

DRAFT
INITIAL STUDY / MITIGATED NEGATIVE DECLARATION
Large Diameter Gravity Sewer Rehabilitation Project II-3
Town of Ross, CA

Prepared for
Ross Valley Sanitary District
2960 Kerner Boulevard
San Rafael, CA 94901

Prepared by
The logo for Integral Consulting Inc. features the word "integral" in a bold, blue, sans-serif font. A thin, curved line starts from the bottom of the letter "i" and sweeps upwards and to the right, ending under the letter "l". To the right of the word "integral", the words "consulting inc." are written in a smaller, blue, sans-serif font.
703 2nd Street
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Santa Rosa, CA 95404

January 2019

MITIGATED NEGATIVE DECLARATION

PROJECT TITLE

Large Diameter Gravity Sewer Rehabilitation Project II-3

LEAD AGENCY/NAME AND ADDRESS

Ross Valley Sanitary District, 2960 Kerner Boulevard, San Rafael, CA 94901

PROJECT LOCATION

The Ross Valley Sanitary District (RVSD) Large Diameter Gravity Sewer (LDGS) Rehabilitation Project (Project) is located in the district service area in the Town of Ross in Marin County (Attachment B, Figure 1). The town is a land area of approximately 1.56 square miles and is situated in a series of small valleys bordered by moderate hillside slopes and ridgetops. Ross is flanked by the town of San Anselmo to the north, town of Kentfield to the south, city of San Rafael to the east, and the Mount Tamalpais watershed to the west.

The Project will be constructed in two phases. Phase 1 will be located on Shady Lane from Bolinas Avenue to Locust Avenue and includes work within Ross Commons Park. Phase 2 begins near the intersection of Shady Lane and Locust Avenue and extends southward towards Lagunitas Avenue and includes work on Poplar Avenue from the intersection of Ross Common to Kent Avenue near the Ross/Kentfield border.

PROJECT DESCRIPTION

The Project entails the construction and rehabilitation within the existing alignment of approximately 7,000 lineal ft of sanitary sewer mains and related appurtenances within the town of Ross to be constructed in two phases. The Project as a whole plans to rehabilitate or replace approximately 4,100 ft of existing trunk mains with diameters ranging from 12-in. to 28-in., and 450 ft of 8-in. branch lines. The primary objective of this Project is to relieve hydraulic and structural deficiencies with aging RVSD infrastructure within the town of Ross.

Phase 1 of the LDGS Rehabilitation Project plans to replace approximately 1,550 lineal ft of 21-in.-diameter sanitary sewer mains with 28-in.-outside-diameter high-density polyethylene (HDPE) pipe using a combination of pipe bursting and open cut construction. Open cut is also proposed for the replacement of approximately 25 lineal ft of 8-in.-diameter, 55 lineal ft of 12-in.-diameter, 280 lineal ft of 16-in.-diameter, 80 lineal ft of 20-in.-diameter, and 75 lineal ft of

24-in.-diameter sanitary sewer mains. Slip-lining is proposed for approximately 185 lineal ft of existing 21-in.-diameter sanitary sewer main with 12-in.-diameter slip-line pipe. The construction, removal, and/or replacement of sanitary sewer manholes and reconnection of side sewers (laterals) to new sewers is also planned.

Phase 2 of the LDGS Rehabilitation Project proposes open cut construction of approximately 1,200 lineal ft of 16-in.-diameter sanitary sewer main in Kent Avenue and Poplar Avenue, and 1,200 lineal ft of 24-in.-diameter and 110 lineal ft of 8-in.-diameter sanitary sewer mains in Shady Lane. Installation of approximately 200 lineal ft of 8-in.-diameter sanitary sewer main in Ross Common is proposed using horizontal directional drilling (HDD). Rehabilitation of approximately 1,520 lineal ft of 21-in.-diameter sanitary sewer mains is proposed using either the cured-in-place pipe method (CIPP, steam or UV cure) or foldable thermoplastic pipe (FP, “fold-and-form”) method. Construction of a double-barrel inverted siphon in Shady Lane under Ross Creek, which entails installation of 6-in.- and 18-in.-diameter HDPE sewer mains inside a 36-in.-diameter steel casing installed by jack and bore, open cut construction to connect the siphon pipes to existing sewers, and open cut construction of a short 20-in-diameter air jumper, is proposed. The construction, removal, and/or replacement of sanitary sewer manholes and reconnection of side sewers (laterals) to new sewers is also planned. The Project is anticipated to be completed by February 2020.

MITIGATION MEASURES

Mitigation Measure Bio1

Adequate measures shall be taken to avoid inadvertent take of bird nests protected under the federal Migratory Bird Treaty Act and State Fish and Game Code when in active use. This shall be accomplished by taking the following steps:

- If initial construction is proposed during the nesting season (March 1 to August 31), a focused survey for nesting raptors and other migratory birds shall be conducted by a qualified biologist within 7 days prior to the onset of construction in order to determine whether any active nests are present in the area of potential effects (APEs) and surrounding area within 100 ft of proposed construction. The survey shall be re-conducted any time construction has been delayed or curtailed for more than 7 days during the nesting season.
- If no active nests are identified during the construction survey period, or development is initiated during the non-breeding season (September 1 to January 31), construction may proceed with no restrictions.
- If bird nests are found, an adequate setback shall be established around the nest location and construction activities restricted within this no-disturbance zone until the qualified

biologist has confirmed that any young birds have fledged and are able to function outside the nest location. Required setback distances for the no-disturbance zone shall be based on input received from the California Department of Fish and Wildlife (CDFW), and may vary depending on species and sensitivity to disturbance. As necessary, the no-disturbance zone shall be delineated if construction is to be initiated elsewhere in the APEs to make it clear that the area should not be disturbed.

- A report of findings shall be prepared by the qualified biologist and submitted to the RVSD or designated agent for review and approval prior to initiation of construction during the nesting season (March 1 to August 31). The report shall either confirm absence of any active nests or should confirm that any young are located within a designated no-disturbance zone and construction can proceed. No report of findings is required if construction is initiated during the non-nesting season (September 1 to January 31) and continues uninterrupted according to the above criteria.

Mitigation Measure Cul1

Shady Lane: Monitoring is recommended in areas where native soils will be disturbed in work planned from Bolinas Avenue to Locust Avenue and the Ross Creek crossing. For work from Southwood Avenue and Lagunitas Road, initial monitoring should be conducted for all excavation of native soil; spot monitoring to follow if initial monitoring results prove negative.

Downtown Ross (Poplar Avenue): Monitoring is recommended on all excavation of native soils. It is recommended that areas in close proximity to known sites be spot monitored even in areas where mostly disturbed soils will be impacted. It is possible that secondary deposits, or intact pockets of shell midden in trench walls, will be encountered in these areas.

Mitigation Measure Cul2

Construction crews shall be trained in “basic archaeological identification” and have access to an Alert Sheet. The Alert Sheet shall photographically depict shell midden and associated indicators of prehistoric archaeological sites, and clearly outline the procedures in the event of new archaeological discovery. These procedures include temporary work stoppage (Stop Work Order) of all ground disturbance, short-term physical protection of artifacts and their context, and immediate advisement of the archaeological team and RVSD representatives. Any Stop Work Order will contain a description of the work to be stopped, special instructions or requests for the Contractor, suggestions for efficient mitigation, and a time estimate for the work stoppage. The archaeologist shall notify the Federated Indians of Graton Rancheria (FIGR), examine the findings and assess their significance, and offer recommendations for any procedures deemed appropriate to further investigate and/or mitigate adverse impacts to those cultural resources that have been encountered.

Mitigation Measure Cul3

Adequate measures will be taken if human remains are found onsite. Upon discovery, the Coroner Division of the Marin County Sheriff's Office will be contacted for identification of human remains. The Coroner has 2 working days to examine the remains after being notified.

If the remains are Native American, the Coroner must notify the Native American Heritage Commission (NAHC) of the discovery within 24 hours. The NAHC will then identify and contact a Most Likely Descendant (MLD). The MLD may make recommendations to the owner, or representative, for the treatment or disposition, with proper dignity, of the remains and grave goods. Once proper consultation has occurred, a procedure that may include the preservation, excavation, analysis, and curation of artifacts and/or reburial of those remains and associated artifacts will be formulated and implemented.

If the remains are not Native American, the Coroner will consult with the archaeological research team and the lead agency to develop a procedure for the proper study, documentation, and ultimate disposition of the remains. If a determination can be made as to the likely identity—either as an individual or as a member of a group—of the remains, an attempt should be made to identify and contact any living descendants or representatives of the descendant community. As interested parties, these descendants may make recommendations to the owner, or representative, for the treatment or disposition, with proper dignity, of the remains and grave goods.

FINDINGS

An Initial Study has been prepared to assess the proposed Project's potential effects on the environment and the significance of those effects. Based on the Initial Study, it has been determined that the proposed Project, with the mitigation measures described above incorporated, would not have any significant effects on the environment.

A copy of the Initial Study is attached. The materials related to the proposed Project are on file at the Ross Valley Sanitary District office, located at 2960 Kerner Boulevard, San Rafael, CA 94901, and are available online at www.rvsvd.org.

Katherine Hayden
Infrastructure Assets Manager

Date

CALIFORNIA ENVIRONMENTAL QUALITY ACT INITIAL STUDY

Integral Consulting Inc. (Integral) has completed the following document for this project in accordance with the California Environmental Quality Act (CEQA) [Pub. Resources Code, div. 13, § 21000 et seq.] and accompanying Guidelines [Cal. Code Regs., tit. 14, § 15000 et seq.].

PROJECT TITLE: Large Diameter Gravity Sewer Rehabilitation Project II-3		
PROJECT ADDRESS: Shady Lane & Poplar Avenue	CITY: Ross	COUNTY: Marin
PROJECT SPONSOR: Ross Valley Sanitary District	CONTACT: Katherine Hayden	PHONE: (415) 259-2949 x217

LEAD AGENCY ADDRESS: 2960 Kerner Blvd. San Rafael, CA 94901	CONTACT: Katherine Hayden	PHONE: (415) 259-2949 x217
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APPROVAL ACTION UNDER CONSIDERATION: Implementation of sewer rehabilitation project.

Project Overview and Purpose

The Ross Valley Sanitary District (RVSD) Large Diameter Gravity Sewer (LDGS) Rehabilitation Project (Project) entails the construction and rehabilitation, within the existing alignment of approximately 7,000 lineal ft of sanitary sewer mains and related appurtenances within the town of Ross to be constructed in two phases. The Project as a whole plans to rehabilitate or replace approximately 4,100 ft of existing trunk mains with diameters ranging from 12 in. to 28 in. and 450 ft of 8-in.-branch lines. The primary objective of this Project is to relieve hydraulic and structural deficiencies with aging RVSD infrastructure within the town of Ross.

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of 24-in.-diameter and 110 lineal ft of 8-in.-diameter sanitary sewer mains in Shady Lane. Installation of approximately 200 lineal ft of 8-in.-diameter sanitary sewer main in Ross Common using horizontal directional drilling (HDD) is also proposed. Rehabilitation of approximately 1,520 lineal ft of 21-in.-diameter sanitary sewer mains will be implemented using either the cured-in-place pipe method (CIPP, steam or UV cure) or foldable thermoplastic pipe (FP, “fold-and-form”) method. Construction of a double-barrel inverted siphon in Shady Lane under Ross Creek, which entails installation of 6-in.- and 18-in.-diameter HDPE sewer mains inside a 36-in.-diameter steel casing installed by jack and bore, open cut construction to connect the siphon pipes to existing sewers, and open cut construction of a short 20-in.-diameter air jumper is included in the Project. The construction, removal, and/or replacement of sanitary sewer manholes and reconnection of side sewers (laterals) to new sewers is also planned.

The Project is anticipated to be completed by February 2020. Attachment A provides a list of abbreviations and acronyms.

Project Location

The Project is located in the district service area in the town of Ross in Marin County (Attachment B, Figure 1). The town has a land area of approximately 1.56 square miles and is situated in a series of small valleys bordered by moderate hillside slopes and ridgetops. Ross is flanked by the town of San Anselmo to the north, town of Kentfield to the south, city of San Rafael to the east, and the Mount Tamalpais watershed to the west.

The Project will be constructed in two phases. Phase 1 will be located on Shady Lane from Bolinas Avenue to Locust Avenue and includes work within Ross Commons Park. Phase 2 begins near the intersection of Shady Lane and Locust Avenue and extends southward towards Lagunitas Avenue and includes work on Poplar Avenue from the intersection of Ross Common to Kent Avenue near the Ross/Kentfield border.

Site Setting

The Project is located a distance of approximately 4,300 ft along Shady Lane, Lagunitas Road, and Poplar Avenue. Regional access to the Project site from the north and south is provided by U.S. Highway 101 (U.S. 101) and from the east by the Richmond-San Rafael Bridge (Interstate 580 [I-580]). The area west of U.S. 101 includes a mix of commercial, residential, and recreational uses.

The Project is located in a mixed residential and commercial use area with institutional properties and residential areas. To the north and northeast of the Project site are residential properties and institutional properties such as the St. Anselm School. Commercial developments are along the intersection of Bolinas Avenue and San Anselmo Avenue and in Downtown Ross along Poplar Avenue. Additional institutional properties, including the San Francisco Theological Seminary and Montgomery Memorial Chapel, are located to the northwest of the site. The St. Anselm Church is located at the northernmost extent of the Project site at the intersection of Bolinas Avenue and Shady Lane. The Project is bounded to the south by the intersection of Kent Avenue and Bridge Road. To the east of the Project site, beyond Shady Lane and Poplar Avenue, is the Corte Madera Creek estuary with Sir Francis Drake Boulevard just beyond. Residences are located to the west and immediate east and west of Shady Lane. Lagunitas Road is flanked by institutions including St. John’s Episcopal Church to the north and Ross School K-8 to the south. Residences are located to the immediate east and west of Poplar Avenue with one commercial business and a hospital (Kentfield Hospital) between Poplar Avenue and the Corte Madera Creek estuary. The Marin County Bicycle Route 20 is located parallel to Poplar Avenue along the Corte Madera Creek estuary.

Site Background

The RVSD was established in 1899 and is located approximately 15 miles north of San Francisco. The service area is bounded on the east by the San Francisco Bay, and on the west by the coastal hills. RVSD is one of three wastewater collection agencies that form the Central Marin Sanitation Agency. RVSD serves the wastewater collection needs of approximately 56,000 customers in Fairfax, San Anselmo, Ross, Larkspur, Bon Air, Sleepy Hollow, Kentfield, Kent Woodlands, Oak Manor, Greenbrae, and Murray Park.

Planning for the proposed Project began in 2005 as part of RVSD's Sanitary Sewer Hydraulic Evaluation and Capacity Assurance Plan. Between 2008 and 2013, RVSD experienced an increase in the number and severity of sewer system overflows (SSOs). On May 13, 2013, the San Francisco Bay Regional Water Quality Control Board (RWQCB) issued a cease and desist order (CDO) No. R2-2013-0020 in response to instances where sewer system overflows reached waters of the state (RWQCB 2013). The CDO required RVSD to develop and implement an Infrastructure Asset Management Plan (IAMP). The IAMP presents projects to rehabilitate and replace RVSD's deficient wastewater facilities through the year 2020. The proposed Project is a part of this program.

Construction Methods

Five construction methods will be utilized for this Project: open cut is the primary method of construction, followed by pipe-bursting, CIPP or FP ("fold-and-form"), slip lining, HDD, and bore-and-jack. All methods except open cut are trenchless, meaning that they do not require open exposure from the surface along the entire segment. Construction methods are further detailed in Attachment C and Attachment D.

Work Hours and Schedule

Phase 1 of the Project started in July 2018 and is anticipated to be complete by May 2019. Pipe bursting activities are completed in the school zone and through Ross Common Park.

Work is expected to begin on the Phase 2 of the Project in early to mid-May 2019 and continue through early 2020. Work hours will generally be 8 a.m. to 5 p.m.; however, hours will be dependent on location-specific constraints imposed by encroachment permits conditions.

Construction Staging

Site preparation will include the following general tasks: survey and excavation layout, and preparation of staging, ingress, and egress areas. Prior to construction, the selected contractor will develop a staging operations plan that identifies construction equipment staging and support areas, site access, exclusion areas, excavation areas and stockpile areas, truck lanes, parking areas, and site office trailers. Construction staging for the Project will likely include both local as well as offsite staging areas given the congested nature of the Project area.

Bypass Pumping

Bypass pumping during construction will be location-specific and based on site-specific requirements and constraints as outlined in a Contractor-supplied and RVSD-approved bypass plan. In general, bypass systems will be surface laid and follow the most direct route, excluding trespass onto private property.

Site Restoration

The Contractor will, at all times, keep property on which work is in progress and the adjacent property free from the accumulation of waste material or rubbish caused by employees or by the work. Upon completion of the construction, the Contractor will remove all surplus materials, temporary structures, rubbish, and waste materials resulting from their operation.

Permits and Project Approvals

Permits that will likely be required, but are not necessarily limited to, include the following:

- Town of Ross Encroachment Permit
- County of Marin Encroachment Permit
- State of California, Department of Fish and Wildlife Lake or Streambed Alteration agreement.

The area of Project disturbance is less than 1 acre in total, therefore a General Construction Stormwater Permit is not required.

Overview of Control Measures

Numerous control measures would be incorporated into the Project's Contract Documents by RVSD to address environmental and public health and safety issues. Control measures are procedures known to further reduce the potential for impacts based on regulatory agency requirements, standards in the industry, and construction/operating experiences of RVSD and the design engineer.

Regulatory agency requirements would be contained in permits obtained for the Project. The Contractor would be required to obtain encroachment permits from the Town of Ross. These permits would contain specific requirements for traffic control and parking, emergency access, pavement restoration, noise control, and allowable work hours, and would provide for the safety of residents, pedestrians, and motorists. The Contractor would be required to comply with all conditions set forth in the encroachment permits and corresponding RVSD standards.

Coordination would be established and maintained with local residents and businesses along the alignment and a mechanism for monitoring construction activities and addressing any complaints would be implemented. Any damaged landscaped and/or hardscaped areas would be restored, and a series of best management practices (BMPs) would be enforced to maintain site appearance; control dust, erosion, and stormwater discharge; and provide noise attenuation if needed.

Biological and cultural resources technical reports have been completed, which identify measures that would be included in the Contract Documents to address potential impacts. Deep excavations would be needed in some areas to support the open cut construction methods. A variety of geotechnical and regulatory agency control measures would be included to provide for the constructability of the Project and its environmental compatibility, and to ensure the protection of workers' and the public's health and safety.

Control measures implemented for the site include measures for:

- Site management, including tree protection
- Dust control
- Stormwater and erosion control
- Geotechnical
- Hazardous materials
- Safety
- Dewatering
- Noise
- Traffic management
- Ground movement monitoring.

Full control measures implemented for the site are included in Attachment E.

References

RWQCB. 2013. Order No. R2-2013-0020. San Francisco Bay Regional Water Quality Control Board. May 13.

ENVIRONMENTAL IMPACT ANALYSIS:

1. Aesthetics

Project Activities Likely to Create an Impact:

Construction activities associated with the Project, including the replacement of existing sewer pipes, installation of new pipes, construction of new manholes, and spot repairs on existing sewer lines could only create a temporary aesthetic impact during. Specifically, the following activities could temporarily impact aesthetics:

- Staging of construction materials
- Generation of rubbish and debris/material storage
- Damage to hardscape and landscaped areas
- Transporting and handling of imported and exported materials.

Description of Baseline Environmental Conditions:

The site is located in a mixed residential and commercial area that also includes institutional properties. The northernmost extent of the site is the Shady Lane, Bolinas Avenue to Locust Avenue segment. Shady Lane is a road right-of way that has been developed with a two-lane road. The street is residential with roadside ditches, planted street trees, and adjacent landscaping. There is limited to no shoulder on the western side of the road along Shady Lane. The Downtown Ross area is located near the intersection of Shady Lane and Lagunitas Road. At the intersection on Shady Lane and Lagunitas Road, the roadway expands with sidewalks on the northern and southern sides of the roadway. Ross Elementary school is located on the southern edge of Lagunitas Road. Ross Commons Park, a large open space used for recreation is located at the intersection of Lagunitas Road and Poplar Avenue. Poplar Avenue runs south through downtown Ross, which includes both commercial businesses and residences. The roadway continues to be landscaped on either side with trees, shrubs, turf, and sidewalks. At the intersection of Poplar Avenue and Redwood Drive are several commercial businesses with parking lots and street parking. The sidewalk and street edges have limited vegetation along the commercial businesses. Poplar Avenue transforms from commercial business to residences with landscaped yards.

The Project site is nearly level and does not have extensive views along the roadway. The Corte Madera Creek is located to the east beyond Poplar Avenue but it is not visible from the site. According to the Town of Ross, St. Anselm Church located at the corner of Bolinas Avenue and Shady Lane; St. John's Episcopal Church and Ross School, located at Shady Lane and Lagunitas Road; and Ross Common Park and the Post Office, located along Ross Commons (Poplar Avenue) are considered important town landmarks (Town of Ross 2007). With implementation of Control Measures listed in Attachment E under "Site Management Practices," temporary construction activities would have no impact on aesthetics.

Analysis as to whether or not project activities would:

- a. Have a substantial adverse effect on a scenic vista.

Impact Analysis:

The construction activities are temporary and will not obstruct the view of scenic vistas and, therefore, will have no impact.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated

☐ Less Than Significant Impact

☒ No Impact

- b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a state scenic highway.

Impact Analysis:

The construction activities are temporary and will not damage scenic resources and there will be no removal of trees. Therefore, the Project will have no impact on scenic resources.

Conclusion:

☐ Potentially Significant Impact

☐ Less Than Significant with Mitigation Incorporated

☐ Less Than Significant Impact

☒ No Impact

- c. Substantially degrade the existing visual character or quality of the site and its surroundings.

Impact Analysis:

Currently, the site is a local roadway primarily used by locals and residents. Although the Project work will increase site activity, it will not degrade the existing visual quality of the site or the surroundings.

Conclusion:

☐ Potentially Significant Impact

☐ Less Than Significant with Mitigation Incorporated

☐ Less Than Significant Impacts

☒ No Impact

- d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Impact Analysis:

The construction activities will only occur during daytime hours and will not contribute to glare or a substantial new light source.

Conclusion:

☐ Potentially Significant Impact

☐ Less Than Significant with Mitigation Incorporated

☐ Less Than Significant Impact

☒ No Impact

References Used:

1. Town of Ross. 2007. *Town of Ross General Plan 2007-2025*. Town of Ross, CA.

2. Agricultural and Forestry Resources

Project Activities Likely to Create an Impact

No Project activities are likely to create an impact to agricultural and forestry resources.

Description of Baseline Environmental Conditions:

The Project is located within the town of Ross, which is largely built out with residential and some commercial uses. According to the Town of Ross General Plan Land Use Map (Town of Ross 2007), no agricultural or forest lands exist within the town. The California Department of Conservation Farmland Mapping and Monitoring Program classifies the areas as Urban and Built-up Land (California Department of Conservation 2016). The proposed Project site does not contain any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as defined by the Farmland Mapping & Monitoring Program for the State of California, Department of Conservation.

Analysis as to whether or not project activities would:

- a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.

Impact Analysis:

The proposed Project site does not contain any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as defined by the Farmland Mapping & Monitoring Program of the State of California, Department of Conservation. The Project would not call for the conversion of land from agricultural to non-agricultural use. Additionally, the Project is surrounding by lands that are already developed, approved for development, or designated as parkland area and, therefore, would not increase development pressure on agricultural lands by extending infrastructure into agricultural areas. Therefore, the Project would have no impact on agricultural resources.

Conclusion:

- ☐ Potentially Significant Impact
☐ Less Than Significant with Mitigation Incorporated
☐ Less Than Significant Impact
☒ No Impact

- b. Conflict with existing zoning or agriculture use, or Williamson Act contract.

Impact Analysis:

The Project would not call for the conversion of any land from agricultural to non-agricultural use.

Conclusion:

- ☐ Potentially Significant Impact
☐ Less Than Significant with Mitigation Incorporated
☐ Less Than Significant Impact
☒ No Impact

- c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Codes section 51104(g))?

Impact Analysis:

The Project would not conflict with existing zoning or cause rezoning of forest land or timber.

Conclusion:

- ☐ Potentially Significant Impact
☐ Less Than Significant with Mitigation Incorporated
☐ Less Than Significant Impact
☒ No Impact

- d. Result in the loss of forest land or conversion of forest land to non-forest use?

Impact Analysis:

The site does not contain forest land.

Conclusion:

- ☐ Potentially Significant Impact
☐ Less Than Significant with Mitigation Incorporated
☐ Less Than Significant Impact
☒ No Impact

- e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Impact Analysis:

The site does not contain forest land nor is it zoned for agriculture.

Conclusion:

- ☐ Potentially Significant Impact
☐ Less Than Significant with Mitigation Incorporated
☐ Less Than Significant Impact
☒ No Impact

References Used:

1. California Department of Conservation. 2016. Farmland Mapping and Monitoring Program. Available at: <ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2016/mar16.pdf>.
2. Town of Ross. 2007. *Town of Ross General Plan 2007-2025*. Town of Ross, CA.

3. Air Quality

Project Activities Likely to Create an Impact:

- Equipment used for construction activities¹
- Heavy duty trucks used for transporting materials and supplies to and from work areas
- Loading of media including soil and construction debris onto dump trucks
- Transporting and handling of imported backfill materials
- Worker and other vehicles traveling to and from construction sites.

Description of Baseline Environmental Conditions:

The proposed Project is located in the town of Ross in the eastern portion of Marin County, part of the nine-county San Francisco Bay Area Air Basin (SFBAAB). Federal, state, and regional agencies regulate air quality in the SFBAAB. At the federal level, the U.S. Environmental Protection Agency (EPA) is responsible for overseeing implementation of the federal Clean Air Act (CAA). The California Air Resources Board (CARB) is the state agency that regulates mobile sources throughout the state and oversees implementation of the state air quality laws and regulations, including the California CAA. The local air quality regulatory agency responsible for the SFBAAB is the Bay Area Air Quality Management District (BAAQMD).

Local Climate and Air Quality

The air quality in a given area depends on the sources of air pollution in the area, transport of pollutants to and from surrounding areas, and local and regional meteorological conditions, as well as the surrounding topography of the SFBAAB. Air quality is described by the concentration of various pollutants in the atmosphere. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The significance of a pollutant concentration is determined by comparing the concentration to an appropriate ambient air quality standard. The standards represent the allowable pollutant concentrations designed to ensure that the public health and welfare are protected, while including a reasonable margin of safety to protect the more sensitive individuals in the population.

Marin County is bounded on the west by the Pacific Ocean, on the east by San Pablo Bay, on the south by the Golden Gate and on the north by the Petaluma Gap. Most of Marin's population lives in the eastern part of the county, in small, sheltered valleys. Because of the wedge shape of the county, northeast Marin County is farther from the ocean than is the southeastern section. This extra distance from the ocean allows the marine air to be moderated by bayside conditions as it travels to northeastern Marin County. In southern Marin the distance from the ocean is short and elevations are lower, resulting in higher incidence of maritime air in that area.

In the summer months, areas along the coast are usually subject to onshore movement of cool marine air. In the winter, proximity to the ocean keeps the coastal regions relatively warm, with temperatures varying little throughout the year. Coastal temperatures are usually in the high 50s in the winter and the low 60s in the summer. The warmest months are September and October. The eastern side of Marin County has warmer weather than the western side because of its distance from the ocean and because the hills that separate eastern Marin from western Marin occasionally block the flow of the marine air. The temperatures of cities next to the Bay are moderated by the cooling effect of the Bay in the summer and the warming effect of the Bay in the winter. For example, San Rafael experiences average maximum summer temperatures in the low 80s and average minimum winter temperatures in the low 40s. Inland towns such as Greenbrae experience average maximum temperatures that are two degrees cooler in the winter and two degrees warmer in the summer.

¹ Will require the use of an excavator, front end loader, grader, and/or other pieces of heavy machinery.

Air pollution potential is highest in eastern Marin County, where most of population is located in semi-sheltered valleys. In the southeast, the influence of marine air keeps pollution levels low. As development moves farther north, there is greater potential for air pollution to build up because the valleys are more sheltered from the sea breeze. While Marin County does not have many polluting industries, the air quality on its eastern side—especially along the U.S. 101 corridor—may be affected by emissions from increasing motor vehicle use within and through the county (BAAQMD 2017a).

Criteria Air Pollutants

The federal and California CAAs have established ambient air quality standards for common pollutants. The ambient air quality standards are intended to protect human health and welfare. At the federal level, national ambient air quality standards have been established for criteria pollutants. These criteria pollutants include carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), respirable particulate matter with a diameter less than 10 microns (PM₁₀), fine particulate matter with a diameter less than 2.5 microns (PM_{2.5}), sulfur dioxide (SO₂), and lead.

California has adopted ambient air quality standards that are, in general, more stringent than the national ambient air quality standards, and include other pollutants not regulated at the federal level (sulfates, hydrogen sulfide, and vinyl chloride). National and state ambient air quality standards are shown in Table 1. Both the national and California ambient air quality standards have been adopted by BAAQMD.

Table 1. State and National Air Quality Standards and Summary of Measured Air Quality Exceedances in the Project Area (2015–2017)

Pollutant/ Averaging Period	Primary Standard		Year	Maximum Concentration ^a	Days Exceeding State/National Standard
	State	National			
Ozone 1-hour	0.09 ppm	none	2015	0.081	0/0
			2016	0.088	0/0
			2017	0.088	0/0
Ozone 8-hour	0.70 ppm	0.70 ppm	2015	0.07	0/0
			2016	0.067	0/0
			2017	0.063	0/0
Carbon Monoxide 1-hour	20 ppm	35 ppm	2015	1.4	0/0
			2016	1.4	0/0
			2017	2.6	0/0
Carbon Monoxide 8-hour	90. ppm	9 ppm	2015	0.9	0/0
			2016	1	0/0
			2017	1.6	0/0
Nitrogen Dioxide 1-hour	0.18 ppm	0.100 ppm	2015	0.062	0/0
			2016	0.044	0/0
			2017	0.053	0/0
Nitrogen Dioxide Annual	0.030 ppm	0.053 ppm	2015	0.011	0/0
			2016	0.011	0/0
			2017	0.01	0/0
Sulfur Dioxide 1-hour	none	0.075 ppm	2015	ND	0/0
			2016	ND	0/0
			2017	ND	0/0
Sulfur Dioxide 24-hour	0.04 ppm	none	2015	ND	0/0
			2016	ND	0/0
			2017	ND	0/0

Table 1. State and National Air Quality Standards and Summary of Measured Air Quality Exceedances in the Project Area (2015–2017)

Pollutant/ Averaging Period	Primary Standard		Year	Maximum Concentration ^a	Days Exceeding State/National Standard
	State	National			
Respirable Particulate Matter (PM ₁₀) 24-hour	50 µg/m ³	150 µg/m ³	2015	42	0/0
			2016	27	0/0
			2017	94	2/0
Respirable Particulate Matter (PM ₁₀) Annual	20 µg/m ³	none	2015	16.1	0/0
			2016	17.7	0/0
			2017	13.8	0/0
Fine Particulate Matter (PM _{2.5}) ^a 24-hour	None	35 µg/m ³	2015	36.3	0/2
			2016	15.6	0/0
			2017	74.7	0/8
Fine Particulate Matter (PM _{2.5}) ^a Annual	12 µg/m ³	12.0 µg/m ³	2015	8.6	0/0
			2016	6.4	0/0
			2017	9.7	0/0

Source: BAAQMD (2018)

Notes

µg/m³ = micrograms per cubic meter

NA = not applicable

ND = no data available

ppm = parts per million

^a All pollutant concentrations were measured at the San Rafael monitoring station

Ambient concentrations of criteria pollutants are monitored in the SFBAAB by BAAQMD. The San Rafael station is the closest to the Project site and the only station in Marin County. Table 1 includes a summary of the monitored maximum concentrations and the number of occurrences of exceedances of the state/national ambient air quality standards for the 3-year period from 2015 through 2017.

Table 1 shows that over the last 3 years reported, the state 1-hour and 8-hour O₃ standards were not exceeded. The state 24-hour PM₁₀ standard was exceeded 2 times, and the 24-hour national PM_{2.5} standard was exceeded 10 times.

Toxic Air Contaminants

In addition to “criteria” air pollutants, there is another group of substances found in ambient air referred to as toxic air contaminants (TACs). These contaminants tend to be localized and are found in relatively low concentrations in ambient air. However, they can result in adverse chronic health effects including cancer. Sources of TACs include industrial processes such as petroleum refining and manufacturing, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. One of the TACs of greatest concern in California is diesel particulate matter, which is classified as a carcinogen (i.e., causes cancer). TACs are regulated at the local, state, and federal level.

Federal Air Quality Regulations

The federal CAA requires CARB, based on air quality monitoring data, to designate portions of the state where the national ambient air quality standards are not met as “nonattainment areas.” Because of the differences between the national and state ambient air quality standards, the designation of nonattainment areas is different under the federal and state legislation. Areas that meet the air quality standards are considered to be in attainment of the standards. Areas where there is no monitoring data available or

insufficient data to classify an area are considered unclassified, which for regulatory purposes is treated as an attainment area.

The Bay Area as a whole does not meet national ambient air quality standards for O₃ and PM_{2.5}. EPA has classified the region as marginal nonattainment for 8-hour O₃. In October 2009, EPA designated the Bay Area as nonattainment for 24-hour PM_{2.5} standard. The Bay Area is considered as attainment or unclassifiable with respect to the national air quality standards for all other pollutants. EPA requires states that have areas that are not in compliance with the national standards to prepare and submit air quality plans showing how the standards would be met. If the states cannot show how the standards would be met, then they must show progress toward meeting the standards. These plans are referred to as the State Implementation Plan (SIP). On January 9, 2013, EPA issued a final rule to determine that the San Francisco Bay Area has attained the national 24-hour PM_{2.5} air quality standard. This action suspends federal SIP planning requirements for the Bay Area. BAAQMD has permit authority over stationary sources, acts as the primary reviewing agency for environmental documents, and develops regulations that must be consistent with or more stringent than federal and state air quality laws and regulations.

California Air Quality Regulations

The California CAA outlines a program for areas in the state to attain the California ambient air quality standards by the earliest practical date. The California CAA set more stringent air quality standards for most of the pollutants covered under national standards, and additionally regulates other pollutants. If an area does not meet the California ambient air quality standards, CARB designates the area as nonattainment area. With respect to the state air quality standards, the Bay Area is a nonattainment area for ozone and particulate matter (PM₁₀ and PM_{2.5}), and either attainment or unclassified for other pollutants. The California CAA requires local air pollution control districts to prepare air quality attainment plans for pollutants, except for particulate matter, that are not in attainment with the state standards. These plans must provide for district-wide emission reductions of 5 percent per year averaged over consecutive 3-year periods or if not, provide for adoption of “all feasible measures on an expeditious schedule.”

Regional Air Quality Regulations and Planning

Air quality in the Project region is regulated by BAAQMD. BAAQMD regulates stationary sources (with respect to federal, state, and local regulations), monitors regional air pollutant levels (including measurement of toxic air contaminants), develops air quality control strategies, and conducts public awareness programs.

The most recent air quality air plan is the 2017 Clean Air Plan that was adopted by BAAQMD in April 2017 (BAAQMD 2017b). The 2017 Plan provides a regional strategy to protect public health and protect the climate. To protect public health, the plan describes how BAAQMD will continue making progress toward attaining all state and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities. The 2017 Plan includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful, such as particulate matter, ozone, and toxic air contaminants; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion. The 2017 Plan represents the Bay Area’s most recent assessment of the region’s strategy to attain the state and national ozone and PM_{2.5} standards.

The BAAQMD has also developed CEQA Air Quality Guidelines that establish significance thresholds for evaluating new projects and plans and provides guidance for evaluating air quality impacts of projects and plans (BAAQMD 2017a). The Air Quality Guidelines provide procedures and significance thresholds for evaluating potential construction-related impacts during the environmental review process consistent with CEQA requirements. The Air Quality Guidelines also address operation-related impacts, but the proposed Project is a construction activity with no substantial additional operational component as compared to existing operations.

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions

would cause significant environmental impacts under CEQA and were included in BAAQMD's most recent CEQA Air Quality Guidelines (BAAQMD 2017a, updated May 2017).

Analysis as to whether or not project activities would:

a. Conflict with or obstruct implementation of the applicable air quality plan.

Impact Analysis:

The Project is in an area currently designated nonattainment for the state 1-hour and 8-hour O₃ standards, nonattainment for the state 24-hour and annual PM₁₀ standards, and nonattainment for the state annual PM_{2.5} standard. It is also designated as nonattainment for the national 8-hour O₃ standard. To meet planning requirements related to these standards, BAAQMD has developed a regional air quality plan, the Bay Area 2017 Clean Air Plan. A significant impact would occur if a project conflicted with the plan by not being consistent with the population-growth and vehicle miles traveled assumptions of the plan. As discussed in the Project Description, the proposed Project involves the rehabilitation and replacement of deficient wastewater facilities, and would not be considered growth-inducing. Since construction activities associated with the Project would be short term and temporary and there would be no long-term operational component to the Project that would generate new vehicle trips in the SFBAAB that would conflict with the plan. As a result, the Project would not conflict with or obstruct with implementation of the plan, and there would be no impact.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Impact Analysis:

The proposed Project would involve construction activities associated with the repair and replacement of sewer system components that would result in temporary increases in air pollutant emissions. These emissions would be generated primarily from construction equipment exhaust, earth disturbance, and construction worker and other construction-related vehicle trips to and from the Project construction areas. The overall Project activities would occur for about 8 months.

BAAQMD's approach to the CEQA analysis of construction impacts is two-fold. BAAQMD has identified thresholds of significance for exhaust emissions from construction-related activities. The guidelines specify the following significance thresholds for daily and annual criteria air pollutant emissions from project construction (BAAQMD 2017a):

- PM₁₀ = 82 lb/day; 15 ton/year
- PM_{2.5} = 54 lb/day; 10 ton/year
- Reactive organic gases (ROG) = 54 lb/day; 10 ton/year
- Oxides of nitrogen (NO_x) = 54 lb/day; 10 ton/year
- PM₁₀ from fugitive dust: BMPs; if appropriate construction controls are implemented, fugitive dust emissions from construction activities would be considered less than significant. Control Measures listed in Attachment E are consistent with BAAQMD-recommended control methods for particulate emissions.

Emissions from construction activities were estimated with the Roadway Construction Emissions Model version 8.1.0 (RoadMod) developed by the Sacramento Metropolitan Air Quality Management District (SMAQMD) (SMAQMD 2016). RoadMod was developed to calculate emissions from road-related construction and linear projects. BAAQMD recommends using RoadMod for linear projects such as new roadways, road widening, or pipeline installation (BAAQMD 2017a). Projected sewer line construction information, including the size of disturbed areas, and number and types of construction equipment and vehicles, along with the anticipated length of their use for the different sewer construction methods, were used with RoadMod to calculate Project exhaust and fugitive dust emissions. Project emissions for the sewer rehabilitation were developed based on information provided by the Project Engineer, including Project activities and scheduling, off-road equipment use, and projected haul truck and vendor truck trips. Details of the emission calculations are included in Attachment F.

Table 2 provides a summary of the average daily and annual criteria pollutant emissions from Project construction activities, along with a comparison to the BAAQMD significance thresholds and conformity with *de minimis* emission thresholds.

Table 2. Annual and Average Daily Emissions from Project Activities

Pollutant	Annual Emissions (ton/year)	Thresholds (ton/year)	Average Daily Emissions (lb/day) ^a	Thresholds (lb/day)	Above Threshold?
ROG	0.02	10	0.53	54	No
CO	0.14	NA	2.3	NA	No
SO ₂ ^a	-. ^b	NA	-. ^b	NA	No
NO _x	0.21	10	5.7	54	No
PM10 ^c	0.09	15	1.4	82	No
PM2.5 ^c	0.02	10	0.42	54	No

Source: Justin Seufert, Project Engineer, January 2019

^a SO₂ emissions are expected to be negligible due to use of ultra-low sulfur diesel fuel.

^b Average daily emissions calculated from annual emissions and 160 (20 days per month x 8 months) working days for construction activities.

^c PM10 and PM2.5 represent total emission values.

Due to the very low level of annual emissions from the Project, significantly less than 1 ton per year, the Project's annual emissions would be well below 10 percent of the SFBAAB's annual emissions. Therefore, the Project emissions would be below the *de minimis* level and less than 10 percent of the emissions inventory for nonattainment pollutants in the SFBAAB, and further general conformity analysis is not required.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- c. Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

Impact Analysis:

As noted above, Project activities that have the potential to impact air quality can be characterized as construction activities because of the short duration of the Project and use of construction equipment. As demonstrated above, estimated emissions are below significance thresholds listed in the BAAQMD guidelines.

Since emissions from gasoline- and diesel-fueled vehicles and equipment are below significance thresholds, and fugitive dust emissions would be controlled with BMPs, the Project would not result in a violation of an air quality standard or contribute significantly to an existing or projected air quality violation.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- d. Expose sensitive receptors to substantial pollutant concentrations.

Impact Analysis:

Sensitive receptors are locations where an identifiable subset of the general population (children, asthmatics, the elderly, and the chronically ill) that is at greater risk than the general population to the effects of air pollutants are likely to be exposed. These locations include residences, schools, playgrounds, childcare centers, retirement homes, hospitals, and medical clinics. The Project is mostly within residential areas and there are several sensitive receptors including one school along Lagunitas Road and Ross Common Park located at the intersection of Lagunitas Road and Poplar Avenue. These sensitive receptors would be exposed to short-term emissions of TACs while construction takes place.

The primary concern for nearby sensitive receptors would be exposure to diesel emissions from diesel-powered construction equipment associated with Project construction activities and diesel trucks while at the sites. Diesel particulate matter (DPM) is designated as a TAC by CARB for the cancer risk associated with long-term (i.e., 30 years) exposure to DPM. Given that construction would occur for a limited amount of time (less than 1 year) and the Project will only be utilizing a limited number of diesel-fueled equipment and trucks, DPM emissions will be very low and localized exposure to DPM would be minimal. In addition, the amount of onsite diesel-generated PM_{2.5} exhaust for this Project is estimated to be 0.02 ton/year. The estimated PM_{2.5} exhaust emissions are several orders of magnitude below the BAAQMD threshold of 10 tons/year.

The Project is not expected to expose sensitive receptors to substantial pollutant concentrations for the following reasons:

- Minor amounts of soil excavations would occur on a daily basis.
- A limited number of construction vehicles or equipment would operate at any time.
- The Project activities are short-term and would last approximately 8 months.
- Combustion emissions from vehicles and equipment are below the significance thresholds from the BAAQMD guidelines.
- Project activities will not take place near the school during the school year.

- Control Measures, listed under “Dust Control” in Attachment E, will be implemented such as minimizing idle times to control emissions and exposures.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- e. Create objectionable odors affecting a substantial number of people.

Impact Analysis:

During construction there are sources of odor from the proposed Project. During sewage bypass pumping, odors can disperse from open manholes or access openings in the sewers. However, Control Measures listed in Attachment E will serve to minimize dispersal of odor and provide for control, as well as to address odor complaints if received.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

References Used:

1. BAAQMD. 2017a. California Environmental Quality Act Air Quality Guidelines. May 2017. Available at: http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed January 2019. Bay Area Air Quality Management District.
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4. BAAQMD. 2018. Annual Bay Area Air Quality Summaries. Available at: <http://www.baaqmd.gov/about-air-quality/air-quality-summaries>. Bay Area Air Quality Management District.
5. SMAQMD. 2016. Roadway Construction Emissions Model Version 8.1.0 (May 2016). Available at: <http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/CEQA-Guidance-Tools>. Sacramento Metropolitan Air Quality Management District. May.

4. Biological Resources

Project Activities Likely to Create an Impact:

- Excavation of soils and installation of the siphon
- Equipment used for construction activities
- Site restoration, including backfill of all excavated areas with imported clean soil.

The Project involves the replacement of existing sewer pipes, installation of new pipes, construction of new manholes, and spot repairs on existing sewer lines. A steel casing siphon will be installed underneath Ross Creek using the bore-and-jack method.

Description of Baseline Environmental Conditions:

A Biological Resource Assessment for the Project was prepared by Environmental Collaborative (2017) and is included in Attachment G. The reader is referred to this report for a detailed discussion of the setting and impact analysis.

