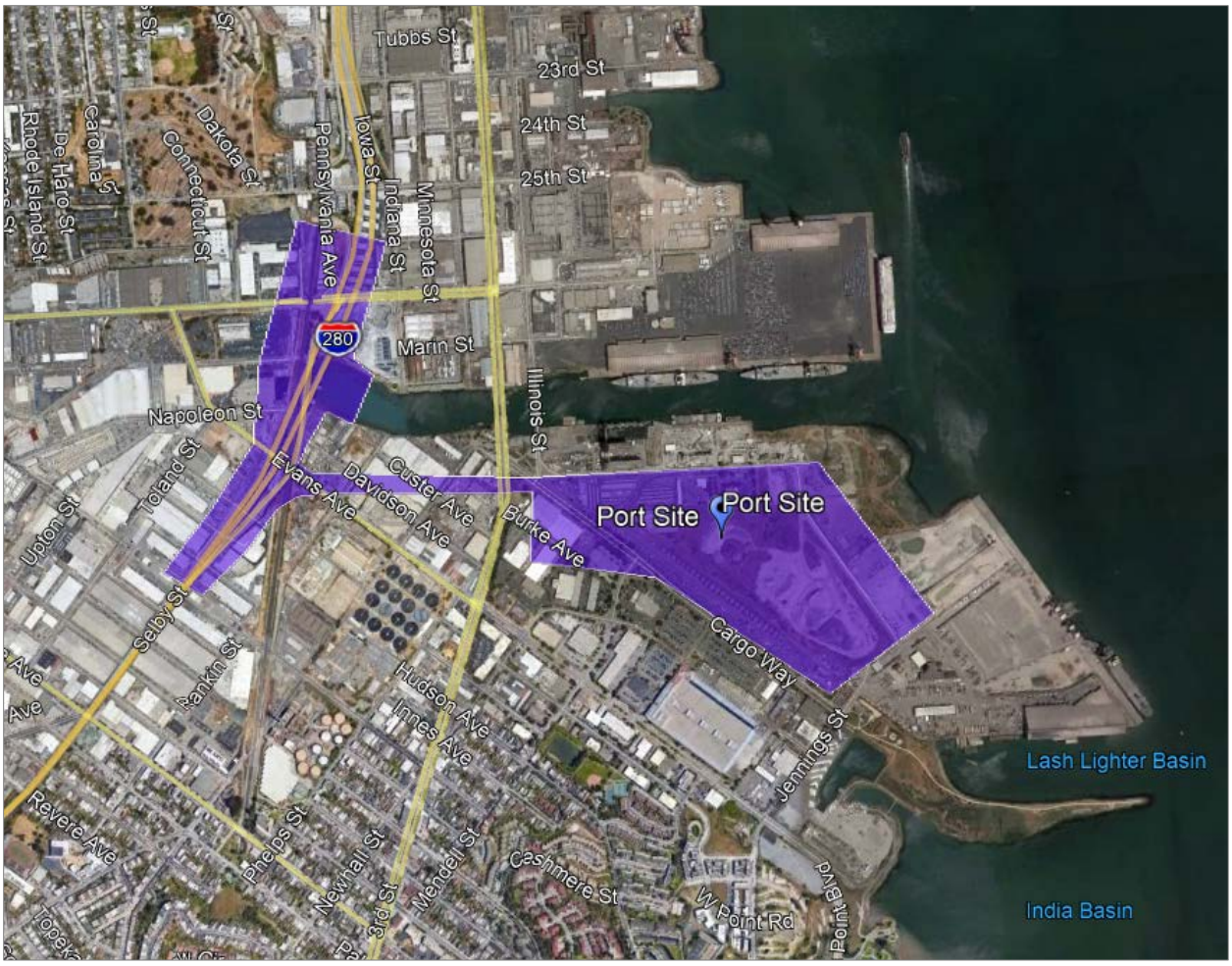
- *Cultural resources:* The San Francisco Yard is on the historic Bay Shore and it is highly sensitive for both historic and precontract archaeological resources. The site is expected to have a large number of potentially historic properties that are locally significant and/or would be eligible for the National Register of Historic Places (NRHP). Construction of the LMF at this site may result in indirect adverse effects to adjacent historic district resources and likely direct adverse effects to historic eligible or NRHP-listed resources.
- *Land use:* Development of the LMF at the San Francisco Yard would result in the displacement of five city blocks of high density development in downtown San Francisco, including large numbers of residential units. The impacts would be very severe and it would be very difficult, if not impossible, to find any sort of like-kind replacement for these properties.

Conclusion*:* The San Francisco Yard site was eliminated from consideration in the DEIR/S because it would adversely affect a regionally important transportation facility, severely disrupt circulation elements of a major urban area, displace blocks of high density residential and commercial development, and require unreasonable expenditures of funds to acquire existing development. Development of the site would also result in adverse impacts to cultural resources. For these reasons, the San Francisco Yard is not a feasible site and, as such, was not advanced for consideration as a LMF site in the EIR/EIS for the project section.

B. Port Site (Piers 90-94)

The Port Site is located in an industrial area of San Francisco. The site, much of which is currently vacant, is owned and operated by the Port (City and County) of San Francisco. Currently, the Port is seeking regulatory approvals to develop this land as a site for construction staging activities, storage, materials recycling, and other industrial uses. This site is approximately 4 miles from the terminal station, which is sufficient for LMF operations. However, this would be a single ended facility.

In this area, the Caltrain tracks are beneath the northbound and southbound structures of the I-280 freeway. Due to the overhead conflict, to connect the LMF to the mainline, a 1-mile tunnel would be necessary to facilitate grade separation of the lead tracks from the mainline tracks. This tunnel, would sever the existing trench of Cesar Chavez, a major east-west arterial street. The construction of the tunnel would also have tremendous impacts, as the columns of I-280 would need to be relocated within Islais Creek.



Site Feasibility

- *Regionally Important Use*: The Port is currently seeking the necessary regulatory approvals and preparing site engineering plans to improve Piers 90-94 (Maritime Eco-industrial Center). The proposed new uses include: construction lay down, marshalling, auto storage, self-storage, and construction material recycling as well as eco-industrial uses such as batching operations, and biofuels production.
- *Circulation impacts*: Construction of the tunnel would sever Cesar Chavez Street, a major arterial in San Francisco which connects approximately 200 to 250 acres of medium density industrial neighborhoods to the east to the US-101 freeway, from much of San Francisco. The loss of this connection would overburden the next available access points to US-101, which is located approximately a mile and a half to the north from the existing off/on ramps. The Port Site would not be a feasible location in light of the severity of the impacts on circulation.
- *Cost*: The construction of the LMF at the Port Site would require construction of an approximately 1-mile tunnel for the lead tracks and relocation of an elevated portion of the Interstate-280 freeway and associated ramps, necessitating six pier relocations in Islais Creek. At a cost of over $2.1B, these project features would make the LMF approximately three times more expensive than the Preferred Alternative, and the second most costly of the sites considered. Consequently, the costs associated with the acquisition of this site would not be reasonable.

