



Appendix G
Focused Traffic Impact Analysis



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Project No. 5025183001

Mr. Mo Sharma
Public Works Administrator
City of South San Francisco
550 N. Canal St.
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Subject: Orange Memorial Park Water Capture Project Traffic Memorandum

Dear Mo,

Wood Environment & Infrastructure Solutions, Inc. (Wood) has prepared this technical traffic memorandum to independently evaluate potential traffic circulation issues associated with the proposed Water Capture Project at Orange Memorial Park (Park) in the City of South San Francisco (City).

1.0 Introduction

This traffic memorandum assesses the potential effects of the proposed Project on transportation and traffic conditions in the vicinity of the Project. The evaluation of traffic impacts presented within this memorandum as defined by the California Environmental Quality Act (CEQA), as well as by the City of South San Francisco's regulations, will be incorporated into the *Draft Initial Study/Mitigated Negative Declaration (Draft IS/MND) for Orange Memorial Park Water Capture Project*.

2.0 Project Description

The Project site evaluated in the *Draft IS/MND for Orange Memorial Park Water Capture Project* is located at 1 West Orange Avenue in South San Francisco, California. The Project involves the installation of a stormwater diversion, capture, and treatment project, with installation of a large underground storage reservoir beneath two ballfields situated in the southeast portion of the Park. The reservoir will cover up to 2.5 acres and involve the excavation of soil and fill material approximately 10 feet below ground surface (bgs) of the two ballfields. The Project would include construction and operation of a water capture facility through the installation of a drop inlet, diversion channel, and pipe inlet junction structure (grit chamber and trash screen) in the upper and western end of the Colma Creek channel and Park boundary (refer to Figure 2 in the Draft IS/MND Project Description). Captured water would be diverted into a storm pipe and a series of underground filtration chambers that would lead to underground storage reservoir. These facilities would be constructed underneath a portion of the Park's two existing ballfields. Water stored for irrigation use



would be further treated in a water quality polishing and disinfection shed. This shed also includes an irrigation pump and would be sited in the southwestern corner of the Park. This regional water capture Project would have multiple benefits in addition to water quality improvements, including reducing flooding and reusing treated water for irrigation and groundwater recharge. Following construction of the proposed Project, the two ballfields would be restored to pre-grade conditions. Artificial turf would be installed on the ballfields as part of a separate and subsequent project.

3.0 Traffic Impact Analysis

Existing Traffic Setting

The circulation system in the Project vicinity is comprised of residential roads and a state highway. The principal components of this network include West Orange Avenue, Memorial Drive, and State Route 82, which serves as one of three main arterials of the City's circulation network. A description of each of roadway included as part of this network is provided below.

State Route 82

California State Route 82 (SR-82) is a state highway controlled and maintained by the California Department of Transportation (Caltrans) that extends for approximately 52 miles from Interstate 880 in San Jose to Interstate 280 in San Francisco. SR-82 comprises a portion of California's historic El Camino Real as a component of the California National Highway System, and serves as a major arterial road for the peninsula (Caltrans 2011). SR-82 is designated in the City's Municipal Code as a truck traffic route for vehicles exceeding a maximum gross weight of three tons (City of South San Francisco 2018a).

Within the Project vicinity, SR-82 is a six-lane highway with an intermittent center median that is intersected by minor arterial and collector roads to provide through access to local roadway networks. The posted speed limit of SR-82 in the Project vicinity (between its intersection with West Orange Avenue and 1st Street) is 35 miles per hour (mph). SR-82 has an average daily traffic level varying from 32,000 to 41,000 vehicles per day (Caltrans 2016). According to the City of South San Francisco General Plan Transportation Element, SR-82 has a daily volume of varying from 24,700 to 45,500 daily trips with a capacity of 40,000 to 60,000 daily trips (City of South San Francisco 1999). The portion of SR-82 in the Project vicinity from Orange Avenue to Chestnut supports 30,951 Average Daily Trips (ADT) according to a transportation impact analysis prepared for the Community Civic Campus Project Subsequent Environmental Impact Report (City of South San Francisco 2017). While most roadway segments were expected to be maintained within the City (based on the 1999 General Plan), portions of El Camino Real continue to operate at congested levels (City of South San Francisco 1999).

At its intersections with 1st Street and 2nd Street, designated right-turn lanes are absent in both the northbound and southbound directions of SR-82, while unprotected left-turn lanes are provided. The intersection of West Orange Avenue lacks a designated right-turn lane but provides a signalized left-turn lane in the northbound and southbound directions, as well as pedestrian crosswalks. SR-82 is also a designated Class III bicycle route, in which there is no bicycle lane and the road is shared with automobiles and other vehicles. The road shoulders of SR-82 in the vicinity are used as parking for access to local businesses and residences, and there are sidewalks present on both sides of the road. SR-82 is approximately 100 feet in width including road shoulders.