The area of potential effect (APE) consists largely of road rights-of-ways that have been developed with roadways, roadside ditches, planted street trees, and adjacent landscaping, with no remaining natural habitat. The one exception to this is the Ross Creek channel, which passes through the APE at the Shady Lane bridge crossing. Ross Creek remains a natural channel where it passes through the APE, with the existing sewer line exposed on a man-made weir across the channel bottom. Vegetation along the creek banks is dominated by invasive groundcover species such as English ivy (*Hedera helix*) and Algerian ivy (*Hedera canariensis* var. *algeriensis*), with a few remnant native California bay (*Umbellularia californica*) and coast live oaks (*Quercus agrifolia*) growing near the top of bank.

Landscaping along the roadway frontages consists of native and non-native trees, shrubs, and groundcovers. Native tree species growing along the roadway frontages include valley oak (*Quercus lobata*), coast live oak, California bay, and coast redwood (*Sequoia sempervirens*), of varying size and condition. Some larger-sized specimens most likely predate the residential development in the area, such as the scattered valley oaks in Commons Park. Non-native tree species growing along the roadway frontages include blackwood acacia (*Acacia melanoxydon*), olive (*Olea europaea*), magnolia (*Magnolia* spp.), London Plane Tree (*Platanus acerifolia*), and liquid amber (*Liquidambar styraciflua*), among others. Shrubs and groundcovers are generally non-native ornamental species such as ivy, periwinkle (*Vinca* spp.), oleander (*Nerium oleander*), pyracantha (*Pyracantha* sp.), privet (*Ligustrum* spp.), rose (*Rosa* spp.), camellia (*Camellia* spp.), and irrigated lawns.

Most of the APE generally provides very little in terms of wildlife habitat given its developed condition as roadway and adjacent residential frontages. The limited vegetative cover, intensity of human disturbance and activity, and risk of vehicle strikes limits its importance as foraging and dispersal habitat. Species typical of residential development utilize the mature trees and well-developed landscape for foraging, perching and possibly nesting substrate. These species include house finch (*Haemorhous mexicanus*), house sparrow (*Passer domesticus*), northern mocking bird (*Mimus polyglottos*), American robin (*Turdus migratorius*), scrub jay (*Aphelocoma californica*), mourning dove (*Zenaidura macroura*), and California towhee (*Melospiza crissalis*), amongst others. Common mammals include naturalized pest species such as house mouse (*Mus musculus*), Norway rat (*Rattus norvegicus*), and raccoon (*Procyon lotor*). The introduced marsupial Virginia opossum (*Didelphis virginiana*) is also common throughout east Marin, including the Ross area. There was no evidence of any bird nesting observed in the trees and other landscaping along the APE during the field reconnaissance.

The Ross Creek channel does provide for movement of terrestrial and aquatic species across the APE through the Shady Lane bridge undercrossing. Habitat conditions along the creek are limited due to the dominance by non-native groundcovers along the creek bank, the lack of pools and other aquatic refugia, and presence of concrete and rubble on much of the channel bottom. However, seasonal flows in the creek allow for movement of the federally threatened steelhead trout (*Oncorhynchus mykiss*) along Ross Creek, which is designated as critical habitat for this species by the U.S. Fish and Wildlife Service (USFWS). Surface water was absent from the immediate vicinity of the existing sewer line crossing at the time of the field reconnaissance survey, but the creek corridor may serve as a movement corridor for other fish species, and possibly western pond turtle (*Actinemys marmorata*), aquatic garter snake (*Thamnophis atratus*), amphibians such as Pacific chorus frog (*Pseudacris regilla*) and western toad (*Anaxyrus boreas*), and a number of aquatic invertebrates when surface water is present.

A record search conducted by the California Natural Diversity Database (CNDDDB), together with review of lists from the USFWS and California Native Plant Society included in Attachment G, indicates that occurrences of numerous plant and animal species with special status have been recorded from or are suspected to occur in the Ross area of Marin County. The broad list of special-status plants and animals are known from a wide range of habitat types found in Marin County, however, none contain suitable habitat any longer within the APE due to the extent of past and ongoing development and disturbance.

No evidence of any bird nesting was observed during the field reconnaissance survey. The intensity of human activity and absence of suitable habitat limits the likelihood that any special-status bird species nest in or near the APE, including northern spotted owl. But there is a possibility that new nests of more common bird species could be established in the future in advance of Project construction. Nests in active use of both special-status and more common bird species are protected under the federal Migratory Bird Treaty Act and State Fish and Game code.

Jurisdictional Waters

Based on a review of the National Wetland Inventory mapping and the observations made during the field reconnaissance survey, Ross Creek is the only potential jurisdictional wetlands or regulated unvegetated "other waters of the U.S." in the vicinity of the APE. Ross Creek passes under Shady Lane as an open channel with banks covered by ivy, and with a few scattered remnant native California bay and oak trees near the top of bank. The low flow channel below the Ordinary High Water Mark is an estimated 10 ft where the existing sewer line crosses the creek bottom. The proposed sewer rehabilitation would involve installation of a new sewer line under the creek channel at a depth that would avoid any disturbance to the bed or banks of Ross Creek. BMPs would be used to prevent any construction-generated sediment or other debris from entering the storm drain systems and eventually entering Ross Creek.

Regulatory Overview

Special-status species are plants and animals that are legally protected under federal and state laws. The USFWS is responsible for administering the federal Endangered Species Act (ESA) and the Migratory Bird Treaty Act. The California Department of Fish and Wildlife (CDFW) administers the California ESA. See Attachment G for more information on the regulatory framework affecting sensitive biological reserves. The compliance of the Project with these and other federal regulations is addressed later in this section.

CDFW is responsible for protecting and conserving fish and wildlife resources, and the habitats upon which they depend. The Lake and Streambed Alteration (LSA) Program reviews projects that would alter any river, stream, or lake and conditions projects to conserve existing fish and wildlife resources. The compliance of the Project with this program is addressed later in this section.

Analysis as to whether or not project activities would:

- a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

Impact Analysis:

In preparing this assessment, special status species were evaluated using the CNDDDB (2017) for the San Rafael quad. CNDDDB records (Attachment G) include federal special status species, state special status species, CDFW special status species, and California rare plant species. CNDDDB shows records for 44 special status plant species or communities within the quad, including four federally endangered species (Tiburon paintbrush, White-rayed pentachaeta, Tiburon jewel-flower, and Showy Rancheria [two-fork] clover) and three threatened species (Tiburon mariposa-lily, Marin western flax, and Santa Cruz tarplant). However, none of the 44 special status plant species/communities are found on the site of the proposed Project.

CNDDDB shows records for 59 special status animals within the San Rafael quad including 10 federally endangered species (Coho salmon, Tidewater goby, San Bruno elfin butterfly, Mission blue butterfly, Myrtle's

silverspot butterfly, California brown pelican, California least tern, California clapper rail, Short-tailed albatross, and Salt marsh harvest mouse) and nine threatened species (Chinook salmon, Steelhead, Green sturgeon, Delta smelt, California red-legged frog, Western snowy plover, Marbled murrelet, California black rail, and Northern spotted owl). There is marginally suitable habitat at Ross Creek for the Steelhead and California red-legged frog, however, no direct or indirect effects are anticipated by construction of the Ross Creek Siphon component of the Project, which would be drilled under the channel bottom and would avoid both banks, with no disturbance to the creek corridor.

None of the other federally listed species are found on the Project site as there are no suitable habitats. The California clapper rail, California black rail, and salt marsh harvest mouse are only found in salt marshes. The San Bruno elfin butterfly north-facing slopes where host plants are present, and the Mission blue butterfly and Myrtle's silverspot butterfly are found in coastal chaparral, scrub, and grassland. The California brown pelican, California least tern, and Western snowy plover are found along coastal shoreline and bay and the Pacific Ocean. The Marbled murrelet are found foraging at sea and nest in conifers. The Northern spotted owl is found in dense forest and woodlands. The Short-tailed albatross is found foraging over open ocean. None of these habitats occur on the Project site.

There was no evidence of any bird nesting within the APE observed during the field reconnaissance survey. Although the limited habitat values and extent of ongoing disturbance generally precludes the potential for nesting birds in the APE, there remains a remote possibility that new bird nests could be established in the trees and other vegetation in and near the APE. If construction were initiated during the bird nesting season (March 1–August 31), construction-related disturbance could result in abandonment of the nests if any are present in the immediate vicinity. If construction-related noise and disturbance resulted in destruction or abandonment of a nest in active use and loss of any eggs or young in the nest, this would be a significant adverse impact and violation of the federal Migratory Bird Treaty Act and State Fish and Game Code sections. Mitigation Measure Bio1 would serve to avoid this potential for violation of federal and state regulations by conducting a preconstruction survey and implementing appropriate construction restrictions if any active nests are encountered until any young birds have successfully fledged. With implementation of Mitigation Measure Bio1, impacts to biological resources would be less than significant.

Mitigation Measure Bio1

Adequate measures shall be taken to avoid inadvertent take of bird nests protected under the federal Migratory Bird Treaty Act and State Fish and Game Code when in active use. This shall be accomplished by taking the following steps:

- If initial construction is proposed during the nesting season (March 1 to August 31), a focused survey for nesting raptors and other migratory birds shall be conducted by a qualified biologist within 7 days prior to the onset of construction in order to determine whether any active nests are present in the APEs and surrounding area within 100 ft of proposed construction. The survey shall be re-conducted any time construction has been delayed or curtailed for more than 7 days during the nesting season.
- If no active nests are identified during the construction survey period, or development is initiated during the non-breeding season (September 1 to January 31), construction may proceed with no restrictions.
- If bird nests are found, an adequate setback shall be established around the nest location and construction activities restricted within this no-disturbance zone until the qualified biologist has confirmed that any young birds have fledged and are able to function outside the nest location. Required setback distances for the no-disturbance zone shall be based on input received from the CDFW, and may vary depending on species and sensitivity to disturbance. As necessary, the no-disturbance zone shall be delineated if construction is to be initiated elsewhere in the APEs to make it clear that the area should not be disturbed.
- A report of findings shall be prepared by the qualified biologist and submitted to the RVSD or designated agent for review and approval prior to initiation of construction during the nesting season

(March 1 to August 31). The report shall either confirm absence of any active nests or should confirm that any young are located within a designated no-disturbance zone and construction can proceed. No report of findings is required if construction is initiated during the non-nesting season (September 1 to January 31) and continues uninterrupted according to the above criteria.

Conclusion:

- ☐ Potentially Significant Impact
- ☒ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☐ No Impact

- b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

Impact Analysis:

The segment of the Ross Creek corridor where the proposed siphon is to be constructed is dominated by non-native ivy and a few remnant native trees, and does not contain well-developed riparian or other sensitive natural community types. And the Ross Creek siphon would be drilled below the creek bed, avoiding any disturbance to the bed and bank of the channel. In addition, an LSA permit will be obtained prior to construction activities. The proposed siphon under Ross Creek would be installed by bore-and-jack method, and would avoid any disturbance to the bed or bank of the channel. No adverse impacts on sensitive natural communities are anticipated.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Impact Analysis:

The Ross Creek channel is the only federally protected waters within the APE. The proposed siphon under Ross Creek would be installed by bore-and-jack method, and would avoid any disturbance to the bed or bank of the channel. No liquids would be required during drilling under the channel and the new siphon would be installed at an adequate depth to avoid future exposure as a result of channel incision, thereby avoiding the remote potential for a frackout during construction. The existing sewer line at the surface of the channel bottom would be abandoned in place, eliminating the risk of future leaks or rupture and the associated contamination that would occur if the existing crossing were left intact. This would be a long-term benefit of the Project through the reduction of possible future contamination of downstream waters. Appropriate controls would be implemented during construction to prevent any materials from entering the Ross Creek corridor, and BMPs outlined in Attachment E would be followed to prevent sediments and other construction-generated pollutants from reaching downstream waters.

Given that disturbance to the Ross Creek waters is not anticipated, authorization from the U.S. Army Corps of Engineers (USACE) or RWQCB under the provisions of the Clean Water Act (CWA) do not appear necessary. The CDFW typically requires notification any time modifications are proposed under or over a regulated drainage, such as Ross Creek. As discussed above, an LSA permit application will be obtained from CDFW.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Impact Analysis:

The proposed Project would not have any significant adverse impacts on wildlife movement opportunities or adversely impact native wildlife nursery sites. Wildlife in the vicinity of the APE are already acclimated to human activity, and construction-related disturbance would not cause any significant impacts on wildlife movement in the surrounding area. Species common to the area would continue to utilize the surrounding area, even during construction.

No essential fish habitat would be affected and the Project is consistent with the Magnuson-Stevens Fishery Conservation and Management Act. The proposed siphon under Ross Creek would be installed by bore-and-jack method, and would avoid any disturbance to the bed or bank of the channel. None of the mature trees near the top of the creek bank would be removed or adversely affected, and no impacts to fish habitat would occur as a result of Project implementation. The existing crossing at the surface of the channel bottom would be abandoned in place, eliminating the risk of future leaks or rupture and the associated contamination that would occur if the existing crossing were left intact. This would be a long-term benefit of the Project through the reduction of possible future contamination of downstream waters known to support steelhead and other listed species.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- e. Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Impact Analysis:

Policies in the Town of Ross General Plan 2007-2025 address the protection of sensitive biological and wetland resources, including creeks, trees and tree groves, threatened and endangered species habitat, riparian vegetation, and other resources. With the exception of Ross Creek and the trees that grow along the roadways in the APE, there are no other sensitive biological resources in the vicinity. As discussed above, no direct impacts are anticipated with installation and operation of the Ross Creek siphon, which would avoid direct disturbance to the bed and bank of the channel.

The Town of Ross Ordinance No. 659 establishes regulations governing the removal of trees. The ordinance defines a "Significant Tree" as a tree with a single trunk diameter greater than 12 in. Under the ordinance, any tree 6 in. or greater in diameter and designated for removal requires a permit.

Although no trees are planned for removal, some of the Project improvements could affect a number of trees along the APE, including both non-native ornamentals and remnant native oaks and California bay trees. Damage to the tree root zones, limbs, and trunk could occur as a result of trenching and other construction activities. As described in Attachment E, the contractor shall exercise due diligence and implement necessary precautions to avoid needlessly damaging or destroying trees, shrubs, or other landscaping in the Project limits. Any required pruning of existing trees will be completed by a certified arborist. No major conflicts with local plans and policies are anticipated, and potential impact would be less than significant.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impact Analysis:

No habitat conservation plans have been prepared addressing the APE, and the Project would therefore not conflict with any adopted habitat conservation plans. As indicated in Attachment G, Figure 2, Ross Creek and Corte Madera Creek have been identified as Critical Habitat for steelhead and other species. However, the proposed Ross Creek siphon would be installed under the Ross Creek channel and would not result in any direct or indirect impacts to the creek corridor of suitable habitat for steelhead or other special-status species. RVSD has committed to securing all authorizations required under state or federal laws related to biological and wetland resources. As a result, no impact would occur.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

References Used:

1. Environmental Collaborative. 2017. Biological Resource Assessment Ross Valley Sanitary District Large Diameter Gravity Sewer Rehabilitation Project, Ross, California. Environmental Collaborative. January 6.
2. CNDDDB. 2017. California Natural Diversity Database. Wildlife & Habitat Data Analysis Branch, Department of Fish and Game. January 4.

5. Cultural and Tribal Cultural Resources

Project Activities Likely to Create an Impact:

- Excavating of soil, particularly in areas with native soils.

The Project entails realignment of approximately 1,200 lineal ft of 24-in. and 16-in. sanitary trunk mains on Shady Lane and Poplar Avenue. The Project further proposes to install approximately 100 lineal ft of 36-in. steel casing under Ross Creek. Construction methods are described in Attachment C.

The Project construction methods CIPP and fold-and-form have no potential to impact any extant cultural resources (since there is no disturbance outside the current footprint); pipe bursting has a minimal potential impact, and open cut has a moderate potential impact in areas where an existing pipe has partially disturbed soil and a high potential in areas of native soil. Bore-and-jack and horizontal drilling have a high potential for impacts due to the difficulty of monitoring underground work. The insertion and receiving pits for the bore-and-jack trenchless rehabilitation and slip lining methods have equivalent impact potential to open cut.

Impacts from pipe bursting are limited to the soils immediately surrounding the existing pipeline, while open cut will displace soils immediately surrounding the pipe as well as all soils above it. While the affected soil in both cases would be solely or primarily backfill from the initial installation of the existing pipeline, and thus should not contain an intact archaeological deposit, the open cut method may impact native soils if the new trench does not exactly correspond with the depth or width of the original trench.

In addition, as backfill could still contain previously displaced cultural materials, any methods disturbing adjacent soils have the potential to affect human remains or disturbed cultural materials.

Bore-and-jack would impact soils removed within the bore path itself, and both bore-and-jack and slip lining would disturb soils for the insertion and receiving pits. Horizontal drilling disturbs soils in the pilot hole and along the path. Some of these methods may disturb soils that were previously undisturbed.

Impacts from open cut and from excavation of insertion and receiving pits have the ability to be monitored. Impacts along trenchless segments—the soils surrounding a host pipe in pipe bursting and the bore path in bore-and-jack and horizontal drilling—cannot be monitored. However, soils removed can be observed out of context.

Description of Baseline Environmental Conditions:

The Projects encompass two specific locations: one discontinuous segment along Shady Lane from the San Anselmo/Ross border towards downtown, and another through downtown Ross to the Ross/Kentfield border. A Phase I Cultural Resources Evaluation for the proposed Project was prepared by Archeo-Tec, Consulting Archaeologists in July 2017. Because the report contains confidential information about the locations and characteristics of archaeological sites, the report is not included in this Initial Study for public review, but rather, can be made available to agencies and other professionals for review as necessary.

Multiple subsurface archaeological sites in the form of prehistoric shell midden deposits have been found in close proximity to the Project alignment/footprint in multiple directions, and one of these sites is directly adjacent to the Poplar Avenue portion of the Project alignment. Another deposit is in close proximity to the Lagunitas Road segment and the southern portion of the Shady Lane segment. Neither surveys along unpaved areas adjacent to the alignment, nor monitoring of one geotechnical boring—where the alignment crosses a creek—produced clear evidence of an intact, significant archaeological site. Two small shell fragments were found on the surface adjacent to the Poplar Avenue section of the alignment.

Pursuant to CEQA Section 21080.3.1(d), within 14 days of a determination that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency is required to contact the Native American tribes that are culturally or traditionally affiliated with the geographic area in which the Project is located. Notified tribes have 30 days to request consultation with the lead agency to discuss

potential impacts on tribal cultural resources and measures for addressing those impacts. On November 26, 2018, Integral contacted the Federated Indians of Graton Rancheria (FIGR) providing a description of the Project and requesting comments on the identification, presence, and significance of tribal cultural resources in the Project vicinity. On December 19, 2018, an e-mail was received indicating that they would “review your project within 10 business days.” No further communication or request for consultation was received.

Analysis as to whether or not project activities would:

- a. Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5, listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k).

Impact Analysis:

An archaeological feature’s significance is determined by its potential eligibility to be listed on the California Register of Historical Resources. The California Register is a listing of properties that are important to the history of California and our nation. To be eligible for listing on the California Register, a property must typically be 50 years of age or more; it must possess historical significance; and it must possess integrity of location, design, setting, materials, workmanship, feeling, and association. Historical significance is the importance of a property to the history, architecture, archaeology, engineering, or cultural aspects of a community.

Although one historic property, prehistoric archaeological site CA-MRN-72, is located in close proximity to the APE, its currently documented boundaries do not extend into the APE and no evidence was found to suggest that this or any other archaeological resource exists within the APE. Therefore, a finding of “No effect to historic properties” is recommended. To ensure the correctness of this finding, it is recommended that ground-disturbing work in the vicinity of CA-MRN-72 be monitored by a qualified archaeologist. Given the abundance of shell midden deposits in very close proximity to the alignment, the depth of the deposits, the fact that sites have been found beneath alluvium (and therefore would not be visible in a surface survey), as well as the hardscaping of most of the alignment, it is recommended that all areas excavating native soils be monitored, and that areas impacting a mix of disturbed and undisturbed soils be spot-monitored. Further, it is recommended that areas in very close proximity to known sites be spot-monitored even if much of the excavation is disturbed, as midden deposits may be visible in trench walls and re-deposited midden may contain human remains. With implementation of Mitigation Measure Cul1 and Cul2, impacts to cultural and tribal cultural resources would be less than significant.

Mitigation Measure Cul1

Shady Lane: Monitoring is recommended in areas where native soils will be disturbed in work planned from Bolinas Avenue to Locust Avenue and the Ross Creek crossing. For work from Southwood Avenue and Lagunitas Road, initial monitoring should be conducted for all excavation of native soil; spot monitoring to follow if initial monitoring results prove negative.

Downtown Ross (Poplar Avenue): Monitoring is recommended on all excavation of native soils. It is recommended that areas in close proximity to known sites be spot monitored even in areas where mostly disturbed soils will be impacted. It is possible that secondary deposits, or intact pockets of shell midden in trench walls, will be encountered in these areas.

Mitigation Measure Cul2

Construction crews shall be trained in “basic archaeological identification” and have access to an Alert Sheet. The Alert Sheet shall photographically depict shell midden and associated indicators of prehistoric archaeological sites, and clearly outline the procedures in the event of new archaeological discovery. These procedures include temporary work stoppage (Stop Work Order) of all ground disturbance, short-term physical protection of artifacts and their context, and immediate advisement of the archaeological team and RVSD representatives. Any Stop Work Order will contain a description of the work to be stopped, special instructions or requests for the Contractor, suggestions for efficient mitigation, and a time estimate for the

work stoppage. The archaeologist shall notify the FIGR, examine the findings and assess their significance, and offer recommendations for any procedures deemed appropriate to further investigate and/or mitigate adverse impacts to those cultural resources that have been encountered.

Conclusion:

- ☐ Potentially Significant Impact
- ☒ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☐ No Impact

- b. Cause a substantial adverse change in the significance of an archeological resource pursuant to 15064.5 or a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.²

Impact Analysis:

The following investigations were conducted as part of this archaeological resources evaluation:

1. A systematic review of relevant archival documents on file at the Northwest Information Center at Sonoma State University in Rohnert Park
2. Correspondence with the Native American Heritage Commission (NAHC) in Sacramento, as well as with members of the local Native American community
3. A surface archaeological reconnaissance of the APE
4. Monitoring of a geotechnical boring within the APE
5. Detailed assessment of the archaeological potential of the various sites and alignments under consideration.

The alignments are located beneath paved, active streets; the presence of these sites could thus not be completely ruled out within the scope of this study. The Project alignment is surrounded on multiple sides by known Native American shell midden sites from the Prehistoric period. Many such sites are in close proximity of the alignment, clearly indicating indigenous activity and settlement in the vicinity of the Project APE.

The closest archaeological site to the alignment is known as CA-MRN-72 near the Project alignment along Poplar Avenue. CA-MRN-73 lies just to the west of CA-MRN-72. Two known sites have been identified near the Shady Lane portion of the alignment. CA-MRN-311 is located about east of the APE's northernmost Shady Lane segment. Site P-21-0002794, which consists of a secondary rather than primary deposit, is located close to both the Lagunitas Road segment and the southern portion of the Shady Lane segment.

Two sites have been found to the south of the alignment. CA-MRN-406, a large village site thought to be the center of activity in the area, is located about southeast of the Project alignment's southern extent, and CA-MRN-71 is located south of the alignment's southern extent. Recent subsurface explorations of CA-MRN-72

² Including those listed in (a) or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

revealed intact midden buried beneath sandy alluvial soils and a layer of disturbed midden, suggesting that nearby sites may also be deeply buried.

Given the high sensitivity of the area, monitoring is recommended in areas where native soils will be disturbed. Given the abundance of shell midden deposits in very close proximity to the alignment, the depth of the deposits, the fact that sites have been found beneath alluvium (and therefore would not be visible in a surface survey), as well as the hardscaping of most of the alignment, it is recommended that all areas excavating native soils be monitored, and that areas impacting a mix of disturbed and undisturbed soils be spot-monitored. Further, it is recommended that areas in very close proximity to known sites be spot-monitored even if much of the excavation is disturbed, as midden deposits may be visible in trench walls and re-deposited midden may contain human remains. See Mitigation Measure Cul1.

Conclusion:

- ☐ Potentially Significant Impact
- ☒ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☐ No Impact

c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Impact Analysis:

The geologic context of the Project area is described in Archeo-Tec (2017) and in Section 6 (Geology and Soils), including the subsurface conditions. The Project APE lies upon alluvial deposits that have formed atop the Franciscan Formation, thus suitable subsurface deposits do not exist that might contain paleontological resources or unique geologic features of paleontological or cultural value. The Project involves limited excavation within the public right-of-way or in designated easements, which in general have been previously disturbed. No impact would occur.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

d. Disturb any human remains, including those interred outside of formal cemeteries.

Impact Analysis:

In California, discovery of human remains during construction activities is regulated by the California Health and Safety Code. Per California Health and Safety Code §7050.5 and California Public Resources Code §5097.98, the following procedures will be followed in the event that human remains and associated cemetery/grave items are encountered. Associated cemetery/grave items are any items (e.g., clothing, funerary gifts, etc.) that are buried with the individual, as well as any cemetery furniture, architecture, fencing, or other features associated with the cemetery itself. This definition applies to both prehistoric and historic period cemeteries. The term "grave" also extends to cremation pits containing (non-intact) human remains. There is a potential to discover human remains during any phases of the Project that involve excavation in native soils. With implementation of Mitigation Measure Cul3, impacts to cultural and tribal cultural resources would be less than significant.

Mitigation Measure Cul3

Upon discovery, the Coroner Division of the Marin County Sheriff's Office will be contacted for identification of human remains. The Coroner has 2 working days to examine the remains after being notified.

If the remains are Native American, the Coroner must notify the NAHC of the discovery within 24 hours. The NAHC will then identify and contact a Most Likely Descendant (MLD). The MLD may make recommendations to the owner, or representative, for the treatment or disposition, with proper dignity, of the remains and grave goods. Once proper consultation has occurred, a procedure that may include the preservation, excavation, analysis, and curation of artifacts and/or reburial of those remains and associated artifacts will be formulated and implemented.

If the remains are not Native American, the Coroner will consult with the archaeological research team and the lead agency to develop a procedure for the proper study, documentation, and ultimate disposition of the remains. If a determination can be made as to the likely identity—either as an individual or as a member of a group—of the remains, an attempt should be made to identify and contact any living descendants or representatives of the descendant community. As interested parties, these descendants may make recommendations to the owner, or representative, for the treatment or disposition, with proper dignity, of the remains and grave goods.

Conclusion:

- ☐ Potentially Significant Impact
- ☒ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☐ No Impact

References Used:

1. Archeo-Tec. 2017. Phase I Cultural Resources Evaluation for the Ross Valley Sanitary District Large Diameter Gravity Sewer Rehabilitation Project Ii-3, Marin County, California. Prepared for Scheidegger & Associates. Archeo-Tec. July.

6. Geology and Soils

Project Activities Likely to Create an Impact:

- Excavating of soil and fill/debris
- Loading of soil and fill/debris onto dump trucks
- Transporting and handling of imported backfill materials.

Shady Lane Alignment

The Shady Lane alignment involves restoring and upsizing an abandoned sewer and reconfiguring local sewers in Bolinas Avenue so they connect to the reactivated Shady Lane truck sewer, and constructing a new inverted siphon beneath Ross Creek at Locust Avenue. The alignment along the edge of Shady Lane will likely consist of excavation of both previously undisturbed soil and fill materials. The new inverted siphon under Ross Creek will be installed using the bore and jack method. One jack and one receiving pit will be excavated on either side of the creek. Both pits are anticipated to disturb native soil due to their width and depth. The segment of along Shady Lane from Southwood Avenue to Lagunitas Road will undergo the replacement and upsize a sewer. Activities will require the excavation and insertion of a trench on Lagunitas

Road. The insertion of the trench will cross a number of utilities and excavation material is anticipated to be mainly fill with some areas of previously undisturbed soils.

Poplar Avenue Alignment

The Poplar Avenue Alignment includes the rehabilitation of an existing truck sewer using CIPP at the corner of Shady Lane and Lagunitas Road. The pipeline in Poplar Avenue has numerous commercial and residential lateral service connections, which will be disconnected from the truck sewer and reconnected to a new sewer, installed by open cut construction to a maximum depth of 8 ft. The new sewer is anticipated to be constructed within the existing street, but may include disturbance of native soils due to its depth.

Description of Baseline Environmental Conditions:

Geotechnical studies have been prepared for the Project by Miller Pacific Engineering (2017).

Regional Geology and Topography

The site is located within the Coast Range Geomorphic Province of California. The regional bedrock geology consists of complexly folded, faulted, sheared, and altered sedimentary, igneous, and metamorphic rock of the Franciscan Complex. Bedrock is characterized by a diverse assemblage of greenstone, sandstone, shale, chert, and melange, with lesser amounts of conglomerate, calc-silicate rock, schist, and other metamorphic rocks.

The regional topography is characterized by northwest-southeast trending mountain ridges and intervening valleys that were formed by movement between the North American and the Pacific Plates. Continued deformation and erosion during the late Tertiary and Quaternary Age (the last several million years) formed the prominent coastal ridges and the inland depression that is now the San Francisco Bay. The more recent seismic activity within the Coast Range Geomorphic Province is concentrated along the San Andreas Fault zone, a complex group of generally north to northwest trending faults.

The site is located in the seismically active San Francisco Bay Area region. The town of Ross is not included on Table 4 Cities and Counties Affected by Alquist-Priolo Earthquake Fault Zones as of January 2010 of *Special Publication 42, Fault-Rupture Hazard Zones in California*, indicating that the site property is not located within an Earthquake Fault Zone. No active faults were identified onsite or in the Project vicinity by the *Principal Faults Zones Under Alquist-Priolo Earthquake Fault Zoning Act 1974-2007* issued by the California Division of Mines and Geology in 2007 (Bryant and Hart 2007). Therefore, there would be no Project impacts related to rupture of a known earthquake fault as delineated by the State Geologist or other substantial evidence of a known fault.

Regional geologic mapping (Miller Pacific Engineering 2017) indicates that the Project areas are generally underlain by alluvial deposits. Alluvium typically consists of poorly sorted, unconsolidated clays, silts, sands and gravels deposited in active stream channels, on terraces, and as floodplain or over bank deposits.

Geologic Hazards

Although there are no active faults onsite, the Project is located near several active faults, and is in an area subject to strong ground shaking from earthquakes along the San Andreas and Hayward faults.

Two geologic hazards were identified in the *2017 Geotechnical Investigation RVSD Large Diameter Gravity Sewer Rehabilitation Project II San Anselmo, California* (Miller Pacific Engineering 2017). The primary geologic hazards relevant to the proposed Project include strong seismic ground shaking and liquefaction. Liquefaction refers to the sudden, temporary loss of soil strength during strong ground shaking. Regional liquefaction hazard maps indicate the Project areas are mapped within zones of moderate to very high susceptibility to liquefaction. While a quantitative analysis of liquefaction susceptibility is beyond the scope of work for this Project, the potential for liquefaction to occur within the alluvial soils is generally moderate to

high depending upon location. The geotechnical studies concluded that construction of the Project is feasible from a geotechnical standpoint provided appropriate controls are utilized.

Within the Project areas, surface conditions generally consist of asphalt-paved roadways. The sites are located within relatively densely populated suburban areas with neighboring properties generally consisting of residential land use. There are overhead power lines along the shoulder of some of the streets and numerous underground utilities exist and are often located within several feet of the proposed alignments.

Groundwater

The Project includes deep excavations for construction of the various improvements. Based on data from boreholes advanced for the geotechnical studies, it is likely that groundwater will be encountered during construction at depths ranging from 6 to 15 ft below ground surface (Miller Pacific Engineering 2017).

Analysis as to whether or not project activities would:

- a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
 - ii) Strong seismic ground shaking?
 - iii) Seismic-related ground failure, including liquefaction?

Impact Analysis:

Although there are no active faults in the Project area, the proposed Project site is located near several active faults and is in an area subject to strong ground shaking from earthquakes along the active San Andreas and Hayward faults. Therefore, there is a possibility that the site may experience ground shaking from periodic minor earthquakes and possibly a major earthquake.

The potential for seismically induced landslides in the slopes above the Project site is not a concern. Figure 7 of the Town of Ross General Plan (Town of Ross 2007), shows the Project area is located in a valley, with slopes flanking the town on the east and west. However, there are no identified deep-seated slide areas on or above the Project site, and there is not a potential for seismically induced landslides in the slopes above the Project site. Construction activities will not increase the potential for seismically induced landslides or attract additional population to a potentially hazardous area.

Project construction will involve excavation to depth. Excavation depths will approach approximately 25 ft on Shady Lane near Ross Creek where the jack and bore method will be used.. Strong seismic ground shaking can result in damage to the pipelines and related improvements. Liquefaction can result in flood failure, lateral spreading, ground movement, settlement, and other related effects. Buried pipelines and manholes embedded within liquefied soils may also experience uplift due to buoyancy. Control measures outlined in Attachment E have been included in the Project to address these issues, should they arise. Therefore, potential impacts related to ground shaking, ground failure, and associated physical hazards are less than significant.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

b. Result in substantial soil erosion or the loss of topsoil.

Impact Analysis:

Project construction will involve soil excavation, primarily for areas of open cut excavation and for the insertion and receiving pits. Although the construction activities are limited in extent and duration, these activities could still cause sediment and other pollutants to leave the sites and enter local drainage systems, and possibly nearby streams. Proper implementation of the Control Measures listed in Attachment E would prevent significant soil erosion from occurring and the loss of topsoil would be considered a less-than-significant impact.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

Impact Analysis:

The ground shaking accompanying major earthquakes has primary and secondary effects. Primary effects of ground shaking are those that directly affect buildings and other structures. Secondary effects of ground shaking can cause various types of soil movements, such as landslides, settlement, and liquefaction. Liquefaction is a response to severe ground shaking that can occur in loose, uniform soils that are saturated with water.

The soils on the Project site and in the watershed above the site are made up of surface soils. The Project site is underlain by interbedded and laterally variable alluvial soils, which are dominated by medium stiff to stiff clays and medium dense granular deposits. Local deposits of soft clays and loose sand and gravel were also encountered (Miller Pacific Engineering 2017).

The primary geologic hazards that could affect the proposed development include strong seismic ground shaking and liquefaction. As stated by the Miller Pacific Engineering (2017), strong seismic shaking has the potential to damage pipelines and related improvements, and the potential for liquefaction to occur within the alluvial soils is generally moderate to high depending on location. Project improvements should include flexible connections and new structures should be designed to resist seismic loads to account for uplift and buoyancy effects associated with liquefaction. Proper implementation of geotechnical consideration would be considered a less-than-significant impact.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

Impact Analysis:

Expansive soils are not an issue with this Project as construction activities will not increase the potential for additional population or call for the construction of new properties. Fill materials used for pipe backfill will consist of non-expansive materials (Miller Pacific Engineering 2017).

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of water.

Impact Analysis:

Project activities aim to rehabilitate deficient wastewater facilities by replacing existing sewer pipes, installing new pipes, constructing new manholes and spot repairs on existing sewer lines. This infrastructure is currently in place. Because RVSD is not constructing a new system, the soils will adequately support the Project needs.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

References Used:

1. Bryant, W.A., and E.W. Hart. 2007. Fault-Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zone Maps. Special Publication 42. Interim Revision 2007. California Department of Conservations, Sacramento, CA.
2. Miller Pacific Engineering. 2017. Geotechnical Investigation RVSD Large Diameter Gravity Sewer Rehabilitation Project II San Anselmo, California. February 2.
3. Town of Ross. 2007. *Town of Ross General Plan 2007-2025*. Town of Ross, CA.

7. Greenhouse Gas Emissions

Project Activities Likely to Create an Impact:

- Excavation/removal of soil and debris using appropriate construction equipment in select areas (may include excavator, backhoe, bulldozer, or grader)
- Offsite transport and disposal of excavated soil and debris to appropriate facility
- Site restoration, including backfill of all excavated areas with imported clean soil.

Description of Baseline Environmental Conditions:

Gases that trap heat in the atmosphere are called greenhouse gases (GHGs). The process of heat being trapped in the atmosphere is similar to the effect greenhouses have in raising the internal temperature, hence the name “greenhouse gas.” Both natural processes and human activities emit GHGs. The accumulation of GHGs in the atmosphere regulates the Earth’s temperature; however, emissions from human activities—such as fossil fuel–based electricity production and the use of motor vehicles—have elevated the concentration of GHGs in the atmosphere. GHGs are not monitored in the same manner as air quality pollutants, so there are no background data to characterize the baseline conditions of a given area in terms of GHG levels.

GHGs from fossil fuel combustion include carbon dioxide (CO₂), methane, and nitrous oxide. CO₂ is the most common reference gas for climate change. To account for warming potential, GHGs are often quantified and reported as CO₂ equivalents (CO₂e), based on their warming potential relative to CO₂.

Short-term construction projects are not recognized in Table 3-1 of the Air Quality Guidelines, which provides land use type screening level sizes for criteria air pollutants, precursors, and GHG (BAAQMD 2017a). The California Global Warming Solutions Act of 2006 (AB32) requires statewide GHG emissions be reduced to 1990 levels by the year 2020, but the proposed Project will be completed in only several months and have no contribution to the 2020 emission cap. BMPs identified in the Air Quality Guidelines for reducing GHG emissions during construction can include the following (BAAQMD 2017a):

1. Use alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment of at least 15 percent of the fleet. (The proposed Project is a small-scale construction project with limited vehicle and equipment needs. While the chosen Contractor may have alternative-fueled vehicles and equipment, requiring 15 percent of the fleet to be alternative-fueled would have an unnecessary cost burden with no measurable benefit.)
2. Use local building materials of at least 10 percent. (Construction materials use such as aggregate base and asphalt, will be limited for the Project but all will be obtained locally.)
3. Recycle or reuse at least 50 percent of construction waste or demolition materials. (The generation of construction waste will also be limited.)

Analysis as to whether or not project activities would:

- a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Impact Analysis:

Proposed Project activities would result in direct GHG emissions from fuel combustion in construction equipment and vehicles. The number of Project-related vehicles would be relatively small and the Project duration would be relatively short. GHG emissions were calculated using the RoadMod emissions estimator model, as described above in Section 3, Air Quality. The estimated GHG emissions are shown in the table below.

Table 3. Maximum Annual Emission from Project Activities

Pollutant	Maximum Annual Emissions (MT/year)	Threshold ^a (MT/year)	Above Threshold?
CO ₂ e	51.17	1,100	No

^a Based on the threshold of significance for operations-related GHG emissions (BAAQMD 2017)

The Guidelines (BAAQMD 2017a) present an emissions threshold for GHGs from a land use operations project of 1,100 CO₂e maximum annual emissions (MT/year), but do not report an adopted threshold of significance for construction-related GHG emissions. However, based on the small scale of this construction Project, it is estimated that the maximum annual emissions (51.17 MT/year) that could be generated during construction are approximately one-third of the BAAQMD's threshold of significance for operations-related GHG emissions of 1,100 CO₂e MT/year. As a comparison, SMAQMD's threshold of significance for construction-related GHG emissions is 1,100 MT/year (SMAQMD 2015). The Marin Climate and Energy Partnership web site (<http://www.marinclimate.org/>) was reviewed, but also contains no thresholds of significance. The estimated GHG emissions for the town of Ross in 2015 were over 13,000 MT with approximately half of this attributed to the residential sector, comprising less than 1 percent of the residential emissions for the town of Ross. This level of increase is less than significant.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Impact Analysis:

The proposed Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Measures contained in the 2017 Clean Air Plan (BAAQMD 2017b) to reduce overall emissions from construction equipment, already accounted for in the regional planning emissions budget, would also control GHG emissions. Thus, the Project would not conflict with GHG plans, policies, or regulations, and impacts would be less than significant.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

References Used:

1. BAAQMD.2017a. California Environmental Quality Act Air Quality Guidelines. May 2017. Available at: http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed January 2019. Bay Area Air Quality Management District.
2. BAAQMD. 2017b. Spare the Air Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area. Bay Area Air Quality Management District. April.
3. Marin Climate & Energy Partnership. 2017. Town of Ross Community Greenhouse Gas Emissions Inventory for the year 2015. Available at: <http://marinclimate.org/sites/default/files/documents/Ross%202015%20GHG%20Inventory%20Report.pdf>. Accessed January 16, 2019. Marin Climate & Energy Partnership.
4. SMAQMD. 2015. Thresholds of Significance Table. Available at: <http://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable5-2015.pdf>. Accessed January 16, 2019. Sacramento Metropolitan Air Quality Management District.

8. Hazards and Hazardous Materials

Project Activities Likely to Create an Impact:

- Excavation and stockpiling of debris using appropriate construction equipment in select areas (may include excavator, backhoe, bulldozer, or grader)
- Storage and staging of construction equipment.

This resource category addresses health and safety issues related to construction activities at the Project site. Health and safety issues apply to construction workers and members of the public who would be exposed to hazardous materials and physical conditions associated with the presence of construction equipment and excavations in the area of sensitive land uses. Construction activities are generally located within local roadways and the surrounding areas are predominately residential.

Description of Baseline Environmental Conditions:

Hazardous materials are not expected to be encountered during construction activities. There are a variety of state and federal regulations that apply to construction projects for protection of health and safety. RVSD also has standard specifications to address these issues based on other successfully completed projects. Control measures in Attachment E have been established to manage the unexpected discovery of hazardous materials during Project implementation. The use of hazardous materials would be limited during construction activities and would include such traditional materials as gasoline, diesel, oil, paint, resin, and epoxy concrete.

Several regulatory agency databases were consulted regarding the presence of hazardous materials release sites within the Project area, including the State Water Resources Control Board (SWRCB) Geotracker web site and the Department of Toxic Substances Control (DTSC) Cortese List. No sites on the SWRCB Geotracker web site (SWRCB 2015) or the Cortese List (DTSC 2019) are located in the Project area. If hazardous materials are encountered during Project work, Control Measures listed in Attachment E under "Hazardous Materials" will be implemented.

Analysis as to whether or not project activities would:

- a. Create a significant hazard to the public or the environment throughout the routine transport, use or disposal of hazardous materials.

Impact Analysis:

Construction activities will not create a significant hazard to the public or environment. Control measures in Attachment E have been established to manage the unexpected discovery of hazardous materials during Project implementation.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- b. 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.

Impact Analysis:

Construction activities will not create a significant hazard to the public or environment. The primary objective of the Project is to relieve hydraulic and structural deficiencies in the Project area. These improvements help address the problem of SSOs in the RVSD service area. SSOs can expose the public to raw sewage and overflows can reach local streams with adverse water quality impacts. Thus, the impact related to public health and environmental hazards is beneficial.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ Beneficial Impact
- ☐ No Impact

- c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school.

Impact Analysis:

Ross School is located adjacent to the Project alignment on Lagunitas Road. Avoidance of the school year (mid-August through mid-June) is preferable with a construction window of mid-June through mid-August being preferable. The Contractor will verify school schedules prior to construction.

The use of hazardous materials would be limited during construction activities and would include such traditional materials as gasoline, diesel, oil, paint, resin, and epoxy concrete. In addition to the Control Measures listed in Attachment E, which address hazards and hazardous materials, the impact is less than significant.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to public or the environment.

Impact Analysis:

The Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area.

Impact Analysis:

The Project is not located within an airport land use plan or within 2 miles of a public airport or public use airport. The Project is not within the vicinity of a private airstrip. Thus, the Project would not result in a safety hazard for people residing or working in the Project area.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.

Impact Analysis:

See 8e above.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Impact Analysis:

The Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Project activities and movement related to such activities would be conducted in a manner that would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; therefore, there will be no impacts with an adopted emergency response plan or emergency evacuation plan.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Impact Analysis:

No development is planned for this Project and, therefore, no impacts are expected.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

References Used:

1. DTSC. 2019. Hazardous waste and substances site list. Available at: [https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site_type=CSITES,OPEN,FUDS,CLOSE&status=ACT,BKLG.COM,COLUR&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+\(CORTESE\)](https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site_type=CSITES,OPEN,FUDS,CLOSE&status=ACT,BKLG.COM,COLUR&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+(CORTESE)). Department of Toxic Substances Control.
2. SWRCB. 2015. Geotracker. Available at: <https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=ross%2C+california>. State Water Resources Control Board.

9. Hydrology and Water Quality

Project Activities Likely to Create an Impact:

- Excavating of soil and fill/debris
- Generation of rubbish and debris material
- Site restoration, including backfill of all excavated areas with imported clean soil

It is possible that rehabilitation and replacement of sewer lines could result in degradation of water quality in San Francisco Bay by reducing the quality of stormwater runoff. The work does not propose any discharges to receiving waters other than discharges associated with stormwater runoff.