Other Factors

- *Aquatic resource impacts:* The relocation of six piers in Islais Creek Channel associated with the relocation of an elevated portion of the Interstate-280 freeway would result in approximately 5.1 acres of permanent and temporary impacts to aquatic resources.
- *Biological resource impacts:* Placement of the LMF at the Port Site would result in impacts to habitat for the following special status species: bristly sedge, Townsend's big-eared bat, pallid bat, western red bat, and white-tailed kite.

Conclusion*:* An LMF at the Port Site would impact a regionally important agency, the Port of SF. Development of the site would also result in major impacts on street circulation elements within South San Francisco. The development of the Port Site for the LMF would be unreasonably costly due to both the value of the land that would be acquired and the cost of the additional necessary infrastructure modifications. For these reasons, the Port Site is not a feasible location for the LMF and, consequently, was not advanced for consideration in the DEIR/S.

C. Cow Palace

The Cow Palace, which is located in Daly City, has functioned as a convention center since 1941. This site location would impact the City of Brisbane, and the residential neighborhoods of Bayshore Heights and Visitacion Valley. The site is approximately 10.5 miles from the terminal station, which would be a suitable distance from an operational standpoint. The site is over 1 mile from the mainline track, which would be less desirable than being adjacent to the mainline.

The Authority considered two configurations at the Cow Palace site, East-West and North-South. The East-West configuration is a single-ended facility. The North-South configuration is a double-ended facility, which uses a tunnel to burrow through the San Bruno Mountain.

1. Cow Palace – East/West

Site Feasibility

- *Section 4(f)*: The Cow Palace is likely eligible for NRHP listing. Consequently, construction of the LMF at this site would constitute a 4(f) use, potentially rendering the site unavailable.
- *Cost*: At a cost approaching $1.8B, the Cow Palace – East/West site would cost more than 4 times more than the Preferred Alternative and is among one of the third most expensive potential LMF sites considered. Consequently, the costs associated with the acquisition of this site would not be reasonable.

Other Factors

- *Land Use*: Placement of the LMF at this site would require the demolition of the Cow Palace, as well as some residences. Construction of the lead tracks would also cause the displacement of businesses and residences on the south side of the Geneva Avenue. The lead tracks would run adjacent to Geneva Avenue, displacing businesses on the south side of the street and requiring the relocation of a 28-acre PG&E substation. Trains traveling between the LMF and the mainline tracks

would travel through a densely populated residential area, physically dividing the neighborhood and increasing noise and vibration levels for properties adjacent to the tracks.

- *Biological resources*: Construction of the LMF at this site would likely result in 6.32 acres impacts to habitat for four special status species: Townsend's big-eared bat, pallid bat, western red bat, and white-tailed kite.
- *Cultural Resources*: Cow Palace is likely eligible for the NRHP listing. Additionally, a portion of the Bayshore Heights neighborhood would likely be considered locally significant and/or eligible for NRHP.
- *Environmental Justice*: Brisbane, Bayshore Heights, and Visitacion Valley are areas of low income and minority populations.

Conclusion: Cow Palace's designation as a 4(f) resource would likely render the site unavailable. The Cow Palace East-West site would be unreasonably costly to develop. Moreover, the placement of the LMF at this site would result in the displacement and division of a residential and commercial development with environmental justice populations. Consequently, the Cow Palace East-West site is not a feasible location for the development of the LMF and, consequently, was not advanced for consideration in the DEIR/S.

2. Cow Palace – North/South

- *Section 4(f):* The Cow Palace is likely eligible for NRHP listing. Consequently, construction of the LMF at this site would constitute a 4(f) use, potentially rendering the site unavailable.
- *Cost:* At a cost approaching $2B, the Cow Palace North/South site would be nearly three times as expensive as compared to the Preferred Alternative cost estimate, and would be one of the third most expensive sites to construct.

Other Factors

- *Land Use:* The 1.5-mile southern LMF lead track would pass through the southern part of the Brisbane Baylands property, crossing Bayshore Boulevard and Guadalupe Canyon Road and tunneling through San Bruno Mountain (a county park) to reach Cow Palace. The 1.3-mile northern lead track would require extensive residential displacements in Visitacion Valley. Trains traveling between the LMF and the mainline tracks would travel through a densely populated residential area, physically dividing the neighborhood and increasing noise and vibration levels to residences adjacent to the tracks.
- *Biological resources*: Development of the LMF at this site would likely result in up to 10.95 acres of impacts to three federally endangered butterfly species, Mission blue butterfly, Callippe silverspot butterfly, and San Bruno elfin butterfly. Impacts to several special status species would also result from placement of the LMF at Cow Palace North/South.
- *Cultural resources*: As noted earlier, the Cow Palace is likely eligible for the NRHP listing. Additionally, a portion of the Bayshore Heights neighborhood would likely be considered locally significant and/or eligible for NRHP. *Environmental Justice*: Brisbane, Bayshore Heights, and Visitacion Valley are areas of low income and minority populations.
- *Environmental Justice*: Brisbane, Bayshore Heights, and Visitacion Valley are areas of low income and minority populations.

Conclusion: The Cow Palace's designation as a 4(f) resource would render the site unavailable and would be unreasonably costly to develop. Moreover, the placement of the LMF at the site would result in the displacement residential and commercial development and the dividing of existing communities, biological resource impacts, cultural impacts, and environmental justice impacts. Consequently, the Cow Palace North/South site is not a feasible location for development of the LMF and was not advanced for consideration in the DEIR/S.

D. Georgia Pacific Site

The Georgia Pacific site largely consists of commercial development. To the west of the site is the freeway US-101 and further to the west is Downtown South San Francisco. A nearby arterial is E. Grand Avenue, which has ramps to US-101 and connects the residential neighborhoods to the west to the industrial neighborhoods to the east. Passing through the site is South Airport Avenue, which is a major north-south arterial that provides access through the industrial neighborhoods. At approximately 13 miles from the terminal station, this alternative would be marginally acceptable from an operational standpoint. This site is approximately 0.5 mile from the mainline track, which is less desirable than being adjacent to the mainline track. The 0.5 mile lead track would impact South San Francisco Caltrain Station and a train storage facility for UPRR. This is a single-ended facility, which is not desirable.

Site Feasibility

- *Circulation impacts:* Construction of lead track to the LMF at Georgia Pacific would permanently sever E. Grand Ave in South San Francisco, which would hinder the movement of traffic from the residential area on the west side of US-101 to the industrial and commercial zone east of US-101. Approximately 400 to 450 acres of heavy density industrial and commercial properties would not be able to use E. Grand Ave to access US-101. The residual traffic impact to adjacent on/off ramps to the north and south of E. Grand Avenue would be severe and unmanageable. Main north-south arterials of Gateway Blvd, Harbor Way, and Littlefield Ave in South San Francisco would also be severed, prohibiting movement of traffic between South Airport Boulevard and Grand Avenue. Placement of the LMF at Georgia Pacific would substantially impede existing circulation patterns in a major urban area.
- *Cost:* At a cost approaching $1B, this site would be three times as expensive compared to the Preferred Alternative cost estimate.