Chestnut Avenue/Westborough Boulevard

Chestnut Avenue is a major arterial road that transitions from Westborough Boulevard east of SR-82/El Camino Real and extends west for approximately 4,850 feet to Hillside Boulevard north of the Project vicinity (City of South San Francisco 1999). This portion of the roadway is also designated as a truck traffic route for vehicles exceeding a maximum weight of three tons in the City's Municipal Code (City of South San Francisco 2018a). The prima facie speed limit of Chestnut Boulevard from El Camino Real to Commercial Avenue is 30 mph (City of South San Francisco 2018a). The portion of the roadway from Grand Avenue to Mission Road supports 19,332 ADT (City of South San Francisco 2017). The width of the paved road is approximately 85 feet with four through lanes and one to two dedicated turn lanes in each direction. At its intersection with Commercial Avenue, designated light-controlled right- and left- turn lanes are provided in each direction. Chestnut Avenue does not provide direct access to the Project site but may convey vehicular transportation to the vicinity via Commercial Avenue.

West Orange Avenue

West Orange Avenue is a two-lane undivided road controlled by the City of South San Francisco that borders the Park to the southeast and provides access to the Project site. West Orange Avenue is classified as a minor arterial road by the City's General Plan Transportation Element and has free-flowing traffic conditions with a Level of Service (LOS) rating of A (City of South San Francisco 1999). According to the City of South San Francisco General Plan Transportation Element, Orange Avenue between North Canal Street and Commercial Street, north of the Project site, has a daily volume of 9,700 daily trips with a capacity of 18,000 daily trips. The speed limit of West Orange Avenue within the Project vicinity is 25 mph. West Orange Avenue has frequent driveway access on the residential side from its intersection with Memorial Drive to North Canal Street, north of which it is separated from residences by a grove of eucalyptus trees. Pedestrian accommodation is provided by sidewalks on both sides of the road and crosswalks at stop-controlled intersections. West Orange Avenue is a designated bike route with defined bike lanes along the majority of 1,300 foot border of the Park. The width of the paved road is approximately 55 feet, including shoulders on either side that may be utilized as additional parking for access to residences and visitors to the Park.

Memorial Drive

Memorial Drive is a two-lane undivided road that borders the Park to the south and serves as the primary access route to the Park Lane Apartments located to the southeast Colma Creek. Beginning at West Orange Avenue, Memorial Drive extends for approximately 1,300 feet along the southern perimeter of the Park until its terminus behind the Park Lane Apartments. The road has a speed limit of 15 mph and provides primary access to parking lots along the south and west perimeter of Park. Pedestrian access along Memorial Drive is limited as there is no developed shoulder or sidewalk as the road is separated from Park facilities by a dirt barrier lined with eucalyptus trees. However, pedestrians may walk along the dirt barrier. Memorial Drive has an approximate width of 24 feet.

Tennis Drive

Tennis Drive is a two-lane undivided road that borders the Park to the north and has frequent driveway access to residences north of the Park. Tennis Drive serves as the primary access route to the



largest central parking lot of the Park, adjacent to facilities such as the Joseph A. Fernekes Recreation building, tennis courts, and a children's playground. Recreationalists utilizing Orange Memorial Pool may use Tennis Drive to access a smaller parking lot located within the northeast boundary of the Park. There are one-directional stop signs at its intersections with West Orange Avenue and Eucalyptus Avenue, and pedestrian accommodation is provided to access the Park. Tennis Drive is classified as a local street under the City's General Plan Transportation Element and has a posted speed limit of 15 mph (City of South San Francisco 1999).

Eucalyptus Avenue

Eucalyptus Avenue is a two-lane undivided road that extends south from Tennis Drive and provides primary access to facilities in the northwestern portion of the Park. Beginning at Tennis Drive, Eucalyptus Avenue extends for approximately 425 feet and provides driveway access to a ceramics studio, art studios, and the skate park. The paved road then turns 90 degrees east into the Park and transitions into a one-way street that allows through access back to Tennis Drive in a loop around the Park's central parking lot. For the length of the road south of Tennis Drive and within the Park, Eucalyptus Avenue varies in width between approximately 22 to 30 feet and is classified as a local street under the City's General Plan Transportation Element (City of South San Francisco 1999). This portion of Eucalyptus Avenue does not have a posted speed limit.

Centennial Way / Biking and Pedestrian

The Centennial Way Trail is a 2.85 mile asphalt bike and pedestrian path that runs adjacent to the Park for approximately 1,000 feet and provides direct access to park facilities (City of South San Francisco 2018b). The trail is a designated linear park and is classified as a contiguous Class 1 bike path, in which paved facilities are physically separated from roadways used by motor vehicles and are designated for bike use (City of South San Francisco 1999). Centennial Way is 10 feet in width with a decomposed granite shoulder along the length of the paved trail. The Park is a dedicated point of interest according to the City's Centennial Way brochure (City of South San Francisco 2018b).