Construction and grading within the Project site would require temporary disturbance of surface soils and removal of vegetative cover. During the construction period, grading and excavation activities would result in exposure of soil to runoff, potentially causing erosion and entrainment of sediment in the runoff. Excavated areas on the Project site would be exposed to runoff and, if not managed properly, the runoff could cause erosion and increased sedimentation in downstream culverts and the Bay. The accumulation of sediment could result in blockage of flows, potentially resulting in increased localized ponding or flooding.

The potential for chemical releases is present at most construction sites. Once released, substances such as fuels and lubricants could be transported to nearby surface waters in stormwater runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters. Control Measures listed in Attachment E will serve to minimize the exposure of soil to runoff and chemical releases.

Description of Baseline Environmental Conditions:

Regional Hydrology

The Project is located within the Corte Madera Creek Watershed, a 28-square-mile area of eastern Marin County. Shady Lane crosses over Ross Creek between Fernhill Avenue and Southwood Avenue. Farther down at the confluence, Ross Creek meets San Anselmo Creek and becomes Corte Madera Creek. Corte Madera Creek drains into a tidal salt marsh at Kentfield and then into San Francisco Bay near Corte Madera.

Flood Hazard

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Marin County provides coverage for the Project area. Most of Shady Lane is located within the 100-year (Zone AE) floodplain. A portion of Shady Lane that crosses over Ross Creek is located within the regulatory floodway. Lagunitas Road and Poplar Avenue are located within the floodway. Lagunitas Road is located within the 100-year (Zone AE) floodplain near Shady Lane, and within the regulatory floodplain near Ross Common. Poplar Avenue is located within the 100-year floodplain (Zone AE).

Groundwater

The Project is located within the Central Basin of San Francisco Bay. The basin is not used for municipal drinking water or for major agricultural use. As discussed in Section 6, the Geotechnical Studies found that shallow groundwater occurs in the Project area and that groundwater is likely to be encountered during deeper excavation activities along the Project alignments (Miller Pacific Engineering 2017). The Contractor may have to design and install dewatering systems for construction of some improvements.

Analysis as to whether or not project activities would:

- a. Violate any water quality standards or waste discharge requirements.

Impact Analysis:

The proposed Project is one of a series of RVSD projects that are included in its IAMP (V.W. Housen & Associates 2013). The IAMP includes projects to rehabilitate and replace RVSD's deficient wastewater facilities through the year 2020. The IAMP is in response to RWQCB CDO No. R2-2013-0020 (RWQCB 2013). Construction of the Project helps ensure compliance with the RWQCB order and is a beneficial impact.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ Beneficial Impact
- ☐ No Impact

- b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

Impact Analysis:

The Project does not propose the use of groundwater and therefore no long-term extraction of groundwater at the Project site is expected. There may be short-term dewatering of shallow groundwater associated with soil removal and filling activities. Short-term dewatering activities would not be expected to have any significant long-term effect on groundwater resources because any pumping activities would be of limited duration. Therefore, with the implementation on Control Measures listed in Attachment E, the Project would have a less-than-significant impact.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site.

Impact Analysis:

The Project involves the rehabilitation and replacement of sewer lines within existing easement areas of the RVSD without altering the existing drainage pattern of the area. Work areas will be returned to pre-Project conditions. Existing drainage patterns will not be significantly affected.

As a part of the Shady Lane alignment, an inverted siphon will be installed under Ross Creek using the bore and jack method. Wreco performed a scour analysis to determine the stability and scour potential of the streambed and channel of Ross Creek. It was recommended that the existing sewer encasement should be

left in place, as it presently acts as grade control (Wreco 2017). Removal or failure of the sewer encasement will result in destabilization of the bed of the channel and likely lead to rapid erosion upstream of the sewer encasement (Wreco 2017). If recommendations from the scour analysis and Control Measures listed in Attachment E are implemented, the Project would have a less-than-significant impact.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off-site.

Impact Analysis:

No significant changes in runoff rates and volumes from the Project site are anticipated since rehabilitation and replacement of sewer lines will occur within existing easement areas of the RVSD without altering the existing drainage pattern of the area. Work areas will be returned to pre-Project conditions.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

Impact Analysis:

It is not expected that construction activities will increase discharge, and water from dewatering activities will be properly disposed of by the Contractor. There is no impact-related runoff capacity for this Project, and a less-than-significant level of impact related to additional sources of polluted runoff with proper implementation of Control Measures listed in Attachment E.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- f. Otherwise substantially degrade water quality.

Impact Analysis:

See 9a.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

Impact Analysis:

According to the most recent FEMA mapping, the site is located within the 100-year flood hazard zone (FEMA 2016). However, there will be no placement of housing or other structures on the Project site for this Project. Work in the Project area would be temporary and there would not be any permanent aboveground structures that would impede or redirect flood flows.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

Impact Analysis:

See 9g.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

Impact Analysis:

The Project does not include any features that would impact a levee or dam; therefore, there is no impact from the Project.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

j. Inundation by seiche, tsunami or mudflow.

Impact Analysis:

Seiching is the formation of standing waves in a waterbody due to wave formation and subsequent reflections from the ends. These waves may be incited by earthquake motions (similar to the motions caused by shaking a glass of water) or impulsive winds over the surface, or due to wave motions entering the basin. Most notable seiches occur in large waterbodies (e.g., the Great Lakes). Potential damage to the proposed Project from a seiche is considered a less-than-significant impact as there are no waterbodies near the Project area.

The estimated run-up from a tsunami with a 100-year return period (i.e., expected to occur once every 100 years, on average) is 4.9 ft above mean sea level at the Bay I Corte Madera Creek estuary shoreline near the Project site (Garcia and Houston 1975). The elevation of the Project site is approximately 15 to 40 ft above mean sea level or more. Given the surface elevation of the Project site, inundation from a 100-year tsunami would not be expected.

The Project site is relatively level and no impacts from mud flows would be expected in this area.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

References Used:

1. FEMA. 2016. Flood Insurance Rate Map (FIRM), Town of Ross, California, Community Panel Number 06041C0458F. Federal Emergency Management Agency. March 16.
2. Garcia, A., and J. Houston. 1975. Type 16 Flood Insurance Study: Tsunami Predictions for Monterey and San Francisco Bays and Puget Sound, Technical Report H-75-17. November.
3. Miller Pacific Engineering. 2017. Geotechnical Investigation RVSD Large Diameter Gravity Sewer Rehabilitation Project II San Anselmo, California. February 2.
4. RWQCB. 2013. Order No. R2-2013-0020. San Francisco Bay Regional Water Quality Control Board. May 13.
5. V.W. Housen & Associates. 2013. Sanitary District No. 1 of Marin County. Infrastructure Asset Management Plan. October 1.
6. Wreco. 2017. Ross Creek Scour Analysis for Ross Valley Sanitary District. Walnut Creek, California. June 30.

10. Land Use and Planning

Project Activities Likely to Create an Impact:

None. No land use changes are proposed.

Description of Baseline Environmental Conditions:

The proposed Project is a high priority wastewater collection system improvement consistent with RVSD's responsibility to provide high quality wastewater collection and disposal service for the local community, which is protective of public health and the environment.

The Project area along the Shady Lane alignment is currently zoned for single family residential, the areas adjacent to Lagunitas Road are zone for single family residential and community cultural (Ross School and Ross Common Park), and Ross Common and Poplar Avenue are zoned for community cultural, commercial and residential (Town of Ross 2000).

Analysis as to whether or not project activities would:

a. Physically divide an established community.

Impact Analysis:

No land use changes are proposed. The construction activities will have no impact related to dividing established communities.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

Impact Analysis:

No land use changes are proposed. The construction activities would not conflict with any applicable land use plan, policy, or regulation.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- c. Conflict with any applicable habitat conservation plan or natural community conservation plan.

Impact Analysis:

The Project site is not within any habitat conservation plan or natural community conservation plan. Therefore, the Project would have no impact on any biological resources plan. There are no agricultural resources or operations on or adjacent to the Project site; therefore, the Project would not have a significant impact on agricultural resources.

Overall, the replacement of existing sewer pipes, installation of new pipes, construction of new manholes and spot repairs on existing sewer lines would not result in significant environmental impacts related to land use and planning.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

References Used:

1. Town of Ross. 2000. Town of Ross Zoning Map. Available at: <https://www.townofross.org/sites/default/files/fileattachments/planning/page/277/zoning-map.pdf>. Town of Ross, CA.

11. Mineral Resources

Project Activities Likely to Create an Impact:

There are currently no significant mineral deposits or active mining operations within the town of Ross.

Description of Baseline Environmental Conditions:

The California Division of Mines and Geology (CDMG) has classified urbanizing lands within the North San Francisco Bay Production-Consumption Region according to presence or absence of sand, gravel, or stone deposits that are suitable as sources of aggregate. The Project site is located in an area that has been classified as Mineral Resource Zone 1 (MRZ-1). Areas that are classified MRZ-1 are "areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence" (CDMG 1987).

Analysis as to whether or not project activities would:

- a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

Impact Analysis:

Since no mineral resources of value to the region are known to exist within the Project site and soil removal and backfilling activities would take place in areas of already disturbed soil, the Project would have no effect on the availability of known mineral resources.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Impact Analysis:

See 11a.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

References Used:

1. CDMG. 1987. Mineral Land Classification: Aggregate Materials in the San Francisco-Monterey Bay Area: North San Francisco Bay Production Consumption Region, California Department of Conservation, Division of Mines and Geology.

12. Noise

Project Activities Likely to Create an Impact:

The Project could potentially cause temporary noise impacts associated with the upgrade and replacement of existing sewer lines primarily related to Project-generated traffic noise and operational noise from onsite construction equipment.

Description of Baseline Environmental Conditions:

Residential areas and the Ross Elementary school are primary noise-sensitive land uses located within the Project area. The existing noise environment is dominated by traffic using the local roadways. The Project is within the Town of Ross and is subject to the noise regulations of this jurisdiction.

The Town of Ross Municipal Code, Title 9, Chapter 9.20, Section 9.20.03 Construction states that:

It is unlawful for any person or construction company within the Town limits to perform any construction operation before 8:00 AM or after 5:00 PM, Monday through Friday of each week and not at any time on Saturday, Sunday, or the other holidays listed in Section 9.20.060; except that:

- (1) Work done solely in the interior of a building or structure, the performance of which does not create any noise which is audible from the exterior of the building or structure; or

- (2) Work actually physically performed solely by the owner of the property, on holidays.

The Noise/Land Use Compatibility Standards contained in Part IV, Section 5.7 of the Town of Ross' 2007-2025 General Plan Noise Element contains noise performance standards for outdoor use areas (i.e., backyards and patios) in residential areas of 55 "A" weighted decibels (dBA) day, night (L_{dn}). Part IV, Section 5.8 of the General Plan limits interior noises levels due to exterior sources to an L_{dn} of 45 dBA and recommends that an interior noise level due to exterior sources of 40 dBA L_{dn} be maintained in bedrooms of new residences. Part IV, Section 5.10 of the General Plan requires mitigation of construction and traffic noise impacts on the ambient noise level in the town limits.

The Project is a short-term construction activity that will replace and upgrade sewer lines with no new significant operational noise sources.

Analysis as to whether or not project activities would result in:

- a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Impact Analysis:

An encroachment permit will be obtained before the start of Project work and the Contractor will be required to comply with all conditions set forth in the permit and RVSD standards. Project soil removal and backfilling activities would cause temporary, intermittent noise effects in the immediate Project vicinity for the duration of construction. Noise would also be generated because of the use of excavators, backhoes, and other construction equipment; increased haul truck traffic on area roadways; and the transport of heavy materials and equipment to and from the Project site for the duration of the work.

Ross School is located on the corner of Shady Lane and Lagunitas Road. Active construction (pipe bursting in Ross Common Park) was in progress while school was in session during Phase 1. Some incidental work may occur near the school while in session during Phase 2 of the Project. In general, work on roadways near school has been restricted/limited to limit traffic congestion. Work is typically performed during normal work hours; therefore, within acceptable noise limits. With the implementation of Control Measures listed in Attachment E under "Safety" and given the short duration of the Project, this impact would be considered less than significant.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- b. Exposure of persons to or generation of excessive groundbourne vibration or groundbourne noise levels.

Impact Analysis:

Construction activities likely to create groundbourne vibration or groundbourne noise levels include pipe bursting, jack and bore, and backfill operations. With the implementation of Control Measures listed under "Ground Movement Monitoring" in Attachment E, this impact would be considered less than significant.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- c. A substantial permanent increase in ambient noise levels in the vicinity above levels existing without the project.

Impact Analysis:

The construction Project is estimated to last approximately 8 months. Therefore, no permanent increase in ambient noise levels is expected.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Impact Analysis:

See 12a and 12c.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

Impact Analysis:

The Project site is not within any airport land use plan or within 2 miles of any airport or airstrip. Therefore, the Project would not impact, or be impacted by, an airport land use.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

Impact Analysis:

See 12e.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

References Used:

1. Town of Ross. Municipal Code, Title 09 – Peace, Safety and Morals, Chapter 9.20 Unnecessary Noise. Town of Ross, CA.
2. Town of Ross. 2007. *Town of Ross General Plan 2007-2025*. Town of Ross, CA.

13. Population and Housing

Project Activities Likely to Create an Impact:

The primary objective of the Project is to replace existing sewer pipes, install of new pipes, construct new manholes, and spot repair existing sewer lines. Improvements will be made along local access roads Shady Lane, Lagunitas Road, and Poplar Avenue, and public-right-of-ways.

Description of Baseline Environmental Conditions:

The Project site is located in a mixed residential and commercial area. Specifically:

Shady Lane Alignment

Residential properties are located adjacent to the roadway throughout the entirety of Shady Lane, until the roadway intersects with Lagunitas Road.

Poplar Avenue Alignment

Institutional properties are located along Lagunitas Road. Poplar Avenue runs south through downtown Ross, which includes both commercial businesses and residences.

The Project will have no impacts related to population growth or demographics. The Project will also not displace existing housing or a substantial number of people. As the Project does not call for the construction

of new homes or demolition of existing homes, regulations pertaining to proper construction, provision, and siting of housing for a variety of incomes do not apply.

Analysis as to whether or not project activities would:

- a. Induce substantial population growth in area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

Impact Analysis:

The construction activities will not induce population growth. Activities are aimed towards relieving hydraulic and structural deficiencies in existing pipes.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

Impact Analysis:

The construction activities will not displace existing housing.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Impact Analysis:

The construction activities will not displace existing housing.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

14. Public Services

Project Activities Likely to Create an Impact:

The proposed Project will have no public service impacts.

Description of Baseline Environmental Conditions:

The Project is in an area that is currently served by fire, police, and paramedic services; schools; and other public facilities. It is not anticipated that the soil removal and filing activities would increase the number of police and fire protection–related calls received from the area or the level of regulatory oversight that must be provided as a result of the work. Overall, the Project would not create additional demand for public services in Ross. Therefore, the Project would have no impact on public services.

Analysis as to whether or not project activities would:

- a. Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

- Fire protection

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- Police protection

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- Schools

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- Parks

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- Other public facilities

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

15. Recreation

Project Activities Likely to Create an Impact:

The primary objective of the Project is to relieve hydraulic and structural deficiencies in a portion of RVSD's collection system. Phase 1 of the Project included the rehabilitation of an alignment that traversed through Ross Common Park. Improvements will be made along local access roads Shady Lane, Lagunitas Road, and Poplar Avenue, and public right-of-ways. The Project will have no impacts related to recreation and will not increase the use of local parks or involve construction of new facilities.

Description of Baseline Environmental Conditions:

According to the Town of Ross Open Space Plan, there are three parks in the vicinity of the Project site: Station Park, Frederick S. Allen Park, and Ross Common Park (Town of Ross 2007).

Station Park is approximately 1 acre and is located at the intersection of Lagunitas Road and Ross Common (which transforms into Poplar Avenue) on the eastern side of the Project site. Sir Francis Drake Boulevard is located to the east, parallel of the park. Station Park includes parkland, trees, and areas for sitting.

Frederick S. Allen Park is approximately 9 acres and is located to the adjacent south of Station Park and southeast of Ross Common Park. The park is bounded to the east by Sir Francis Drake Boulevard and to the west by Poplar Avenue. The park offers picnicking areas and areas for sitting and active recreation including tennis courts. The Marin County Bicycle Route 20 runs through the park. A portion of the Corte Madera Creek runs through Frederick S. Allen Park. The creek is currently under development by the USACE for flood risk management projects.

Ross Common Park is located at the intersection of Lagunitas Road and Ross Common (which transforms into Poplar Avenue) on the western side of the Project site. The approximately 4-acre Ross Common Park is opposite of the Ross Post Office and adjacent to the east of Ross School. It includes a narrow strip of trees lining the sidewalk and a cluster of redwoods at the northern extent of the park. The park offers picnicking areas and wide grassy areas for sitting or active recreation.

Analysis as to whether or not project activities would:

- a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Impact Analysis:

The soil removal and backfilling activities are not expected to increase the use of existing neighborhood and regional parks or other recreational facilities.

Conclusion:

- ☐ Potentially Significant Impact
☐ Less Than Significant with Mitigation Incorporated
☐ Less Than Significant Impact
☒ No Impact

- b. Include recreational facilities or require construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Impact Analysis:

The soil removal and backfilling activities do not involve recreational facilities or require construction or expansion of recreational facilities.

Conclusion:

- ☐ Potentially Significant Impact
☐ Less Than Significant with Mitigation Incorporated
☐ Less Than Significant Impact
☒ No Impact

References Used:

1. Town of Ross. 2007. *Town of Ross General Plan 2007-2025*. Town of Ross, CA.

16. Transportation and Traffic

Project Activities Likely to Create an Impact:

The Project could impact transportation and traffic by the following activities:

- Empty dump trucks accessing the Project site to load soil and debris excavated as part of the Project
- Loaded dump trucks transporting excavated soil and debris from the Project site to appropriate disposal facilities
- Loaded dump trucks accessing the site to deliver imported materials to backfill excavations
- Empty dump trucks leaving the site after delivering backfill materials
- Transport of Project-related construction equipment, materials, etc.
- Worker travel to and from the Project site.

All areas of the site will require flow bypassing and traffic control measures (Attachment E) during construction activities. Excavated soils will be hauled away and replaced with suitable material from offsite on a continuous basis.

Description of Baseline Environmental Conditions:

The Project site is bound to the north by Bolinas Avenue and to the south by the Ross/Kentfield border along Poplar Avenue. Sir Francis Drake Boulevard, located to the east of the Project site, is the major east-west through road in Marin County, stretching from Point Reyes on the west to the San Quentin Peninsula on the east. According to the Town of Ross General Plan, travel through and around Ross is affected by countywide development and travel patterns on Sir Francis Drake Boulevard. Bottle necks on Sir Francis Drake Boulevard can push through traffic on Bolinas Avenue, Shady Lane, Laurel Grove Avenue, and Poplar Avenue. Traffic on the town of Ross' roads is not only weekday traffic, but also includes weekend recreational traffic to state and national parks located in central and west Marin. Project-affected streets in the town of Ross include (Town of Ross 2007):

- Shady Lane—A two-lane arterial that connects the community of the town of Ross with Sir Francis Drake Boulevard.
- Lagunitas Road—A two-lane arterial that connects the community of the town of Ross with Sir Francis Drake Boulevard.
- Poplar Avenue—A two-lane arterial that connects the community of the town of Ross with the downtown area and traverses the community to Kentfield.

The Traffic Level of Service (LOS) Standards contained in Part V, Section 7.2 of the Town of Ross' 2007-2025 General Plan Transportation Element contains LOS for arterials in the town of Ross (Table 4). Part V, Section 7.3 requires that traffic from Sir Francis Drake Boulevard onto local streets is minimized. Part V, Section 7.4 of the General Plan requires a full CEQA review be undertaken for significant development proposals in Ross and in nearby areas and along the Sir Francis Drake Boulevard corridor that may impact traffic operations. Part V, Section 7.5 requires that roadway impacts due to construction activities are mitigated.

Table 4. Level of Service Rankings for Arterials in the Town of Ross

LOS	Existing	Forecast
Sir Francis Drake Boulevard/Bolinas Avenue		
AM Peak LOS	C	C
PM Peak LOS	C	C
Sir Francis Drake Boulevard/Laurel Grove		
AM Peak LOS	B	B
PM Peak LOS	A	B
Sir Francis Drake Boulevard/Lagunitas Road		
AM Peak LOS	A	A
PM Peak LOS	A	A
Lagunitas Road/Shady Lane		
AM Peak LOS	A	A
PM Peak LOS	A	A

Existing LOS (2006) and Forecasted (2025) Intersection LOS (Town of Ross 2017).

Analysis as to whether or not project activities would:

- a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

Impact Analysis:

The Project is a standard construction activity requiring equipment, materials, removal and offsite transport of construction debris and workers, and import of clean fill. The added number of vehicle trips would be minimal and by themselves not overload traffic flow. However, the intrusion of construction equipment and vehicles into the local street system of this residential area, especially along the Shady Lane and Poplar Avenue alignments, can result in traffic circulation and safety impacts. The traffic control plan prepared by Mark Thomas (2018) in Attachment D states that:

- The Contractor shall maintain access to local properties in all areas at all times.
- The Contractor shall provide 24 hours of traffic control as required.
- The Contractor shall notify residents in writing of traffic changes, impacted streets, and impacted intersections, detours, and closed streets at least three times in advance of the impact.
- The Contractor shall provide truck route in compliance with local ordinances.
- The Contractor shall place temporary signs 1 month in advance work notifying of road closures.

The traffic control plan prepared by the Contractor and the Control Measures listed in Attachment E will serve to minimize traffic flow overload.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.

Impact Analysis:

The Project site is located within the jurisdiction of the Town of Ross. As discussed in 16a above, the proposed Project is not expected to exceed the acceptable traffic levels of service or create increased congestion of the nearby streets, highways, or intersections, and would therefore have less-than-significant impacts.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

Impact Analysis:

The Project activities would not require air travel or transport. In addition, no structures would be constructed or altered in such a way that air traffic patterns would be affected.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Impact Analysis:

The Project would introduce a negligible number of trips over an approximately 8-month period. Lane closures are planned for Kent Avenue and Poplar Avenue and Redwood Drive and Poplar Avenue. The Contractor will place temporary signs 1 month in advance of work notifying residents of these lane closures and flaggers will be present during the lane closures. With the implementation of the traffic control plan prepared by the Contractor and the Control Measures in Attachment E, no elements of the Project design would introduce hazards to the road system.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- e. Result in inadequate emergency access.

Impact Analysis:

RVSD staff would ensure that access to the Project site will be maintained and controlled throughout Project implementation. In addition, the Project does not prescribe activities involving transportation of massive amounts of material and the high frequency of truck trips usually associated with such activities.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Impact Analysis:

The proposed work would not significantly impact existing roadways, bicycle paths, or pedestrian facilities and therefore does not conflict with any related, adopted policies, plans, or programs. An encroachment permit will be obtained before the start of Project work and the Contractor will be required to comply with all conditions set forth in the permit and RVSD standards. In addition, the Contractor will install bicycle warning signs at the entrances to all work areas and provide temporary pedestrian access plan that comply with the latest Caltrans Temporary Pedestrian Facilities Handbook.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

References Used:

1. Town of Ross. 2007. *Town of Ross General Plan 2007-2025*. Town of Ross, CA.
2. Mark Thomas. 2018. *Traffic Control Plan*. Mark Thomas, Walnut Creek, CA. August 8.

17. Utilities and Service Systems

Project Activities Likely to Create an Impact:

The construction activities would not significantly increase the requirement of water or wastewater services for the Project site.

Description of Baseline Environmental Conditions:

The Project is in an area where water service is provided by the Marin Municipal Water District, sewer facilities are managed by Sanitary District No. 1, wastewater treatment service is provided at the Central Marin Wastewater Treatment Plant, and local solid waste disposal is provided by Marin Sanitary Service at the Novato Landfill.

The Project site is currently owned by the Town of Ross. The sewer piping is operated and maintained by the Sanitary District No. 1. The Sanitary District No. 1 provides collection service to the Project site. Wastewater would not be generated by the soil removal and filling activities.

The soil removal and filling activities would not significantly increase the consumption of water on the Project site. A temporary increase of water consumption may occur associated with water truck use for dust suppression during soil removal and filling activities.

The Project would not require the construction of new public wastewater or stormwater drainage facilities.

Analysis as to whether or not project activities would:

- a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

Impact Analysis:

Wastewater would not be generated by the wastewater collection system improvement Project. Temporary sanitary facilities (portable toilets) will be deployed for use for the length of the Project.

Conclusion:

- ☐ Potentially Significant Impact
☐ Less Than Significant with Mitigation Incorporated
☐ Less Than Significant Impact
☒ No Impact

- b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Impact Analysis:

The Project will not result in the construction of new wastewater or wastewater-treatment facilities, or the expansion of existing facilities; therefore, there would be no impact on the existing wastewater network.

Conclusion:

- ☐ Potentially Significant Impact
☐ Less Than Significant with Mitigation Incorporated
☐ Less Than Significant Impact
☒ No Impact

- c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Impact Analysis:

The Project would not require the construction of new public stormwater drainage facilities.

Conclusion:

- ☐ Potentially Significant Impact
☐ Less Than Significant with Mitigation Incorporated
☐ Less Than Significant Impact
☒ No Impact

- d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.

Impact Analysis:

The construction activities would not significantly increase the consumption of water on the Project site. A temporary increase of water consumption may occur associated with water truck use for dust suppression during construction activities.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- e. Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the projects projected demand in addition to the providers existing commitments.

Impact Analysis:

Wastewater would not be generated by the construction activities and therefore there would be no impact on the existing wastewater network.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☐ Less Than Significant Impact
- ☒ No Impact

- f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.

Impact Analysis:

The construction would not significantly increase solid waste disposal needs at the Project site. A temporary increase of solid waste disposal may occur associated with site debris from soil removal and filling activities. Since landfill approval will take place before the planned soil removal, there will be no impact associated with permitted capacity.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

- g. Comply with federal, state, and local statutes and regulations related to solid waste.

Impact Analysis:

The removed soil and other wastes will be properly disposed of at a designated facility following the applicable state and federal regulations. See Attachment E.

Conclusion:

- ☐ Potentially Significant Impact
- ☐ Less Than Significant with Mitigation Incorporated
- ☒ Less Than Significant Impact
- ☐ No Impact

REPORT PREPARERS

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703 2nd Street, Suite 322
Santa Rosa, CA 95404
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Bridgette DeShields, Principal-in-Charge
Mala Pattanayek, Project Manager
Carolyn Huynh, Scientist

Mandatory Findings of Significance

Based on evidence provided in this Initial Study, Integral makes the following findings:

- a. The project ☐ has ☒ does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

The short-term disturbance of the Project area during the construction activities would not impact the adjacent habitat. There are no identified special-status species in the Project area. Based on the information presented within the Biological Resources section, there would be a less-than-significant potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal. There was no evidence of any bird nesting within the APE observed during the field reconnaissance survey. Although the limited habitat values and extent of ongoing disturbance generally precludes the potential for nesting birds in the APE, there remains a remote possibility that new bird nests could be established in the trees and other vegetation in and near the APE. With implementation of the mitigation measure, impacts to biological resources would be less than significant.

Based on the presented information within the Cultural and Tribal Cultural Resources section, multiple subsurface archaeological sites in the form of prehistoric shell midden deposits have been found in close proximity to the Project alignment/footprint in multiple directions, and one of these sites is directly adjacent to the Poplar Avenue portion of the Project alignment. Another deposit is in close proximity to the Lagunitas Road segment and the southern portion of the Shady Lane segment. Monitoring is recommended in areas where excavation of native soils and disturbance of native soils will occur. Spot monitoring will follow the initial monitoring activities if results prove negative and in areas where disturbed soils will be impacted. In addition, construction crews will be trained in "basic archaeological identification" and will have access to an Alert Sheet. If human remains are identified, the Coroner Division of the Marin County Sheriff's Office will be contacted for identification of human remains. With implementation of the mitigation measures, impacts to Native American or historic archaeological resources due to subsurface excavation would be less than significant.

- b. The project ☐ has ☒ does not have impacts that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

The proposed activities are limited in aerial extent and duration, would result in the construction of no new structures/buildings, and would return the ground surface in outdoor areas to pre-Project conditions. Therefore, the cumulative impact from Project activities is less than significant.

- c. The project ☐ has ☒ does not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly.

Worker and public health and safety were discussed in various sections of this Initial Study, including air quality, geology and soils, hazards and hazardous materials, noise and vibration, transportation/traffic, and utilities and service systems. In all instances, specific control measures have been included as necessary in the Project to reduce impacts to worker and public health and safety to less-than-significant levels. It should be noted that the proposed Project will replace infrastructure that is past its useful life, improve maintenance operations and safety, and reduce SSOs. Thus, the impact related to public health and environmental hazards is beneficial.

Determination of Appropriate Environmental Document:

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Certification:

Name
Title

Date

ATTACHMENT A

ABBREVIATIONS AND ACRONYMS

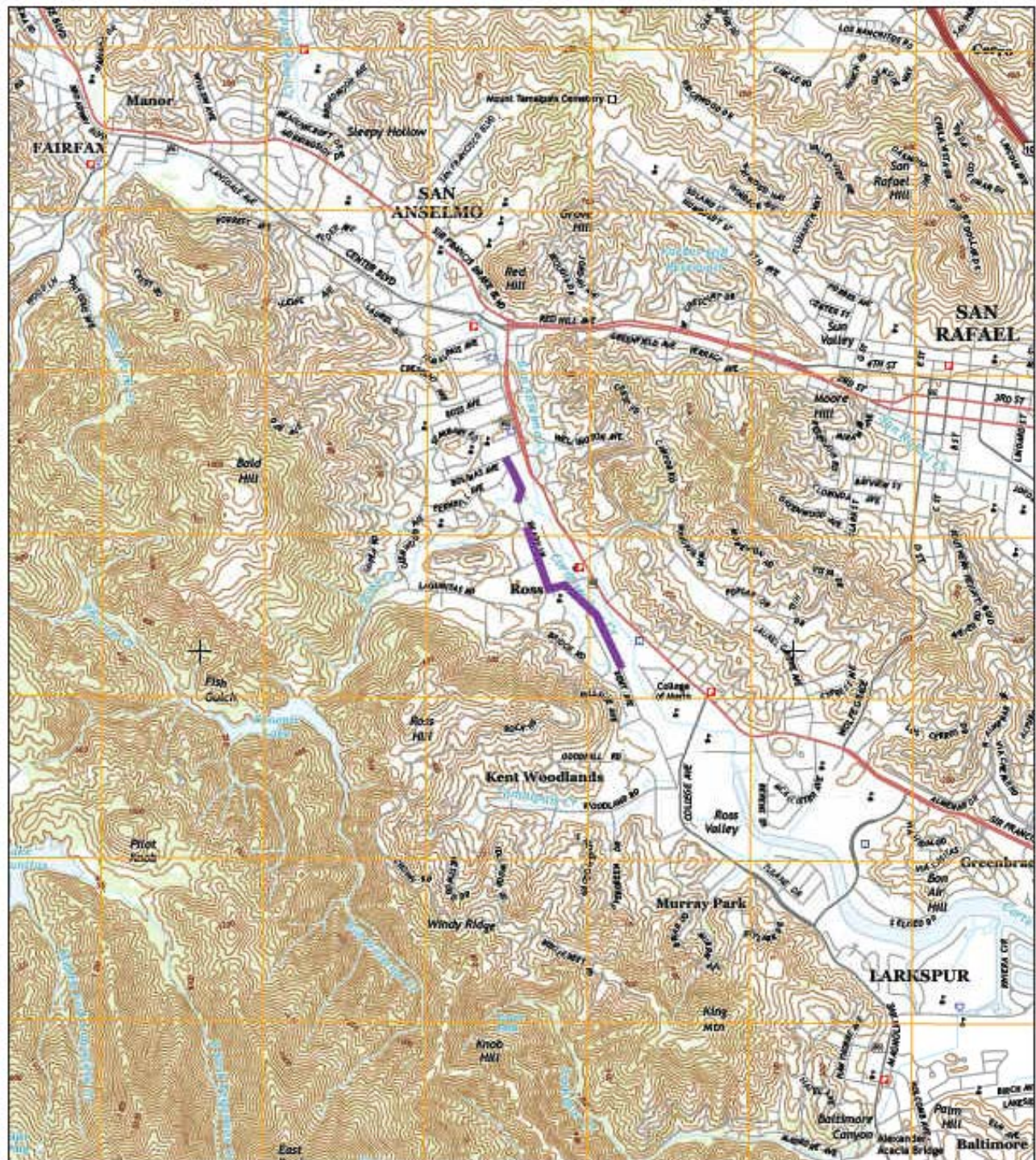
ATTACHMENT A ABBREVIATIONS AND ACRONYMS

AB32	California Global Warming Solutions Act of 2006
APE	area of potential effect
BAAQMD	Bay Area Air Quality Management District
BMP	best management practice
CAA	Clean Air Act
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CDMG	California Division of Mines and Geology
CDO	cease and desist order
CEQA	California Environmental Quality Act
CIPP	cured-in-place pipe
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalents
CWA	Clean Water Act
dBA	“A” weighted decibel
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIGR	Federated Indians of Graton Rancheria
FP	foldable thermoplastic pipe
GHG	greenhouse gas
HDD	horizontal directional drilling
HDPE	high-density polyethylene
I-580	Interstate 580
IAMP	Infrastructure Asset Management Plan
Integral	Integral Consulting Inc.
LDGS	Large Diameter Gravity Sewer
L _{dn}	day, night
LOS	Level of Service

LSA	Lake and Streambed Alteration
MLD	Most Likely Descendant
MRZ	Mineral Resource Zone
MT/year	maximum annual emissions
NAHC	Native American Heritage Commission
NO ₂	nitrogen dioxide
NO _x	oxides of nitrogen
O ₃	ozone
PM _{2.5}	particulate matter less than 2.5 microns
PM ₁₀	particulate matter less than 10 microns
ppm	parts per million
Project	Ross Valley Sanitary District Large Diameter Gravity Sewer Rehabilitation Project
RoadMod	Roadway Construction Emissions Model version 8.1.0
ROG	reactive organic gases
RSL	regional screening level
RVSD	Ross Valley Sanitary District
RWQCB	San Francisco Bay Regional Water Quality Control Board
SFBAAB	San Francisco Bay Area Air Basin
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO ₂	sulfur dioxide
SSO	sewer system overflow
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
U.S. 101	U.S. Highway 101
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
µg/m ³	micrograms per cubic meter

ATTACHMENT B

FIGURES



2015 "San Rafael, CA" US Topo 7.5-minute USGS topographical map

 Project Location

SCALE

0  1 Kilometer

0  1 Mile



Figure 1. Project Location Map

Large Diameter Gravity Sewer Rehab Project

ATTACHMENT C

OVERVIEW OF CONSTRUCTION METHODS

ATTACHMENT C—OVERVIEW OF CONSTRUCTION METHODS

The proposed Project includes the replacement of existing sewer pipes and the installation of new pipes by a variety of methods. These methods are:

- The *open cut* method relies on excavation of a trench from the surface. In many cases, open cut trenches are dug in previously disturbed soils within the footprint of an existing trench or roadway.
- *Pipe bursting* uses equipment to burst the host pipe outward into the surrounding soil while simultaneously pulling the new pipeline in its place.
- *Cured-in-place pipe* (CIPP) involves sliding a flexible resin-impregnated tube into an existing (host) pipe; the resin is then cured with hot water or steam to form a new jointless pipe.
- *Fold-and-Form* liner is introduced into the host pipe from existing manholes. Steam is used to form and cure the liner; once formed, compressed air or a mix of water and compressed air is used to cool and set the liner to form the new jointless pipe.
- *Slip Lining* involves excavation of a pit and removal of a portion of the host pipe to establish access. Sections of new liner are then inserted into the host pipe via the access point and joined together per manufacturer recommendations.
- *Horizontal Directional Drilling* (HDD) is generally accomplished in three stages. The first stage consists of directionally drilling a small diameter pilot hole along a designed directional path. The second stage involves enlarging this pilot hole to a diameter suitable for installation of the proposed pipeline. The third stage consists of pulling the pipeline back through the enlarged hole.
- *Bore-and-jack* is a form of horizontal auger boring for new construction in which a boring machine is set on tracks in an insertion pit, jacking each length of casing into the bore path as the auger carries debris back to the insertion pit for removal.

ATTACHMENT D

CONSTRUCTION PLANS

ROSS VALLEY
SANITARY DISTRICT



VOLUME 3 OF 3
PLANS FOR
PROJECT NO. 944

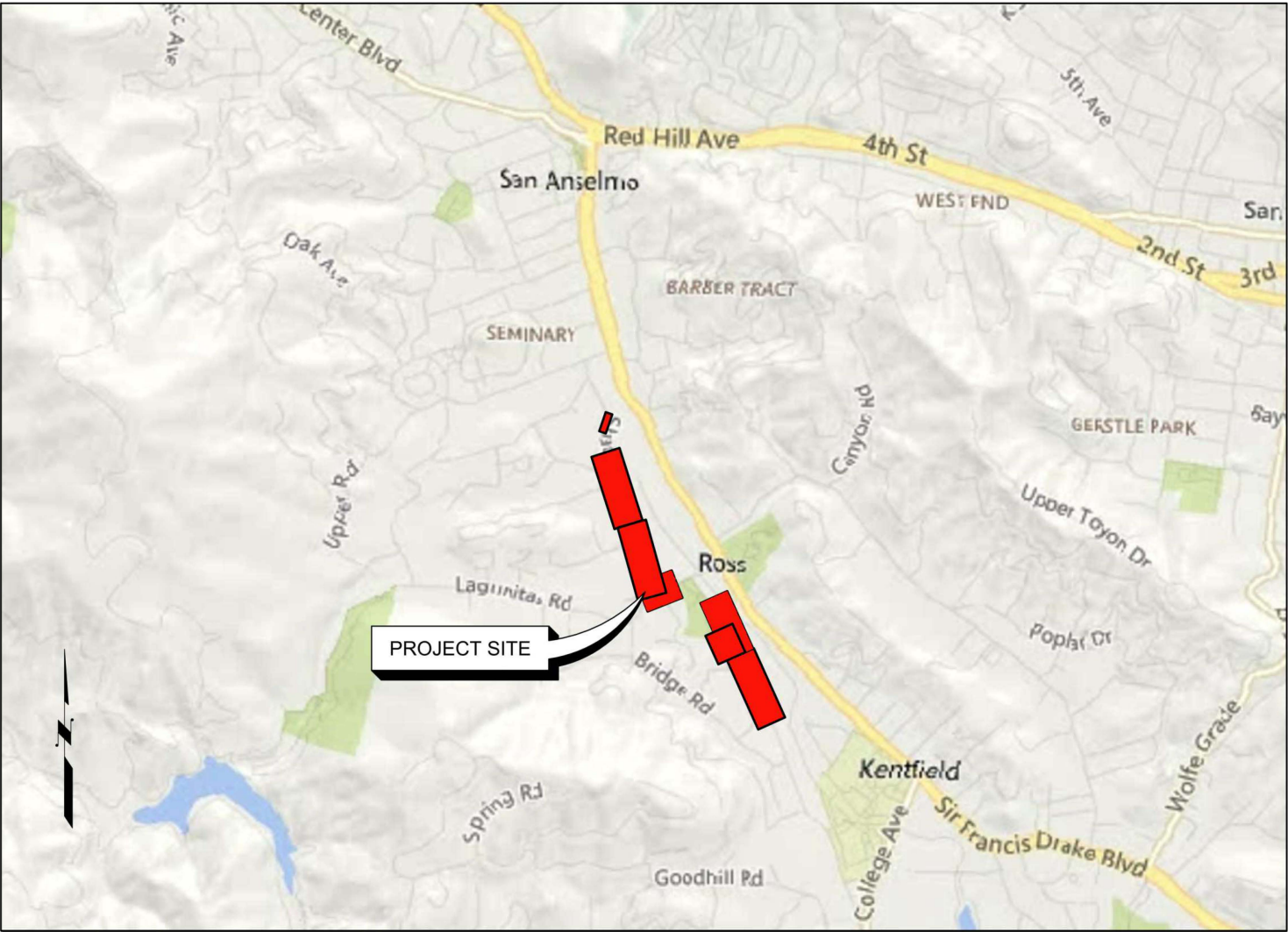
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SEWER PROJECT II-3B
LOWER SHADY LANE/POPLAR AVENUE

BOARD OF DIRECTORS

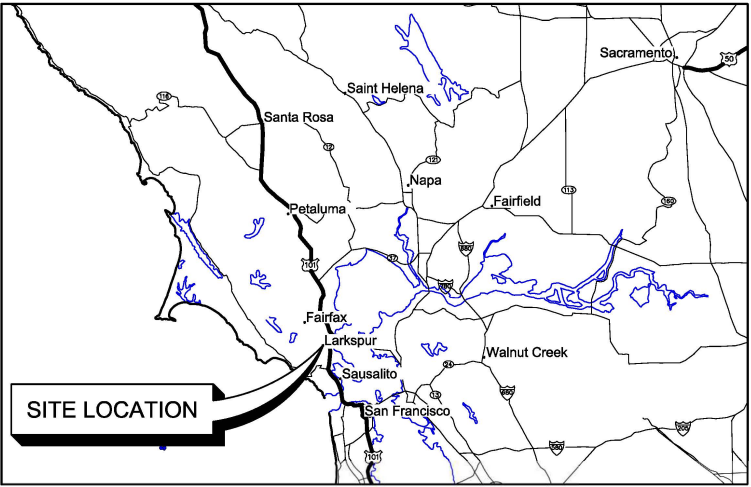
THOMAS GAFFNEY	PRESIDENT
MARY SYLLA	SECRETARY
MICHAEL BOORSTEIN	TREASURER
DOUG KELLY	ALTERNATE SECRETARY
PAMELA MEIGS	ALTERNATE TREASURER
STEVEN MOORE, PE	GENERAL MANAGER
KATHERINE HAYDEN, PE	INFRASTRUCTURE ASSETS MANAGER

BID SET FOR
CONSTRUCTION
NOVEMBER, 2018

Brown AND
Caldwell



LOCATION MAP
SCALE: 1" = 1000'



VICINITY MAP
SCALE: NONE

SUBMITTED BY: Erik Zalkin 11/27/18
ERIK ZALKIN, PE C75392 DATE

ACCEPTED BY: Katherine Hayden 11/27/18
KATHERINE HAYDEN, PE DATE
INFRASTRUCTURE ASSETS MANAGER

INDEX OF DRAWINGS

GENERAL

- | | | |
|---|----|---|
| 1 | G0 | TITLE SHEET |
| 2 | G1 | KEY MAP AND SURVEY CONTROL POINTS |
| 3 | G2 | STANDARD SYMBOLS |
| 4 | G3 | ABBREVIATIONS AND GENERAL NOTES |
| 5 | G4 | MANHOLE REHABILITATION AND LATERAL SCHEDULES |
| 6 | G5 | PIPING, GEOTECHNICAL BORING, POTHOLING AND PAVING SCHEDULES |

CIVIL

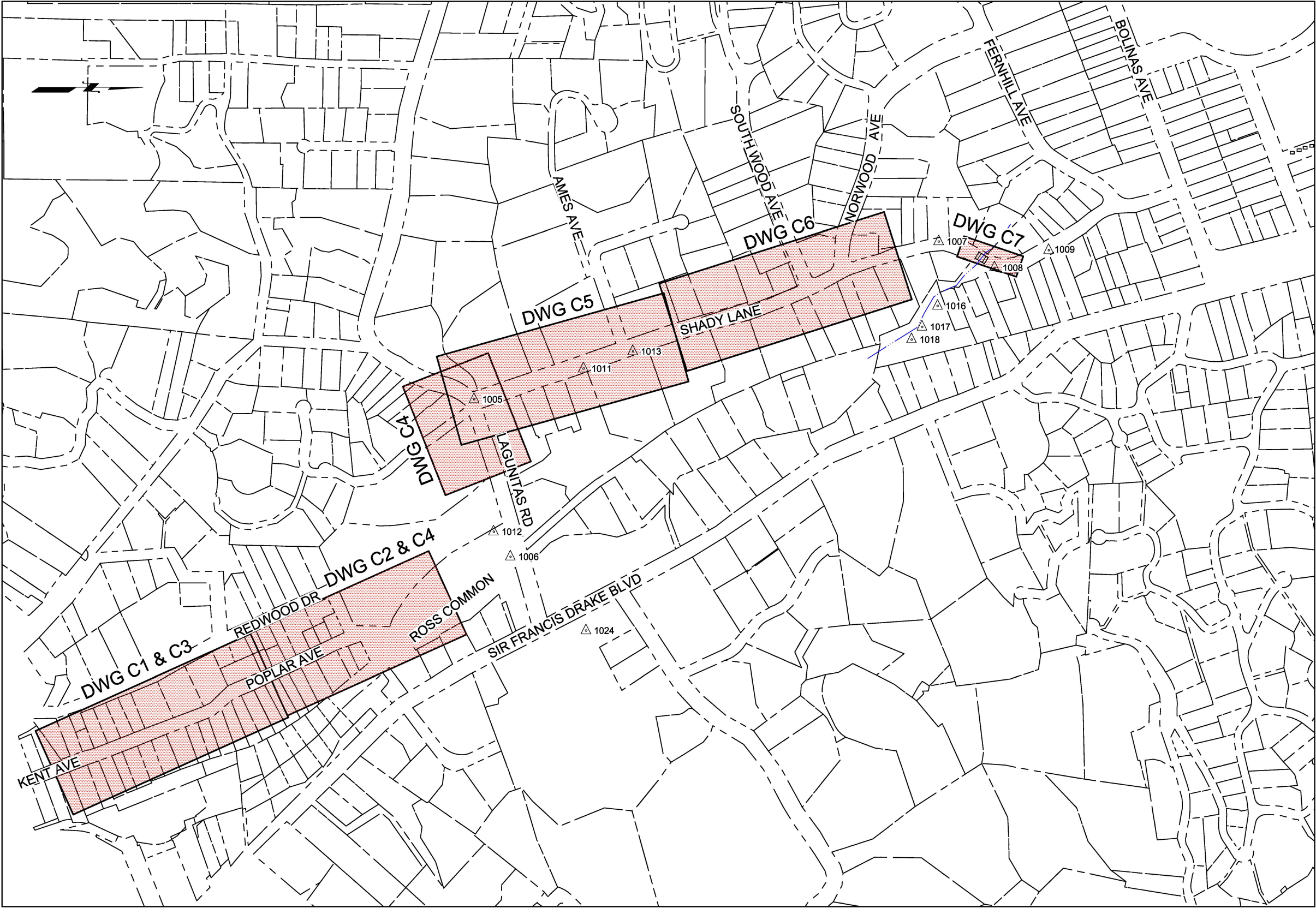
- | | | |
|----|-----|------------------------------------|
| 7 | C1 | PARALLEL SEWER PLAN AND PROFILE 1 |
| 8 | C2 | PARALLEL SEWER PLAN AND PROFILE 2 |
| 9 | C3 | REHABILITATION PLAN AND PROFILE 1 |
| 10 | C4 | REHABILITATION PLAN AND PROFILE 2 |
| 11 | C5 | REHABILITATION PLAN AND PROFILE 3 |
| 12 | C6 | REHABILITATION PLAN AND PROFILE 4 |
| 13 | C7 | ROSS CREEK SIPHON PLAN AND PROFILE |
| 14 | C8 | BYPASS |
| 15 | C9 | PAVEMENT RESTORATION |
| 16 | C10 | CIVIL DETAILS 1 |
| 17 | C11 | CIVIL DETAILS 2 |
| 18 | C12 | CIVIL DETAILS 3 |
| 19 | C13 | CIVIL DETAILS 4 |

- | | | |
|----|-----|-------------------------|
| 20 | C14 | CIVIL DETAILS 5 |
| 21 | C15 | CIVIL DETAILS 6 |
| 22 | C16 | DETAIL MANHOLE PHOTOS 1 |
| 23 | C17 | DETAIL MANHOLE PHOTOS 2 |

TRAFFIC CONTROL

- | | | |
|----|------|------------------------|
| 24 | TC-1 | TRAFFIC CONTROL PLAN 1 |
| 25 | TC-2 | TRAFFIC CONTROL PLAN 2 |
| 26 | TC-3 | TRAFFIC CONTROL PLAN 3 |
| 27 | TC-4 | TRAFFIC CONTROL PLAN 4 |
| 28 | TC-5 | TRAFFIC CONTROL PLAN 5 |
| 29 | TC-6 | TRAFFIC CONTROL PLAN 6 |
| 30 | TC-7 | TRAFFIC CONTROL PLAN 7 |
| 31 | TC-8 | TRAFFIC CONTROL PLAN 8 |
| 32 | TC-9 | TRAFFIC CONTROL PLAN 9 |

Path: P:\480001\148768 - RVS\GD\GD Rehab II Design-ESD\CAD\2-SHEETS\G-GENERAL File: 148768-148768-V17-G-01.dwg Plot Date: November 26, 2018 - 11:09 AM CADD User: Larry Bullock



KEY MAP
SCALE: 1" = 200'

- SURVEY BASE NOTES**
1. THE PROJECT HORIZONTAL DATUM IS BASED UPON THE NORTH AMERICAN DATUM OF 1983 (NAD83). CALIFORNIA COORDINATE SYSTEM ZONE 3, EPOCH 2010.00, U.S. SURVEY FEET.
 2. THE PROJECT IS BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), U.S. SURVEY FEET.
 3. PROPERTY LINES AS SHOWN ARE BASED UPON COUNTY GIS DATA.