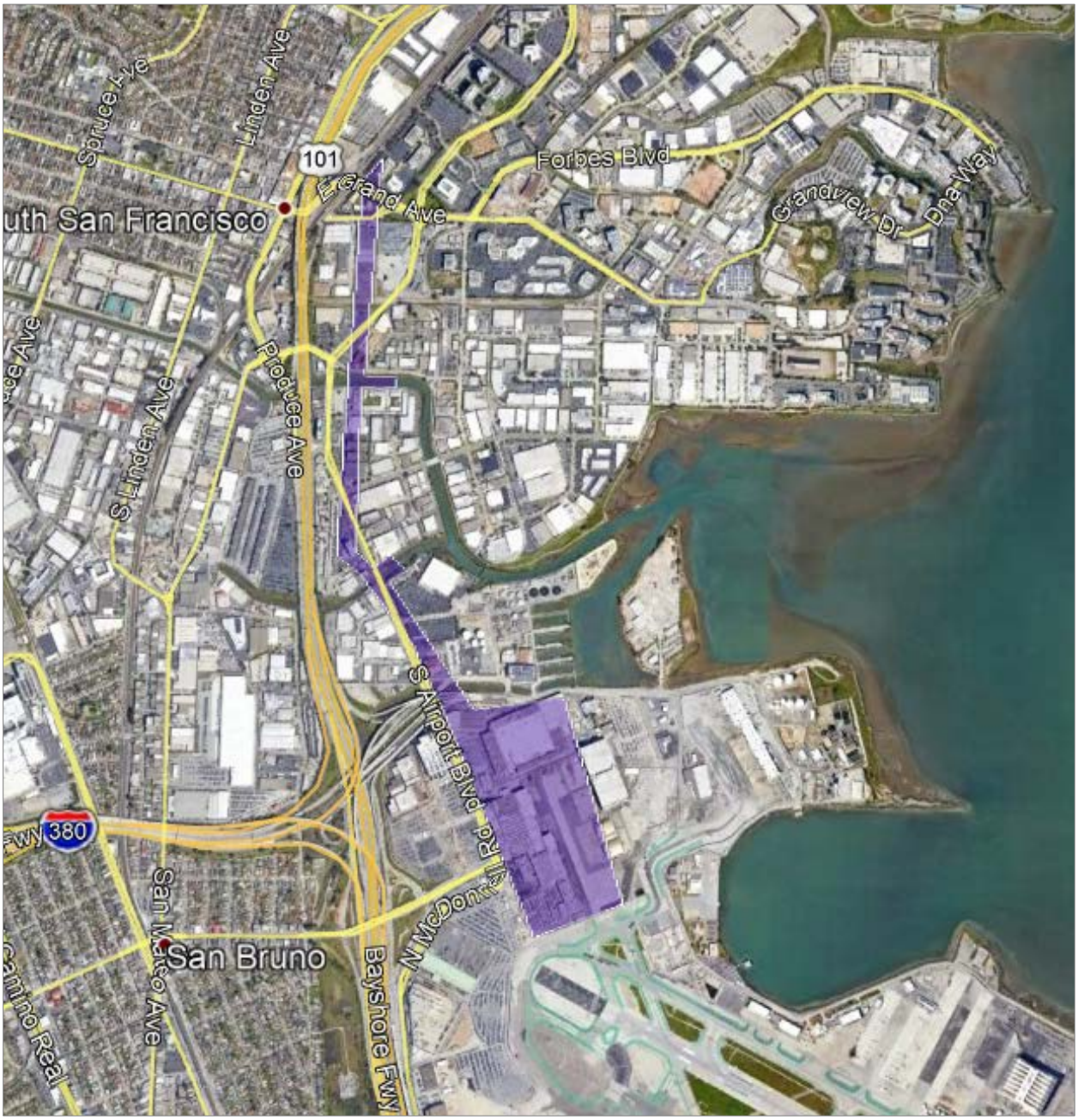
Other Factors

- *Biological resources:* Placement of the LMF at Georgia Pacific would impact 0.08 acre of bristly sedge, a special status plant species.
- *Land use:* Placement of the LMF at this site would displace a number of existing commercial/industrial land uses. In addition, the UPRR storage facility would have to be reconfigured to preserve its existing use.

Conclusion*:* The Georgia Pacific site was eliminated from consideration for LMF siting in the DEIR/S due to circulation impacts, and unreasonable costs. Additionally, there are impacts to biological resources and there would be substantial displacement of industrial buildings. Consequently, the Georgia Pacific site is not a feasible location for development of the LMF and was not advanced for consideration in the DEIR/S.

E. San Francisco International Airport (SFO)

SFO is a regionally important transportation facility owned and operated by the City and County of San Francisco. The land use north of the airport is largely comprised of hotels, commercial, and industrial land uses. It is approximately 15 miles from the terminal station, which is marginally acceptable from an operational standpoint. It is approximately 1.5 miles from the mainline track, which is less desirable than being adjacent to the mainline track. The LMF requires a lead track to connect to the mainline tracks to the north, and will impact the South San Francisco Caltrain Station and UPRR storage facility. It is a single-ended facility, which is not desirable.



Site Feasibility

- *Regionally Important Use:* Obtaining the SFO site for use as an LMF would conflict with and further restrict airport operations as documented in the Airport Development Plan and the City and County Board of Supervisors' 2008 resolution. The Airport Development Plan acknowledges that the airport has significant constraints on long-term expansion plans because of the lack of available vacant land for new development or expansion of airport facilities, including restrictions to runway expansion. In 2008, the San Francisco Board of Supervisors passed a resolution restricting additional fill in San Francisco Bay for new or reconfigured runways at SFO. The importance of this site for continued operations of SFO renders the site unavailable for the LMF.
- *Circulation impacts:* Construction of the lead track tying into the mainline tracks near the existing South San Francisco Caltrain Station would require severing E. Grand Avenue, a major east-west arterial street. This street connects to on and off ramps of US-101, and connects the South San Francisco residential neighborhood to the west with the industrial neighborhoods to the east.
- *Cost:* At a cost approaching $1.4B, the SFO site would cost more than two times as much as the Preferred Alternative, and is one of the most expensive potential LMF sites considered. Consequently, the costs associated with the acquisition of this site would not be reasonable.