Public Transportation

The Bay Area Rapid Transit (BART) is a heavy rail elevated and subway system that serves the Bay Area and travels underground adjacent to the southern border of the Park. BART provides daily regional transportation connecting San Francisco and Oakland to urban and suburban areas, and linking communities to employment and activity centers throughout the region. The nearest BART service to the Project vicinity is the South San Francisco station, which is located approximately 1.15 miles to the northwest.

SamTrans provides bus service, including Redi-Wheels paratransit service and Caltrain commuter rail service operated by San Mateo County Transit District. It operates 76 bus routes throughout San Mateo County and into parts of San Francisco and Palo Alto. The Caltrain Commuter Rail is a ticketed train service that provides regional weekday and weekend transportation in a linear route through the City. The nearest Caltrain service station to the Project vicinity is located approximately 1.2 miles to the east.



The South City Shuttle is a free, public weekday service that operates in a clockwise loop and provides transit connections with SamTrans and BART, as well as trips to local stores and community centers. The shuttle provides 15 daily departures times at two stops located along West Orange Avenue that provide access to the Project vicinity.

Public Parking in the Project Vicinity

Public parking in the Project vicinity is available in City-owned public parking lots accessed through Memorial Drive, Eucalyptus Avenue, and Tennis Drive, with the majority of off-street parking available within a small parking lot off Memorial Drive (i.e. approximately 140 parking spaces) and a large parking lot off Tennis Avenue (i.e. approximately 160 parking spaces) On-street parallel parking in the immediate vicinity is also provided on West Orange Avenue and pull-in spaces along Memorial Drive.

Thresholds of Significance

Construction traffic impacts from project construction trucks, construction vehicles, etc., would be considered potentially significant if project construction would materially interfere with the area traffic flow and capacity of the street system, cause unsafe conditions, or introduce substantial truck traffic through a residential area.

3.0 Project Traffic Impacts

Construction Traffic

The analysis of the Project's construction impacts considers heavy truck traffic generated from excavation, construction vehicles, and material and equipment delivery over the duration of the 12 to 18 month period of construction. Additionally, the analysis evaluates the potential for construction related impacts on traffic flows, reduction in lane capacities, parking availability, delays or alterations of transit service, and impacts to pedestrian and bicycle circulation.

The proposed Project would require the use of construction equipment such as:

- Excavators;
- Bulldozers;
- Backhoes;
- Front-end loaders;
- Single- or double-axle dump trucks;
- Concrete ready-mix trucks;
- Concrete pump trucks;
- Flat-bed semi-tractor/trailers; and
- Cranes.

This equipment, along with other construction contractor vehicles, would be staged in the paved Park parking lots accessible from Memorial Drive or within the immediate vicinity of the two ballfields



within the Park property. The worker, vendor, and hauling trips generated will vary throughout each construction phase, as detailed in Table 1 below.

Table 1.
Approximate Trips Generated

Construction Phase	# Worker Trips (/day)¹	# Vendor Trips (/day)	# Trips Hauling (total)
Staging and Mobilization	10	0	0
Excavation and Export	25	0	700
Installation of Underground Storage Reservoir	30	18	0
Installation of Diversion Pipelines	25	1	0
Installation of Treatment and Filtration Chambers	30	18	0
Restoration of Ballfields	10	1	0

NOTE: 1 – Assumes each worker arrives in their personnel vehicle each day and generates one inbound trip during the morning peak hour and one outbound trip during the evening peak hour.

The proposed Project would require the delivery and removal of materials at the construction staging areas. Materials delivery and concrete trucks supporting construction activities at the Park would access the Project site either: via Interstate 280 (I-280) to Westborough Boulevard to El Camino Real to West Orange Avenue to Memorial Drive; or via Interstate 380 (I-380) to El Camino Real to West Orange Avenue to Memorial Drive. Materials delivery trucks and other heavy construction equipment supporting the Project would access the construction staging areas via Memorial Drive. Removal of excavated materials would be temporarily staged in the far western portion of the Park south of Colma Creek, or north of the Colma Creek in an abandoned and vacant parcel west of Eucalyptus Avenue.