CONTROL POINT TABLE				
POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
1005	SVNS-SET MAG	2179203.19	5968158.56	27.58
1006	CUT X	2179341.44	5968759.62	29.54
1007	SVNS-SET MAG	2180976.61	5967556.15	36.63
1008	SVNS-SET MAG	2181189.79	5967656.15	35.64
1009	SVNS-SET MAG	2181396.52	5967589.76	N/A
1011	SVNS-SET WK PT	2179620.61	5968041.36	29.42
1012	SVCX-SET	2179277.60	5968663.98	25.61
1013	SVNS-SET MAG	2179809.19	5967975.73	31.66
1016	SVNS-SET	2180972.04	5967802.04	33.60
1017	SVNS-SET	2180912.96	5967881.85	33.04
1018	SVMC 60D WK PT	2180872.71	5967930.36	35.14
1024	MAG NAIL & SHINER	2179630.04	5969041.44	31.91

Brown AND Caldwell
WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

SCALE: AS SHOWN

DESIGNED: C. DUDLEY
DRAWN: T. LAMBERT
CHECKED: _____
APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901




















GENERAL

KEY MAP AND SURVEY CONTROL POINTS

FILENAME
148768-148768-V17-G-01.DWG
BC PROJECT NUMBER
148768
Nov 26, 2018
DRAWING NUMBER
G1
SHEET NUMBER
2 OF 32

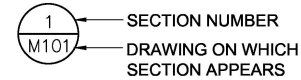
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STANDARD SYMBOLS

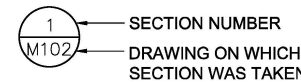
 COMMUNICATION BOX	 IRRIGATION VALVE BOX	 DOWN DRAIN	 WELL
 FIBER OPTICS	 PATH LIGHT	 DROP INLET (NON-CURB)	 WELL PUMP
 COMMUNICATION GUY ANCHOR	 TREE	 STORM DRAIN MANHOLE	 SIGNAL POLE
 COMMUNICATION MANHOLE	 SANITARY SEWER CLEAN OUT	 REINFORCED CONCRETE PIPE	 AIR RELEASE VALVE
 COMMUNICATION POLE	 GREASE TRAP	 STORM DRAIN RISER	 SURVEY CONTROL POINT
 COMMUNICATION RISER	 BILLBOARD SIGN	 SUBDRAIN	 MONUMENT
 ELECTRICAL BOX	 SANITARY SEWER MANHOLE	 LANE ARROW - STRAIGHT	 PIPE SIZE AND DIRECTION OF FLOW
 ELECTROLIER	 BUS STOP SIGN	 LANE ARROW - LEFT	 SANITARY SEWER MANHOLE
 GUY POLE/ STUB	 BIKE CROSSING SIGN	 LANE ARROW - RIGHT	 EXISTING SEWER
 GUY ANCHOR	 COMMUNICATION WARNING SIGN	 LANE ARROW - STRAIGHT/LEFT	 EXISTING SEWER LATERAL
 JOINT POLE	 GAS WARNING SIGN	 LANE ARROW - STRAIGHT/RIGHT	 EXISTING SANITARY SEWER FORCE MAIN
 LIGHT POLE	 HANDICAP PARKING SIGN	 LANE ARROW - STRAIGHT/LEFT/RIGHT	 EXISTING STORM DRAIN
 ELECTRICAL LIGHT	 SIGN MISCELLANEOUS	 COUNTY/ CITY BENCH MARK	 EXISTING GAS
 ELECTRICAL MANHOLE	 NO PARKING SIGN	 MTCO CONTROL POINT (SEE DESCRIPTION)	 EXISTING WATER
 ELECTRICAL METER	 NO STOPPING SIGN	 MTCO SET/FOUND CUT "X"	 EXISTING TELEPHONE
 POWER POLE	 ONE WAY SIGN	 FLIGHT CROSS	 EXISTING UNDERGROUND COMMUNICATIONS
 ELECTRICAL RISER	 WARNING PADDLE	 MTCO SET HUB	 EXISTING CABLE TV
 SERVICE POLE	 PIPELINE WARNING	 FOUND IRON PIPE	 EXISTING ELECTRICAL
 GAS MANHOLE	 RAILROAD CROSSING SIGN	 MTCO SET IRON PIPE	 EXISTING IRRIGATION
 GAS METER	 SPEED LIMIT SIGN	 FOUND IRON ROD	 EXISTING JOINT TRENCH
 GAS RISER	 STOP SIGN	 FOUND MONUMENT	 EXISTING TRAFFIC SIGNAL
 GAS VALVE	 STREET SIGN	 MTCO SET MONUMENT	 EXISTING FENCE
 MONITORING WELL	 YIELD SIGN	 FOUND NAIL & SHINER	 EDGE OF PAVEMENT
 TEST WELL	 AREA DRAIN	 MTCO SET NAIL & SHINER	 PROPERTY LINE
 IRRIGATION BACKFLOW PREVENTOR	 CURB DRAIN INLET	 FOUND BRASS PIN	 BRUSH LINE
 HOSE BIB	 CORRUGATED METAL PIPE	 MTCO SET BRASS PIN	 ABANDONED
 IRRIGATION BOX	 STORM DRAIN CLEAN OUT	 FOUND REBAR (SEE DESCRIPTION)	 ABANDONED WATER LINE
 STAND PIPE	 CULVERT	 MTCO SET REBAR	 ABANDONED SEWER LINE
 IRRIGATION VALVE	 WATER MANHOLE	 RAILROAD SPIKE	 PERMANENT EASEMENT LINE
 BACKFLOW ASSEMBLY	 WATER METER	 PEDESTRIAN BENCH	 TEMPORARY CONSTRUCTION EASEMENT
 BLOW OFF	 WATER PIPE	 BIKE RACK	 DRAWING MATCH LINE
 WATER BOX	 POST INDICATOR VALVE	 BOLLARD	 RIGHT OF WAY
 FIRE ALARM	 WATER RISER	 FLAG POLE	 NEW PIPELINE OR REHABILITATION
 FIRE DEPARTMENT CONNECTION	 WATER VALVE	 FENCE/ GATE POST	 BORE LOCATION
 FIRE HYDRANT		 RESIDENTIAL MAILBOX	 POTHOLE LOCATION
		 FEDERAL MAILBOX	 SLURRY SEAL
		 PARKING BLOCK/ STOP	 STEEL
		 PARKING METER	 SAND
		 TRAFFIC SIGNAL BOX	 NATURAL GROUND OR FINISHED GRADE
		 FLASHING SIGNAL LIGHT	 GRAVEL
		 PEDESTRIAN SIGNAL POLE	 PIPE ZONE BACKFILL
		 SIGNAL POLE AND ELECTROLIER	 CLSM

TYPICAL SECTION AND DETAIL NUMBERING SYSTEM

(1) SECTION CUT ON DWG M101.



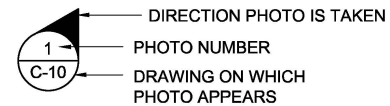
(2) DWG M102 THIS SECTION IS IDENTIFIED AS:



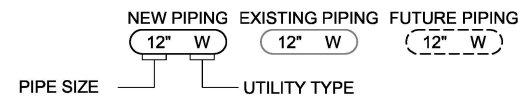
(3) DETAILS ARE CROSS-REFERENCED IN A SIMILAR MANNER, EXCEPT THAT DETAILS ARE IDENTIFIED BY LETTER RATHER THAN BY NUMBER.

PHOTO NUMBERING SYSTEM

PHOTO ON DWG C-10.



PIPING DESIGNATIONS



Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

SCALE: AS SHOWN

DESIGNED: C. DUDLEY

DRAWN: T. LAMBERT

CHECKED: _____

APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS



**ROSS VALLEY
SANITARY DISTRICT**

2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

GENERAL

STANDARD SYMBOLS

FILENAME
148768-113B-V17-G-02.DWG

BC PROJECT NUMBER
148768

Nov 26, 2018

DRAWING NUMBER
G2

SHEET NUMBER
3 OF 32

ABBREVIATIONS

[illegible]

GENERAL NOTES

1. THE CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT (USA) AT 1-800-642-2444 FOR LOCATING AND MARKING SURFACE UTILITIES IN THE AREAS OF THE WORK. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ANY ADDITIONAL UTILITY COMPANIES TO DETERMINE THE LOCATION OF EXISTING UTILITIES. CONTACT AND COORDINATION WITH USA AND USA MARKINGS SHALL NOT RELIEVE THE CONTRACTOR FROM THEIR RESPONSIBILITY FOR UTILITY VERIFICATION AND PROTECTION.
2. CONTRACTOR SHALL OBTAIN ANY NECESSARY PERMITS INCLUDING BUT NOT LIMITED TO:
 - 2.A. TOWN OF ROSS ENCROACHMENT PERMIT
 - 2.B. MARIN COUNTY ENCROACHMENT PERMIT
 - 2.C. CAL-OSHA CONSTRUCTION ACTIVITY PERMIT
 - 2.D. RWQCB SWPPP
 - 2.E. SEE SPECIFICATION SECTION 01060 FOR DETAILS.
3. CONTRACTOR SHALL SUBMIT A DETAILED CONSTRUCTION WORK PLAN AND TRAFFIC CONTROL AND SIGNAGE PLAN FOR REVIEW AND APPROVAL BY THE TOWN OF ROSS AND RVSD PRIOR TO STARTING AND WORK IN FIELD. TRAFFIC CONTROL PLANS PROVIDED HEREIN ARE CONCEPTUAL IN NATURE.
4. THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS SHOWN IN THESE PLANS AND THE SPECIFICATIONS THAT ARE THE CONTRACT DOCUMENTS FOR THE PROJECT. MANY MITIGATIONS, REQUIREMENTS, LIMITATIONS, AND RESTRICTIONS ARE IN EFFECT ON THIS PROJECT FROM MANY JURISDICTIONS, AS IDENTIFIED IN THE SPECIFICATIONS. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS RELATED TO THE PROJECT.
5. PIPELINE STATIONING SHOWN IN THESE PLANS ARE HORIZONTAL DISTANCES MEASURED ON A LEVEL PLANE. THE CONTRACTOR IS ADVISED THAT STEEP TERRAIN OR PIPE SLOPES MAY RESULT IN DEVIATIONS BETWEEN THE DIMENSIONS SHOWN ON THE PLANS AND ACTUAL DIMENSIONS REQUIRED TO COMPLETE THE WORK IN THE FIELD. ALL PIPELINE LAYOUT AND FABRICATION SHOP DRAWINGS SHALL ACCOUNT FOR POTENTIAL VARIATIONS IN THE FIELD. THE CONTRACTOR SHALL RECORD AND REPORT ACTUAL DIMENSIONS, DEPTHS, AND LOCATIONS OF ANY DEVIATIONS FROM THE CONTRACT DOCUMENTS TO THE CONSTRUCTION MANAGER AND INCORPORATE THE ACTUAL DIMENSIONS INTO RECORD DRAWINGS.
6. EXISTING UTILITIES IN THE PROJECT AREA ARE CONSIDERED TO BE IN FRAGILE CONDITION. THE CONTRACTOR SHALL EXERCISE NECESSARY CAUTION WHEN WORKING NEAR EXISTING UTILITIES. WORK IN THE VICINITY OF ALL UTILITIES AND HIGH PRESSURE GAS LINES SHALL BE PER CALIFORNIA GOVERNMENT CODE SECTION 4216.
7. ALL TRAFFIC MARKINGS, PAVEMENT DELINEATIONS, SIGNING AND STRIPING SHALL BE REPLACED PER COUNTY OF MARIN STANDARDS. THE CONTRACTOR SHALL DOCUMENT EXISTING CONDITIONS ALONG THE ALIGNMENT AND HAUL ROUTES PRIOR TO THE START OF WORK.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, PROTECTING AND RESTORING ANY TRAFFIC LOOPS. WIRE SPLICES ARE NOT ALLOWED.
9. CONTRACTOR SHALL COMPLY WITH SCHEDULE CONSTRAINTS, PERMIT CONSTRAINTS AND CONDITIONS AS SPECIFIED IN THE CONTRACT SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO SECTIONS 01010 AND 01060.
10. THE LOCATION AND SIZE OF UTILITIES SHOWN ARE APPROXIMATE AND BASED ON AVAILABLE UTILITY INFORMATION PROVIDED BY THE OWNERS OF THE UTILITIES. WHERE SIZE OF UTILITY IS NOT SHOWN, THE UTILITY OWNER DID NOT PROVIDE THIS INFORMATION. CONTRACTOR SHALL FIELD VERIFY LOCATION AND SIZE PRIOR TO EXCAVATION.
11. SOME UTILITIES AND SERVICE CONNECTIONS MAY NOT BE SHOWN ON THE DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF UTILITIES AND THEIR SERVICE CONNECTIONS IN THE FIELD AND FOR LOCATING AND PROTECTING ALL SUCH FACILITIES.
12. SANITARY SEWER LATERAL CONNECTIONS ARE APPROXIMATE, CONTRACTOR SHALL FIELD VERIFY LATERAL LOCATIONS AND REINSTATE LATERALS IN ACCORDANCE WITH SPEC SECTION 02600 AND NOTES ON PLANS.
13. CONTRACTOR SHALL PROVIDE ACCESS TO UTILITY COMPANIES FOR MAINTENANCE AND WORK ON THEIR UTILITIES DURING THE COURSE OF CONSTRUCTION.
14. TREES, LANDSCAPING AND IRRIGATIONS SYSTEMS SHALL NOT BE DAMAGED OR REMOVED UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS. LANDSCAPING DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE RESTORED TO MATCH EXISTING CONDITIONS AND IN ACCORDANCE WITH SPEC SECTION 02900.
15. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTIES WITHIN AND ADJACENT TO THE CONSTRUCTION AREA THROUGHOUT THE PERIOD OF CONSTRUCTION AND IN ACCORDANCE WITH THE TRAFFIC CONTROL PLAN AND ENCROACHMENT PERMIT ISSUED BY THE TOWN OF ROSS AND THE COUNTY OF MARIN.
16. WORK AROUND ROSS CREEK SHALL COMPLY WITH THE CONDITIONS STIPULATED IN THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (CA DFW) LAKE AND STREAMBED ALTERATION AGREEMENT (LSA) BETWEEN THE DISTRICT AND CA DFW.

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

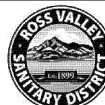
LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

SCALE: AS SHOWN

DESIGNED: C. DUDLEY
DRAWN: T. LAMBERT
CHECKED: _____
APPROVED: E. ZALKIN

[illegible]

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS



**ROSS VALLEY
SANITARY DISTRICT**

2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

GENERAL

FILENAME
 148768-IIB-V17-G-03.DWG
 BC PROJECT NUMBER
 148768
 Nov 26, 2018
 DRAWING NUMBER
 G3
 SHEET NUMBER
 4 OF 32

ABBREVIATIONS AND GENERAL NOTES

Path: P:\4800N\148768 - RVSD LGDS Rehab II Design-ESD\CAD\2-SHEETS\G-GENERAL File: 148768-II3B-V17-G-04.dwg Plot Date: November 26, 2018 - 11:11 AM CADD User: Larry Bullock

MANHOLE SCHEDULE									
DRAWING NO.	MANHOLE	EX. MATERIAL	DEPTH TO INVERT	REPLACE 24" FRAME AND COVER	LINE MANHOLE (SEE NOTE 1)	REPAIR/ MODIFY BENCH	ABANDON MANHOLE	REPLACE MANHOLE	NEW MANHOLE TYPE
C1	R500.050	BR	7.5'	-----	-----	-----	-----	X	NON-STD
C1	R501.010	-----	6.5'	-----	-----	-----	-----	-----	SD-02
C1	R501.020	-----	6.8'	-----	-----	-----	-----	-----	SD-02
C1	R501.030	-----	7.8'	-----	-----	-----	-----	-----	SD-02
C2	R501.040	-----	8.7'	-----	-----	-----	-----	-----	SD-02
C2	R501.050	-----	6.7'	-----	-----	-----	-----	-----	SD-01
C2	R501.060	-----	5.2'	-----	-----	-----	-----	-----	SD-01
C3	R500.060	-----	7.0'	-----	-----	-----	-----	-----	SD-02
C3	R500.070	BR	8.1'	X	X	X	-----	-----	-----
C2/C4	R500.080	CONC	9.4'	-----	-----	-----	-----	-----	-----
C4	R500.095	CONC	11.2'	-----	-----	-----	-----	-----	-----
C4	R500.100	BR	11.3'	X	X	X	-----	-----	-----
C4	R500.110	BR	10.2	-----	-----	-----	X	-----	-----
C4	R500.115	CONC	10.8'	X	-----	X	-----	-----	-----
C4/C5	R500.120	BR	10.1'	-----	-----	-----	-----	X	SD-02
C5	R500.125	-----	10.5'	-----	-----	-----	-----	-----	SD-02
C5	R500.130 (EX)	CONC	13.2'	-----	-----	-----	X	-----	-----
C5	R500.130 (NEW)	-----	11.9'	-----	-----	-----	-----	-----	SD-02
C5	R556.010	CONC	10'	-----	-----	X	-----	-----	-----
C5	R581.010	CONC	9.5'	-----	-----	X	-----	-----	-----
C5	R500.135	CONC	13.1'	-----	-----	-----	-----	-----	SD-02
C6	R500.140 (EX)	BR	16.1'	-----	-----	-----	X	-----	-----
C6	R500.140 (NEW)	-----	17.4'	-----	-----	-----	-----	-----	SD-02
C7	R500.165	CONC	13.5'	-----	-----	-----	-----	-----	SD-02
C7	R500.170	BR	14.0'	-----	-----	-----	X	-----	-----
C7	R500.185	CONC	9.5'	-----	-----	-----	-----	-----	-----

MANHOLE NOTES:

1. MANHOLES SHALL BE REHABILITATED PER SPECIFICATION SECTION 02720.
2. SEE STANDARD DETAILS SD-01, SD-02, SD-05, SD-10, SD-11, AND SD-13 FOR MANHOLE CONSTRUCTION DETAILS.

LATERAL SCHEDULE							
EXISTING UPSTREAM MH	APPROX. LATERAL STATION (SEE NOTE 1)	DIRECTION		EXISTING UPSTREAM MH	APPROX. LATERAL STATION (SEE NOTE 4)	DIRECTION	
R500.140	10+91	W		R500.070	6+89	E	
R500.130	4+30	E			6+41	W (NOTE 2)	
R500.110	1+47	N			6+30	E	
	0+47	N			5+75	E	
R500.100	0+27	E			5+44	W (NOTE 2)	
	0+04	W			5+39	E	
R500.080	11+98	E			4+96	E	
	11+35	E			4+94	E	
	11+32	E			4+64	E	
	11+27	W			3+58	E	
	10+82	W			3+49	E	
	10+66	E			3+05	E	
	10+52	W			2+66	E	
	10+40	E			2+53	E	
	10+19	W			2+49	W	
	10+17	W			1+82	E	
	9+92	E			1+39	E	
	9+85	W			1+31	E	
	9+41	E			0+39	E	
	9+33	W					
	8+91	E					
	8+89	E					
	8+88	W					
	8+76	W					
	8+72	W (NOTE 2)					
	8+22	E					
	8+01	W (NOTE 2)					
	7+70	E					
	7+36	E					
	7+26	W (NOTE 2)					

LATERAL NOTES:

1. STATIONING FROM DISTRICT CCTV RECORDS IS APPROXIMATE; CONTRACTOR TO FIELD LOCATE ALL LATERALS.
2. IF THERE IS NOT ENOUGH SPACE TO PASS BENEATH THE EXISTING SD AND EXTEND THESE LATERALS TO THE NEW 16" SEWER, THEN LEAVE THEM CONNECTED TO THE EXISTING 21" SEWER AND REINSTATE THEM AFTER LINING.
3. DOWNSTREAM OF MHS R500.080 AND R500.070: SOME LATERALS FROM THE WEST MAY REQUIRE REMOVAL UP TO AND INCLUDING THE CONNECTION TO THE EXISTING 21 IN MAIN. SEE DWG C14 FOR DETAILS ON PLUGGING THE OPENINGS AFTER REMOVAL OF THE LATERALS.

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

SCALE: AS SHOWN

DESIGNED: C. DUDLEY

DRAWN: T. LAMBERT

CHECKED: -----

APPROVED: E. ZALKIN

REGISTERED PROFESSIONAL ENGINEER
E. S. ZALKIN
No. 022392
CIVIL
STATE OF CALIFORNIA

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

ROSS VALLEY
SANITARY DISTRICT

2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

GENERAL

MANHOLE REHABILITATION AND LATERAL SCHEDULES

FILENAME
148768-II3B-V17-G-04.DWG

BC PROJECT NUMBER
148768

Nov 26, 2018

DRAWING NUMBER
G4

SHEET NUMBER
5 OF 32

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PIPING SCHEDULE												
DRAWING NO.	DS MANHOLE	US MANHOLE	EXISTING DIAMETER, IN	LENGTH (FT)	EXISTING MATERIAL	NEW MATERIAL	NEW DIA	METHOD	LINING METHOD	OVALITY (%)	MODULUS OF PASSIVE SOIL REACTION (PSI)	WORKING RESTRICTIONS (SEE SPEC SECTION 01010)
C1	R500.050	R501.010	-	296		PVC DR 18 (C900)	16	OPEN CUT	-	-	-	X
C1	R501.010	R501.020	-	277	-	PVC DR 18 (C900)	16	OPEN CUT	-	-	-	X
C1	R501.020	R501.030	-	120	-	PVC DR 18 (C900)	16	OPEN CUT	-	-	-	X
C1/C2	R501.030	R501.040	-	490	-	PVC DR 18 (C900)	16	OPEN CUT	-	-	-	X
C2	R501.040	R500.080	-	5	-	PVC DR 18 (C900)	16	OPEN CUT	-	-	-	X
C2	R501.040	R501.050	-	124	-	PVC DR 18 (C900)	8	OPEN CUT	-	-	-	X
C2	R501.050	R501.060	-	194	-	PVC DR 18 (C900)	8	OPEN CUT, HDD	-	-	-	X
C3	R500.050	R500.060	21*	310	CP	CIPP	21*	LINING	CIPP (S,UV), FP	2	1000	X
C3	R500.060	R500.070	21*	70	CP	PVC DR 18 (C900)	24	OPEN CUT	SPOT REPAIR	-	-	X
C3	R500.060	R500.070	21*	392	CP	CIPP	21*	LINING	CIPP (S,UV), FP	2	1000	X
C3/C4	R500.070	R500.080	21*	501	CP	CIPP	21*	LINING	CIPP (S,UV), FP	2	1000	X
C4	R500.095	R500.100	21*	31	CP	CIPP	21*	LINING	CIPP (S,UV), FP	2	1000	X
C4	R500.100	R500.110	21*	225	CP	CIPP	21*	LINING	CIPP (S,UV), FP	10	1000	X
C4	R500.110	R500.115	21*	32	CP	CIPP	21*	LINING	CIPP (S,UV), FP	2	1000	X
C4	R500.115	R500.120	21*	28	CP	CIPP	21*	LINING	CIPP (S,UV), FP	2	1000	X
C5	R500.115	R500.125	-	323	-	PVC DR 18 (C900)	24	OPEN CUT	-	-	-	X
C5	R500.125	R500.130	-	257	-	PVC DR 18 (C900)	24	OPEN CUT	-	-	-	X
C5	R500.130	R556.010	-	53	PVC	PVC DR 18 (C900)	8	OPEN CUT	-	-	-	X
C5	R500.130	R581.010	-	33	PVC	PVC DR 18 (C900)	8	OPEN CUT	-	-	-	X
C5/C6	R500.130	R500.135	-	226	-	PVC DR 18 (C900)	24	OPEN CUT	-	-	-	X
C6	R500.135	R500.140	-	288	-	PVC DR 18 (C900)	24	OPEN CUT	-	-	-	X
C6	R500.140	R500.150	21*	81	CP/CIPP	PVC DR 18 (C900)	24	OPEN CUT	-	-	-	X
C5	R500.120	R500.130	21*	604	CP	-	-	ABANDON	-	-	-	X
C5/C6	R500.130	R500.140	21*	487	CP	-	-	ABANDON	-	-	-	X
C7	R500.165	R500.185	-	114	-	HDPE-IPS DR 17 (PE 4710)	6 & 18	OPEN CUT	-	-	-	X
C7			-	81	-	HDPE-IPS DR 17 (PE 4710)	6 & 18	ENCASED	-	-	-	X
C7	R500.165	R500.185	-	80	-	STL CASING	36	JACK AND BORE	-	-	-	X
C7	R500.185	R000.290	-	80	-	PVC DR 18 (C900)	20	OPEN CUT	-	-	-	X
CP = NON-REINFORCED CONCRETE PIPE; ACP = ASBESTOS CEMENT PIPE; PVC = POLYVINYL CHLORIDE; HDPE = HIGH DENSITY POLYETHYLENE; STL = STEEL; CIPP = CURED-IN-PLACE PIPE S = STEAM CURE CIPP; UV = ULTRAVIOLET-LIGHT CURE CIPP; FP = FOLDED THERMOPLASTIC PIPE; HDD = HORIZONTAL DIRECTIONAL DRILLING *NOMINAL PIPE DIAMETER. FOR LINER DESIGN AND ABANDONMENT, ASSUME ACTUAL INSIDE DIAMETER COULD BE UP TO 23"± DUE TO THINNING OF CP WALLS FROM CORROSION.												

GEOTECHNICAL BORING SCHEDULE	
BORING NUMBER (B#)	DRAWING NUMBER
3, 3B, 4, 4B	C7
5, 6	C5
10, 11	C1
12	C6
13, 14, 15, 16	C5

- NOTES:
- SEE GEOTECHNICAL REPORT IN APPENDIX A FOR DETAILED BORING LOCATIONS.

POTHOLING SCHEDULE					
POTHOLE NUMBER (PH#)	DRAWING NUMBER	DEPTH TO UTILITY	AC THICKNESS (IN)	SIZE (IN)	UTILITY TYPE
1	C5	4'-2"	5	3	GAS
2	C5	2'-9"	7	6	WATER
3	C5	5'-4"	4	6	WATER
4	C5	3'-5"	5	2	GAS
4	C5	4'-9"	5	18	WATER
4	C5	2'-8"	5	8	STORM

PAVEMENT RESTORATION SCHEDULE			
STREET NAME	JURISDICTION	PAVEMENT THICKNESS	AB THICKNESS
KENT AVE	MARIN CO.	6"	12"
LAGUNITAS RD	ROSS	6"	12"
POPLAR AVE	ROSS	6"	12"
ROSS COMMON	ROSS	6"	12"
SHADY LANE	ROSS	6"	12"
MILL AND FILL SHALL BE 2-INCH-THICK AC IN ALL LOCATIONS			

- NOTES:
- SEE SPECIFICATION SECTIONS 02345, 02365, AND 02767 FOR REHABILITATION OF SANITARY SEWERS. SEE SPECIFICATION SECTION 15050 FOR OPEN CUT CONSTRUCTION OF SANITARY SEWER.
 - REFER TO SPECIFICATION SECTIONS 01010 AND 02767 FOR CIPP LINER WORK CONDITIONS.

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

SCALE: AS SHOWN

DESIGNED: C. DUDLEY

DRAWN: T. LAMBERT

CHECKED: _____

APPROVED: E. ZALKIN

REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA
No. 022392
CIVIL

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY SEWER PROJECT II-3B

LOWER SHADY LANE/DOWNTOWN ROSS

ROSS VALLEY

SANITARY DISTRICT

2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

GENERAL

PIPING, GEOTECHNICAL BORING, POTHOLING AND PAVING SCHEDULES

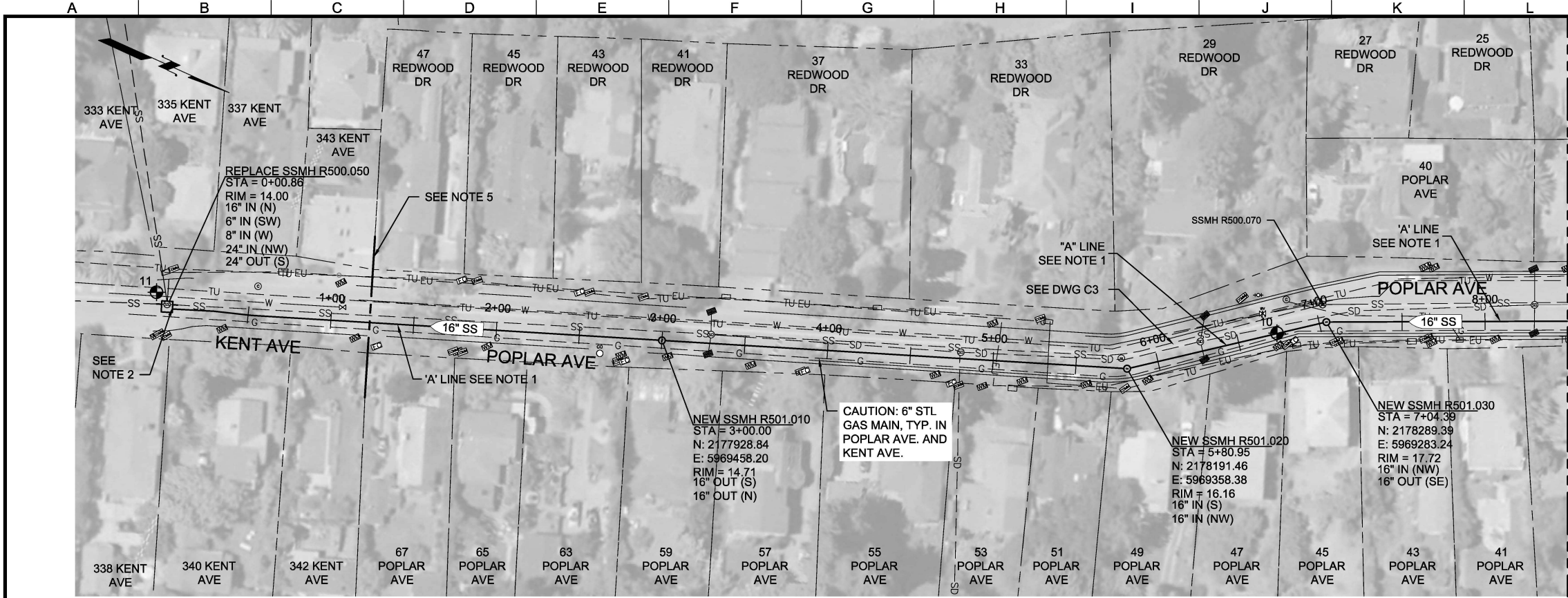
FILENAME
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BC PROJECT NUMBER
148768

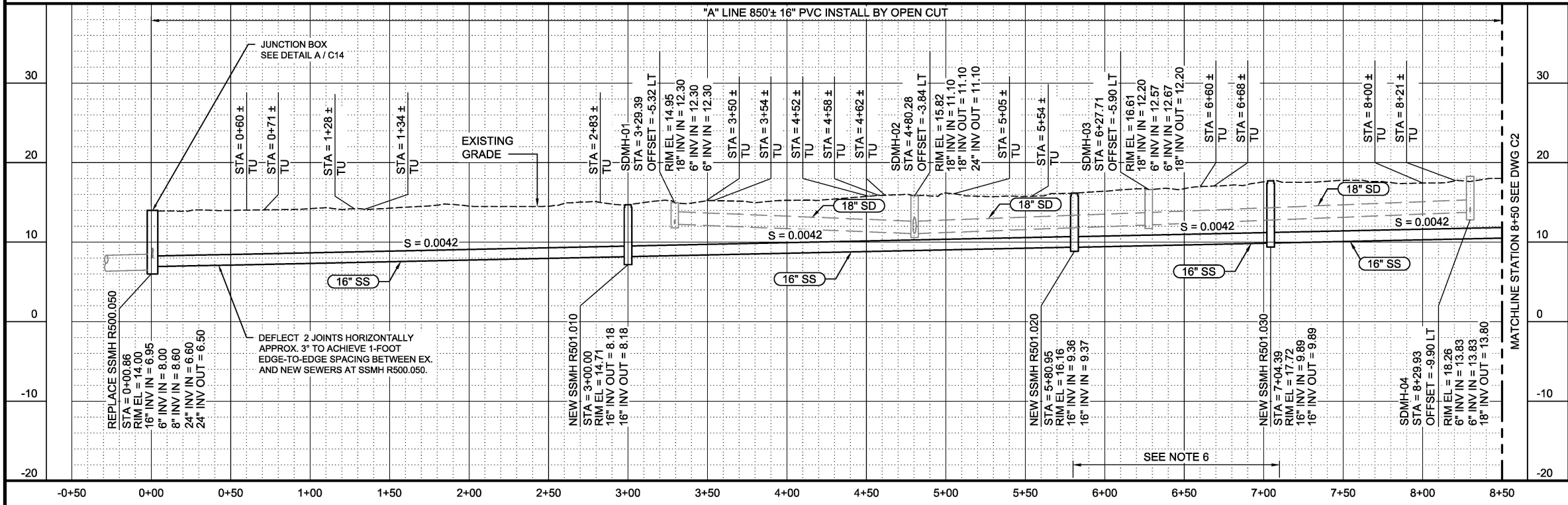
Nov 26, 2018

DRAWING NUMBER
G5

SHEET NUMBER
6 OF 32



PLAN
SCALE: 1" = 40'



PROFILE
SCALE: HORIZONTAL: 1" = 40'
VERTICAL: 1" = 8'

CONSTRUCTION NOTES

1. INSTALL NEW 16" PVC C900 SEWER BY OPEN CUT. DISCONNECT ALL SERVICE LATERALS FROM THE EXISTING 21" CP MAIN, REPLACE LOWER LATERAL TO THE PROPERTY LINE INCLUDING CONSTRUCTION OF A NEW PROPERTY LINE CLEANOUT, EXTEND LATERAL AS NECESSARY, AND CONNECT TO THE NEW MAIN PER DWG C12. VERIFY THAT ALL LATERALS HAVE BEEN RELOCATED PRIOR TO REHABILITATING THE 21" CP, SEE DWG C3. LATERAL LOCATIONS NOT SHOWN FOR CLARITY, SEE DWG G4 FOR THE LATERAL SCHEDULE. SEE DWG C14 FOR LATERAL PLUGGING NOTES AND DETAILS.
2. SEE DWG C14 FOR 6'X6' SQUARE JUNCTION BOX. WHEN REPLACING SSMH R500.050, ALSO REPLACE APPROX. 3' (I.E. THE FIRST STICK) OF EXISTING CP PIPE ON THE IN AND OUT PIPES WITH 24" PVC C900. CONNECT TO EXISTING PIPES PER C13/SD-C20.
3. PROVIDE NEW TWO-WAY CLEANOUTS AT BACK OF SIDEWALK FOR ALL LATERALS PER DISTRICT STANDARD DETAIL SD-27/C12. COORDINATE LOCATIONS WITH CM.
4. SEE DWGS TC-1 TO TC-9 FOR TRAFFIC CONTROL.
5. CLSM TRENCH ZONE BACKFILL IS NOT ALLOWED SOUTH OF THIS LINE IN KENT AVE (MARIN COUNTY). ONLY CLASS II AB PER NOTE 7 ON DETAIL B/C13 WILL BE ALLOWED.
6. CONTRACTOR TO POTHOLE THE 6" GAS MAIN IN THIS AREA, AND SHALL SHIFT THE MH LOCATION AND PIPE ALIGNMENT AS REQUIRED TO FIT THE NEW SEWER BETWEEN THE EXISTING GAS MAIN AND THE EXISTING SS. PROTECT EXISTING UTILITIES IN PLACE DURING CONSTRUCTION.