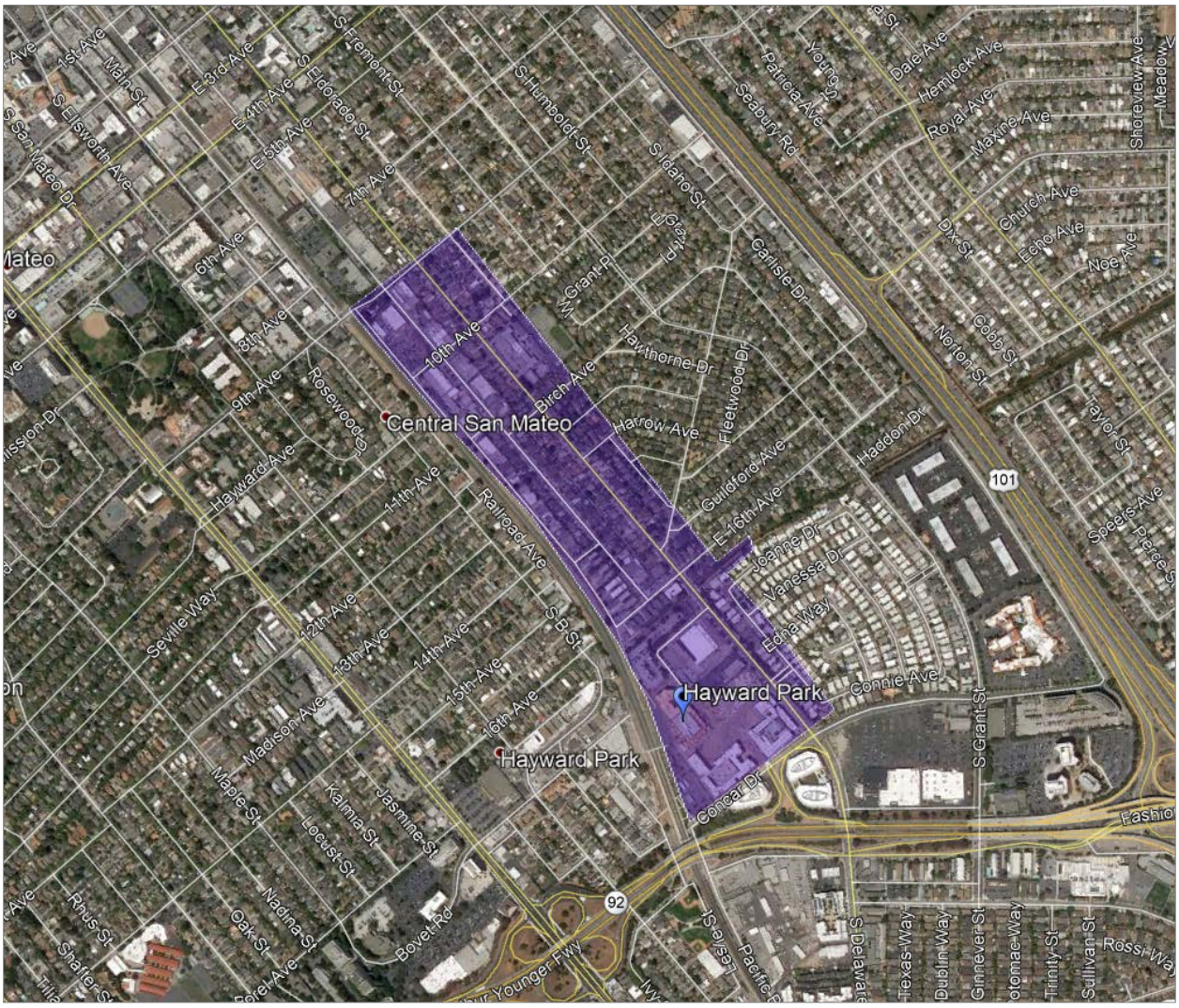
Other Factors

- *Aquatic impacts:* Construction of the LMF at SFO would result in approximately 5.0 acres of permanent and temporary impacts to aquatic resources.
- *Biological impacts:* The SFO site may affect limited suitable habitat for three federally listed butterfly species.

***Conclusion**:* The development of the SFO site for the LMF would conflict with airport use and operations, result in severe impacts to existing circulation elements, and require unreasonable expenditures of funds. Additionally, there would be aquatic and biological impacts with construction of the lead tracks. Consequently, the SFO site is not a feasible location for development of the LMF and was not advanced for consideration in the DEIR/S.

F. Hayward Yard

The Hayward Yard site is located in an area consisting primarily of private residential development. The site is adjacent to a large apartment complex to the south and several commercial developments along Railroad Avenue. Development of this site would require the relocation of Railroad Avenue and S. Delaware Street, a major north-south arterial. The site is approximately 20 miles south of the terminal station, approximately twice the distance as the Preferred Alternative and would therefore cause operational challenges. This site is adjacent to the Caltrain tracks and is a double-ended facility.



Site Feasibility

- *Section 4(f):* This site would impact Sunbrae Park, a public park.
- *Cost:* At a cost approaching $1.8B, this site would be more than four times as expensive as compared to the Preferred Alternative cost estimate, and would be one of the third most expensive sites to construct.