As shown in Table 1, the maximum number of truck trips are forecasted to occur during the excavation and export phase with up to 700 haul trips, including an additional 25 worker trips during the morning and evening hours. The number of haul trips was based on the dimensions of the proposed excavation area for the underground storage reservoir and pipe inlet infrastructure, and the average capacity of a haul truck (i.e. 12 to 16 cubic yards). The haul trips also take into account the route to an off-site hauling destination, which is located approximately 15 miles northeast of the project site at Treasure Island. The worker trips were derived based on similar water capture projects constructed in other cities, and based on the number of employees needed to operate construction equipment needed at the Project site. Worker trips assume each employee arrives in separate vehicle each day and generates one inbound trip during the morning peak hour and one outbound trip during the evening peak hour. While these worker trip routes may vary, they are all anticipated to access the Project site via El Camino Real and West Orange Avenue. Also, vendor trips are expected to vary based on the construction phase, as more vendor and equipment delivery trips are anticipated to be generated during the installation of the underground storage reservoir and treatment and filtration chambers.



During construction, no street (i.e., Memorial Drive or West Orange Avenue) would be temporarily closed or partially closed (one-way traffic) without first obtaining the permission from the City of South San Francisco. At a minimum, one-way traffic would be maintained along Memorial Drive to ensure the multi-family residents can access the Park Lane Apartment complex. The construction contractor would make its own arrangement for off-site storage of equipment and worker parking, if necessary. Construction contractor equipment and parking are currently anticipated to occur on the abandoned and vacant parcel located in the northwest portion of the Park, and along Memorial Drive near the southern portion of the Park near the two ballfields.

The hours of construction are:

- Monday-Friday, 8 a.m. to 8 p.m.
- Saturday, 9 a.m. to 8 p.m.
- Sunday and Holidays, 10 p.m. to 6 p.m.

All work shall be conducted such that construction activities would not interfere unnecessarily with other areas of the Park or residential setting of the immediate vicinity. Construction equipment would be delivered and staged along Memorial Drive for approximately 12 to 18 months. Project materials and underground storage reservoir components would also be delivered to the site over a two-month period.

The implementation of a traffic control plan is recommended to minimize the temporary impact of construction traffic on the existing traffic setting throughout construction of the Project.

Mitigation Measure TRAN-1. Implementation of Traffic Control Plan

A traffic control plan will be established by the contractor, and approved by the City of South San Francisco and San Mateo County. This traffic plan will provide for the appropriate control measures, including barricades, warning signs, speed control devices, flaggers, and other measures to mitigate potential traffic hazards in the vicinity of the Park and El Cerrito Elementary School. The plan would ensure coordination with administrators of El Cerrito Elementary School and other nearby facilities, such as the Boys and Girls Club by providing advanced notification to the facility administrators on the timing, location, and duration of construction activities.

The plan would also ensure coordination with emergency response providers to provide sufficient emergency access for the surrounding area. The City of South San Francisco may require a detour route if Tennis Avenue will be closed as a staging area. If this detour route is necessary, it will be devised by the contractor as part of the traffic control plan. The plan would also require that the export of excess soils would also occur between 10:00 a.m. and 3:00 p.m. to avoid peak traffic periods.

Operation Traffic

Once project construction is complete, long-term trip generation associated with the proposed Project would not occur on a daily basis. Routine maintenance of the water capture facility would require five annual trips of one to two vehicle(s) per visit that would utilize existing parking lots. Project operation would also involve weekly trips to check the irrigation reuse system that would require one vehicle per



trip that would utilize the existing parking lots. No impacts to the existing traffic setting are expected during Project operation.

4.0 Conclusion

During construction of the proposed Project, short-term transportation hazards and impacts to the existing traffic setting may occur. Increased construction traffic on minor arterial roads, particularly large haul trucks and other heavy equipment (e.g. concrete trucks and cranes) may disrupt traffic flows and generally slow traffic movement. In addition, such traffic could interfere with or delay transit operations and disrupt pedestrian and bicycle circulation. Implementation of MM-TRAN 1 would ensure access to the site is maintained and safety provisions would be enacted to ensure that traffic safety is addressed within the road right-of-way. By requiring haul trips to be restricted between 10:00 a.m. and 3:00 p.m., peak early morning and afternoon construction truck trips would be reduced, which would reduce impacts on the surrounding street network during morning and evening commutes.

Parking spaces along Memorial Drive immediately adjacent to the two ballfields could be temporarily displaced as they would be used as a crane pad or as a location for construction equipment staging; however, parking lots would be cleared and restored to the existing condition following Project construction. Access to open recreational areas at the Park would be maintained during Project construction via the entrances on Tennis Drive and Eucalyptus Avenue. The parking lots adjacent to Joseph A. Fernekes Recreation Building and Orange Memorial Pool would provide sufficient parking for Park visitors throughout the duration of construction.

Following construction of the proposed project, the Park would be restored to its prior condition and no operational traffic impacts are expected to occur. The proposed project would not modify the roadway system or change existing land uses.

5.0 References

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April 16, 2019
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If you have any questions or need clarification on any of the information provided, please do not hesitate to call me at (303) 503-7794.

Sincerely yours,
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