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Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

SCALE: AS SHOWN

DESIGNED: C. DUDLEY

DRAWN: T. LAMBERT

CHECKED: _____

APPROVED: E. ZALKIN

REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

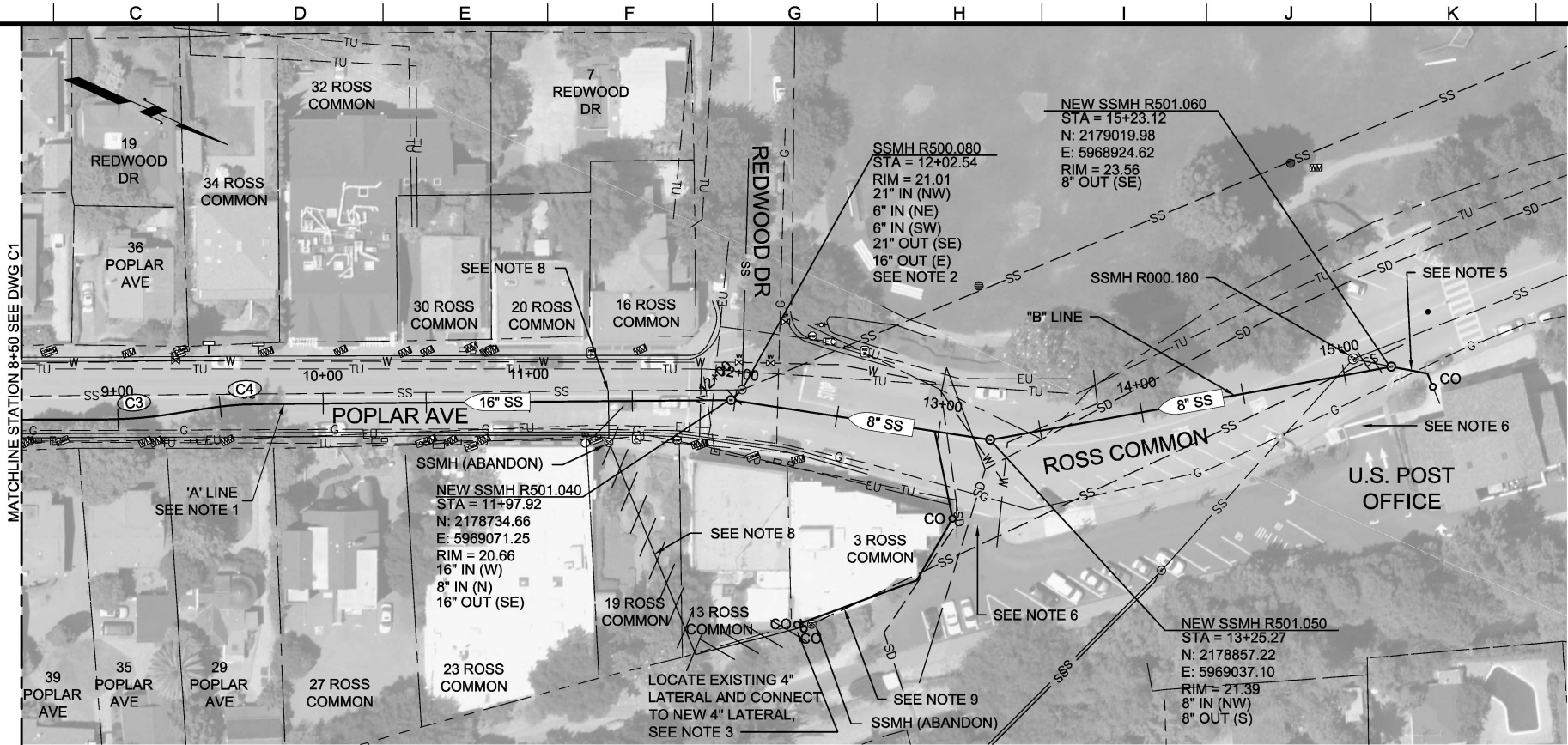
**LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS**

CIVIL

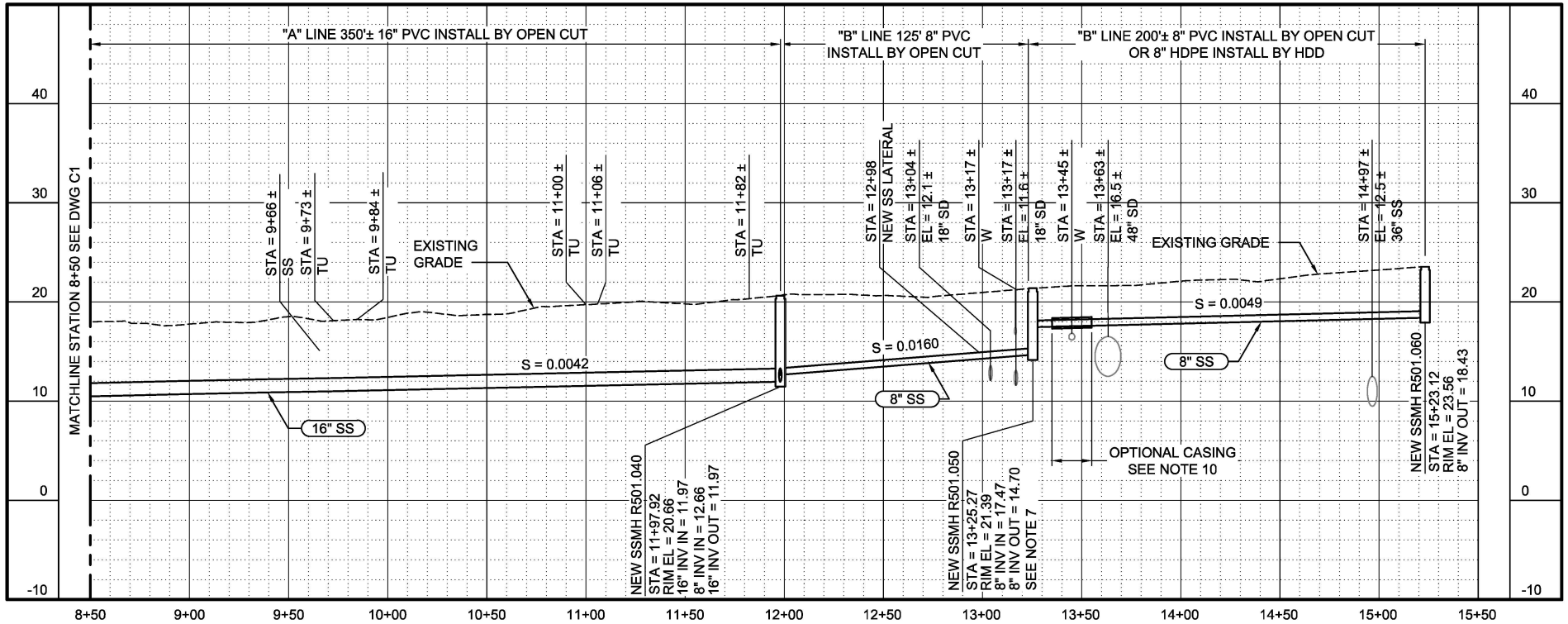
148768-113B-V17-C-01.DWG
BC PROJECT NUMBER
148768
Nov 26, 2018
DRAWING NUMBER
C1
SHEET NUMBER
7 OF 32

PARALLEL SEWER PLAN AND PROFILE 1

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PLAN
SCALE: 1" = 40'



PROFILE
SCALE: HORIZONTAL: 1" = 40'
VERTICAL: 1" = 8'

CONSTRUCTION NOTES

1. INSTALL NEW 16" PVC C900 SEWER BY OPEN CUT. DISCONNECT ALL SERVICE LATERALS FROM THE EXISTING 21" CP MAIN, REPLACE LOWER LATERAL TO THE PROPERTY LINE INCLUDING CONSTRUCTION OF A NEW PROPERTY LINE CLEANOUT, EXTEND LATERAL AS NECESSARY, AND CONNECT TO THE NEW MAIN PER DWG C12. VERIFY THAT ALL LATERALS HAVE BEEN RELOCATED PRIOR TO REHABILITATING THE 21" CP, SEE DWG C3. LATERAL LOCATIONS NOT SHOWN FOR CLARITY, SEE DWG G4 FOR LATERAL SCHEDULE. SEE DWG C14 FOR LATERAL PLUGGING NOTES AND DETAILS.
2. CONNECT NEW 16" SEWER TO 16" PVC C900 CAPPED STUBOUT CONSTRUCTED UNDER PROJECT 10012-3A. THE NEW 16" SS INVERT AT SSMH R501.040 IS SHOWN ON THE PROFILE.
3. CONSTRUCT NEW 4" PVC LATERAL FROM EXISTING LATERAL AT BUILDING FACE TO NEW 8" SANITARY SEWER. CONTRACTOR SHALL VERIFY ELEVATION OF EXISTING LATERAL PRIOR TO CONSTRUCTION OF NEW 8" SANITARY SEWER. FINAL ALIGNMENT SHALL BE COORDINATED WITH AND APPROVED BY RVSD PRIOR TO CONSTRUCTION.
4. MAINTAIN A MINIMUM OF ONE LANE OPEN TO TRAFFIC AT ALL TIMES IN ROSS COMMON, SEE DWGS TC-1 TO TC-9 FOR TRAFFIC CONTROL.
5. NEW SSMH R501.060 SHALL INTERCEPT THE EXISTING POST OFFICE LATERAL. REMOVE AND REPLACE THE EXISTING ACP LATERAL BEHIND CURB TO THE NEW MH AND PROVIDE CLEANOUT. PLUG AND ABANDON THE EXISTING LATERAL BETWEEN THE NEW MH AND SSMH R000.180.
6. MAINTAIN VEHICLE ACCESS TO POST OFFICE PARKING LOT AT ALL TIMES.
7. NEW SSMH R501.050 SHALL BE A TYPE 1 DROP MANHOLE PER DISTRICT STANDARD DETAIL SD-05/C10.
8. PLUG THE 10" PIPE CONNECTION TO THE EXISTING 21" SEWER AND ABANDON THE REMAINDER OF THE 10" PIPE. DO NOT CONNECT IT TO THE NEW 16" SEWER. ABANDON THE EXISTING MH IN THE SIDEWALK IN FRONT OF 19 ROSS COMMON.
9. REMOVE THE EXISTING 8" SEWER AS REQUIRED TO INSTALL THE NEW LATERAL. PLUG AND ABANDON THE PORTION LEFT IN PLACE AND ABANDON THE EXISTING MH NEAR THE LOCATION OF THE NEW CLEANOUTS.
10. OPTIONS FOR CROSSING OVER THE WATER MAIN INCLUDE THE FOLLOWING:
 - A) IF USING PVC C900 PIPE AND THE CONTRACTOR IS ABLE TO CENTER A 20-FOOT-LONG STICK ON THE WATER MAIN, THEN NO CASING IS REQUIRED.
 - B) IF USING PVC C900 PIPE AND ANY JOINTS WILL LIE WITHIN 10 FEET OF THE WATER MAIN, THEN INSTALL THE NEW 8" PIPE INSIDE A 20-FOOT-LONG, JOINT FREE CASING (PVC C900 DR 25, PVC SDR 26, OR HDPE SDR 17) CENTERED ON THE WATER MAIN.
 - C) IF USING HDPE WITH FUSED JOINTS, NO CASING IS REQUIRED REGARDLESS OF WHERE THE JOINTS LIE WITH RESPECT TO THE WATER MAIN.
11. PROVIDE NEW TWO-WAY CLEANOUTS AT BACK OF SIDEWALK FOR ALL LATERALS PER DISTRICT STANDARD DETAIL SD-27/C12. COORDINATE LOCATIONS WITH CM.

CURVE TABLE

CURVE #	RADIUS	LENGTH	DELTA	CHORD DIRECTION	START POINT	END POINT
C3	200.00'	32.15'	009°12'33"	N29°05'56"W	N = 2178462.91 E = 5969204.18	N = 2178490.97 E = 5969188.56
C4	200.00'	31.16'	008°55'39"	N29°14'23"W	N = 2178501.53 E = 5969181.52	N = 2178528.69 E = 5969166.31

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)
SCALE: AS SHOWN
DESIGNED: C. DUDLEY
DRAWN: T. LAMBERT
CHECKED: _____
APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

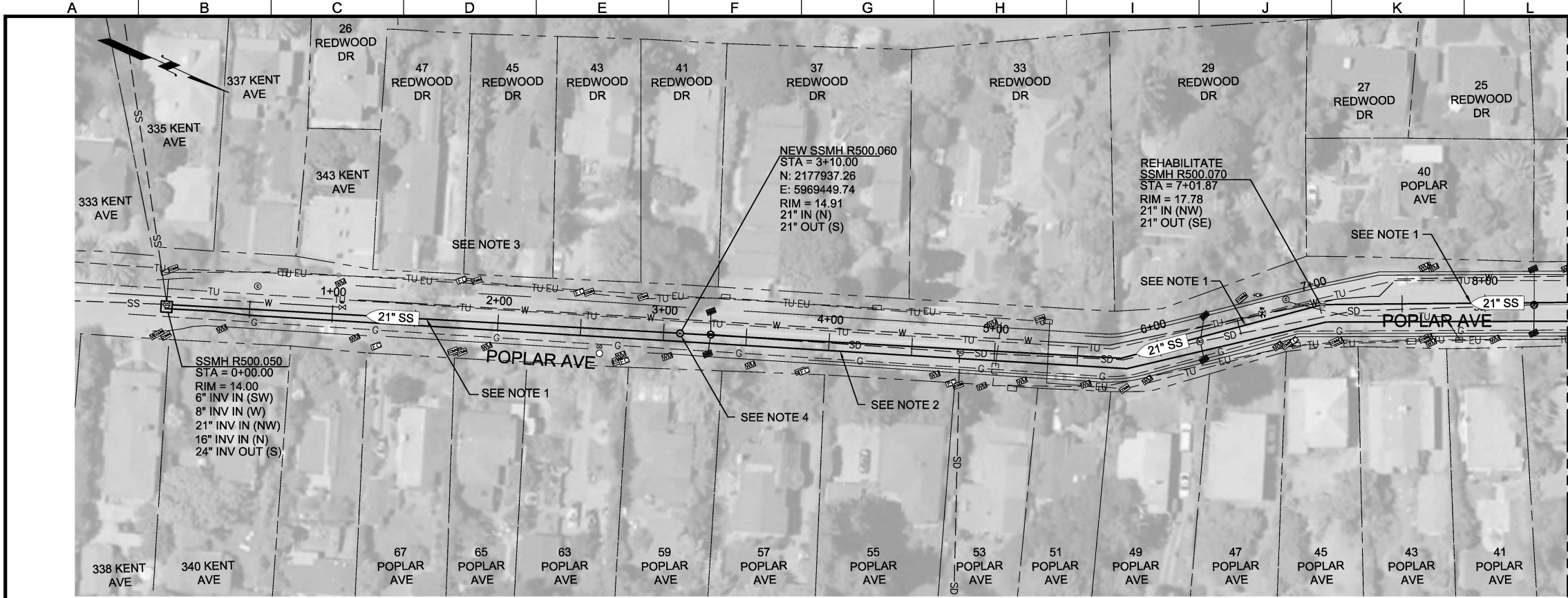
**ROSS VALLEY
SANITARY DISTRICT**

2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

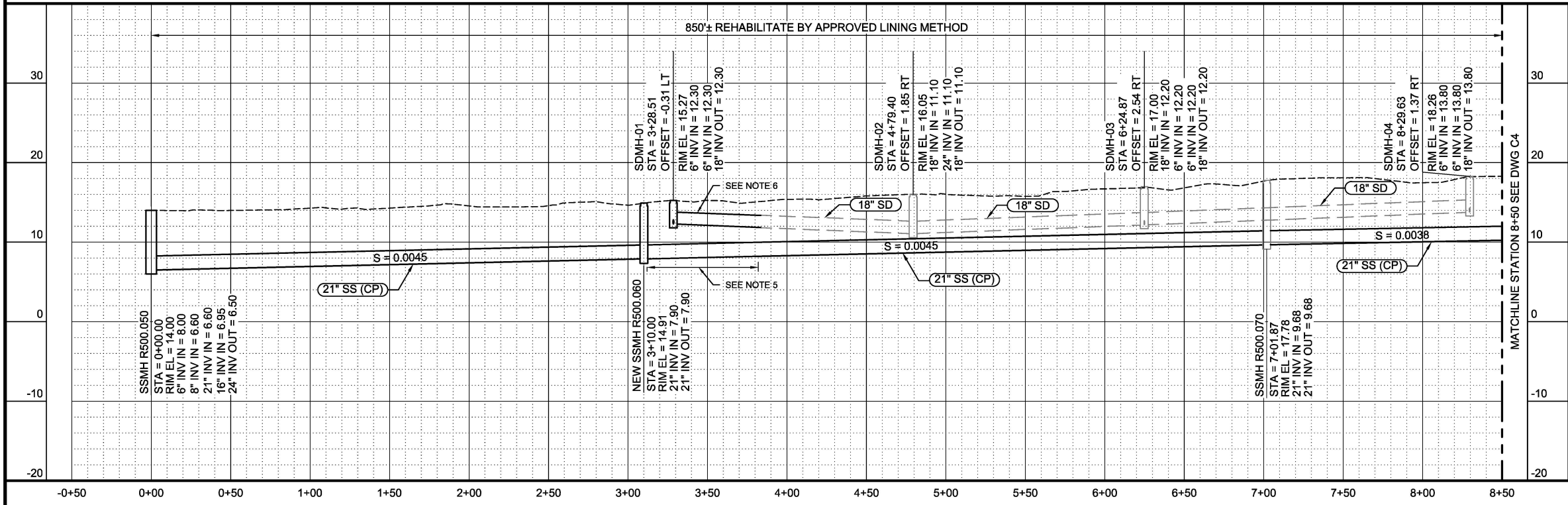
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PARALLEL SEWER PLAN AND PROFILE 2

FILENAME
148768-138-V17-C-02.DWG
BC PROJECT NUMBER
148768
Nov 26, 2018
DRAWING NUMBER
C2
SHEET NUMBER
8 OF 32



PLAN
SCALE: 1" = 40'



PROFILE
SCALE: HORIZONTAL: 1" = 40'
VERTICAL: 1" = 8'

CONSTRUCTION NOTES

1. REHABILITATE EXISTING 21" CP WITH APPROVED LINING METHOD. ALL LATERALS SHALL BE DISCONNECTED FROM THE EXISTING 21" CP AND CONNECTED TO THE NEW 16" PVC SEWER PRIOR TO LINING. PLUG/GROUT ALL ABANDONED LATERAL CONNECTIONS ON THE 21" TO PREVENT INFILTRATION. SEE DETAIL B/C14 LATERALS NOT SHOWN FOR CLARITY, SEE DWG G4 FOR LATERAL SCHEDULE.
2. SEE DWG C1 FOR OPEN CUT CONSTRUCTION OF 16" PVC SEWER IN THIS AREA.
3. DURING PIPE LINING WORK, MAINTAIN A MINIMUM OF ONE LANE OPEN TO TRAFFIC AT ALL TIMES. SEE DWGS TC1-TC9 FOR TRAFFIC CONTROL.
4. SSMH LOCATION IS APPROXIMATE. CONTRACTOR TO FIELD LOCATE AND CONSTRUCT SSMH ATOP EXISTING 21" SS.
5. PRIOR TO PERFORMING LINING, REMOVE AND REPLACE APPROX. 70 LF OF DEFORMED 21" SS (NON-REINFORCED CONCRETE PIPE), (±) STA 3+12 TO STA 3+82. REPLACE WITH 24" DR 18 C900 PVC. CONNECT TO EXISTING SEWER USING AN ADJUSTABLE REPAIR COUPLING PER DISTRICT STANDARD DETAIL SD-20/C13.
6. REMOVE AND REPLACE APPROX. 55 LF OF 18" SD (RCP), SDMH SD-01 (TYPE "A"), AND PORTIONS OF THE CONNECTING 6" SD PIPES, PER MARIN COUNTY STANDARDS, AS REQUIRED TO PERFORM THE SEWER MAIN SPOT REPAIR.

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Brown AND Caldwell
WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)
SCALE: AS SHOWN
DESIGNED: C. DUDLEY
DRAWN: T. LAMBERT
CHECKED: _____
APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

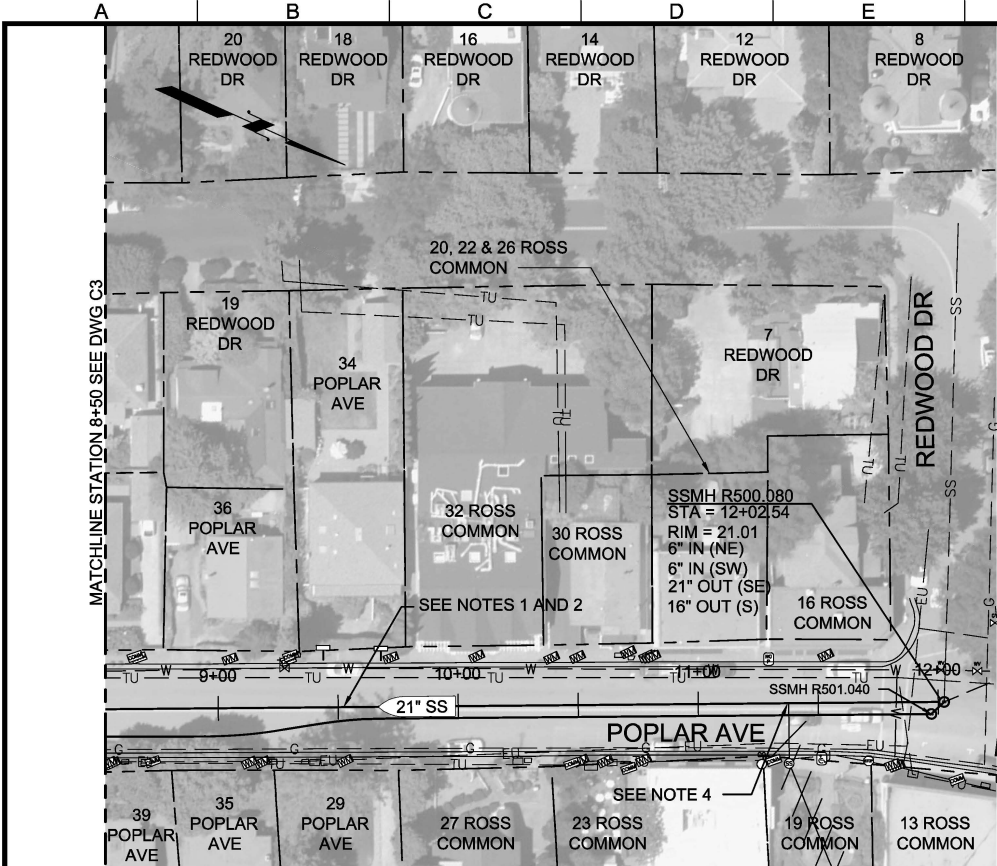
LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

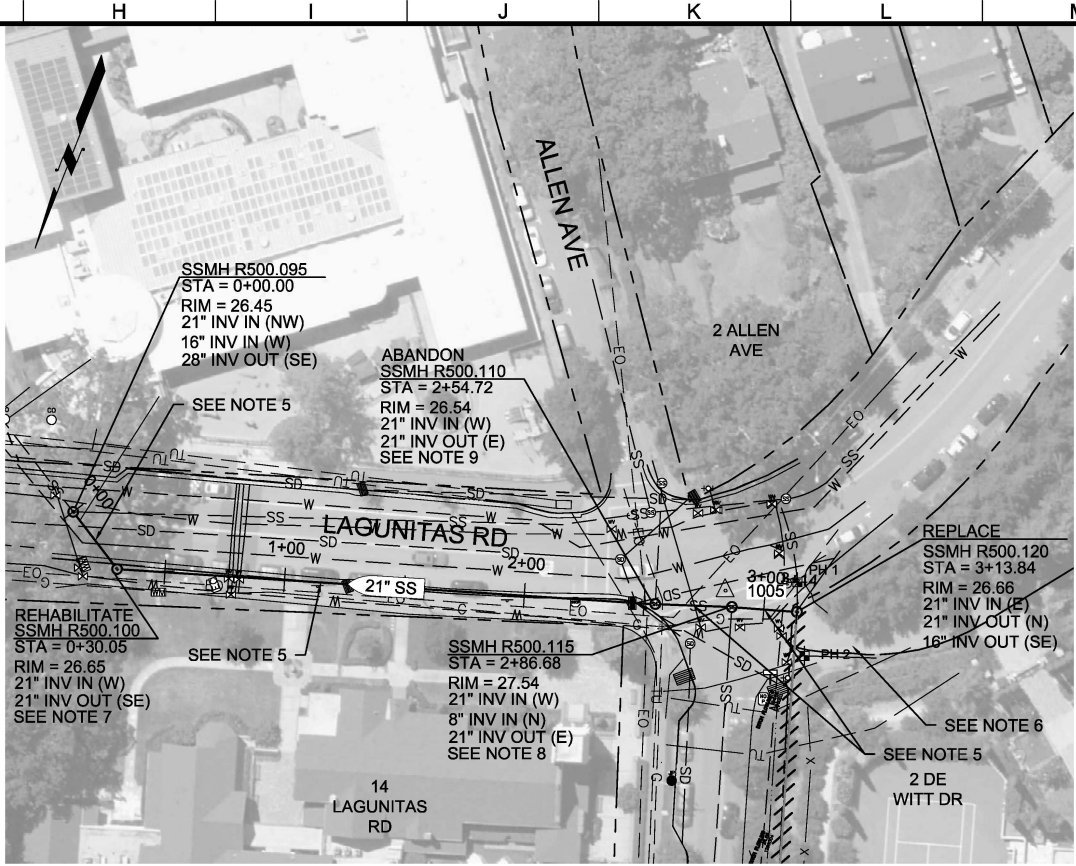
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FILENAME 148768-138-V17-C-03.DWG
BC PROJECT NUMBER 148768
Nov 26, 2018
DRAWING NUMBER C3
SHEET NUMBER 9 OF 32

REHABILITATION PLAN AND PROFILE 1



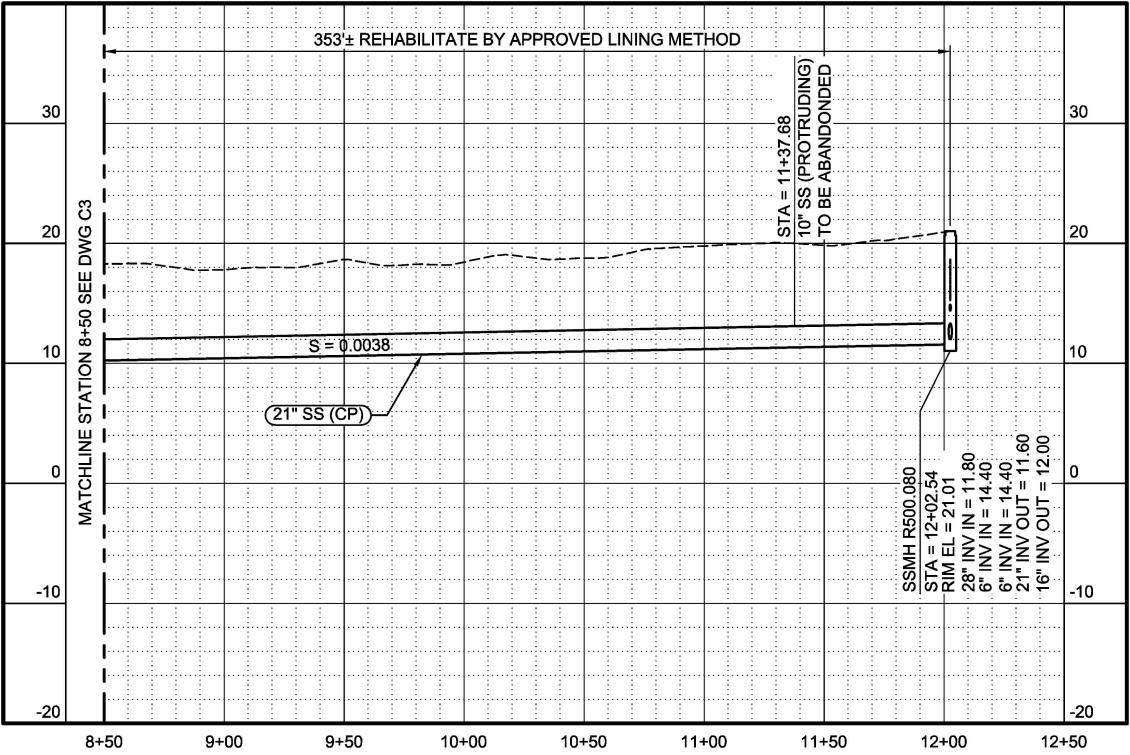
PLAN
SCALE: 1" = 40'



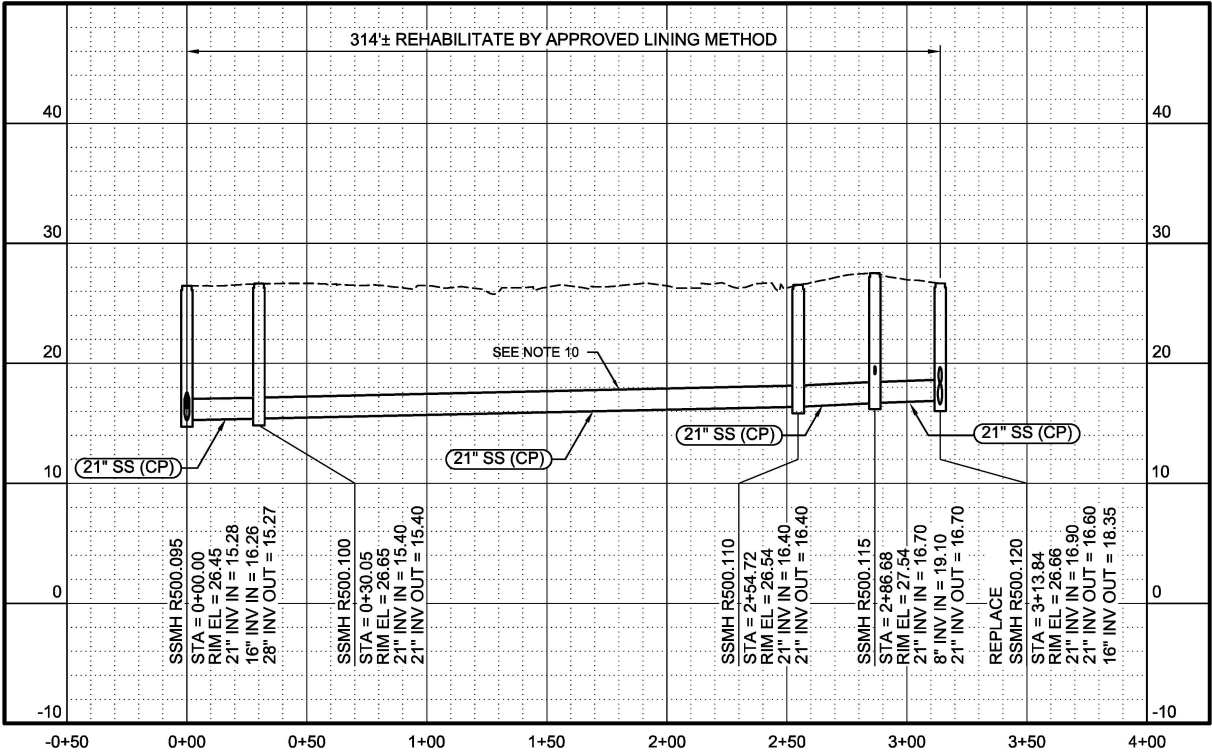
PLAN
SCALE: 1" = 40'

CONSTRUCTION NOTES

- REHABILITATE EXISTING 21" CP WITH APPROVED LINING METHOD. ALL LATERALS SHALL BE DISCONNECTED FROM THE EXISTING 21" CP AND CONNECTED TO THE NEW 16" PVC SEWER PRIOR TO LINING. PLUG/GROUT ALL ABANDONED LATERAL CONNECTIONS ON THE 21" TO PREVENT INFILTRATION. SEE DETAIL B/C14. LATERALS NOT SHOWN FOR CLARITY, SEE DWG G4 FOR LATERAL SCHEDULE.
- SEE DWG C2 FOR OPEN CUT CONSTRUCTION OF 16" PVC SEWER IN THIS AREA.
- DURING PIPE LINING WORK, MAINTAIN A MINIMUM OF ONE LANE OPEN TO TRAFFIC AT ALL TIMES. SEE DWGS TC-1-TC-9 FOR TRAFFIC CONTROL.
- PLUG AND ABANDON THE EXISTING 10" VCP AND REMOVE PROTRUSION INTO 21" CP PRIOR TO LINING. CONTRACTOR SHALL CONSTRUCT NEW BUILDING LATERAL AS SHOWN ON DWG C2 PRIOR TO DISCONNECTION OF EXIST LATERAL.
- REHABILITATE EXISTING 21" CP WITH APPROVED LINING METHOD BETWEEN MANHOLES R500.120 AND R500.095. REINSTATE LATERALS PER DWG G4.
- MAINTAIN ACCESS TO DEWITT DR. AT ALL TIMES.
- OVERHEAD POWER DIRECTLY ABOVE MANHOLE.
- MANHOLE SHALL NOT BE USED AS INSERTION MANHOLE FOR CIPP.
- PRIOR TO LINING THE SEGMENT BETWEEN R500.120 AND R500.095, CHIP OUT THE MH BENCH/BASE AS REQUIRED TO INSTALL A ±4 FT SECTION OF 24" C900 PVC THAT SPANS THE MANHOLE. MATCH THE PIPE SECTION INVERTS TO THE EXISTING 21" IN/OUT PIPE INVERTS, LINE THROUGH THE MANHOLE, AND THEN ABANDON THE MANHOLE PER SPEC SECTION 02050-3.02.C. THE EXISTING MANHOLE WALLS ARE BRICK. PROTECT THE ADJACENT 24" STORM DRAIN.
- REMOVE OBJECT PROTRUDING THROUGH TOP OF PIPE AT APPROXIMATELY STA. 1+80 PRIOR TO LINING. SEE CCTV REPORTS IN APPENDIX E.



PROFILE
SCALE: HORIZONTAL: 1" = 40'
VERTICAL: 1" = 8'



PROFILE
SCALE: HORIZONTAL: 1" = 40'
VERTICAL: 1" = 8'

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)
SCALE: AS SHOWN
DESIGNED: C. DUDLEY
DRAWN: T. LAMBERT
CHECKED: CHECKED BY
APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

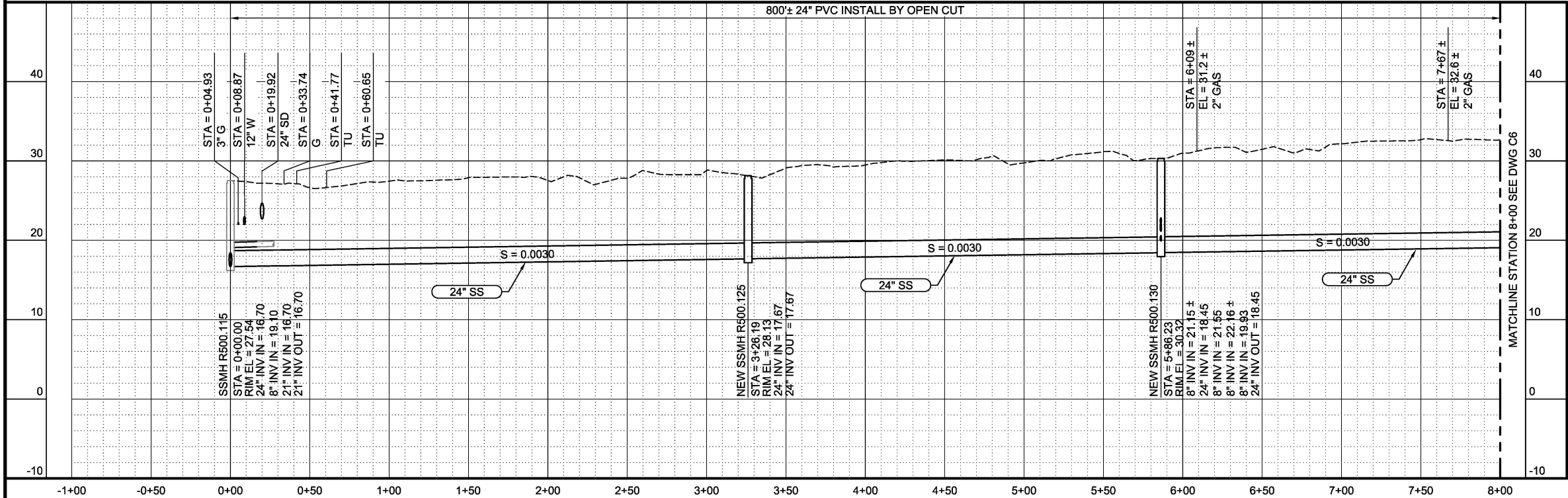
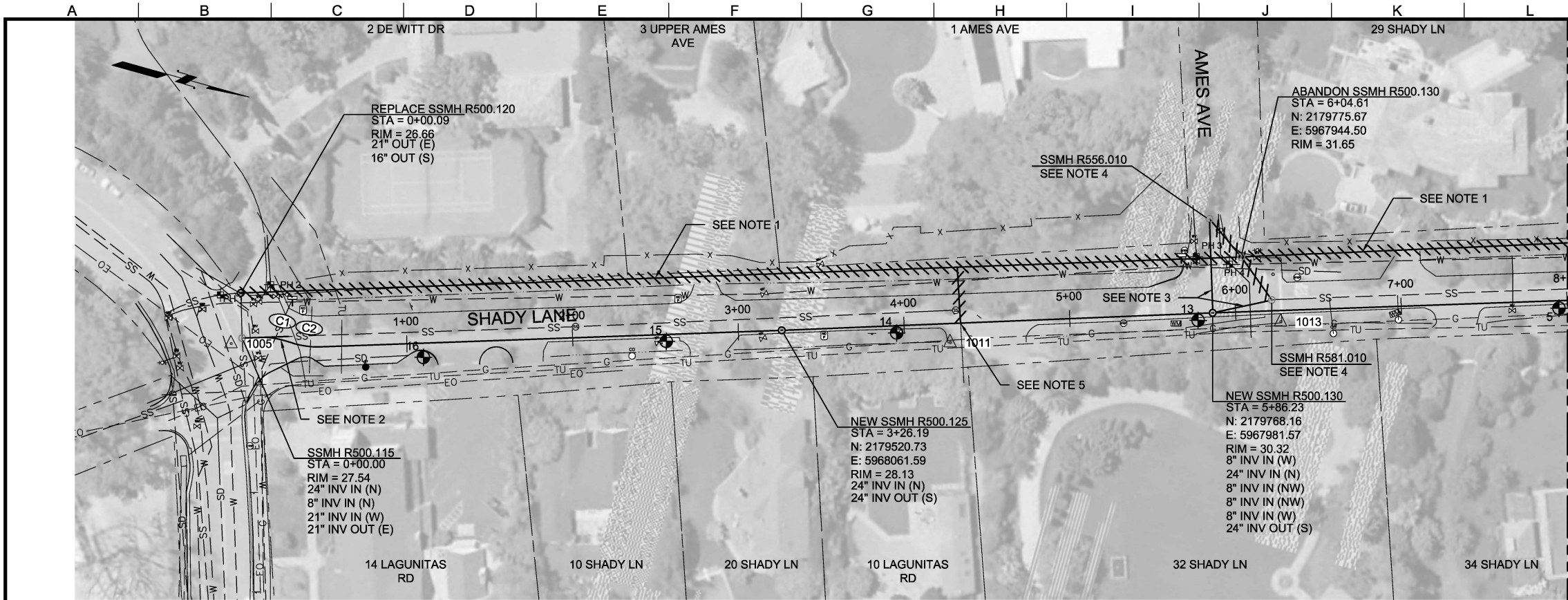
**ROSS VALLEY
SANITARY DISTRICT**

2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

REHABILITATION PLAN AND PROFILE 2

CIVIL	FILENAME 148768-I138-V17-C-04.DWG
	BC PROJECT NUMBER 148768
	Nov 26, 2018
	DRAWING NUMBER C4
	SHEET NUMBER 10 OF 32

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- ### CONSTRUCTION NOTES
- ABANDON EXISTING 21 IN SEWER AND MANHOLES FROM MH R500.120 UPSTREAM TO MH R500.140. ALSO SEE SHEET C6.
 - MAKE S-CURVE BY DEFLECTING JOINTS. REMOVE AND REPLACE 8 IN PVC SEWER AS REQUIRED TO BUILD DEEPER 24 IN SEWER.
 - CONSTRUCT NEW 8 IN PVC C900 SEWER, APPROX. 9 FT DEEP. MATCH EXISTING UPSTREAM OUT PIPE INVERT. SLOPE DOWN AT S=0.015 TO NEW MH R500.130, AND CONSTRUCT TYPE 1 MANHOLE DROP CONNECTION AT NEW MH PER DISTRICT STANDARD DETAIL SD-05/C10. ADJUST DROP CXN INVERTS AT THE MH AS REQUIRED TO FIT.
APPROXIMATE INVERTS ARE AS FOLLOWS:
R556.010 (EX), 8" INV OUT (E) = 22.1'
R500.130 (NEW), 8" INV IN (W) = 21.15'
DROP CXN INVERT AT SPRINGLINE OF NEW 24"
R581.010 (EX), 8" INV OUT (SE) = 22.2'
R500.130 (NEW), 8" INV IN (NE) = 21.55'
DROP CXN INVERT AT CROWN OF NEW 24"
 - RECONSTRUCT MANHOLE BENCH AND CHANNEL TO DIRECT FLOW INTO THE NEW SEWER. MATCH EXISTING OUT PIPE INVERT. PLUG AND ABANDON THE EXISTING 8" SEWER BETWEEN THE MH AND EXISTING SSMH R500.130 TO BE ABANDONED.
 - CONNECT THE LATERAL FOR 10 LAGUNITAS TO THE NEW SEWER AND ABANDON THE PORTION CROSSING THE ROAD TO THE EXISTING 21" SEWER.

CURVE TABLE						
CURVE #	RADIUS	LENGTH	DELTA	CHORD DIRECTION	START POINT	END POINT
C1	50.00'	16.83'	019°16'55"	N07°51'59"W	N = 2179218.45 E = 5968150.46	N = 2179235.04 E = 5968148.17
C2	50.00'	16.96'	019°25'58"	N07°56'30"W	N = 2179238.98 E = 5968148.29	N = 2179255.69 E = 5968145.96

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)
SCALE: AS SHOWN
DESIGNED: C. DUDLEY
DRAWN: T. LAMBERT
CHECKED: _____
APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

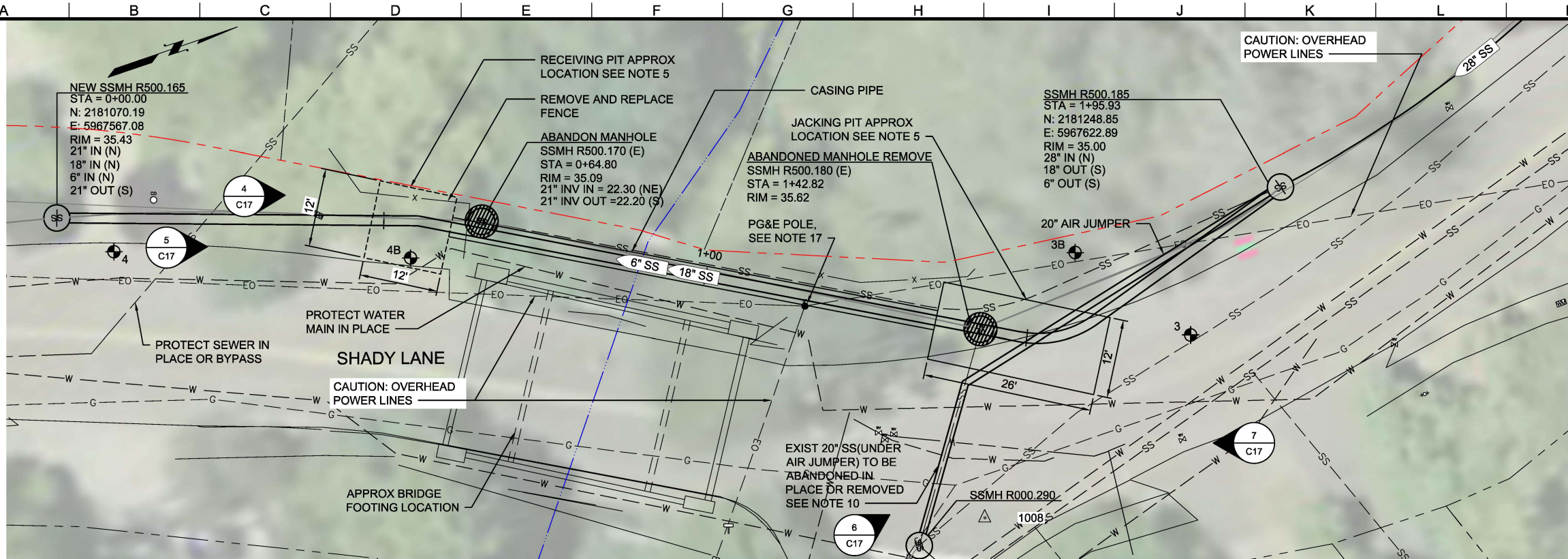
**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

REHABILITATION PLAN AND PROFILE 3

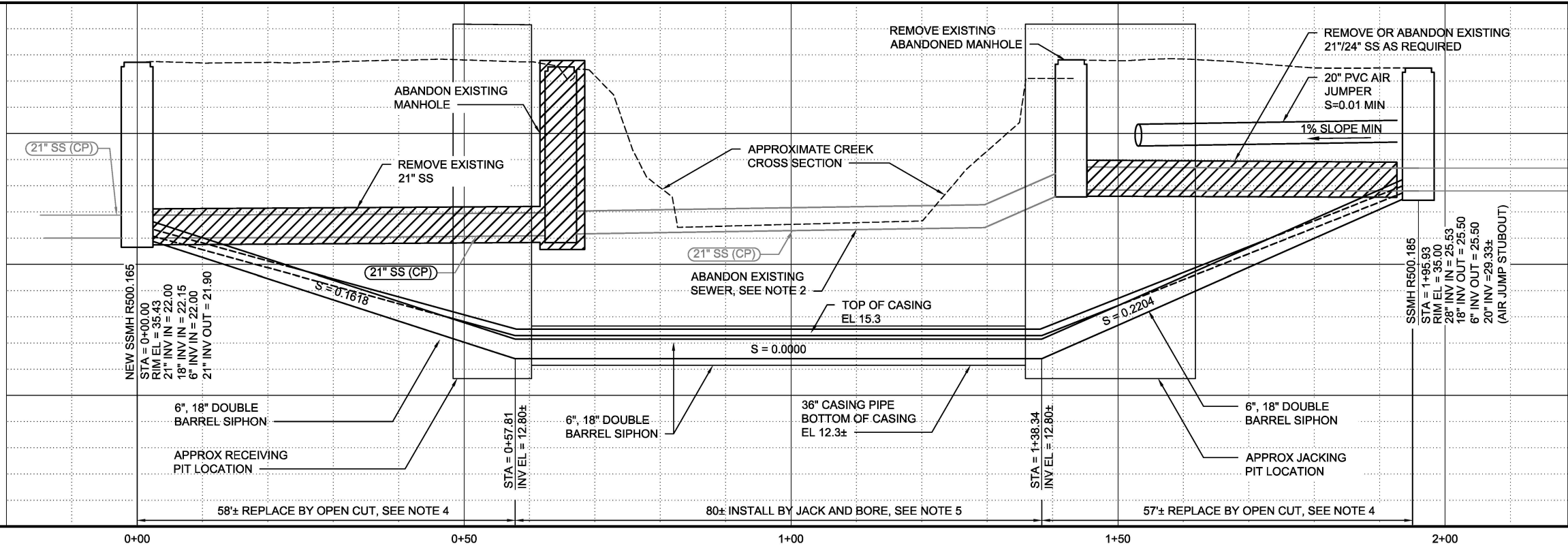
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FILENAME
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BC PROJECT NUMBER
148768
Nov 26, 2018
DRAWING NUMBER
C5
SHEET NUMBER
11 OF 32

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PLAN
SCALE: 1" = 10'



PROFILE
SCALE: HORIZONTAL: 1" = 10'
VERTICAL: 1" = 5'

CONSTRUCTION NOTES

- SEE DWG G4 FOR MANHOLES TO BE REHABILITATED AS PART OF THIS CONTRACT.
- ABANDON EXISTING SEWERS AND MANHOLES PER SPEC SECTION 02050. ABANDON PIPE AND SSMH R500.170 AND FILL WITH LDCC PER SPEC. SECTION 02200-2.03.F. DO NOT REMOVE CONE, FRAME OR COVER FROM R500.170.
- EXISTING SEWER DOWNSTREAM OF SSMH R500.170 HAS BEEN LINED WITH CIPP. EXISTING SS BETWEEN S500.170 AND S000.180 HAS BEEN LINED WITH PVC FOLD-AND-FORM.
- SEE DETAIL A,B/C13 FOR OPEN CUT TRENCH SECTION.
- SEE DETAIL A/C15 FOR JACK AND BORE INSTALLATION SECTION. AND DETAILS. REFER TO SPECIFICATIONS SECTION 02447 FOR JACK AND BORE REQUIREMENTS. JACKING PITS ARE SHOWN SCHEMATICALLY. SIZE, LOCATION AND DESIGN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE SOUTH PIT SHALL BE LOCATED DOWNSTREAM OF SSMH R500.170. MAINTAIN DRIVEWAY ACCESS TO #73 SHADY LANE.
- CONTRACTOR SHALL DEVELOP AND IMPLEMENT A TRAFFIC CONTROL PLAN. CONTRACTOR SHALL PREPARE, SUBMIT AND OBTAIN NECESSARY APPROVALS OF THE TRAFFIC CONTROL PLAN PRIOR TO CONSTRUCTION.
- GEOTECHNICAL REPORT IS CONTAINED IN APPENDICES FOR REFERENCE.
- SIPHON HYDRAULIC CAPACITY IS BASED ON MODELED PEAK WET WEATHER FLOW AND EXIST 21" SS CAPACITY OF 5.75 MGD.
- CONTRACTOR SHALL BYPASS FLOWS AROUND WORK AREA. REFER TO DRAWING C8 AND SPECIFICATIONS SECTION 02145.
- CONNECT 20" PVC AIR JUMPER TO SSMH R000.290 AT APPROX INV EL 28.5'. REMOVE OR ABANDON THE EXISTING 20" PVC SEWER PER SPEC SECTION 02050-3.02.B. THE PIPE HAS BEEN PLUGGED AT SSMH R500.180.
- FOR HDPE SS REFER TO SPECIFICATIONS SECTION 15066.
- SEE DETAIL B,C/C15 FOR SSMH R500.165 AND SSMH R500.185 PLAN AND INVERT LAYOUT.
- FOR SIPHON MANHOLE CONSTRUCTION SEE DETAIL SD-02/C10 AND SPECIFICATIONS SECTION 02700.
- CUSTOM FABRICATED FITTINGS SHALL BE USED FOR MANHOLE AND CASING PIPE ENTRANCES AND EXISTS.
- SIPHONS SHALL BE INSTALLED WITH MINIMUM RADIUS BENDS AND FITTINGS NO GREATER THAN 22-1/2".
- CONTRACTOR SHALL COVER THE JACKING AND RECEIVING PITS WITH TRAFFIC RATED TRENCH PLATES OUTSIDE OF WORKING HOURS.
- UTILITY POLE TO BE RELOCATED BY OTHERS.