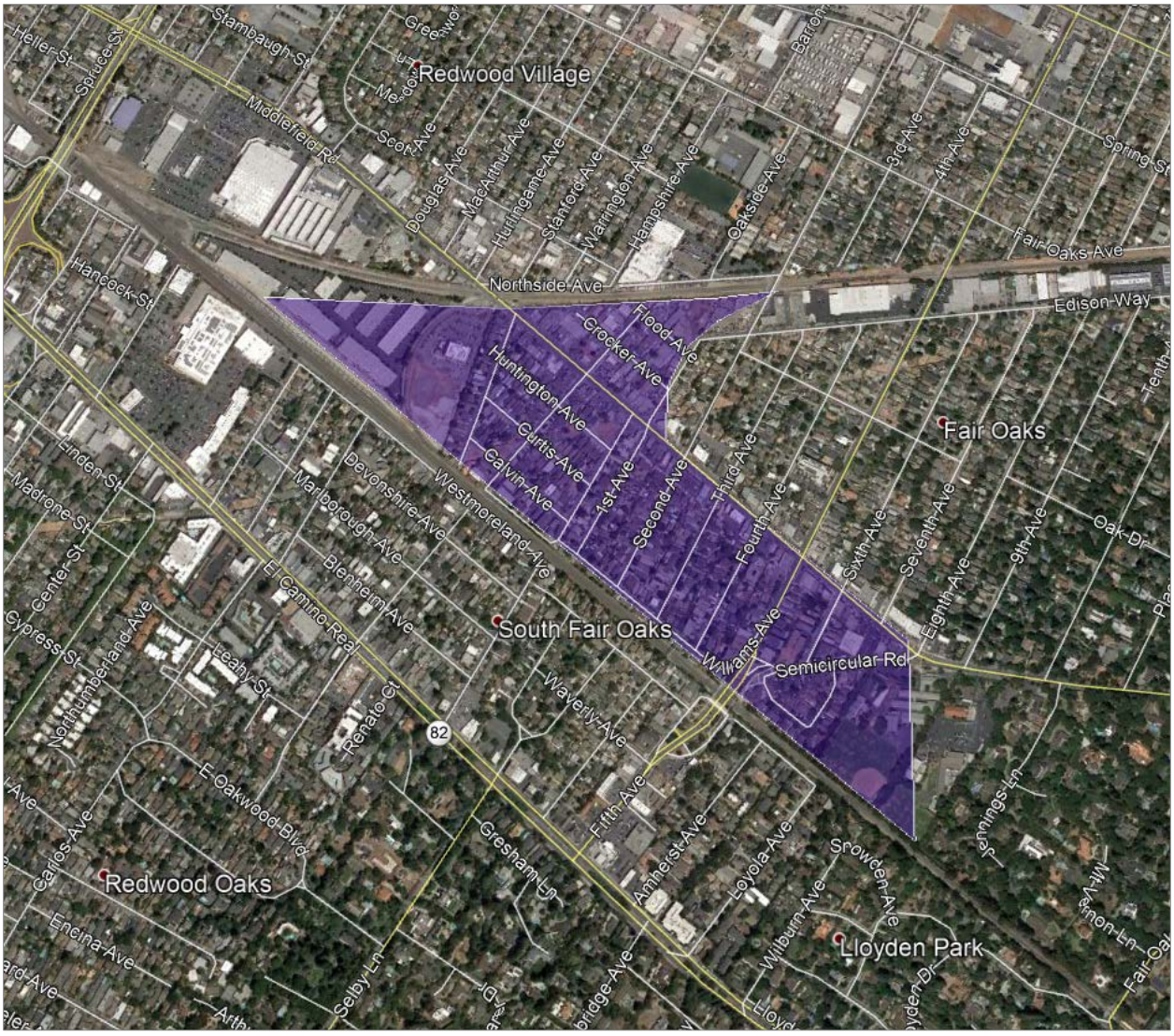
Other Factors

- *Land Use*: Placement of the LMF at the Hayward Park site would require relocating existing dense residential and commercial neighborhoods as well as public facilities in the City of Hayward.
- *Aquatic resource impacts:* Construction of the LMF at Hayward Park would have a combined permanent and temporary impact of approximately 0.1 acres of other waters of the U.S. (constructed watercourse).
- *Cultural resources:* Two highly sensitive precontract archaeological resources that are likely NRHP eligible (Criterion D) are within or adjacent to the Hayward Park site and there is low to moderate potential for other locally significant and/or NRHP properties on site.

***Conclusion**:* The Hayward Park site would have a Section 4(f) impact and pose an unreasonable cost. It would also have unacceptable impacts to dense urban neighborhoods, aquatic impacts, and cultural resources. Consequently, the Haywood Park site is not a feasible location for development of the LMF and was not advanced for consideration in the DEIR/S.

G. Redwood City Wye

The Redwood City Wye site is bounded by the Caltrain corridor to the west and the Dumbarton Rail Spur to the north. The LMF would heavily impact private residences and commercial properties in an area with a large minority and low income population. This site is approximately 27 miles south of the terminal station, more than 2.5 times the distance as the Preferred Alternative. This distance would be unacceptable from a rail operations perspective.



Site Feasibility

- *Circulation:* Development of the LMF at the Redwood Wye site would sever 5th Avenue, a major arterial in the unincorporated town of North Fair Oaks connecting approximately 300-350 acres of dense residential properties to the east and the commercial areas along El Camino Real to the west. Fifth Avenue is the only arterial with an undercrossing to cross Caltrain tracks. The next crossing would be 0.5 miles south through low speed residential collector roads.
- *Cost:* At a cost approaching $2.0B, this site would be almost five times as expensive as compared to the Preferred Alternative, and would be one of the three most expensive sites to construct.

Other Factors

- *Biological resources:* Development of Redwood Wye for a LMF may result in 1.37 acres impacts to four special status species' habitats, Townsend's big-eared bat, pallid bat, western red bat, and white-tailed kite.
- *UPRR Spur*: Development of the LMF would require the relocation of a UPRR spur track.
- *Environmental Justice:* Placement of the LMF would displace a community in South Fair Oaks, which is primarily made up of minority and low income populations.

Conclusion*:* The Redwood City Wye site would cause severe impacts to existing circulation patterns and require unreasonable expenditures of funds. There would also be biological impacts, impacts to a railroad spur track, and unacceptable impacts to a sensitive residential community. Consequently, the Redwood City Wye site is not a feasible location for development of the LMF and was not advanced for consideration in the DEIR/S.

H. Newhall Yard

The Newhall Yard site is owned by the Valley Transportation Authority and is being planned as the location for a future BART storage facility necessary for the expansion of the BART system to Santa Clara. Other land uses surrounding the facility include industrial facilities and Mineta San Jose International Airport to the east. The site is approximately 46 miles from the terminal station, over 4.5 times the distance as the Preferred Alternative. This site is located directly adjacent to the mainline and is a double ended facility.

Site Feasibility

- *Regionally Important Use:* Newhall Yard is planned for a regionally important use. The Authority considered collocating the LMF with the BART maintenance yard; however, BART uses a different gauge of track from the HSR, making the systems incompatible, thus precluding collocation.
- *Cost:* At a cost approaching $1.3B, this site would be more than three times as expensive as compared to the Preferred Alternative cost estimate.

Conclusion*:* The development of the Newhall Yard site for the LMF would interfere with a regional important use and require unreasonable expenditures of funds. Consequently, the Newhall Yard site is not a feasible location for development of the LMF and, consequently, was not advanced for consideration in the DEIR/S.

APPENDIX A: PRELIMINARY AQUATICS AND BIOLOGICAL IMPACTS EVALUATION

Impacts on Aquatic Resources (acres)

Aquatic Resource Type	San Francisco Yard	Port of San Francisco Site	East Brisbane Site	West Brisbane Site	SFO Site	Cow Palace East West	Cow Palace North South	Hayward Park	Redwood City Wye	Georgia	Newhall Coleman
Wetlands											
Freshwater Emergent Wetland	0	0.2	0.7	10.1	0.1	0	1	0	0	0.1	0
Saline Emergent Wetland	0	0	0	0	0.6	0	0	0	0	0	0
Scrub-Shrub Wetland	0	0	0.1	0.1	0	0	0	0	0	0	0
Non-Wetland Waters											
Constructed Watercourse	0	0	0.4	0	0.7	0	0	0.1	0	0	0
Constructed Basin	0	0	0.2	0	0	0	0	0	0	0	0
Natural Watercourse	0	0	0	0	0.4	0	0	0	0	0	0
Drainage Ditch	0	0	0	0	0	0	0	0	0	0	0
Open Water	0	4.9	0	0	0	0	0	0	0	0	0
Total Waters of the U.S.	0	5.1	1.4	10.2	1.8	0	1	0.1	0	0.1	0

Impacts on Biological Resources (acres)

Biological Resource	San Francisco Yard	Port of San Francisco Site	East Brisbane Site	West Brisbane Site	SFO Site	Cow Palace East West	Cow Palace North South	Hayward Park	Redwood City Wye	Georgia	Newhall Coleman
Special-Status Plant Habitat (acres)											
California seablite (FE, 1B.2)	0	0	0	0	0.56	0	0	0	0	0	0
Point Reyes salty birds-beak (1B.2)	0	0	0	0	0.56	0	0	0	0	0	0
Bristly sedge (2.1)	0	0.22	0.7	10.18	0.06	0	0.98	0	0	0.08	0
Saline clover (1B.2)	0	0	0	0	0.56	0	0	0	0	0	0
Special-Status Wildlife Habitat (acres per species/habitat)											
Salt marsh harvest mouse (FE, SE, FP)	0	0	0	0	0.56	0	0	0	0	0	0
California Ridgway's rail (FE, SE, FP)	0	0	0	0	0.56	0	0	0	0	0	0
California black rail (ST, FP)	0	0	0	0	0.56	0	0	0	0	0	0
Townsend's big-eared bat (CFT, SSC)	0	0.46	0	0	0.65	6.32	7.5	0	1.37	0	0
Pallid bat (SSC)	0	0.46	0	0	0.65	6.32	7.5	0	1.37	0	0
Western red bat (SSC)	0	0.46	0	0	0.65	6.32	7.5	0	1.37	0	0
Salt marsh common yellowthroat (SSC)	0	0	0.7	10.18	0.56	0	0	0	0	0	0
Alameda song sparrow (SSC)	0	0	0	0	0.56	0	0	0	0	0	0
White-tailed kite (FP)	0	0.46	0	0	0.65	6.32	7.5	0	1.37	0	0
Salt marsh wandering shrew (SSC)	0	0	0	0	0.56	0	0	0	0	0	0
Burrowing owl (SSC)	0	0	0	0	0	0	0	0	0	0	31.48
Mission blue butterfly (FE)	0	0	0	0	0	0	10.95	0	0	0	0
Callippe siliverspot butterfly (FE)	0	0	0	0	0	0	10.95	0	0	0	0
San Bruno elfin butterfly (FE)	0	0	0	0	0	0	10.95	0	0	0	0

APPENDIX 2-K PART 2: GILROY LMF OPTION CONSIDERATION AND ELIMINATION

MEMORANDUM

Date: September 3, 2021

To: Boris Lipkin, Northern California Director
Morgan Galli, Northern California Deputy Director

From: Paul Hebditch[1], Lead Operations Planning and James Tung, San Francisco to San Jose Project Manager

CC: Gary Kennerley, Northern California Director of Projects
Julian Bratina, Northern California Engineering Project Manager

Subject: Gilroy LMF Option Consideration and Elimination

Introduction

This memorandum provides the history of planning for the Light Maintenance Facility (LMF), discusses the design objectives for high-speed rail in Northern California, presents the technical requirements for an LMF, and documents the reasons for eliminating a Gilroy LMF from consideration.

Summary

The proper location of the LMF in a railway system is one of the critical elements in providing a reliable and resilient train service to customers. The LMF must provide easy access for HSR trains onto and off of the network and be located near key service termination locations to support efficient startup of the service each morning and end of service each evening and allow for overnight maintenance of the trains and the infrastructure.

The California High-Speed Rail Authority (Authority) has been studying a potential LMF site in Brisbane (with options on the east and west side of the tracks) since 2010. In response to the Authority's Draft EIR/EIS for the San Francisco to San Jose project section (published in 2020), the City of Brisbane provided comments suggesting the LMF should be (among other options) located in Gilroy. This memo describes the challenges with that location for the Authority, Caltrain, and the other users of the rail corridor between San Francisco and Gilroy (such as freight operators).

Locating the LMF in Gilroy, further away from the terminal station, would increase the distance that non-revenue trains must travel on the system, increase the need for more frequent track maintenance, and impact the operating windows for freight operators. Overall, these extra trains would increase the risk of operating incidents and decrease the reliability of the system. Because every train would need to

[1] Paul Hebditch, CHSRA Rail Operations and Delivery: Paul Hebditch has over 30 years of experience in the railroad industry working in operations roles at all levels. He spent 25 years in the UK railroad industry and in the last 5 years has supported US railroad businesses in California including the California High-Speed Rail Authority as their Operations Planning Lead. He has experience in the development and implementation of operational plans aimed at delivering reliable resilient and efficient rail operations.

travel the length of the corridor from Gilroy to San Francisco for start of its service, the impacts would be felt across the entire rail corridor for all operators and passengers. In addition to these railroad impacts, additional train travel would impact the community through additional gate down times at all vehicular crossings, which would lead to additional traffic delays, and additional noise impacts during overnight noise-sensitive hours. These challenges would be further exacerbated as service ramps up in the corridor, including through Caltrain's 2040 service vision. Other environmental factors considered for the Gilroy location include impacts to the flood plain, wildlife corridors, and agricultural and cultural resources.

Background

The LMF[2] is a critical component of the HSR system and was conceptualized in the initial planning for the San Francisco to San Jose project section in 2010 and again when the environmental review process for the project section was reinitiated in 2016.

While a total of eleven locations for the LMF were initially considered[3] (refer to Figure 1), since 2010 the only feasible options carried forward are the two locations in Brisbane. The Draft EIR/EIS for this project section, released for public review on July 10, 2020, evaluated the two LMF options in the City of Brisbane, with Alternative A on the east side of the tracks and Alternative B on the west side of the tracks (refer to Figure 2). The Alternative A and Alternative B sites in Brisbane satisfy the key engineering, financial, and operational considerations that guide the siting of an LMF. It is approximately eight miles from the terminal station in San Francisco, and the closest location that would not result in severe impacts to existing land uses. The layout was designed to minimize impacts on Caltrain and freight train operations in this heavily utilized rail corridor by providing a grade-separated junction at the entry to the facility. Among several advantages, the Brisbane sites were the only locations along the Caltrain corridor large enough to accommodate the facility needs without displacing existing neighborhoods or other land uses. Alternative A (East Brisbane LMF) was identified as the Preferred Alternative in part based on consideration of the City's plans[4] to put mixed use (including housing) on the west side of the existing rail corridor and the property owner's plans to phase development starting with the west side.

[2] The 2010 Preliminary Alternatives Analysis and 2010 Supplemental Alternatives Analysis referred to the LMF as the Maintenance Facility. Technical Memorandums 5.1 and 5.3 refer to the LMF as the Terminal Storage and Maintenance Facility (TSMF).

[3] The LMF Site Selection Memorandum evaluates 11 total LMF sites and is included in Appendix 2-K. The Preliminary Alternatives Analysis 2010 and Supplemental Alternatives Analysis 2010 evaluated and dismissed the Port Site and SFO.

[4] In November 2018, voters in Brisbane approved Measure JJ which amended the City's General Plan to allow 1,800-2,200 residential units and 7 million square feet of commercial development on the Baylands site. As of the date of this paper, the Specific Plan for the area is still under development.

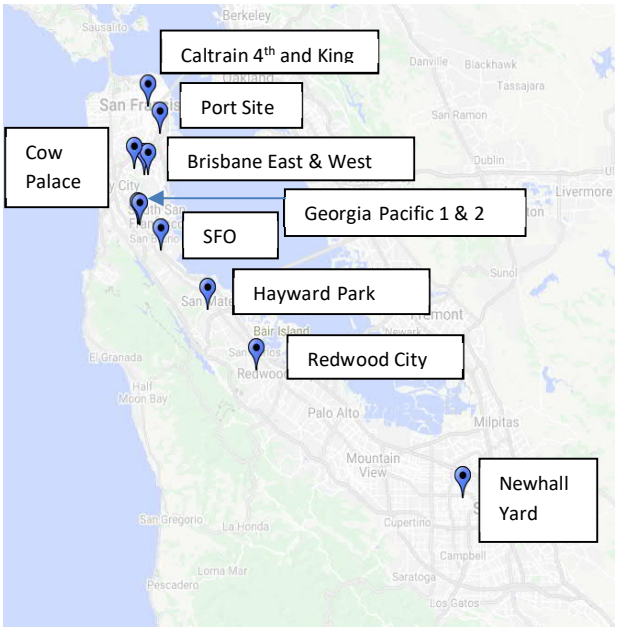


Figure 1: LMF Sites Considered

Figure 2: Alternatives in Draft EIR/EIS

LMF Function and Design Criteria

The LMF analyzed in the Draft EIR/EIS for the San Francisco to San Jose project section is one of only three such facilities[5] that would support the 520-mile Phase 1 high-speed rail system. It would serve as the day-to-day location for overnight storage, maintenance, inspection, and ongoing routine servicing of trainsets. Trains and crews would be dispatched from the LMF to the Salesforce Transit Center (STC), or the interim 4th and King Street Station, to begin revenue service throughout the day. The LMF would house standby trainsets to protect reliable operation and would function as a service point for any trains in need of emergency attention.