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" SCALE ACCORDINGLY)

SCALE: AS SHOWN

DESIGNED: C. DUDLEY

DRAWN: T. LAMBERT

CHECKED: ---

APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

**ROSS VALLEY
SANITARY DISTRICT**

2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

CIVIL

FILENAME
148768-13B-V17-C-07.DWG

BC PROJECT NUMBER
148768

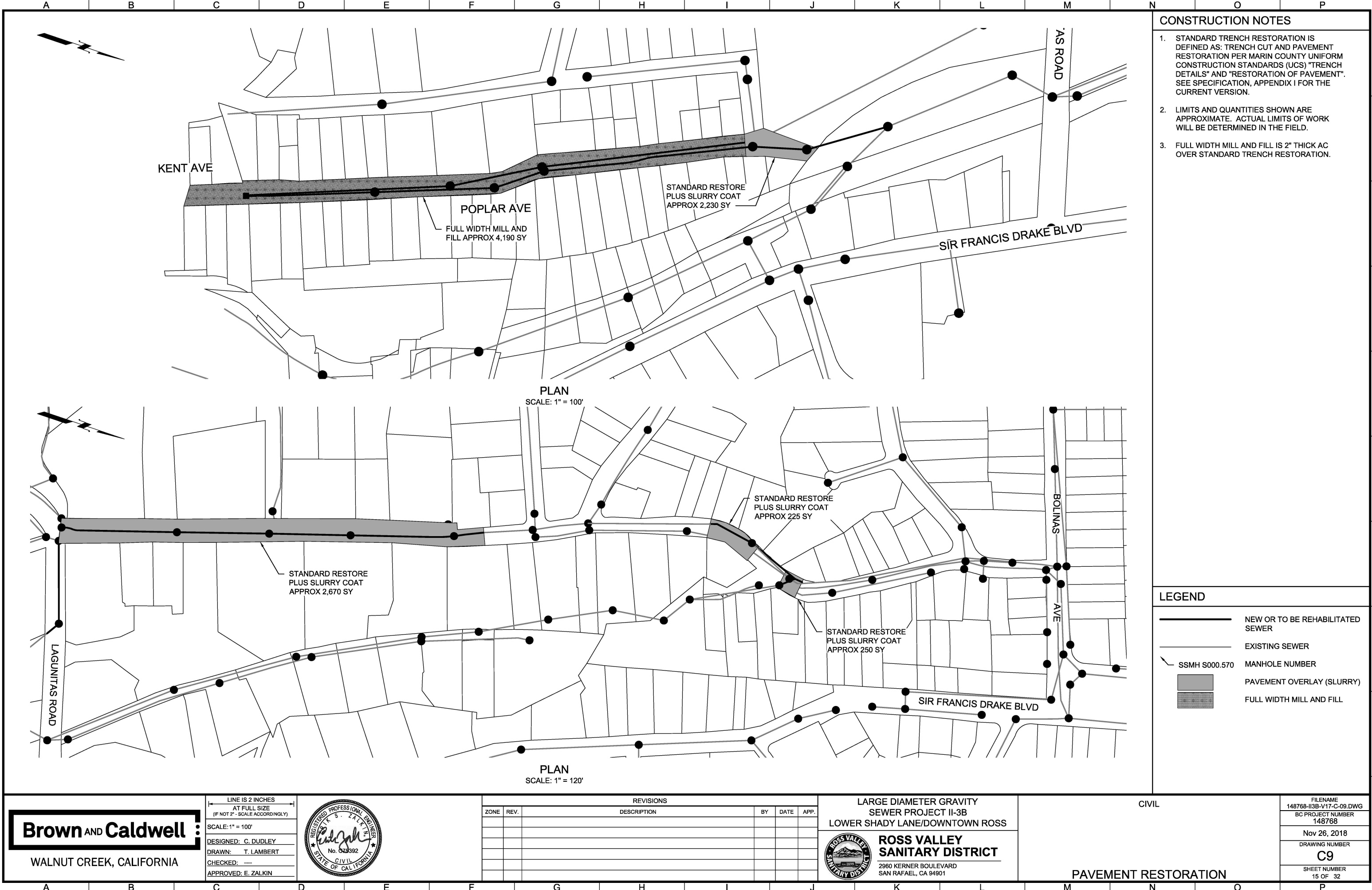
Nov 26, 2018

DRAWING NUMBER
C7

SHEET NUMBER
13 OF 32

ROSS CREEK SIPHON PLAN AND PROFILE

Path: P:\4600N\148768 - RVSD LGDS Rehab II Design-ESD\CAD\2-SHEETS\C-CIVIL Filename: 148768-10B-V17-C-09.dwg Plot Date: November 26, 2018 - 11:32 AM CADD User: Larry Bullock



CONSTRUCTION NOTES

1. STANDARD TRENCH RESTORATION IS DEFINED AS: TRENCH CUT AND PAVEMENT RESTORATION PER MARIN COUNTY UNIFORM CONSTRUCTION STANDARDS (UCS) "TRENCH DETAILS" AND "RESTORATION OF PAVEMENT". SEE SPECIFICATION, APPENDIX I FOR THE CURRENT VERSION.
2. LIMITS AND QUANTITIES SHOWN ARE APPROXIMATE. ACTUAL LIMITS OF WORK WILL BE DETERMINED IN THE FIELD.
3. FULL WIDTH MILL AND FILL IS 2" THICK AC OVER STANDARD TRENCH RESTORATION.

LEGEND

- NEW OR TO BE REHABILITATED SEWER
- EXISTING SEWER
- SSMH S000.570
- MANHOLE NUMBER
- PAVEMENT OVERLAY (SLURRY)
- FULL WIDTH MILL AND FILL

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)
SCALE: 1" = 100'
DESIGNED: C. DUDLEY
DRAWN: T. LAMBERT
CHECKED: ---
APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

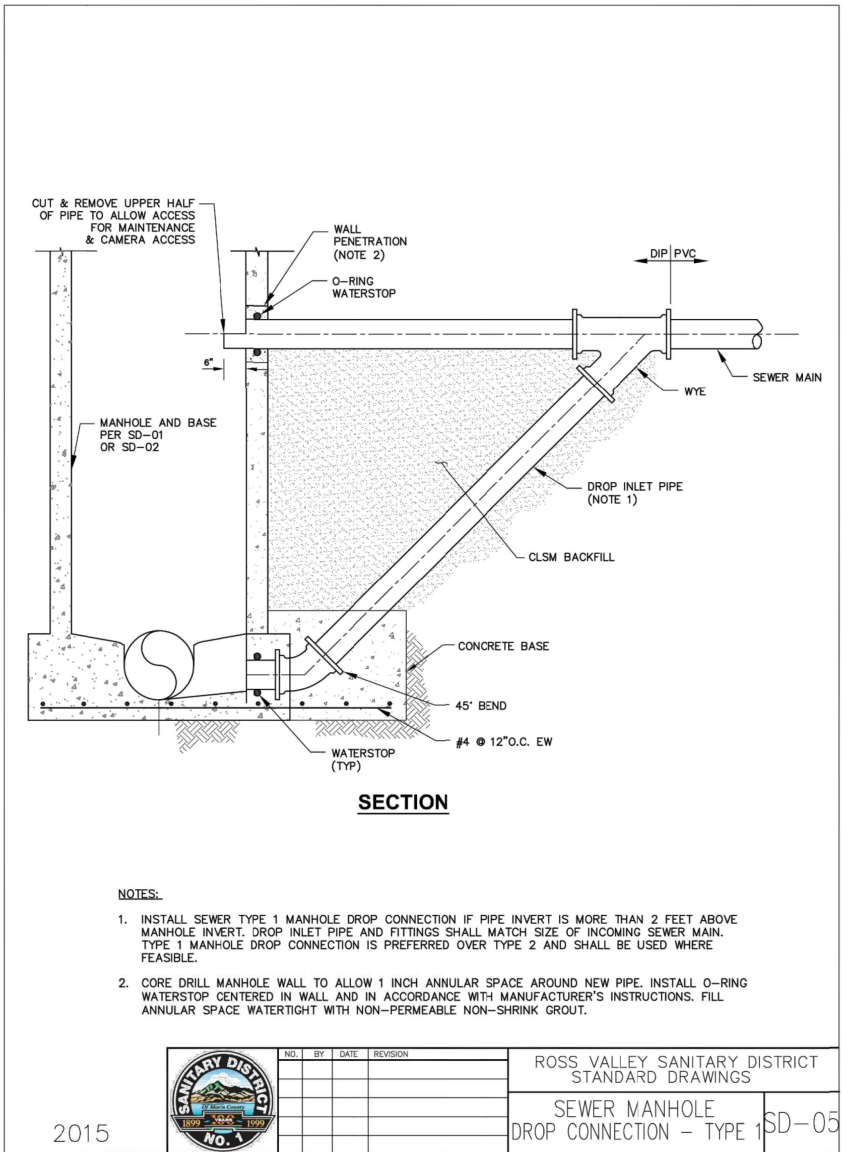
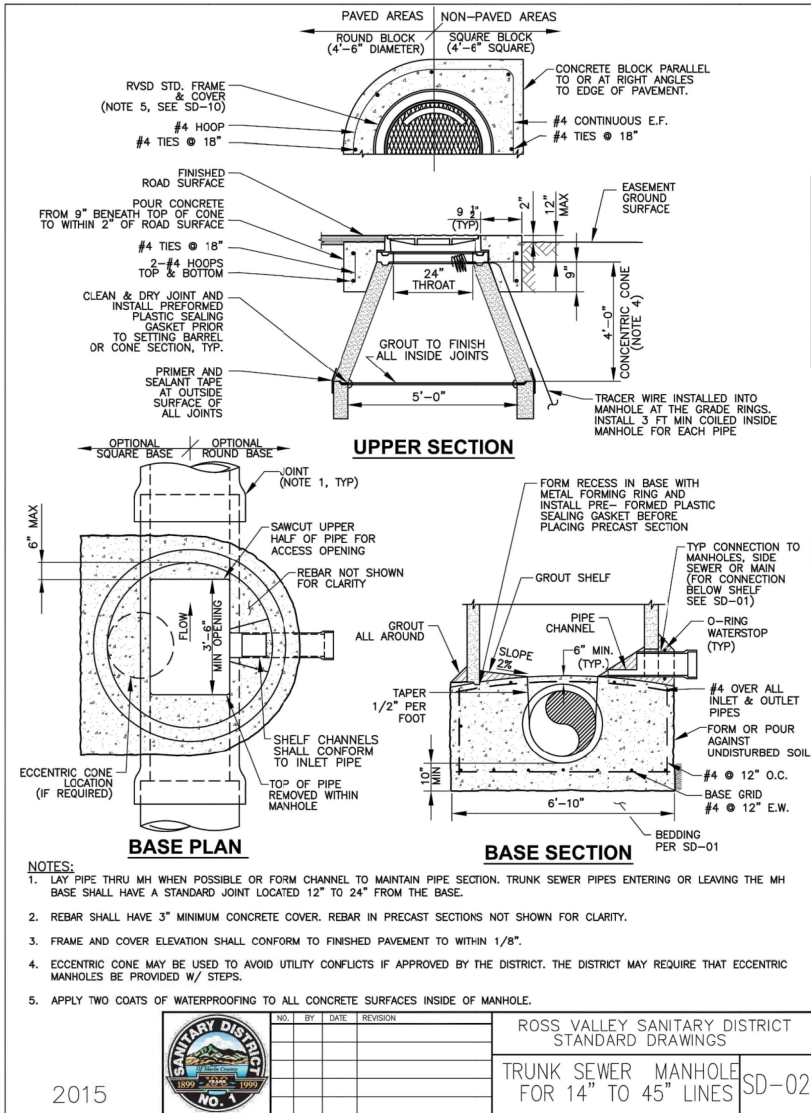
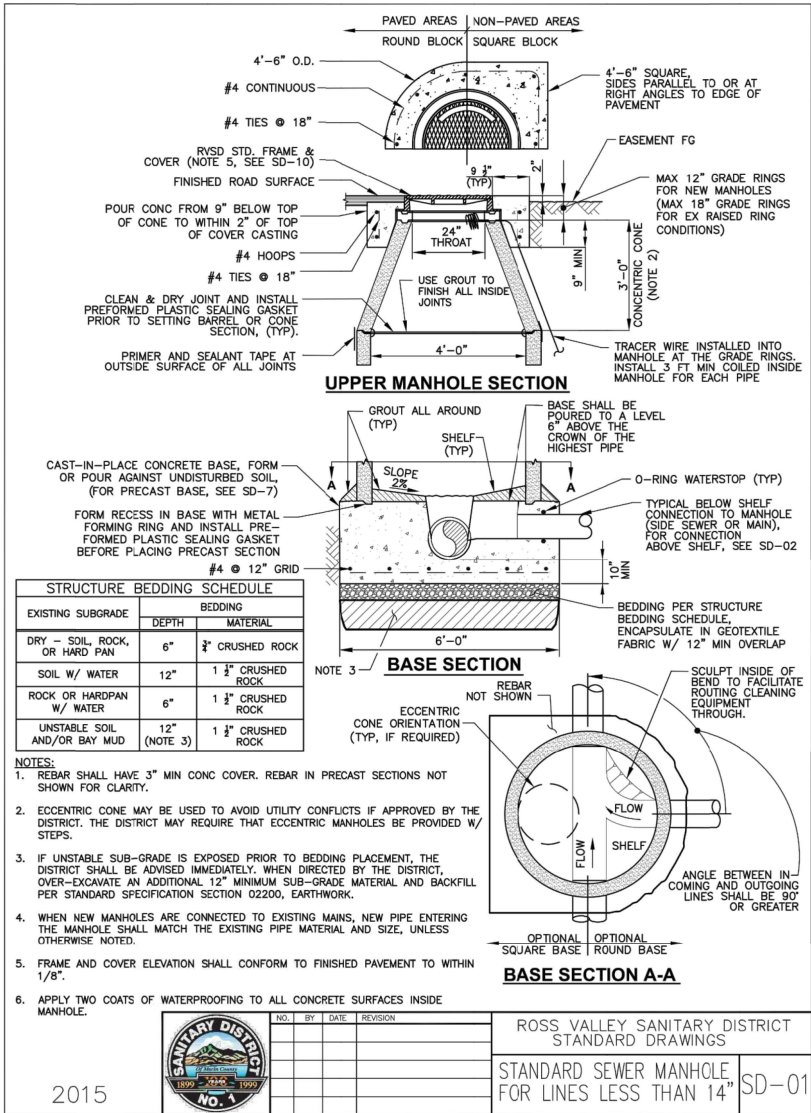
LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

PAVEMENT RESTORATION

CIVIL	FILENAME 148768-10B-V17-C-09.DWG
	BC PROJECT NUMBER 148768
	Nov 26, 2018
	DRAWING NUMBER C9
	SHEET NUMBER 15 OF 32

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Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)
SCALE: AS SHOWN
DESIGNED: C. DUDLEY
DRAWN: T. LAMBERT
CHECKED: ---
APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

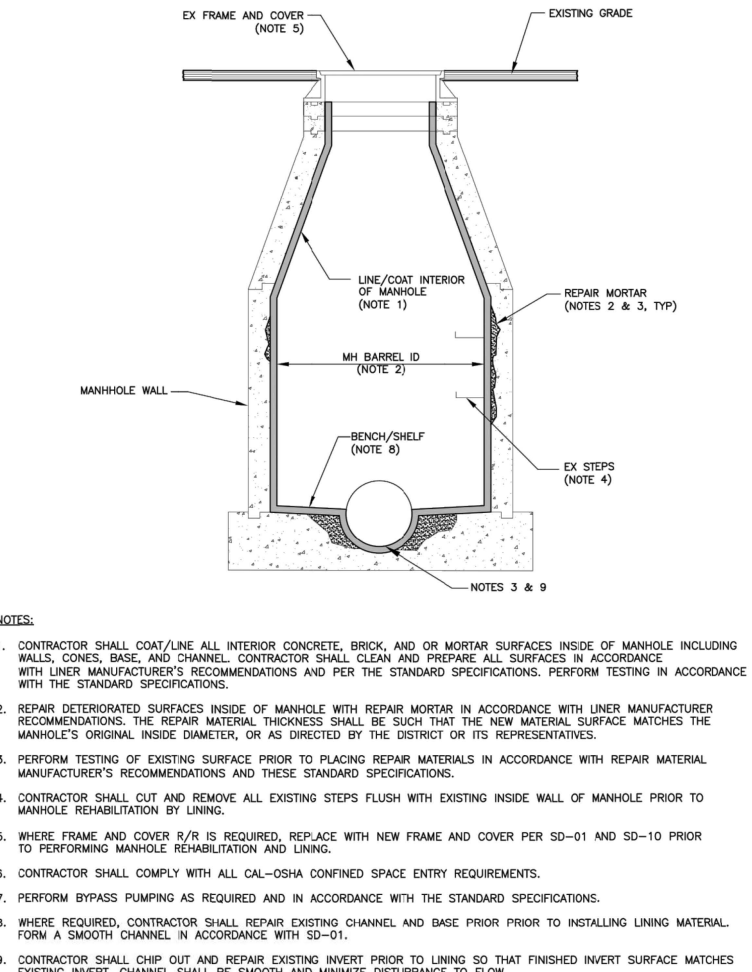
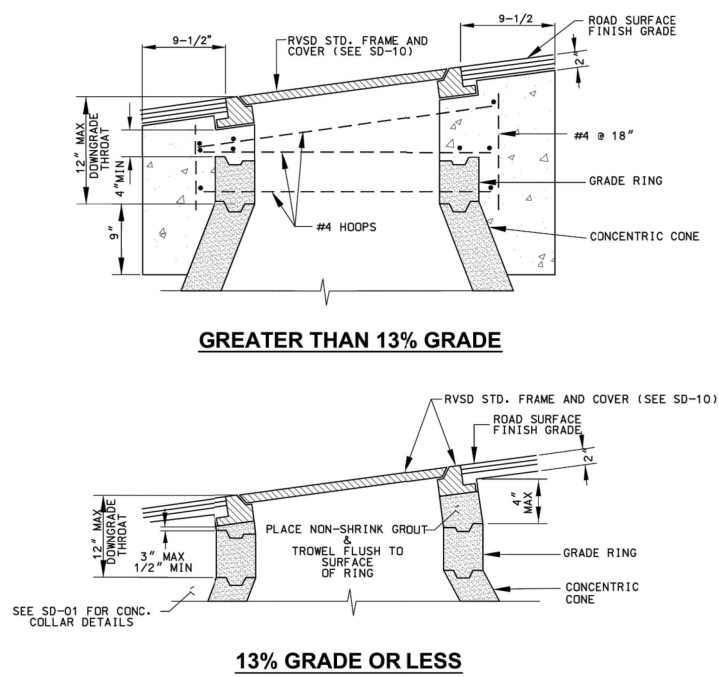
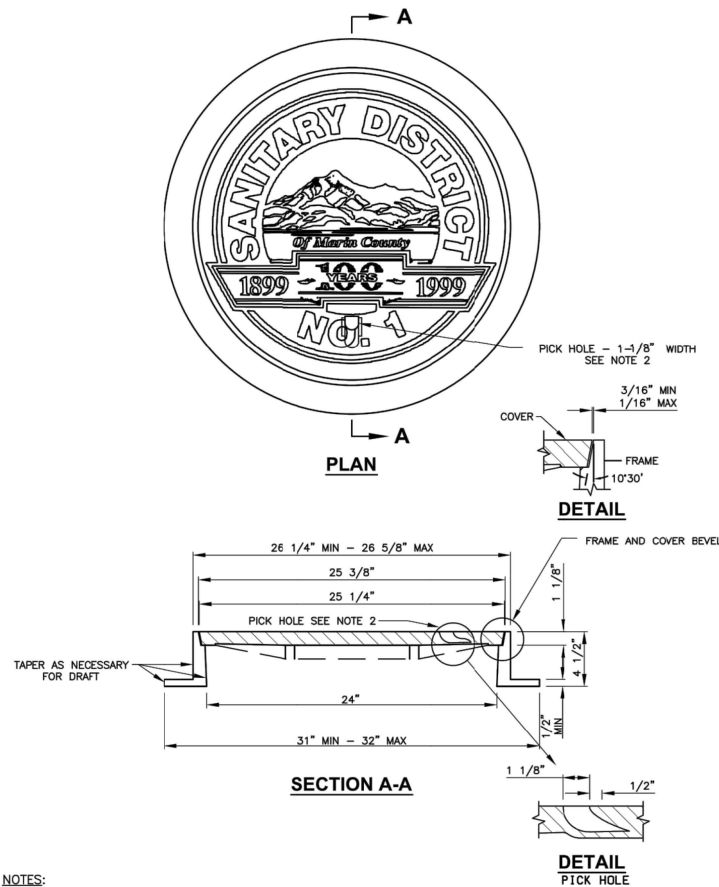
LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

**ROSS VALLEY
SANITARY DISTRICT**


2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

CIVIL	FILENAME 148768-13B-V17-C-10.DWG
	BC PROJECT NUMBER 148768
	Nov 26, 2018
	DRAWING NUMBER C10
	SHEET NUMBER 16 OF 32

CIVIL DETAILS 1

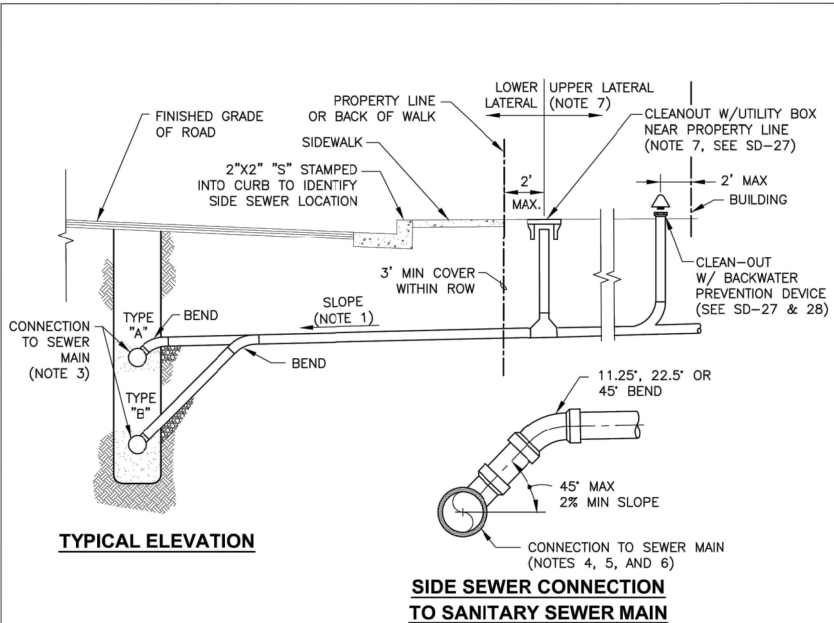


**LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS**

 **ROSS VALLEY
SANITARY DISTRICT**

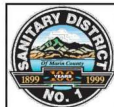
2980 KERNER BOULEVARD
SAN RAFAEL, CA 94901

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NOTES:

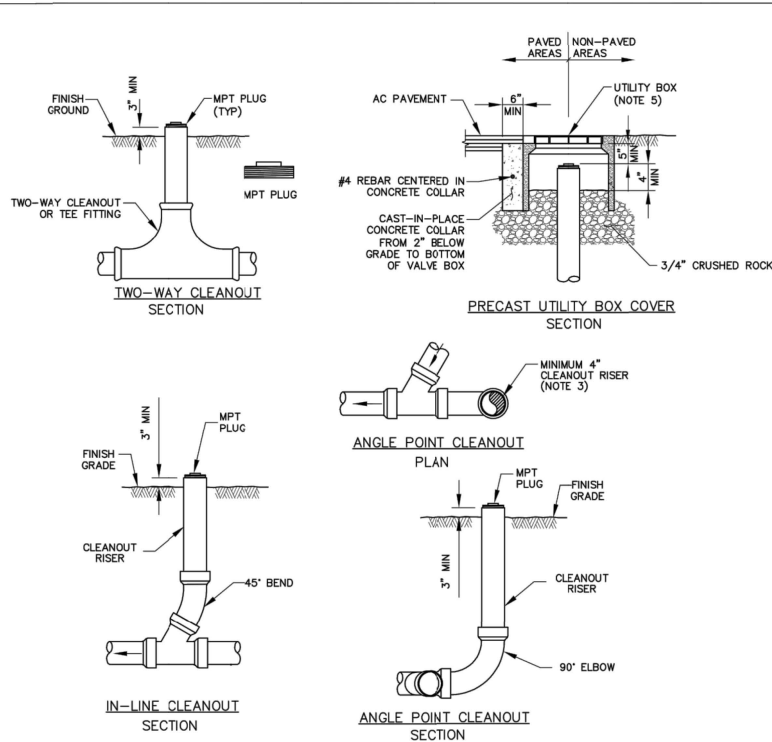
- MIN SLOPE FOR 4-INCH SIDE SEWERS SHALL BE 1.5%. MIN SLOPE FOR 6-INCH OR GREATER SHALL BE 0.7%.
- TRENCHING AND SURFACE REPAIR SHALL BE PER SD-14.
- CONTRACTOR SHALL USE THE MOST APPROPRIATE TYPE CONNECTION (A OR B) FOR THE PARTICULAR SITUATION.
- SIDE SEWER CONNECTION TO SEWER MAIN SHALL BE WITH A NEW WYE FITTING. FOR CONNECTIONS TO EXISTING SEWER MAINS, REMOVE AND REPLACE A PORTION OF SEWER MAIN AS REQUIRED FOR THE WYE FITTING AND PIPING INSTALLATION. PIPING AND CONNECTIONS TO EXISTING MAINS AND EXISTING SIDE SEWERS SHALL BE WITH ADJUSTABLE REPAIR COUPLINGS AND PER STANDARD PIPELINE SPOT REPAIR DETAIL, SEE SD-20. NEW WYES AND PIPING SHALL MATCH EXISTING MAIN MATERIAL.
- TAP CONNECTIONS PER DISTRICT'S APPROVED MATERIALS LIST MAY BE USED TO SEWER MAINS 10-INCH OR LARGER IF APPROVED BY THE DISTRICT.
- FOR CONNECTIONS TO HDPE MAINS, SEE SD-31.
- PROPERTY LINE CLEANOUTS SHALL BE A TWO-WAY OR A 'TEE' WHEREVER POSSIBLE. HOWEVER, A ONE-WAY WILL BE ALLOWED. CONTRACTOR IS ADVISED TO DISCUSS WITH PROPERTY OWNER, AND THE DISTRICT ENCOURAGES THE USE OF TWO-WAY CLEANOUTS.
- ADDITIONAL CLEANOUT(S) WILL BE REQUIRED IN ACCORDANCE WITH THE REQUIREMENTS OF SPECIFICATION SECTION 02600, SIDE SEWERS.



NO.	BY	DATE	REVISION

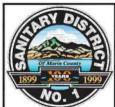
ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

TYPICAL SIDE SEWER SD-26



NOTES:

- CLEAN-OUT SHALL BE THE SAME SIZE AS THE SIDE SEWER.
- FITTINGS FOR CLEANOUTS AND SIDE SEWERS SHALL BE PER THE DISTRICT'S APPROVED MATERIALS LIST, SEE SIDE SEWER FITTINGS.
- ANGLE POINT CLEAN-OUT REQUIRED AT SIDE SEWER DEFLECTIONS EQUAL TO OR GREATER THAN 45°.
- THE CLEAN-OUT NEAREST TO SEWER MAIN (NEAR THE PROPERTY LINE) SHALL BE PROVIDED WITH A UTILITY BOX. ALSO, THE DISTRICT ENCOURAGES THE USE OF TWO-WAY CLEANOUTS WHERE FEASIBLE FOR PROPERTY LINE CLEANOUTS.
- PRECAST UTILITY BOXES SHALL BE PER DISTRICT'S APPROVED MATERIALS LIST. ALL COVERS SHALL BE MARKED "SEWER". CLEANOUT BOXES SHALL BE REQUIRED FOR ALL CLEANOUTS IN PAVED AREAS.
- THE CLEAN-OUT NEAREST TO BUILDING/HOME SHALL HAVE AN BACKWATER PROTECTION DEVICE PER SD-28.



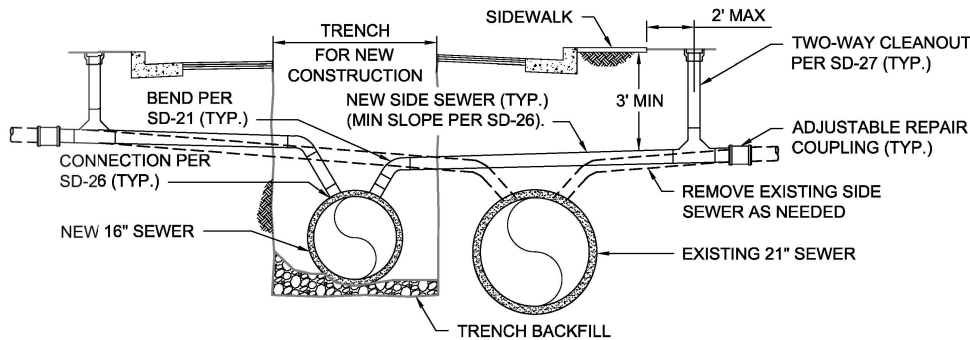
NO.	BY	DATE	REVISION

ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

SIDE SEWER CLEANOUT SD-27

NOTES:

- CUT THE EXISTING LATERAL WITHIN ONE FOOT OF THE CONNECTION TO THE MAIN, OR AT THE FIRST JOINT, AND PERMANENTLY SEAL IT WITH A WATERPROOF CAP/PLUG. WHERE NEW LATERAL CONSTRUCTION REQUIRES COMPLETE REMOVAL OF THE EXISTING LATERAL, I.E. UP TO AND INCLUDING THE CONNECTION TO THE EXISTING SEWER, SEE DETAIL B/C14 FOR ACCEPTABLE METHODS TO PATCH THE HOLE LEFT IN THE 21 IN MAIN.
- DUE TO THE FRAGILE CONDITION OF THE EXISTING 21 IN CP SEWER, BACKFILL COMPACTION ATOP THE PIPE IS NOT ALLOWED. BACKFILL THE LATERAL TRENCH WITH CLSM FOR MIN. 3 FT ON BOTH SIDES OF THE EXISTING SEWER.



RELOCATION OF EXISTING LATERALS
TO NEW 16 IN DIA. SEWER

DETAIL



NO SCALE

NOTES:

- ALL LATERALS CONNECTED TO THE EXISTING 21" SEWER BETWEEN SSMH R500.080 AND SSMH R500.050 SHALL BE CONNECTED TO THE NEW 16" DIAMETER SEWER MAIN, PRIOR TO REHABILITATION EXISTING SEWER.
- PROVIDE TRAFFIC RATED VALVE BOX IN DRIVEWAYS, STREETS AND OTHER AREAS SUBJECT TO REGULAR VEHICLE LOADS, CHRISTY MODEL B1017 OR APPROVED EQUAL. IN OTHER AREAS, PROVIDE CURB-STYLE VALVE BOX, CHRISTY MODEL B09 OR APPROVED EQUAL. VALVE BOXES SHALL HAVE LIDS MARKED "SEWER".
- ALL BANDED RUBBER COUPLINGS SHALL HAVE A STAINLESS STEEL SHEAR BAND AND STAINLESS STEEL CLAMPS PER THE DISTRICTS APPROVED MATERIALS LIST.
- LATERAL LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL PHYSICALLY LOCATE ALL LATERALS BY TELEVISIONING THE EXISTING SEWER MAIN PRIOR TO THE WORK AND/OR BY OTHER LOCATING METHODS.
- EXISTING PVC LATERALS SHALL BE CONNECTED TO THE NEW SEWER MAIN PER DET SD-26.
- EXIST LATERALS NOT CONSTRUCTED OF PVC SHALL BE REPLACED WITH A NEW LATERAL TO THE PROPERTY LINE BY PIPE BURSTING OR OPEN CUT AND A NEW CLEANOUT PROVIDED BEHIND THE SIDEWALK OR CURB PER RVSD STD DETAIL SD-26. IF ASBESTOS CEMENT (AC) PIPE IS ENCOUNTERED, THE LATERAL SHALL BE REPLACED BY OPEN CUT AND REMOVED AND DISPOSED OF IN AN APPROPRIATE MANNER PER PROJECT SPECIFICATIONS. SEE SPECIFICATION SECTION 02600.
- FOR PIPEBURST LATERALS, 4.5" OD HDPE (DR17) PIPE SHALL BE INSERTED THROUGH THE EXISTING LATERAL. ANY OBSTRUCTION, BLOCKAGES, OR BENDS ENCOUNTERED SHALL BE PHYSICALLY EXCAVATED AND REMOVED SO THE PIPE BURSTING CAN BE COMPLETED WITHOUT CHANGING PIPE MATERIAL. WHATEVER PORTION OF THE LATERAL CANNOT BE PIPE BURST SHALL BE REPLACED BY DIRECT BURIAL.
- THE CONTRACTOR SHALL RESTORE ALL SURFACE IMPROVEMENTS OF PRIVATE PROPERTY INCLUDING ALL LANDSCAPING, FENCING, CONCRETE WALLS, SIDEWALKS, DRIVEWAYS, ETC. IN KIND. NOT ALL IMPROVEMENTS ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL INCLUDE THE COST OF RESTORING ALL SURFACE IMPROVEMENTS ON PRIVATE PROPERTY IN THE BID FOR CONSTRUCTION OF SEWER LATERALS.
- THIS PROJECT INVOLVES WORK ON OR NEAR PRIVATE PROPERTIES. THE CONTRACTOR SHALL SPECIFICALLY INSTRUCT ALL WORKERS TO EXERCISE GOOD PUBLIC RELATIONS DURING THE WORK, INCLUDING BEING COURTEOUS, AVOIDING THE USE OF SWEAR WORDS, AND MINIMIZING DAMAGE TO PRIVATE PROPERTY. THE CONTRACTOR SHALL NOTIFY PROPERTY OWNERS PRIOR TO WORKING ON THEIR LATERAL.
- BEDDING REQUIREMENT FOR SERVICE CONNECTION: PLACE A MINIMUM OF 12" OF INITIAL BACKFILL ALL AROUND THE OUTSIDE DIAMETER OF THE RISER AND MECHANICALLY COMPACTED TO 90% RELATIVE DENSITY. TRENCH BACKFILL MATERIAL SHALL BE USED TO 12" FROM GRADE OR TO TOP OF SUBGRADE IF UNDER CONCRETE.
- CLEANOUT MATERIAL TO MATCH LATERAL MATERIAL. HDPE CONNECTIONS SHALL BE MADE BY BUTT FUSION OR ELECTROFUSION. PVC CONNECTIONS SHALL BE SOLVENT WELDED.
- CONTRACTOR SHALL EXPOSE CROSSING UTILITIES PRIOR TO BURSTING LATERALS.

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

SCALE: AS SHOWN

DESIGNED: C.DUDLEY

DRAWN: L. BULLOCK

CHECKED: ---

APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

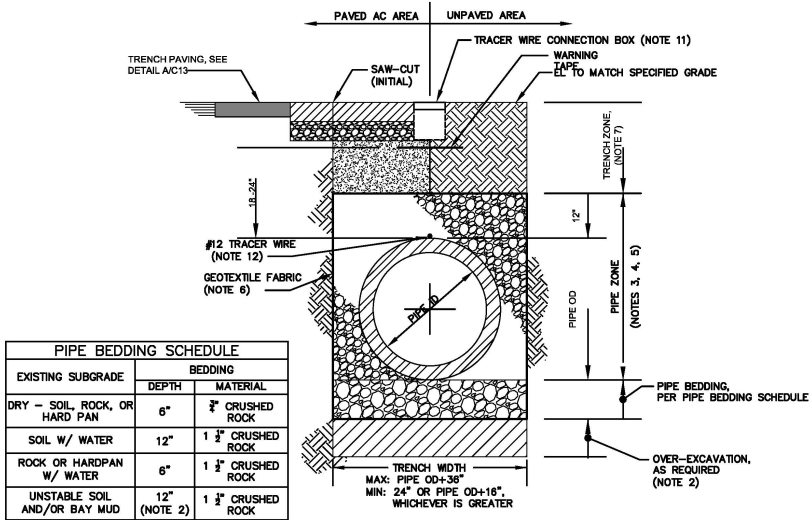
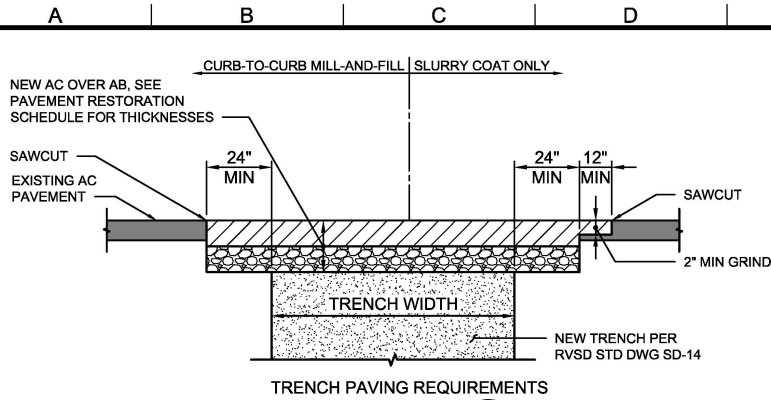
**ROSS VALLEY
SANITARY DISTRICT**

2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

CIVIL DETAILS 3

FILENAME 148768-1I3B-V17-C-12.DWG
BC PROJECT NUMBER 148768
Nov 26, 2018
DRAWING NUMBER C12
SHEET NUMBER 18 OF 32

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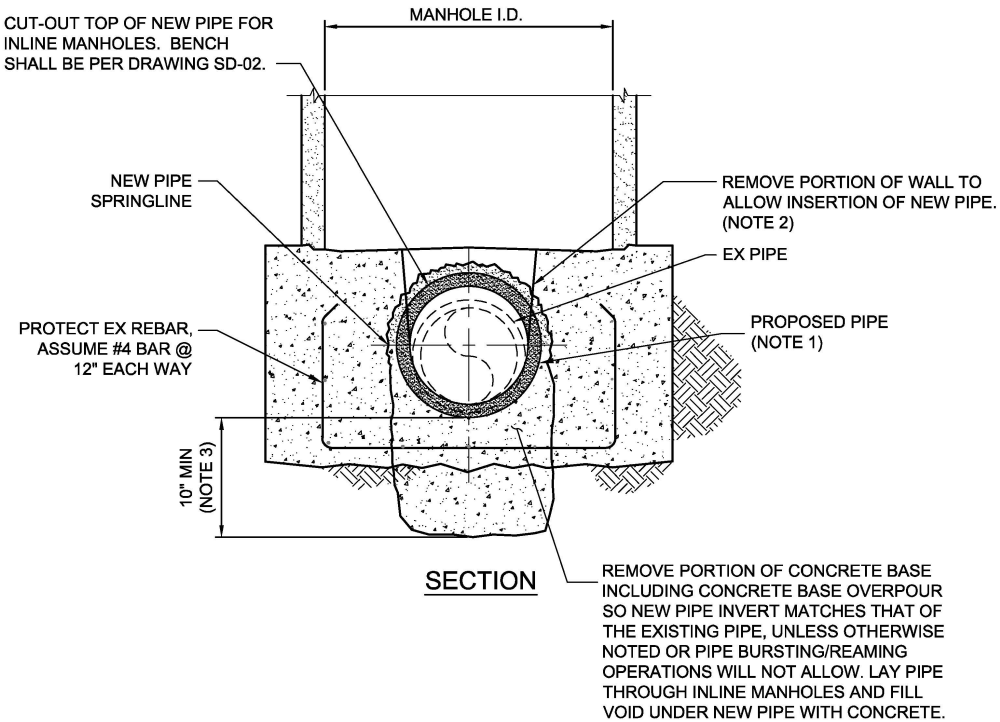


- NOTES:
- TRENCHING SHALL CONFORM TO THE "CONSTRUCTION SAFETY ORDERS OF THE STATE OF CALIFORNIA" AND SECTION 6705 OF THE CALIFORNIA LABOR CODE.
 - IF UNSTABLE SUB-GRADE IS EXPOSED PRIOR TO BEDDING PLACEMENT, THE DISTRICT SHALL BE ADVISED IMMEDIATELY. WHEN DIRECTED BY THE DISTRICT, OVER-EXCAVATE ADDITIONAL 12" MIN UNSUITABLE SUB-GRADE MATERIAL AND BACKFILL PER STANDARD SPECIFICATION SECTION 02200, EARTHWORK.
 - PIPE ZONE BACKFILL SHALL BE 3" CRUSHED ROCK.
 - BACKFILL SHALL BE PLACED IN 6" MAXIMUM LIFTS UNLESS OTHERWISE APPROVED BY THE DISTRICT. EACH LIFT SHALL BE COMPACTED BY A MINIMUM OF THREE (3) PASSES WITH A VIBRATORY PLATE COMPACTOR.
 - WHERE ADEQUATE COMPACTION CANNOT BE ACHIEVED ABOVE CROWN OF PIPE DUE TO OBSTRUCTION OR OTHER CONDITIONS, REPLACE PIPE ZONE AND/OR TRENCH ZONE MATERIAL WITH CLSM, AS DIRECTED BY CONSTRUCTION MANAGER.
 - GEOTEXTILE FABRIC INSTALLATION:
MAIN SEWERS: WRAP/ENCAPSULATE PIPE BEDDING AND PIPE ZONE BACKFILL TOGETHER USING GEOTEXTILE FABRIC WITH MINIMUM 12" OVERLAP.
SIDE SEWERS: INSTALL A SINGLE LAYER/BLANKET OF GEOTEXTILE FABRIC AT THE TOP OF THE PIPE ZONE.
 - TRENCH ZONE BACKFILL SHALL BE:
IN PAVED AREAS: CLSM OR CLASS II AB COMPACTED TO 90% RC, UNLESS OTHERWISE SPECIFIED OR DIRECTED BY THE DISTRICT.
IN NON PAVED AREAS: ENGINEERED FILL COMPACTED TO 90% REL COMPACTION. IN LANDSCAPED AREAS TOP 12" MAY BE TOPSOIL OR NATIVE.
 - PAVEMENT AND PAVEMENT THICKNESS SHALL CONFORM TO THE REQUIREMENTS OF THE TOWN OR CITY WITH JURISDICTION AND THE ENCROACHMENT PERMIT.
 - SAW-CUT FULL DEPTH OF EXISTING AC PAVEMENT. PAVEMENT EDGES OF SECOND NEAT SAW CUT DAMAGED DURING CONSTRUCTION SHALL BE RE-CUT TO NEAT LINES PRIOR TO PAVING. TACK COAT SHALL BE APPLIED TO ALL VERTICAL SURFACES IN ACCORDANCE TO THE LATEST CALTRANS STANDARD SPECIFICATIONS. TACK COAT SHALL BE APPLIED TO COMPLETE WIDTH AND EDGE JUST PRIOR TO PLACING ASPHALT CONCRETE.
 - WHERE EDGE OF GUTTER IS WITHIN 3 FEET OF SAW-CUT, REMOVE REMAINING EXISTING AC PAVING AND REPLACE WITH NEW AC PAVING. EXPOSED EDGE OF SAW-CUT SHALL BE APPLIED WITH A TACK COAT PRIOR TO PAVING.
 - ALL ROADWAY SURFACE MARKINGS, INCLUDING BUT NOT LIMITED TO STRIPING SHALL BE REPLACED TO PRE-EXISTING CONDITIONS.
 - TRACER WIRE SHALL BE TAPED TO THE TOP OF ALL BURIED MAINS, WHERE THE DISTANCE BETWEEN MANHOLES IS GREATER THAN 400 FT, THEN A TRACER WIRE CONNECTION BOX SHALL BE INSTALLED, SEE SD-24. FOR SIDE SEWERS, INSTALL DETECTABLE WARNING TAPE PER STANDARD SPECIFICATION SECTION 02800, SIDE SEWERS.