The LMF would also support maintenance of trainsets, which occur on a daily, monthly, and quarterly basis to meet federal safety and maintFAenance standards. Maintenance activities include train washing, interior cleaning, wheel truing, testing, and inspections. These activities may occur between runs or as a pre-departure service at the start of the revenue day.

The Authority's design criteria[6] for storage and maintenance facilities are based on best practices and experience gained by other high-speed rail system operators throughout the world. There are three primary criteria that govern the siting and location of the LMF (that would be relevant for consideration of the location between Brisbane and Gilroy): Distance from terminal station, size, and proximity to mainline tracks.

[5] As described in TM 5.3, the three maintenance facilities include: one near the northern terminus in San Francisco, one near the southern terminus in Los Angeles, and one Heavy Maintenance Faciltiy in the centrally located between Merced and Bakersfield.

[6] For more information on LMFs, please consult published Authority technical memoranda (TM). TMs 5.1 and 5.3 related to HSR operation facilities may be found online: https://hsr.ca.gov/programs/environmental-planning/project-level-environmental-engineering-guidelines-studies-reports/

- **Distance from terminal station** – To support the functions described above, the optimal location for the LMF would be within 1.5–3 miles of the San Francisco terminal station. The system must be designed to minimize the number and duration of non-revenue generating or "deadhead" movements to avoid increased operations and maintenance costs. Deadhead movements also reduce track capacity and revenue train service, and increase community impacts. Close proximity to the terminal station also allows operators to respond more efficiently in emergencies, including midday incidents. While the Brisbane LMF is more than 3 miles from the terminal station, it was the closest feasible location identified.
- **Site Size** – The LMF sizing criterion is based on ridership projections and fleet size estimates and is intended to be sufficient to handle projected system growth to the year 2040, as identified in the Authority's business plans. Because the LMF is one of three primary maintenance facilities on the high-speed rail system, the capacity of the yard needs to be of sufficient size to accommodate approximately one third of the total fleet size. An area of approximately 100 acres is required to accommodate all necessary components of storage and maintenance at the facility.
- **Proximity to mainline tracks** – Minimizing the distance between the LMF and the mainline or service tracks is important to reducing costs associated with track infrastructure, minimizing travel time between the mainline track and the LMF, and avoiding or reducing potential effects on existing land uses and environmental resources. The longer the lead track required to access the mainline (> 0.25 mile), the greater the operational and maintenance inefficiencies.

Examples:
For these reasons, railroad systems around the world, including in the US and California, locate storage and maintenance facilities as close as practicable to their terminal stations. For example, in the United Kingdom, the primary depots for almost every high-speed rail service serving London includes a storage and maintenance facility in the inner city suburbs and within ten miles of the main terminal. Two examples are the Great Western at Old Oak Common near Paddington station and the West Coast mainline at Wembley near Euston station. Examples can also be found much closer to home here in California. In California, rail operators, including Metrolink, Amtrak, ACE, and Caltrain, have maintenance facilities within close proximity to their stations. See Table 1, for a example list of California train operators' maintenance facility distances.

Table 1: California Examples of Maintenance Facility to Station Distances

Operator	Maintenance Facility Location/Name	Nearest Station	Distance
Metrolink	Central Maintenance Facility	LA Union Station	2 miles
	Eastern Maintenance Facility	San Bernardino	< 1 mile
	Oceanside (OSD)	Oceanside	2 miles
	Lancaster	Lancaster	< 1 mile
	Ventura	Ventura	< 1 mile
	Perris	Perris	< 1 mile

	Riverside	Riverside	< 1 mile
Amtrak Pacific Surfliner	8th Street Yard Los Angeles	LA Union Station	< 1 mile
	San Diego (SDG)	San Diego	< 1 mile
North County Transit District	Oceanside (OSD)	Oceanside	2 miles
	San Diego (SDG)	San Diego	< 1 mile
Amtrak San Joaquin	West Oakland	Oakland	< 1 mile
	Fresno	Fresno	< 1 mile
	Bakersfield	Bakersfield	< 1 mile
ACE	Stockton	Stockton	< 1 mile
	Tamien	San Jose	2 miles
Caltrain	San Jose Centralized Equipment Maintenance and Operations Facility	San Jose	< 1 mile
	SF 4th and King	SF 4th and King	< 1 mile
Capital Corridor	Sacramento	Sacramento	< 1 mile
	West Oakland	Oakland	< 1 mile
	Oakland Coliseum	Oakland Coliseum	< 1 miles
	San Jose	San Jose	< 1 mile

For California high-speed rail service, the key terminating points will be San Francisco and Los Angeles, at STC and LAUS, respectively. In Los Angeles, the Authority is proposing a storage and maintenance facility in the West Yard area, which is within one mile of LAUS. Even at less frequently used terminating locations, such as Merced and Anaheim, the Authority has designed the system in line with international best practices by ensuring that storage and maintenance facilities are in close proximity the terminal stations.

For its northern terminus in San Francisco, the Authority undertook an extensive search to identify an appropriate location for the northern-most maintenance facility. This assessment determined that the sites at Brisbane are the most consistent with operating requirements and avoid intensive existing land uses on the Peninsula.

Operational Consequences of an LMF Located in Gilroy

The LMF is a heavily utilized facility, and Gilroy is not a functionally appropriate location because it is located approximately 80 miles south of the terminal facility. As described below, a Gilroy LMF would add additional risk to the reliability of operations, increase the risk at each of the 70 grade crossings located between San Francisco and Gilroy, increase gate down time, and increase the cost of operations.

Transportation from a Gilroy LMF to the terminal station in San Francisco for the start of daily services and back to the facility at the end of daily service would require an additional 27 deadhead trains per

day to be added to the 124 revenue trains per day to be scheduled on the Caltrain corridor. This represents nearly a 25% increase in the number of high-speed train movements on the entire Caltrain corridor. The additional deadhead movements are summarized and discussed below:

Table 2: Deadhead Movement Assessment

Deadhead miles to Brisbane	240 miles per day
Deadhead miles to Gilroy	2,111 miles per day
Additional deadhead miles for Gilroy LMF	**683,000 miles per year**
First deadhead move departs Brisbane	5:20am to make 6:00am start of service
First deadhead move departs Gilroy	4:25am to make 6:00am start of service
Last deadhead move arrives Brisbane	Leave STC at 12:09am and arrival at 12:40am
Last deadhead move arrives Gilroy	Leave STC at 12:45am and arrival at 1:55am
Additional time of operations	**130 minutes per day**
Additional energy cost per day (@43kWh/mile and $0.074 per kWh)	$7,828
Additional trainset maintenance cost per day (@ $1.077 per mile)	$2,649
Additional traincrew costs per day (@ $75 per hour)	$2,250
Total additional costs	**$12,727 per day ($4.7million per year)**

The additional deadhead miles add a certain amount of risk to the operational objective of providing safe and reliable train operations in several ways. The additional trains would extend the operating period by an additional 130 minutes, thereby reducing the amount of time for track/train maintenance from 6 hours to just under 4 hours. The extra train movements would degrade the system faster but allow less time to provide maintenance. This inverse relationship significantly increases the risk for providing reliable train operations.