PIPE TRENCH

DETAIL B VAR

NO SCALE



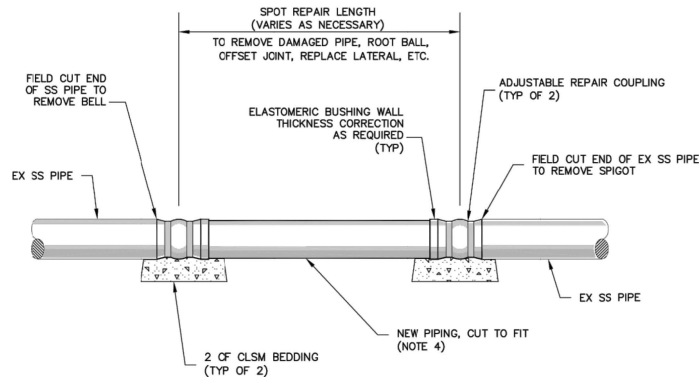
NOTES:

- INSTALL O-RING WATERSTOP AROUND NEW PIPE AND CENTERED WITHIN EXISTING MANHOLE WALL.
- FILL ANNULAR SPACE BETWEEN NEW PIPE AND EXISTING MANHOLE WALL WITH NON-PERMEABLE NON-SHRINK GROUT. ROUGHEN EXISTING CONCRETE SURFACE TO FULL AMPLITUDE OF 1/4" AND APPLY A BONDING AGENT PRIOR TO PLACING NON-SHRINK GROUT.
- 10" MINIMUM OF EXISTING CONCRETE BASE TO REMAIN INTACT UNDER NEW PIPE OR CHIP OUT EXISTING CONCRETE BASE AS NEEDED TO INSTALL NEW CONCRETE WITH A 10" MINIMUM THICKNESS UNDER NEW PIPE.

MANHOLE BASE MODIFICATION FOR PIPELINE REPLACEMENT

DETAIL C VAR

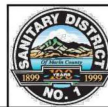
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NOTES:

- THE CONTRACTOR SHALL VERIFY ACTUAL POINT REPAIR LOCATIONS IN THE FIELD IN COORDINATION WITH THE REVIEW OF PRE-INSTALLATION OCTV. ANY POINT REPAIRS OR ADDITIONAL LENGTHS NOT SHOWN IN THE DESIGN DRAWINGS SHALL BE APPROVED BY THE DISTRICT OR ITS REPRESENTATIVES PRIOR TO INSTALLATION.
- WHERE SPOT REPAIRS ARE SHOWN IN DESIGN DRAWINGS TO ENTER INTO AN EXISTING MANHOLE, REMOVE AND REPLACE EXISTING PIPE AND REPAIR MANHOLE WALL AND BASE PER SD-9.
- TRENCH BACKFILL AND SURFACE RESTORATION SHALL BE IN ACCORDANCE WITH SD-14.
- NEW PIPING SHALL BE PVC C900/C905 OR VCP UNLESS OTHERWISE NOTED.

2015



NO.	BY	DATE	REVISION

ROSS VALLEY SANITARY DISTRICT
STANDARD DRAWINGS

PIPELINE SPOT REPAIR SD-20

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

SCALE: AS SHOWN

DESIGNED: C. DUDLEY

DRAWN: T. LAMBERT

CHECKED: ---

APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

**ROSS VALLEY
SANITARY DISTRICT**

2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

CIVIL

FILENAME
148768-13B-V17-C-13.DWG

BC PROJECT NUMBER
148768

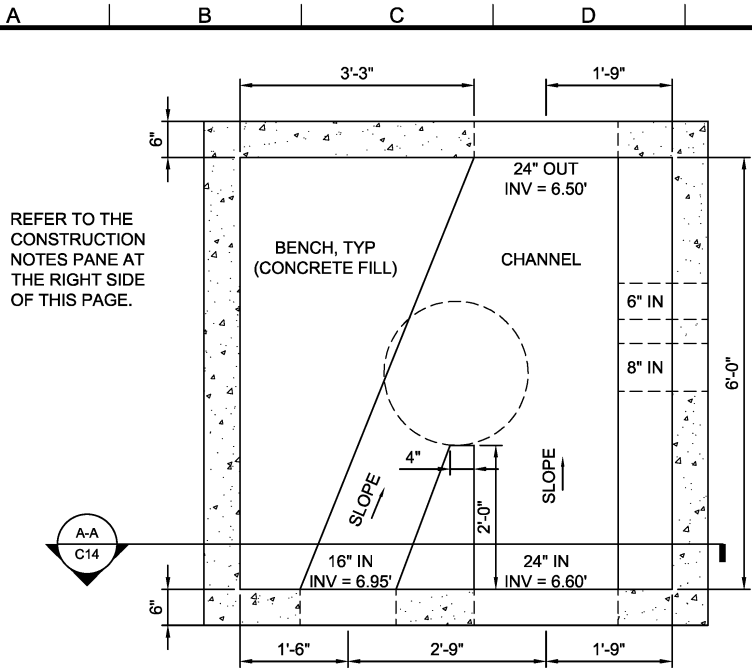
Nov 26, 2018

DRAWING NUMBER
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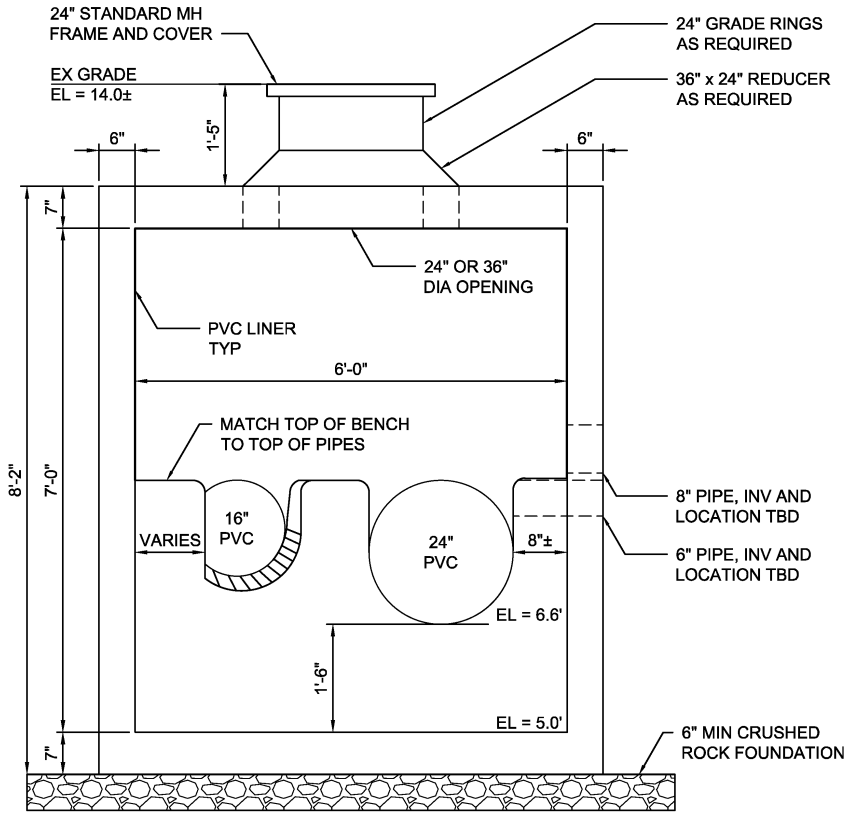
SHEET NUMBER
19 OF 32

CIVIL DETAILS 4

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PLAN
SCALE: 3/4" = 1'-0"

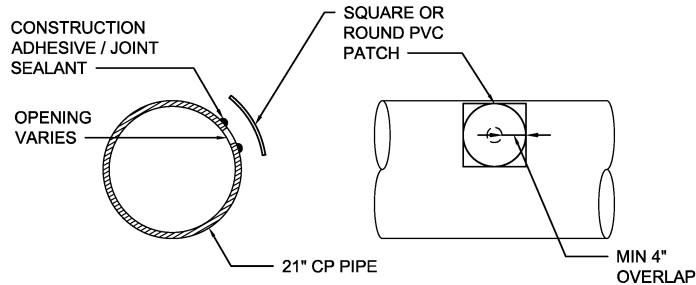


SECTION A-A
SCALE: 3/4" = 1'-0"

REPLACE SSMH R500.050
WITH SQUARE JUNCTION BOX

DETAIL

SCALE: 3/4" = 1'-0"



SEALING OF LATERAL OPENINGS
IN EXISTING 21 IN DIA SEWER

DETAIL

SCALE: NTS

EXTERIOR PATCH DETAILS

1. AFTER REMOVING THE EXISTING LATERAL FROM THE SEWER MAIN, THOROUGHLY CLEAN THE EXTERIOR PIPE SURFACE AROUND THE OPENING, TAKING CARE NOT TO DAMAGE THE PIPE WALL. PREPARE THE SURFACE TO RECEIVE CONSTRUCTION ADHESIVE OR CONCRETE JOINT SEALANT, PER MANUFACTURER'S RECOMMENDATIONS.
2. THE ADHESIVE/SEALANT SHALL EXHIBIT WATERPROOF AND FLEXIBLE PROPERTIES, AND SHALL BE MANUFACTURED BY SIKA CORPORATION, OR APPROVED EQUAL.
3. CUT A SQUARE OR CIRCULAR PATCH OUT OF A SECTION OF 24-IN-DIAM. PVC PIPE (ANY DR OR SDR IS ACCEPTABLE) LARGE ENOUGH TO PROVIDE MIN. 4 IN OVERLAP AROUND THE OPENING ON ALL SIDES. FOR BIDDING PURPOSES, ASSUME OPENINGS ARE APPROXIMATELY 6 IN DIA. ROUGHEN THE INTERIOR (CONCAVE SIDE) OF THE PATCH TO IMPROVE ADHESION.
3. APPLY THE ADHESIVE/SEALANT TO THE PIPE WALL AROUND THE OPENING AND PRESS THE PATCH FIRMLY INTO THE ADHESIVE/SEALANT, ASSURING THAT THERE ARE NO GAPS BETWEEN THE ADHESIVE/SEALANT AND THE PATCH.
4. AFTER THE ADHESIVE/SEALANT HAS SET, AND THE LATERAL HAS BEEN CONNECTED TO THE NEW SEWER AND TESTED, BACKFILL THE TRENCH WITH CLSM UP TO THE NEW AC AND A MIN. OF 3 FT Laterally FROM THE 21 IN PIPE EXTERIOR ON BOTH SIDES. ALSO SEE DETAIL A/C12.

CONSTRUCTION NOTES (JUNCTION BOX)

1. PRECAST VAULT SHALL BE DESIGNED FOR H-20-44 BRIDGE LOADING. ACCEPTABLE PRODUCTS INCLUDE 6'-0" X 6'-0" X 7'-0" MANHOLE/VAULT BY JENSEN PRECAST, OLDCASTLE PRECAST, OR APPROVED EQUAL. THE DIMENSIONS SHOWN ON THIS DRAWING ARE BASED ON THE JENSEN PRODUCT. PROVIDE PVC LINER (AMERON T-LOCK OR EQUAL) ON INTERIOR CEILING AND WALLS ABOVE BENCH.
2. FLEXIBLE PIPE CONNECTORS SHALL BE Z-LOK CONNECTOR, MANUFACTURED BY A-LOCK PRODUCTS, INC OR APPROVED EQUAL. PIPE CONNECTORS SHALL BE CAST INTO THE WALLS AT THE PRECAST PLANT. ALTERNATELY, PROVIDE OPENINGS IN THE MANHOLE WALLS, INSTALL O-RING WATERSTOPS ON PIPES, AND GROUT PIPES IN PLACE PER SD-01 OR SD-02/C-10.
3. JOINT GASKETS, EXTERIOR JOINT SEALANT TAPE, AND INTERIOR WATERPROOFING SHALL BE PER SPECIFICATION SECTION 02700 - MANHOLES.
4. PRECAST CONCRETE COMPONENTS AND MANHOLE FRAME AND COVER SHALL BE PER SECTION 02700 - MANHOLES. CONCRETE SHALL BE MIN. 5,000 PSI COMPRESSIVE STRENGTH, INCLUDING POURED-IN-PLACE CONCRETE FOR THE BENCH.
5. ROUGHEN THE TOP OF THE BENCH TO PROVIDE AN ANTI-SLIP SURFACE. BEVEL ALL CORNERS TO 1/2" RADIUS (±).
6. THE CONCRETE FILL THICKNESS BELOW THE LOWEST PIPE INVERT (6.5') IS APPROX. 1'-6", AS SHOWN.
7. CONTRACTOR TO DETERMINE THE LOCATIONS AND INVERTS OF THE 6 IN AND 8 IN SEWERS THAT ENTER THE STRUCTURE FROM THE SOUTHWEST. MAKE SIDE CHANNELS IN THE BENCH AS REQUIRED TO ACCOMMODATE.

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)
SCALE: AS SHOWN
DESIGNED: C. DUDLEY
DRAWN: L. BULLOCK
CHECKED: ---
APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

**ROSS VALLEY
SANITARY DISTRICT**

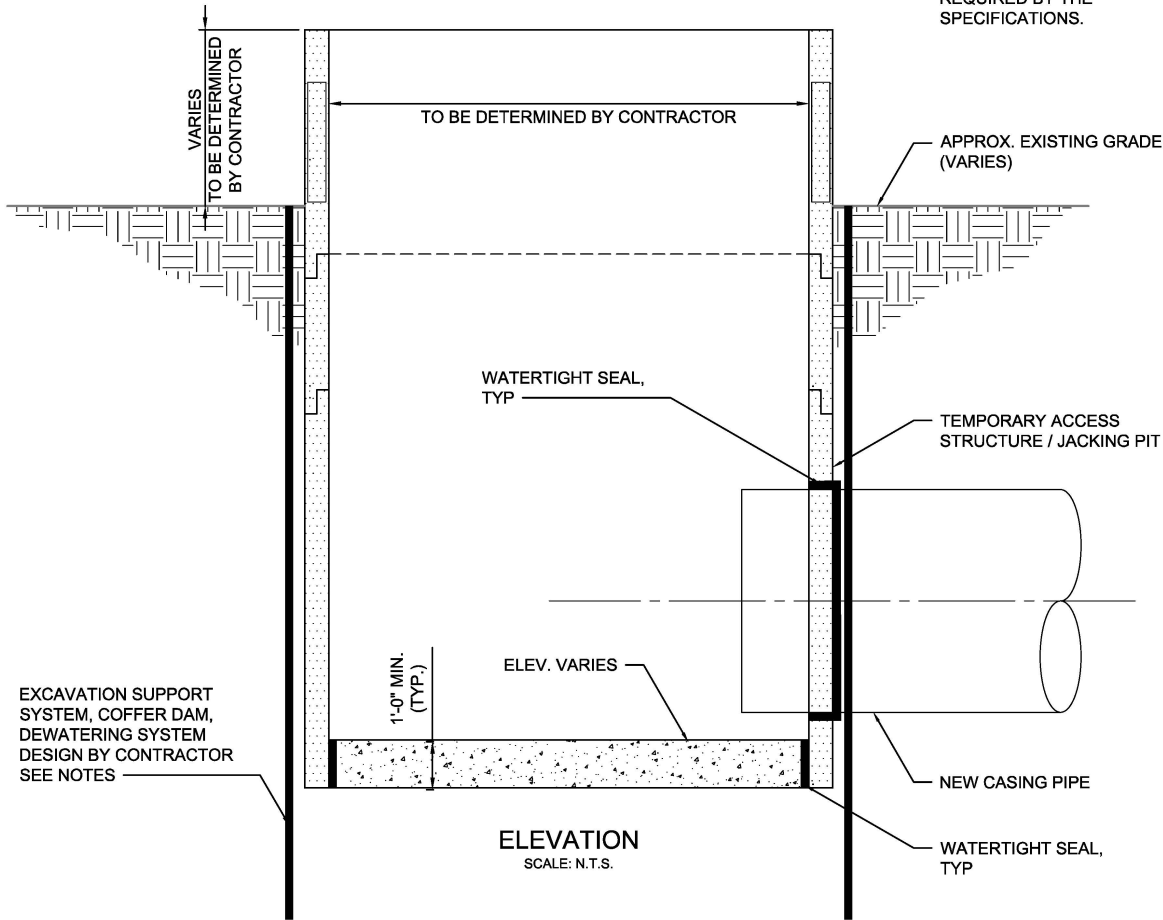
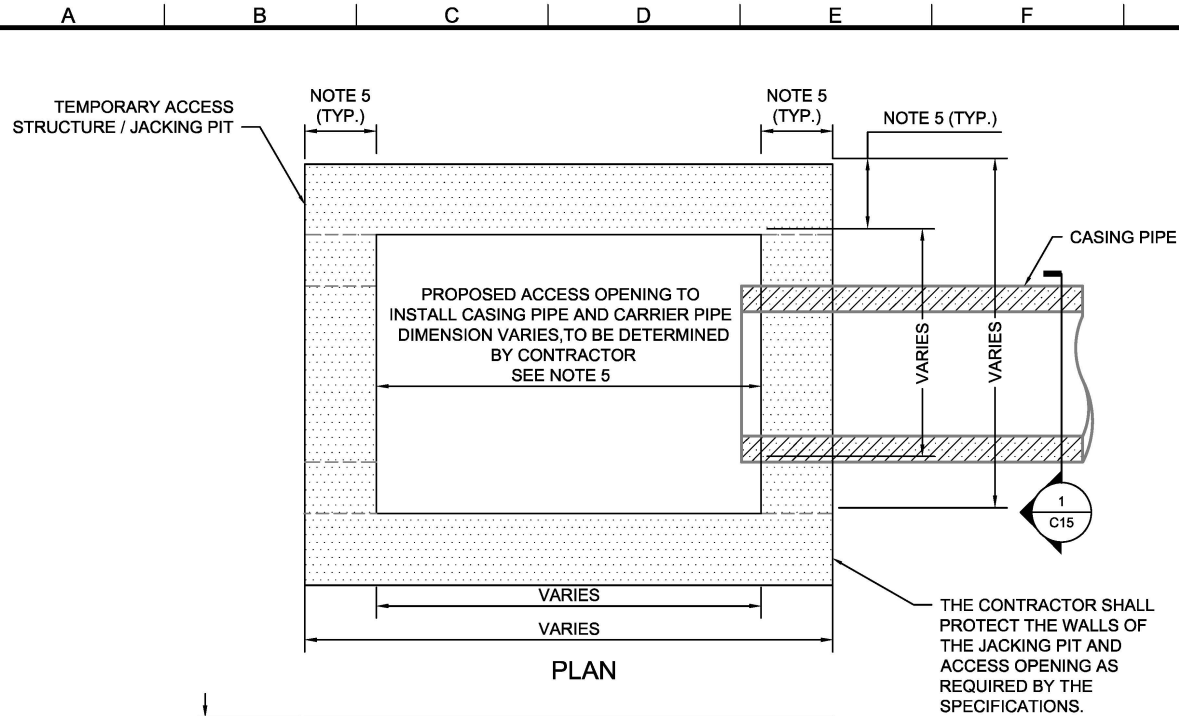
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

CIVIL

CIVIL DETAILS 5

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BC PROJECT NUMBER 148768
Nov 26, 2018
DRAWING NUMBER C14
SHEET NUMBER 20 OF 32

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TYPICAL JACKING AND RECEIVING PIT

DETAIL

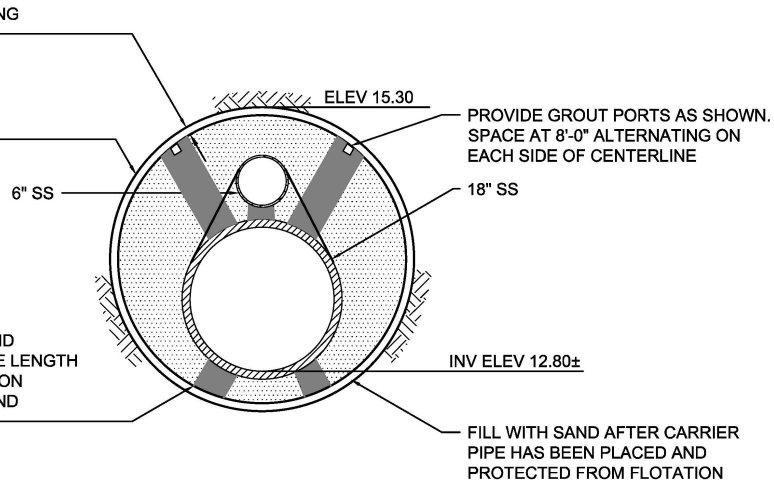


NO SCALE

MINIMUM THICKNESS OF CASING PIPE SHALL BE AS INDICATED

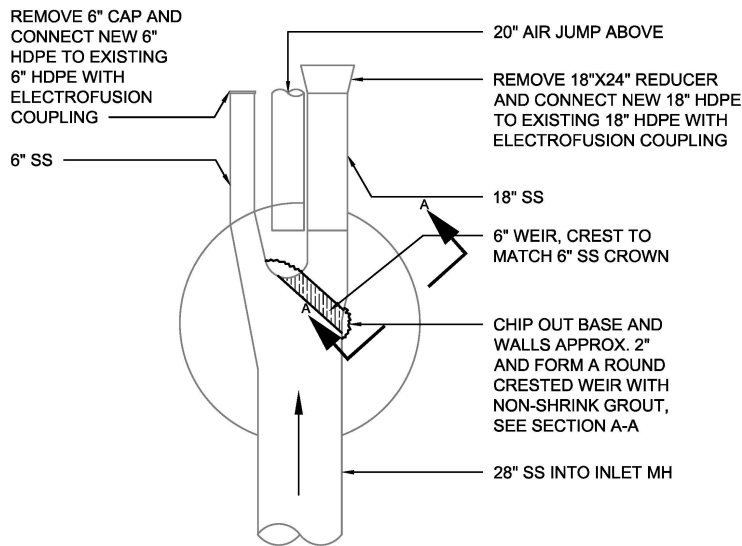
36" CASING PIPE
MAX. SEGMENT
LENGTH OF 10 FT,
SEE NOTE 11

PROVIDE CASING SPACERS AND
SUPPORTS ALONG THE ENTIRE LENGTH
OF INSTALLED SEWER, 6' MIN. ON
CENTER, TYP. SEE NOTE 12 AND
DISTRICT SD-23



SECTION 1 C15

SCALE: 1" = 1'-0"

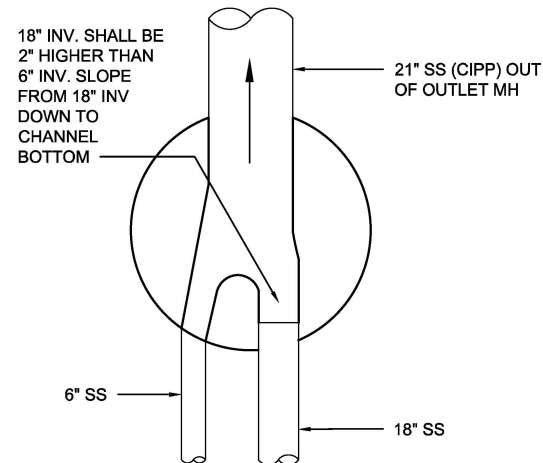


MANHOLE R500.185 PLAN

DETAIL



NO SCALE



MANHOLE R500.165 PLAN

DETAIL



NO SCALE

CONSTRUCTION NOTES

- EXCAVATIONS WILL ENCOUNTER GROUNDWATER THROUGHOUT THE WORK AREA; REFER TO THE GEOTECHNICAL REPORT IN THE SPECIFICATION APPENDICES.
- PROVIDE EXCAVATION SUPPORT AND DEWATERING IN ACCORDANCE WITH SECTION 2140 AND SECTION 2160. CONTINUOUS DEWATERING AND GROUNDWATER DISPOSAL WILL BE REQUIRED.
- ALL CONCRETE SHALL BE MIN. 4000 PSI.
- LOCATING AND PROTECTING EXISTING UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- JACKING PIT DESIGN, INCLUDING THRUST RESTRAINT AND TEMPORARY FACILITIES, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. RECEIVING PITS AND/OR ACCESS PITS CONSTRUCTION SHALL BE SIMILAR TO JACKING PIT CONSTRUCTION. ALL FINAL PIT AND SHORING DIMENSIONS TO BE DETERMINED BY CONTRACTOR.
- PRIMARY VERTICAL EXCAVATION SUPPORT SHALL CONSIST OF INTERLOCKING SHEET PILES OR OTHER APPROVED, WATERTIGHT SYSTEM. CONTRACTOR TO DETERMINE REQUIRED WALL SECTION AND DEPTH BELOW EXCAVATION, AND SHALL DESIGN ALL SHORING COMPONENTS AS REQUIRED, I.E. VERTICAL MEMBERS, WHALERS, CROSS-BRACING, SLAB, ETC.
- WELL-POINT DEWATERING, WHICH LOWERS THE GROUNDWATER TABLE OVER A WIDE AREA OF INFLUENCE, IS NOT ALLOWED. DEWATERING SHALL BE LIMITED TO PASSIVE REMOVAL OF WATER THAT SEEPS INTO THE EXCAVATIONS ONLY, I.E. BY USE OF SUMP PUMPS WITHIN THE PITS.
- THE CONTRACTOR MAY PERFORM GROUTING AND/OR OTHER TECHNIQUES WITHIN AND AROUND THE EXCAVATIONS AS A MEANS TO PROVIDE ADDITIONAL SOIL SUPPORT AND TO CONTROL GROUNDWATER.
- THE PITS SHALL BE COVERED WITH STEEL TRENCH PLATES WHEN THE CONTRACTOR IS NOT AT THE SITE OF THE WORK. SEE SPEC SECTION 01010-5.0 - TRENCH EXCAVATION FOR ADDITIOINAL INFORMATION.
- CASING SPACERS SHALL BE RESTRAINED TO PREVENT FLOTATION AND KEEP THE CARRIER PIPE AT THE BOTTOM OF THE CASING, MANUFACTURED BY CASCADE WATERWORKS MANUFACTURING COMPANY OR APPROVED EQUAL.
- STEEL CASING PIPE SHALL MEET THE REQUIREMENTS OF ASTM A53/A53M, GRADE B, 35,000 PSI MINIMUM YIELD STRENGTH WITH FULL CIRCUMFERENCE WELDED JOINTS IN ACCORDANCE WITH AWS D1.1 TO WITHSTAND JACKING FORCES. ALTERNATELY, PIPE MAY HAVE LOCKING PUSH-ON JOINTS, I.E. PERMALOK BY NORTHWEST PIPE COMPANY OR APPROVED EQUAL. CASING SEGMENTS SHALL BE MAX 10' LONG.
- CASING END SEALS SHALL BE "U" AS MANUFACTURED BY T.D. WILLIAMSON, INC. OR APPROVED EQUAL. SEE DISTRICT SD-23.

Brown and Caldwell

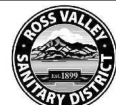
WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)
SCALE: AS SHOWN
DESIGNED: C. DUDLEY
DRAWN: L. BULLOCK
CHECKED: ---
APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS



**ROSS VALLEY
SANITARY DISTRICT**

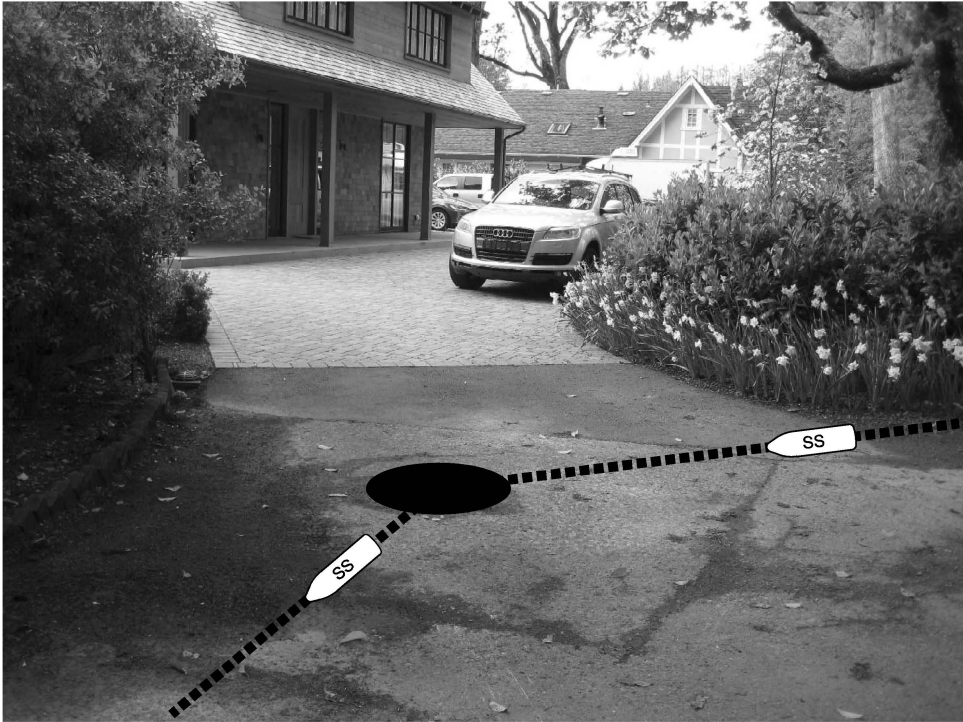
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

CIVIL

CIVIL DETAILS 6

FILENAME
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BC PROJECT NUMBER
148768
Nov 26, 2018
DRAWING NUMBER
C15
SHEET NUMBER
21 OF 32

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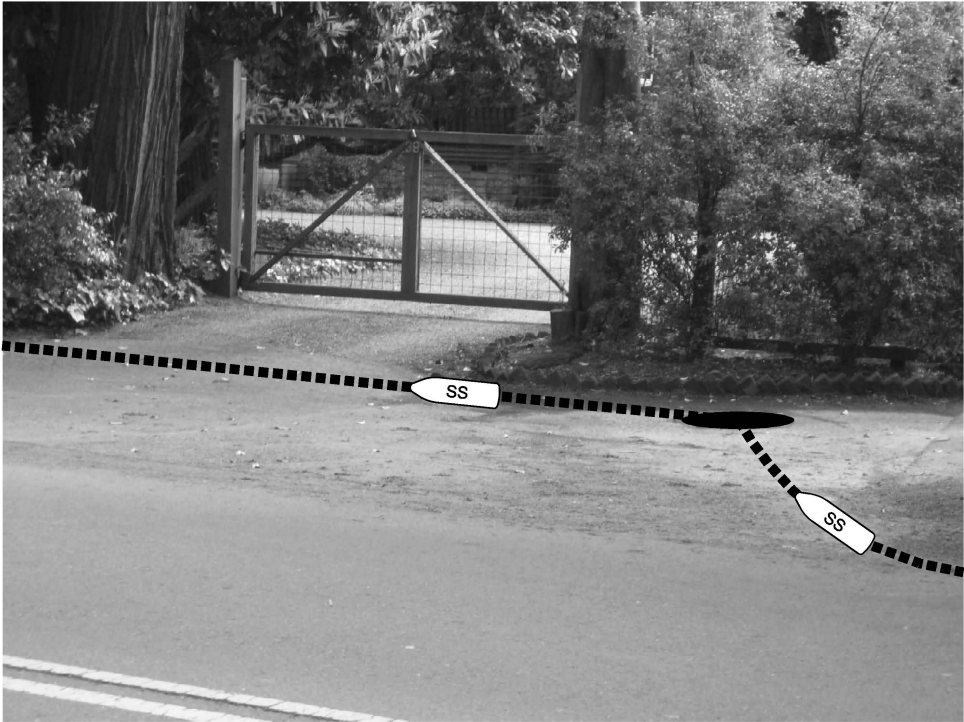


SSMH R500.140 WEST

PHOTO



NO SCALE



R500.140 NORTHWEST

PHOTO



NO SCALE



NEW SSMH R500.140 NORTH

PHOTO



NO SCALE

LEGEND

- TRUNK SEWER MANHOLE
- SEWER MANHOLE
- EXISTING PIPE FLOW DIRECTION, AND PIPE INFO
- REHABILITATED PIPE FLOW DIRECTION, AND PIPE INFO
- NEW SEWER OR EX SEWER TO BE REHABILITATED
- EX SEWER

GENERAL NOTES

- PHOTOS ARE FOR ILLUSTRATIVE PURPOSES ONLY AND ARE NOT TO SCALE. DIMENSIONS AND MANHOLE LOCATIONS SHALL BE TAKEN FROM THE VARIOUS DETAILS AND STANDARD DRAWINGS REFERENCED ON THE PLANS.

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

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SCALE: AS SHOWN
DESIGNED: C. DUDLEY
DRAWN: L. BULLOCK
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REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

**ROSS VALLEY
SANITARY DISTRICT**

2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

DETAIL MANHOLE PHOTOS 1

FILENAME
148768-II3B-V17-C-PHOTOS.DWG
BC PROJECT NUMBER
148768
Nov 26, 2018
DRAWING NUMBER
C16
SHEET NUMBER
22 OF 32

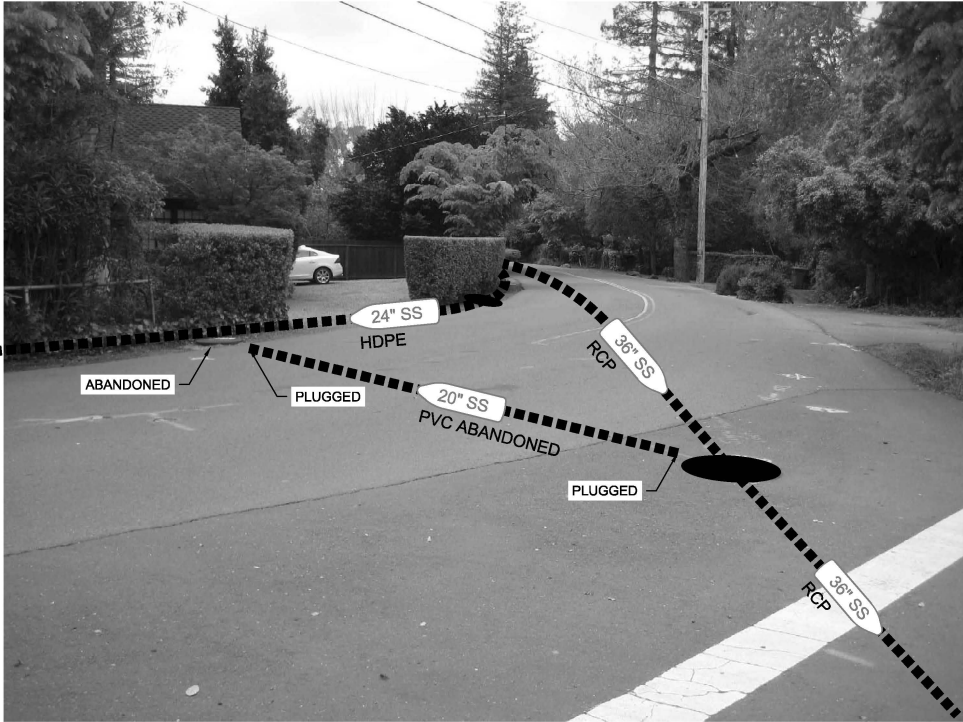
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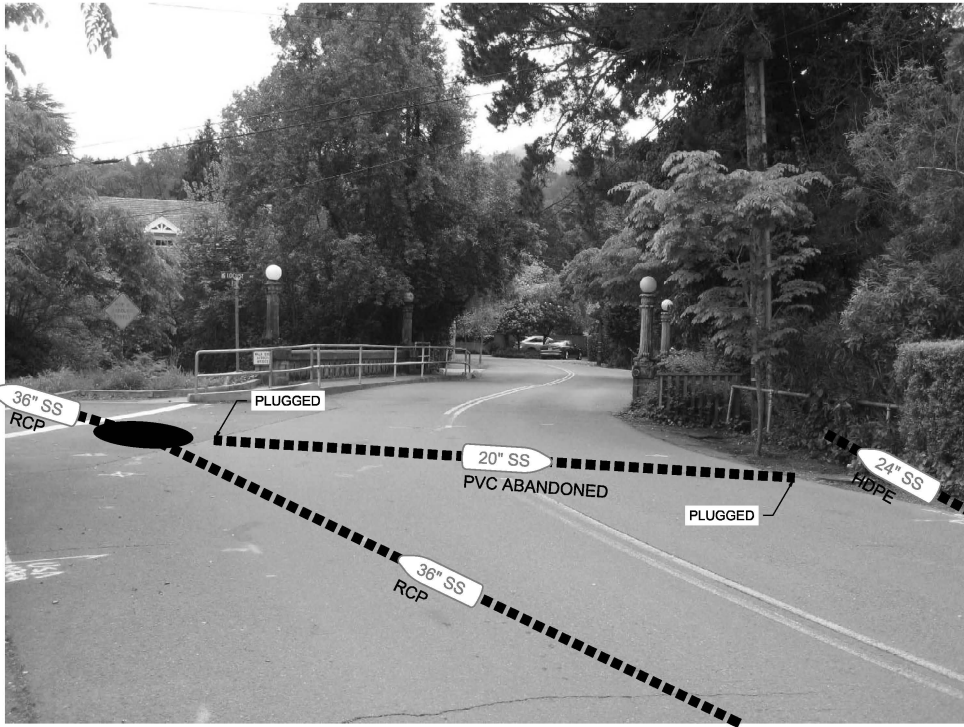
SSMH R500.170 EAST
PHOTO 4
C7
NO SCALE



SSMH R500.170 MARKINGS
PHOTO 5
C7
NO SCALE



SSMH R500.180 NORTH
PHOTO 6
C7
NO SCALE



SSMH R500.800 SOUTH
PHOTO 7
C7
NO SCALE

LEGEND

- TRUNK SEWER MANHOLE
- SEWER MANHOLE
- EXISTING PIPE FLOW DIRECTION, AND PIPE INFO
- REHABILITATED PIPE FLOW DIRECTION, AND PIPE INFO
- NEW SEWER OR EX SEWER TO BE REHABILITATED
- EX SEWER

GENERAL NOTES

- PHOTOS ARE FOR ILLUSTRATIVE PURPOSES ONLY AND ARE NOT TO SCALE. DIMENSIONS AND MANHOLE LOCATIONS SHALL BE TAKEN FROM THE VARIOUS DETAILS AND STANDARD DRAWINGS REFERENCED ON THE PLANS.

Brown AND Caldwell

WALNUT CREEK, CALIFORNIA

LINE IS 2 INCHES
AT FULL SIZE
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SCALE: AS SHOWN

DESIGNED: C. DUDLEY

DRAWN: L. BULLOCK


CHECKED: ---

APPROVED: E. ZALKIN



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY
SEWER PROJECT II-3B
LOWER SHADY LANE/DOWNTOWN ROSS

 **ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

DETAIL MANHOLE PHOTOS 2

CIVIL	FILENAME 148768-II3B-V17-C-PHOTOS.DWG
	BC PROJECT NUMBER 148768
	Nov 26, 2018
	DRAWING NUMBER C17
	SHEET NUMBER 23 OF 32

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- GENERAL NOTES**
- CONTRACTOR SHALL INSTALL "BICYCLE WARNING" SIGN (W11-1) AND "SHARE THE ROAD" PLAQUE (W16-1P) AT ENTRANCES TO ALL WORK AREAS, AT THE LOCATIONS OF "UTILITY WORK AHEAD" SIGN (W21-7) . CONTRACTOR SHALL PROVIDE TEMPORARY PEDESTRIAN ACCESS PLANS THAT COMPLY WITH THE LATEST EDITION OF THE CALTRANS TEMPORARY PEDESTRIAN FACILITIES HANDBOOK, AMERICANS WITH DISABILITIES ACT (ADA), CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND THE PROJECT SPECIFICATIONS.
 - CONTRACTOR SHALL MAINTAIN ACCESS TO LOCAL PROPERTIES IN ALL AREAS AT ALL TIMES.
 - STREET PARKING SHALL BE PROHIBITED DURING THE PERIOD OF UTILITY WORKS.
 - ALL WORK SHALL BE PERFORMED BETWEEN 8:00 A.M. AND 5:00 P.M., EXCLUDING SATURDAY, SUNDAY, AND CITY HOLIDAYS, EXCEPT AS OTHERWISE APPROVED BY THE LOCAL JURISDICTION IN WRITING.
 - ALL TEMPORARY SIGNING AND TEMPORARY FACILITIES SHALL CONFORM TO CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), UNLESS OTHERWISE NOTED.
 - CONTRACTOR SHALL PROVIDE 24 HOURS TRAFFIC CONTROL AS REQUIRED FOR PIPE REAMING ACTIVITIES.
 - CONTRACTOR SHALL NOTIFY RESIDENTS IN WRITING OF TRAFFIC CHANGES. NOTIFY RESIDENTS ON IMPACTED STREETS, AT INTERSECTIONS OF IMPACTED STREETS, AND ON DETOUR AND CLOSED STREETS THREE TIMES: AT LEAST ONE WEEK, 72 HOURS, AND 24 HOURS IN ADVANCE OF IMPACT.
 - CONTRACTOR SHALL PROVIDE TRUCK ROUTE IN COMPLIANCE WITH LOCAL ORDINANCES.
 - CONTRACTOR SHALL PLACE TEMPORARY SIGNS ONE MONTH IN ADVANCE OF WORK NOTIFYING OF KENT AVE/ POPLAR AVE LANE CLOSURE.