For rail corridors, the greatest risk occurs at interfaces with other modes of transportation. There are 70 grade crossings between San Francisco to Gilroy and only 2 grade crossings between San Francisco to Brisbane. By placing the LMF in Gilroy, the number of trains passing through grade crossings increases, thereby increasing the risk of incidents.

Furthermore, when there is an incident or during emergency train servicing scenarios, the train would, to the best of its ability, complete the trip to the terminal station in San Francisco before heading to the LMF. A LMF located in Gilroy would make this journey significantly more challenging and riskier for a train in need of servicing.

The train slots required by these movements would also absorb the limited capacity on the two-track railway corridor between Gilroy and San Francisco. Since the deadhead moves would occur after midnight and before 6am, they would have less effect on passenger revenue service. However, Caltrain conducts non-revenue moves of their trains overnight so capacity for those moves would be affected. The reduced capacity would also affect the window of operation for freight operators, which primarily

operate in the evening and overnight hours in the Caltrain corridor. These operators are also looking to increase future operations.

Finally, the additional distance that high-speed trains would need to travel (estimated at around 683,000 miles per year) would increase wear and tear, resulting in increased track and system maintenance costs for Caltrain as the infrastructure owner, and increased trainset maintenance costs for the Authority as the trainset owner. The Authority would also incur additional costs associated with additional traincrew and traction power requirements. The Authority estimates that total annual operating costs increase for full-service operations would be approximately $4.7 million. These additional costs would need to be recovered through the fare box for the Authority to meet its Proposition 1A requirement to operate without subsidy. Therefore, locating the LMF facility in Gilroy, rather than Brisbane, would directly impact ticket prices for customers.

Environmental Impacts of a Gilroy LMF

Several environmental considerations were factored into the study of LMF locations, including the Gilroy location. Below is a description of Gilroy location specific impacts followed by corridor wide (from San Francisco to Gilroy) impacts.

Location Specific Impacts

The Gilroy LMF was removed from the San Jose to Merced project with the change in program delivery direction and definition of the "Valley to Valley" section in the 2018 Business Plan. When the Valley to Valley Section changed the temporary terminal station in San Jose to a terminal station San Francisco, there no longer was an operational need to have an LMF in Gilroy. By removing the LMF from the San Jose to Merced environmental analysis, the project section's overall impacts to the following resources was minimized:

Flood Plain Impact:

Given the space requirements, a Gilroy LMF would need to be located in the Soap Lake Flood Plain, just as the Maintenance of Way Facility for each of the alternatives. During a 100-year flood event, flooding in the Soap Lake area has the potential to submerge approximately 9,000 acres. The additional encroachment of an LMF into the floodplain and additional impervious surfaces added in the floodplain would increase project effects on hydrology and water quality.

Biological Resources:

A Gilroy LMF would be located in a natural wildlife corridor associated with the lands to the south and east of Gilroy in the Soap Lake Floodplain, including the Pajaro River. This area is a valley, allowing wildlife to migrate between the Diablo Range to the east and the Santa Cruz Mountains to the west. The importance of this wildlife movement corridor to the populations of rare and common species have been documented through the work of the Santa Clara Valley Habitat Conservancy, the Nature Conservancy, and other organizations. The placement of a Gilroy LMF in this wildlife corridor would increase the project's effects on wildlife movement and require increased and more ambitious mitigation efforts. In contrast, the existing conditions of the proposed LMF location for the Preferred Alternative in Brisbane is an area of a former landfill and has much lower habitat value than the land to the south and east of Gilroy.

Agricultural Resources:

A Gilroy LMF would be located in an area of primarily agricultural resources. A Gilroy LMF would require more ambitious mitigation for such effects. In contrast, the existing conditions of the proposed LMF location for the Preferred Alternative in Brisbane is in an area of a former landfill.

Cultural Resources:

A Gilroy LMF would be located in the Soap Lake Flood Plain. This is an area that has been documented as a tribal cultural resource, a sacred place with cultural value to a California Native American tribe and is an archeologically sensitive area. Section 106 requires that this be taken into consideration with any federal project. A Gilroy LMF would require more encroachment into this sensitive area, more construction and disturbance in this archaeologically sensitive area, and potentially more impacts to tribal and archaeological resources. In contrast, the proposed LMF location for the Preferred Alternative in Brisbane is in an area of a former landfill and is not a sensitive area for tribal or archaeological resources.

Corridor Wide Impacts

The corridor wide impacts affect all the communities between San Francisco to Gilroy. As described above, this spans approximately 80 miles and 70 grade crossings.

Transportation and Traffic Impacts:

An LMF facility located in Gilroy would result in substantial deadhead train travel to and from San Francisco, the northern terminus. These increased train movements would increase the potential for incidents at 70 grade crossings between San Francisco and Gilroy, thereby increasing the risk of delay for all rail services on the Caltrain corridor. This could lead to a decline in on-time performance of all services on the Peninsula. If an incident occurs, operational protocol requires the damaged train to go to the terminal station in San Francisco to drop off passengers and then go to the LMF for servicing. Locating the LMF in Gilroy would exacerbate this issue. Not only does this location for the LMF increase the risk of incidents, it makes it harder to recover from them if they occur.

Furthermore, increasing the number of trains at the crossings directly increases gate down time. A gate is down for approximately 1 minute every time a train passes through. 27 extra trains would increase gate down time by approximately 27 minutes per day at all 70 grade crossing between San Francisco to Gilroy. In contrast, an the 27 extra trains would only affect 2 grade crossings with the LMF in Brisbane.

Safety and Security

The Authority received feedback from first response organizations regarding the potential impact on response times in this area from the increased service levels currently proposed for the San Jose to Merced project section. Locating the LMF in Gilroy would exacerbate this issue for all 70 grade crossings between San Francisco to Gilroy. Each gate crossing takes approximately a minute to open and close, depending various site-specific issues such as the speed of the train at that location, potential trains on the adjacent track, and proximity to station platforms. 27 additional trains per day per direction would increase gate down time by 27 minutes per day at each of the 70 grade crossings.

Noise:

The increase in deadhead train movements would increase overnight and early morning train noise along the rail corridor due both to train movements and the sounding of horns. Trains are mandated by FRA rules to sound their horn at every grade crossing, resulting in more frequent horn noise. This noise

would occur during the more noise-sensitive overnight and early morning hours with the deadhead train movements to a Gilroy LMF. These additional noise effects are avoided with an LMF in Brisbane, because the LMF would be located close to the northern California terminus for the HSR system in San Francisco, which reduces the areas affected by deadhead moves compared to an LMF in Gilroy.