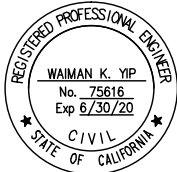
- LEGEND**
- UTILITY WORK AREA
 - DIRECTION OF TRAFFIC
 - CONSTRUCTION AREA SIGN
 - TYPE III BARRICADE
 - CHANNELIZER (SURFACE MOUNTED)
 - FLAGGER
 - SS - ACTIVE SEWER WORK

MARK THOMAS
3000 OAK ROAD, SUITE 650
WALNUT CREEK, CA 94597
(925) 938-0383

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

SCALE: 1" = 40'

DESIGNED: S. LEE
DRAWN: S. LEE
CHECKED: K. YIP
APPROVED: K. YIP



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY SEWER
REHABILITATION PROJECT II-3B



**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

CIVIL

SSMH R500.050 TO SSMH R501.050

TRAFFIC CONTROL PLAN

FILENAME
148768-II3B-SF-TC-01A.DWG

BC PROJECT NUMBER
148768

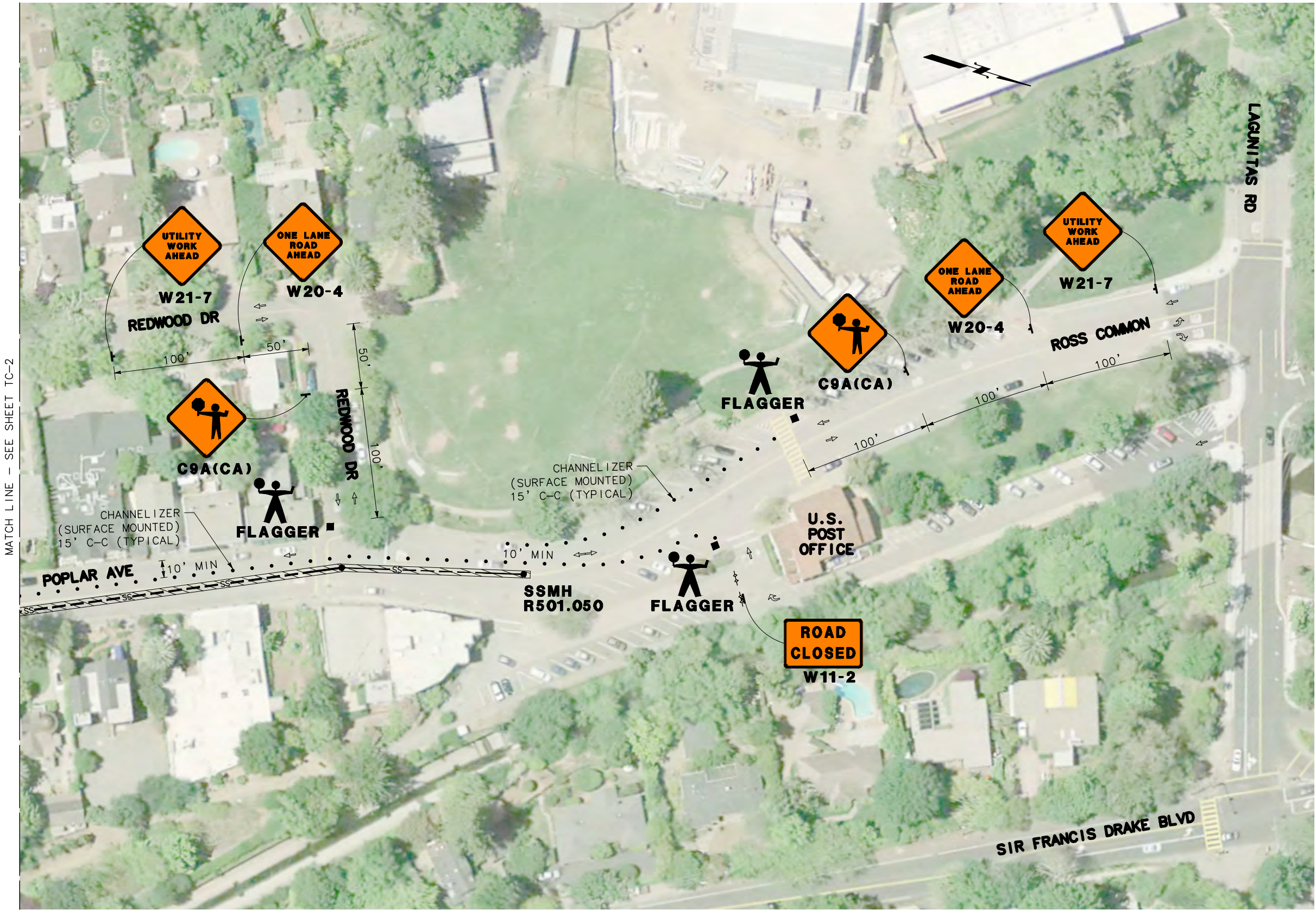
AUGUST 8, 2018

DRAWING NUMBER
TC-1

SHEET NUMBER
24 OF 32



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GENERAL NOTES

1. CONTRACTOR SHALL INSTALL "BICYCLE WARNING" SIGN (W11-1) AND "SHARE THE ROAD" PLAQUE (W16-1P) AT ENTRANCES TO ALL WORK AREAS, AT THE LOCATIONS OF "UTILITY WORK AHEAD" SIGN (W21-7). CONTRACTOR SHALL PROVIDE TEMPORARY PEDESTRIAN ACCESS PLANS THAT COMPLY WITH THE LATEST EDITION OF THE CALTRANS TEMPORARY PEDESTRIAN FACILITIES HANDBOOK, AMERICANS WITH DISABILITIES ACT (ADA), CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND THE PROJECT SPECIFICATIONS.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO LOCAL PROPERTIES IN ALL AREAS AT ALL TIMES.
3. STREET PARKING SHALL BE PROHIBITED DURING THE PERIOD OF UTILITY WORKS.
4. ALL WORK SHALL BE PERFORMED BETWEEN 8:00 A.M. AND 5:00 P.M., EXCLUDING SATURDAY, SUNDAY, AND CITY HOLIDAYS, EXCEPT AS OTHERWISE APPROVED BY THE LOCAL JURISDICTION IN WRITING.
5. ALL TEMPORARY SIGNING AND TEMPORARY FACILITIES SHALL CONFORM TO CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL PROVIDE 24 HOURS TRAFFIC CONTROL AS REQUIRED FOR PIPE REAMING ACTIVITIES.
7. CONTRACTOR SHALL NOTIFY RESIDENTS IN WRITING OF TRAFFIC CHANGES. NOTIFY RESIDENTS ON IMPACTED STREETS, AT INTERSECTIONS OF IMPACTED STREETS, AND ON DETOUR AND CLOSED STREETS THREE TIMES: AT LEAST ONE WEEK, 72 HOURS, AND 24 HOURS IN ADVANCE OF IMPACT.
8. CONTRACTOR SHALL PROVIDE TRUCK ROUTE IN COMPLIANCE WITH LOCAL ORDINANCES.
9. CONTRACTOR SHALL PLACE TEMPORARY SIGNS ONE MONTH IN ADVANCE OF WORK NOTIFYING OF REDWOOD DR AND POPLAR AVE LANE CLOSURE.

LEGEND

- UTILITY WORK AREA
- DIRECTION OF TRAFFIC
- CONSTRUCTION AREA SIGN
- TYPE III BARRICADE
- CHANNELIZER (SURFACE MOUNTED)
- FLAGGER
- ACTIVE SEWER WORK
- PORTABLE CHANGEABLE MESSAGE SIGN

MARK THOMAS
3000 OAK ROAD, SUITE 650
WALNUT CREEK, CA 94597
(925) 938-0383

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

SCALE: 1" = 40'

DESIGNED: S. LEE
DRAWN: S. LEE
CHECKED: K. YIP
APPROVED: K. YIP



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY SEWER
REHABILITATION PROJECT II-3B



**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

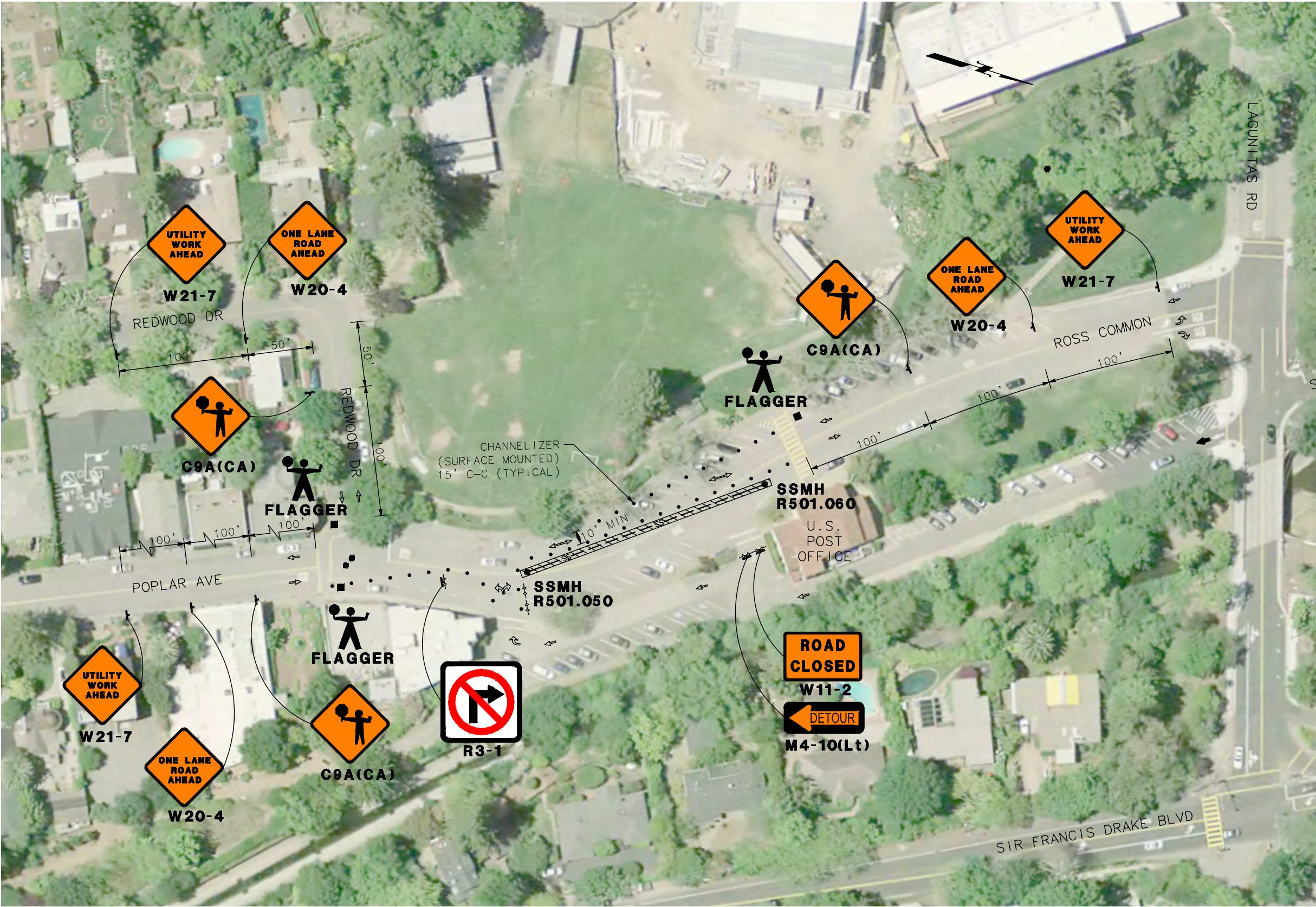
CIVIL

SSMH R500.050 TO SSMH R501.050

TRAFFIC CONTROL PLAN

FILENAME
148768-103B-SF-TC-01A.DWG
BC PROJECT NUMBER
148768
AUGUST 8, 2018
DRAWING NUMBER
TC-3
SHEET NUMBER
26 OF 32

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GENERAL NOTES

1. CONTRACTOR SHALL INSTALL "BICYCLE WARNING" SIGN (W11-1) AND "SHARE THE ROAD" PLAQUE (W16-1P) AT ENTRANCES TO ALL WORK AREAS, AT THE LOCATIONS OF "UTILITY WORK AHEAD" SIGN (W21-7). CONTRACTOR SHALL PROVIDE TEMPORARY PEDESTRIAN ACCESS PLANS THAT COMPLY WITH THE LATEST EDITION OF THE CALTRANS TEMPORARY PEDESTRIAN FACILITIES HANDBOOK, AMERICANS WITH DISABILITIES ACT (ADA), CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND THE PROJECT SPECIFICATIONS.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO LOCAL PROPERTIES IN ALL AREAS AT ALL TIMES.
3. STREET PARKING SHALL BE PROHIBITED DURING THE PERIOD OF UTILITY WORKS.
4. ALL WORK SHALL BE PERFORMED BETWEEN 8:00 A.M. AND 5:00 P.M., EXCLUDING SATURDAY, SUNDAY, AND CITY HOLIDAYS, EXCEPT AS OTHERWISE APPROVED BY THE LOCAL JURISDICTION IN WRITING.
5. ALL TEMPORARY SIGNING AND TEMPORARY FACILITIES SHALL CONFORM TO CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL PROVIDE 24 HOURS TRAFFIC CONTROL AS REQUIRED FOR PIPE REAMING ACTIVITIES.
7. CONTRACTOR SHALL NOTIFY RESIDENTS IN WRITING OF TRAFFIC CHANGES. NOTIFY RESIDENTS ON IMPACTED STREETS, AT INTERSECTIONS OF IMPACTED STREETS, AND ON DETOUR AND CLOSED STREETS THREE TIMES: AT LEAST ONE WEEK, 72 HOURS, AND 24 HOURS IN ADVANCE OF IMPACT.
8. CONTRACTOR SHALL MAINTAIN ACCESS TO POST OFFICE PARKING LOT AT ALL TIMES.

LEGEND

- UTILITY WORK AREA
- DIRECTION OF TRAFFIC
- CONSTRUCTION AREA SIGN
- TYPE III BARRICADE
- CHANNELIZER (SURFACE MOUNTED)
- FLAGGER
- SS - ACTIVE SEWER WORK

MARK THOMAS
3000 OAK ROAD, SUITE 650
WALNUT CREEK, CA 94597
(925) 938-0383

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

SCALE: 1" = 40'

DESIGNED: S. LEE
DRAWN: S. LEE
CHECKED: K. YIP
APPROVED: K. YIP



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY SEWER
REHABILITATION PROJECT II-3B



**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

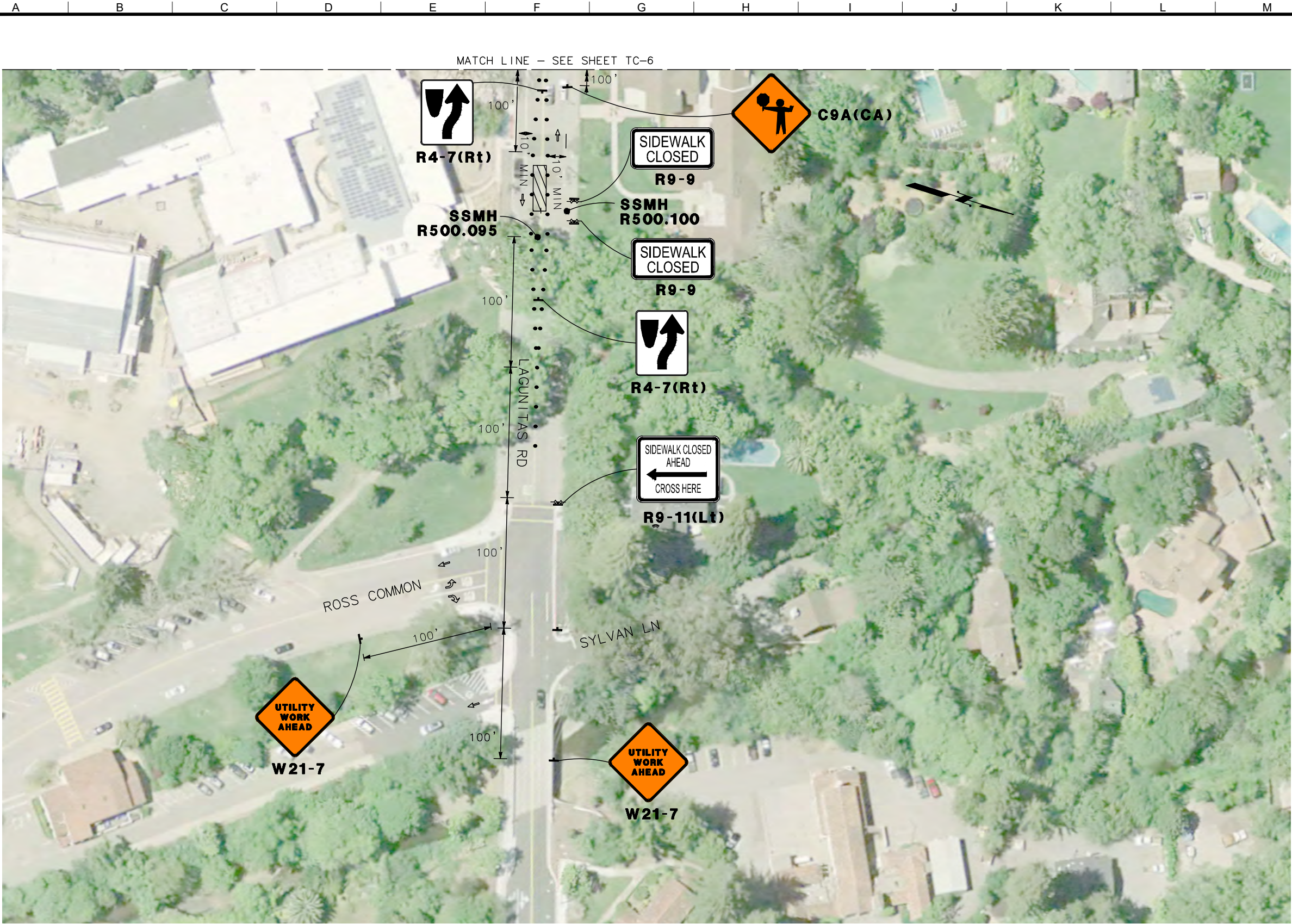
CIVIL

SSMH R501.050 TO SSMH R501.060

TRAFFIC CONTROL PLAN

FILENAME
148768-113B-SF-TC-01B.DWG
BC PROJECT NUMBER
148768
AUGUST 8, 2018
DRAWING NUMBER
TC-4
SHEET NUMBER
27 OF 32

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- GENERAL NOTES**
- CONTRACTOR SHALL MAINTAIN BICYCLE AND PEDESTRIAN ACCESS AROUND WORKING AREAS. CONTRACTOR SHALL INSTALL "BICYCLE WARNING" SIGN (W11-1) AND "SHARE THE ROAD" PLAQUE (W16-1P) AT ENTRANCES TO ALL WORK AREAS, AT THE LOCATIONS OF "UTILITY WORK AHEAD" SIGN (W21-7). CONTRACTOR SHALL PROVIDE TEMPORARY PEDESTRIAN ACCESS PLANS THAT COMPLY WITH THE LATEST EDITION OF THE CALTRANS TEMPORARY PEDESTRIAN FACILITIES HANDBOOK, AMERICANS WITH DISABILITIES ACT (ADA), CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND THE PROJECT SPECIFICATIONS.
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- UTILITY WORK AREA
 - DIRECTION OF TRAFFIC
 - CONSTRUCTION AREA SIGN
 - TYPE III BARRICADE
 - CHANNELIZER (SURFACE MOUNTED)
 - FLAGGER
 - SS - ACTIVE SEWER WORK

MARK THOMAS
3000 OAK ROAD, SUITE 650
WALNUT CREEK, CA 94597
(925) 938-0383

LINE IS 2 INCHES
AT FULL SIZE
(IF NOT 2" - SCALE ACCORDINGLY)

SCALE: 1" = 40'

DESIGNED: S. LEE
DRAWN: S. LEE
CHECKED: K. YIP
APPROVED: K. YIP



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY SEWER
REHABILITATION PROJECT II-3B

**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

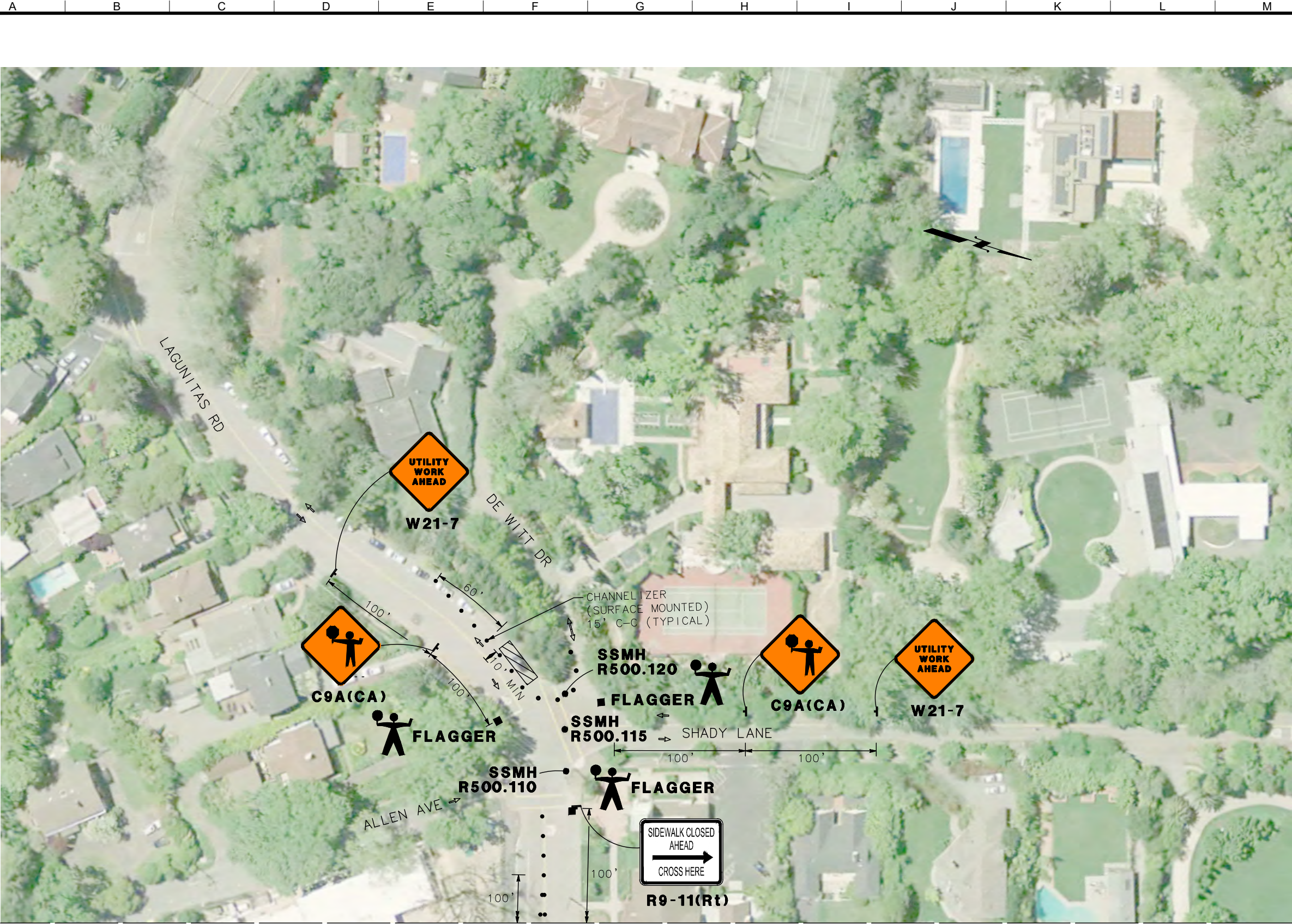
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SSMH R500.095 TO SSMH R500.120

TRAFFIC CONTROL PLAN

FILENAME 148768-13B-SF-TC-02A.DWG
BC PROJECT NUMBER 148768
AUGUST 8, 2018
DRAWING NUMBER TC-5
SHEET NUMBER 28 OF 32

Path: J:\Brown And Galodell\CC-16102-RVSD-LDGS\CAAD\Sheets Filename: 148768-113B-SF-TC-02A.dwg Plot Date: August 9, 2018 - 8:04 PM CADD User: Kemmis Yip



- GENERAL NOTES**
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APPROVED: K. YIP



REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY SEWER
REHABILITATION PROJECT II-3B

**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

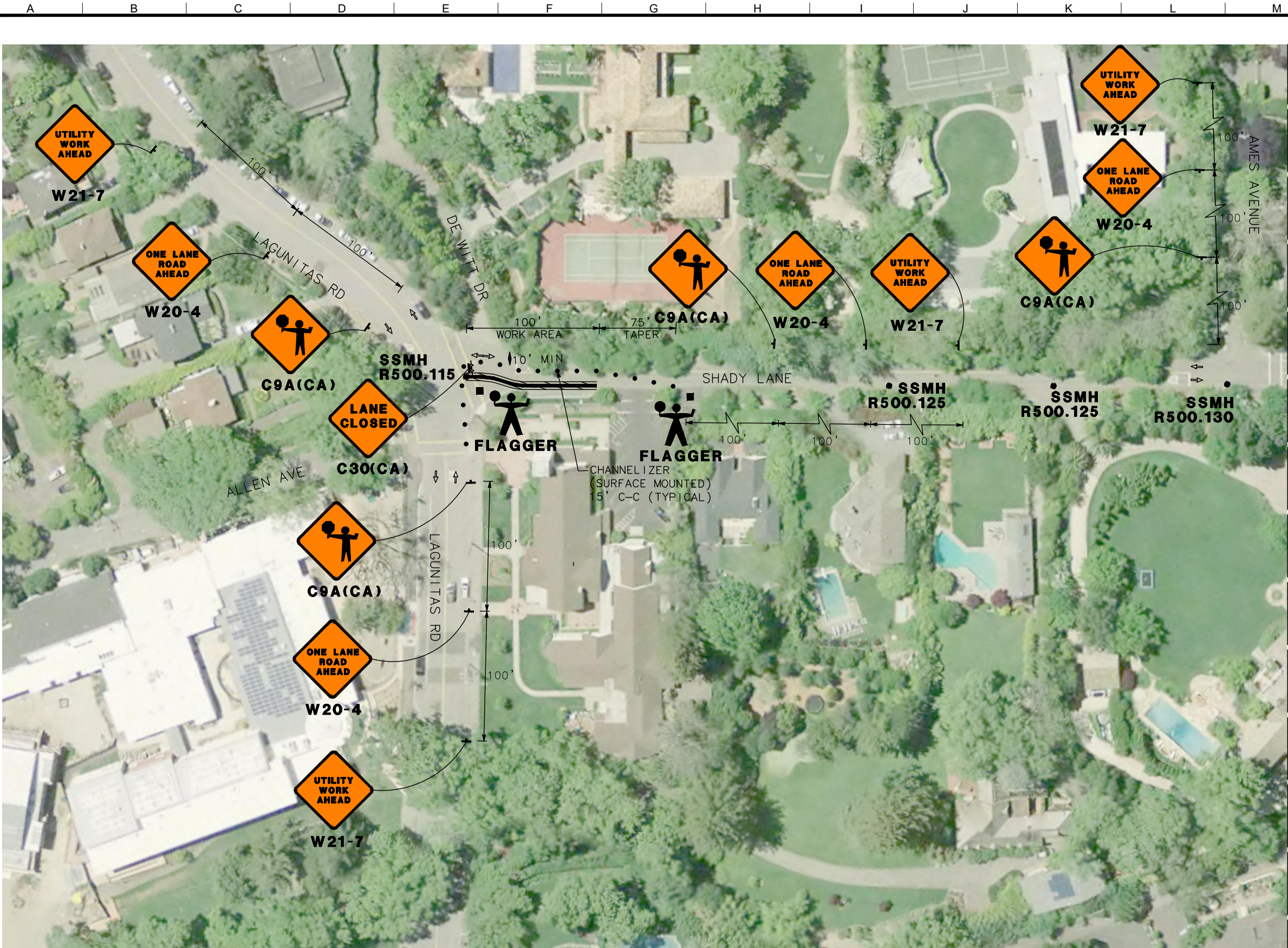
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SSMH R500.095 TO SSMH R500.120

TRAFFIC CONTROL PLAN

FILENAME 148768-113B-SF-TC-02A.DWG
BC PROJECT NUMBER 148768
AUGUST 8, 2018
DRAWING NUMBER TC-6
SHEET NUMBER 29 OF 32

Path: J:\Brown & Caldwell-CC-16102-RVSD-LDGS\CADD\Sheets File: 148768-108-SF-TC-02B.DWG Plot Date: November 8, 2018 2:56 PM CADD User: Alyssa Paluck



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 - TC-7 & TC-8 ASSUME NO ROAD CLOSURE DURING WORK IN SHADY LANE BETWEEN LAGUNITAS AND SSMH R500.140. CONTRACTOR SHALL PROVIDE DETOUR ROUTE IF TOWN OF ROSS ALLOWS ROAD CLOSURE TO THROUGH TRAFFIC.

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 - CONSTRUCTION AREA SIGN
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 - CHANNELIZER (SURFACE MOUNTED)
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REVISIONS					
ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY SEWER
REHABILITATION PROJECT II-3B

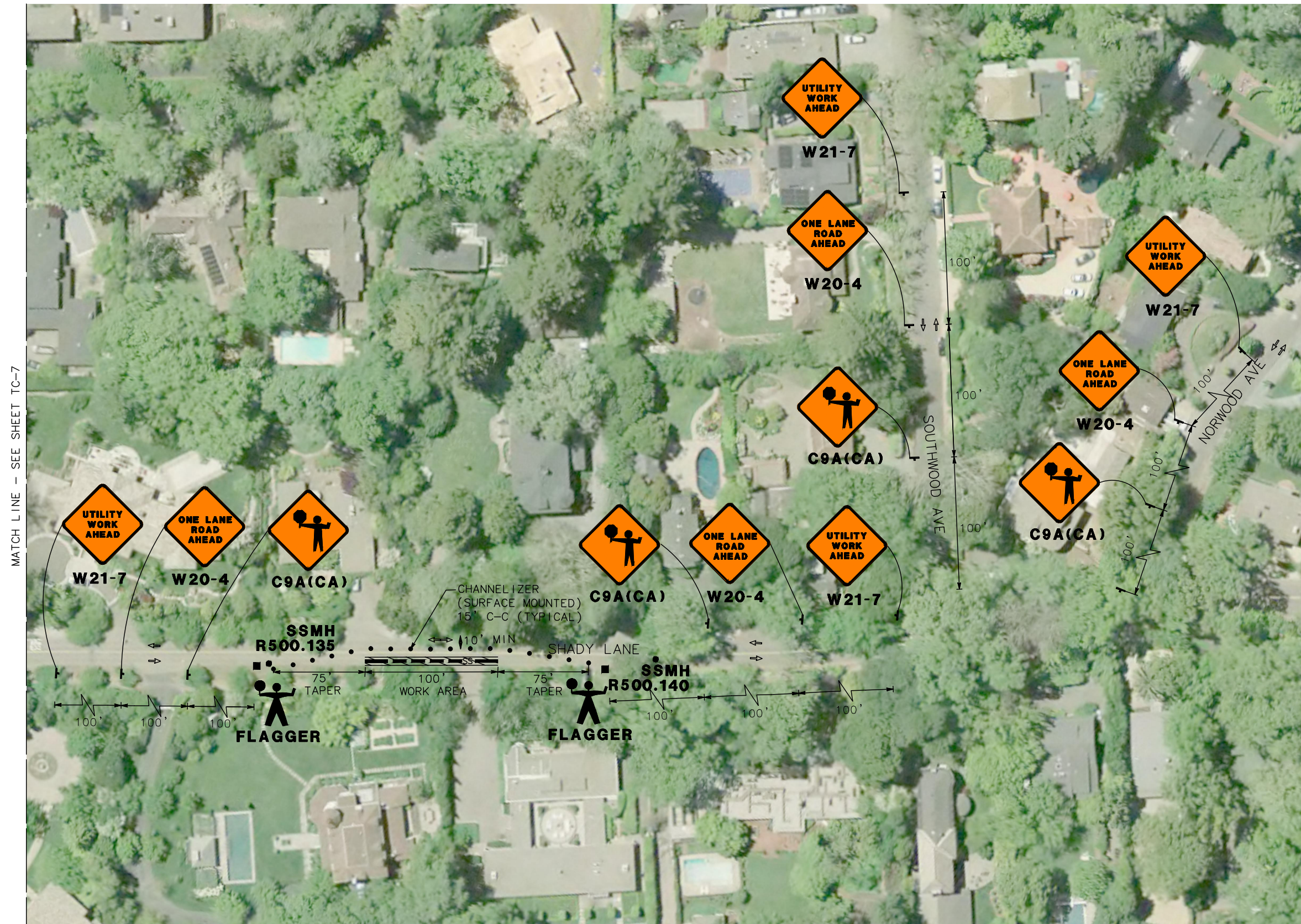
**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

CIVIL

SSMH R500.115 TO SSMH R500.140








TRAFFIC CONTROL PLAN

FILENAME
148768-108-SF-TC-02B.DWG
BC PROJECT NUMBER
148768
AUGUST 8, 2018
DRAWING NUMBER
TC-7
SHEET NUMBER
30 OF 32



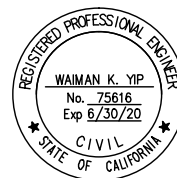
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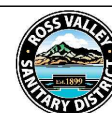
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LARGE DIAMETER GRAVITY SEWER
REHABILITATION PROJECT II-3B



**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

CIVIL

SSMH R500.115 TO SSMH R500.140

TRAFFIC CONTROL PLAN

FILENAME	48768-IIBF-SF-TC-02B.DWG
BC PROJECT NUMBER	148768
AUGUST 8, 2018	
DRAWING NUMBER	TC-8
SHEET NUMBER	31 OF 32

A B C D E F G H I J K L M

N O P



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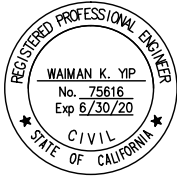
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ZONE	REV.	DESCRIPTION	BY	DATE	APP.

LARGE DIAMETER GRAVITY SEWER
REHABILITATION PROJECT II-3B



**ROSS VALLEY
SANITARY DISTRICT**
2960 KERNER BOULEVARD
SAN RAFAEL, CA 94901

CIVIL

SSMH R500.165 TO SSMH R500.185

TRAFFIC CONTROL PLAN

FILENAME
148768-II3B-SF-TC-03.DWG
BC PROJECT NUMBER
148768
AUGUST 8, 2018
DRAWING NUMBER
TC-9
SHEET NUMBER
32 OF 32

A B C D E F G H I J K L M N O P

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ATTACHMENT E

OVERVIEW OF CONTROL MEASURES

ATTACHMENT E—OVERVIEW OF CONTROL MEASURES

Numerous control measures would be incorporated into the Project's Contract Documents by RVSD to address environmental and public health and safety issues. Control measures are procedures known to further reduce the potential for impacts based on regulatory agency requirements, standards in the industry, and construction/operating experiences of RVSD and the design engineer.

Site Management Practices

1. Remove rubbish and debris from job site daily with proper disposal in compliance with all federal, state, and local regulations. Removal and transport of rubbish and debris shall be in a manner that prevents spillage on pavements, streets, or adjacent areas. Clean up any spillage.
2. Store materials that cannot be removed daily in the Contractor's approved laydown and storage areas, following all requirements established by the property owner and associated permitting jurisdiction.
3. All material excavated shall be removed immediately and transported offsite. No stockpiling of excavated materials will be allowed at any time in the public right-of-way except for limited stockpiling of soil or imported fill at the work site to help facilitate daily operations.
4. Provide temporary lighting that complies with California Occupational Safety and Health Administration (Cal/OSHA) standards.
5. Conduct operations to cause as little damage to hardscape and landscape areas as possible:
 - The Contractor shall exercise due diligence and implement necessary precautions to avoid needlessly damaging or destroying trees, shrubs, or other landscaping in the Project limits. Any required pruning of existing trees will be completed by a certified arborist. A specification for the protection of trees will be provided to the Contractor.
 - The Contractor shall protect all existing utilities, pavement, sidewalks, curbs, fences, landscaping, and other improvements that are not designated for removal, from damage by his operations. Any such features that are damaged or temporarily relocated by the Contractor during construction shall be repaired or restored by the Contractor to a condition equal to or better than they were prior to such damage or temporary relocation.
6. Upon completion of the work, and prior to final acceptance, the Contractor shall remove from the vicinity of the work all surplus material and equipment belonging to them or used under their direction during construction.

7. Restore pavement in all roadways, driveways, and sidewalks.

Dust Control

1. Water all exposed unpaved surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) up to two times per day.
2. Cover all haul trucks transporting soil, sand, or other loose material offsite.
3. Sweep pavements as often as necessary to avoid the spread of debris. Remove all visible mud or dirt track-out from adjacent public roads using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. Minimize idling times either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
5. Maintain and properly tune all construction equipment in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
6. Post a publicly visible sign with the telephone number and person to contact at RVSD regarding dust complaints. This person shall respond and take corrective action within 48 hours.
7. Priority shall be given to obtaining power from Pacific Gas and Electric (PG&E) to reduce air pollutant emissions; if not practicable, then electrical generators and, if necessary, diesel generators shall be used subject to the noise attenuation measures in under the Noise Control Measures.
8. All excavations shall be adequately ventilated and air monitoring of the shafts or pits will be done continuously, pursuant to the Contract Documents.
9. To minimize the dispersal of sewer odors above ground during sewage bypass pumping the Contractor shall:
 - a. Seal all open sanitary manholes or access openings in the sewers when operations have been suspended for a period of 2 hours or more.
 - b. During construction operations when open manholes or access openings cannot be sealed, vent and filter hydrogen sulfide gases upstream of the openings in the sewer.
10. Odor related to construction shall be controlled through the use of filters, chemical addition to the wastewater, and masking agents as needed to limit the levels of hydrogen sulfide gas to 5 parts per million (by volume) 25 ft from the source or at the outside wall of any habitable structure.

11. If odor complaints are received, identify the source, evaluate and implement available abatement measures, and notify the complainant(s) of the results.

Permits

1. The RVSD shall secure any required authorizations from regulatory agencies, conform with any conditions included in these authorizations, and comply with all applicable state and federal laws related to biological and wetland resources.
2. Contractor to obtain Lake or Streambed Alteration agreement and comply with all conditions.
3. Trees and other landscaping removed during construction shall be replaced by the Contractor. If required, the Contractor shall obtain a permit from the Town of Ross for the removal of any trees of regulated size and shall comply with relevant permit conditions of Chapter 12.24 of the Municipal Code (Ordinance No. 659).
4. The Contractor will submit to RVSD, if applicable, a copy of their annual trench and/or excavation permit issued by Cal/OSHA.
5. Comply with all applicable provisions of Section 7-1.01I, "Sound Control Requirements," of Caltrans Standard Specifications and Contract Documents.
6. Comply with the Town Code that regulates noise levels. The Town of Ross Municipal Code, Title 9, Chapter 9.20, Section 9.20.03 Construction states that:

It is unlawful for any person or construction company within the Town limits to perform any construction operation before 8:00 AM or after 5:00 PM, Monday through Friday of each week and not at any time on Saturday, Sunday, or the other holidays listed in Section 9.20.060; except that:

- 1. Work done solely in the interior of a building or structure, the performance of which does not create any noise which is audible from the exterior of the building or structure; or*
 - 2. Work actually physically performed solely by the owner of the property, on holidays.*
7. Contractor to obtain an encroachment permit from the Town of Ross and comply with permit conditions.

Stormwater and Erosion Control

1. Contractor shall prepare a Water Pollution Control Plan (WPCP) for RVSD approval. The WPCP shall describe measures to be implemented to prevent the discharge of contaminated stormwater runoff from the job site. Erosion control measures shall be in accordance with the requirements of Marin County

Stormwater Pollution Prevention Program, and RVSD's Field Management Practices for protection of water quality. The temporary construction site BMPs to be included in the WPCP shall address, but not be limited to the following:

- a. Providing all excavated areas with temporary erosion control measures where natural ground cover is disturbed, all temporary excavation stockpiles, including structures and trench excavations.
- b. Prevent any construction debris from entering Ross Creek and other drainages in the Project vicinity.
- c. Control of equipment fueling and maintenance, concrete mixing and washout, and hauling and storage of materials.
- d. Inspection and maintenance of protected areas regularly during the course of the work.
- e. Placing all excavations, spills, and waste materials in areas not subject to washout, flooding, or natural drainage. No sand, mud, rocks, or other construction debris shall be disposed of in the sanitary sewers, storm sewers, or waterways. The Contractor shall comply with all water discharge requirements to local sanitary and storm sewers.
- f. Placement of filter fabric at local storm drains and use of other appropriate BMPs.

Geotechnical

1. Incorporate the recommendations of the Project Geotechnical Studies for design, construction, and long-term performance into the Contract Documents for the Project.
2. Have a geotechnical engineer review the final Project plans and specifications prior to construction to verify that geotechnical aspects of the Project are consistent with the intent of the recommendations included in the Project Geotechnical Studies.
3. Have a geotechnical engineer review geotechnical-related Contractor submittals during construction (e.g., shoring, dewatering, ground improvement, backfill materials, etc.).
4. Have a geotechnical engineer perform periodic site inspections during the construction to observe and document subsurface conditions encountered by the Contractor with respect to the subsurface conditions described in the Project Geotechnical Studies.
5. In accordance with the provisions in Section 6705 of the Labor Code, the Contractor shall submit in advance of excavation of any trench or trenches 5 ft or more in depth, a detailed plan in conformance with the Project Geotechnical Studies showing the design of shoring, bracing, sloping, or other provisions to be made for

worker protection from the hazard of caving ground during the excavation of such trench or trenches. The use of water-tight shoring in excavations or dewatering will be options available to the Contractor. All trenches in streets shall have vertical trench walls. If such plans vary from the shoring system standards set forth in the Construction Safety Orders of the Division of Industrial Safety in Title 8, Subchapter 4, Article 6, CCR, the plans shall be prepared and signed by a California registered civil or structural engineer.

Hazardous Materials

1. Store and handle all hazardous materials in strict accordance with the Material Safety Data Sheets for the products. The storage and handling of potential pollution causing and hazardous materials, including but not necessarily limited to gasoline, oil, and paint, will be in accordance with all local, state, and federal requirements.
2. When sandblasting, spray painting, spraying insulation or other activities inconveniencing or dangerous to property or the health of employees or the public are in progress, the area of activity shall be enclosed adequately to contain the dust, overspray, or other hazards. In the event there are no permanent enclosures at the area, or such enclosures are incomplete or inadequate, the Contractor shall provide suitable temporary enclosures.
3. If contaminated materials are encountered during excavation, then all work shall comply with the following codes:
 - a. Code of Federal Regulations – Title 40 – Protection of the Environment, Part 761 (40 CFR 761).
 - b. California Code of Regulations, Title 22, Social Security, Division 4, Environmental Health, Chapter 30 – Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes.
4. Pursuant to the Contract Documents, relative to contaminated materials, the Contractor shall submit the following to the RVSD for review:
 - a. The Contractor shall prepare and submit to the RVSD or its appointed Representative, for review, a detailed Job Plan describing the proposed methods and procedures for excavating, segregating, testing, and disposing of petroliferous soil or groundwater. The Job Plan shall be submitted to the RVSD or its appointed Representative no less than fourteen (14) days prior to the start of any excavation work at locations where contaminated soils and groundwater is anticipated.
 - b. The Job Plan shall include step-by-step procedures for the actions to be taken in identifying, handling, removing, and disposing of any contaminated soil or groundwater encountered during excavation.

- c. At least 14 days before the start of any excavation at locations where contaminated soils and groundwater are anticipated, the Contractor shall prepare and submit to the RVSD or its appointed Representative, for review, a supplemental Health and Safety Plan. The supplemental Health and Safety Plan shall be prepared by an industrial hygienist certified by the American Board of Industrial Hygiene and shall include, but not limited to, training of the Contractor's personnel, protective equipment, air monitoring, sampling, and emergency procedures.
 - d. No excavation will be allowed to commence until the Health and Safety Plan has been returned by the RVSD to the Contractor with the notation: "Resubmittal not required."
 - e. The Contractor shall provide copies of hazardous waste transporter licenses, permits, or registrations for all states in which the shipment shall travel.
 - f. The Contractor shall obtain all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work, including certification of transport vehicles carrying hazardous material.
5. Pursuant to the Contract Documents relative to contaminated materials, the Contractor shall implement the following monitoring requirements:
- a. Contractor shall furnish a properly calibrated, fully functional organic vapor analyzer (OVA) for use at the site of every excavation or open trench to continually sample and monitor the ambient atmosphere.
 - b. The preliminary mode of examination for petroliferous soil and/or groundwater shall be through visual and olfactory means. Upon the first observation of soil or water that may contain petroliferous products, the Contractor shall stop excavation work and immediately notify the RVSD or its appointed Representative. No excavation of petroliferous soil, nor pumping of petroliferous water, shall proceed without the approval of RVSD or its appointed Representative.
 - c. Following sensory observation of petroliferous products, the OVA equipment shall be brought to the excavation site and the atmosphere shall be tested. The Contractor's Job Plan and Health and Safety Plan shall be immediately placed into effect.
 - d. Potentially contaminated soil or water shall be segregated and tested by the Contractor, at a certified laboratory approved by RVSD or its appointed Representative, to determine the consistency and quantity of petroliferous products. The soil or water shall then be disposed of in accordance with applicable local, state, and federal law, following the procedures described in the Contractor's Job Plan and Health and Safety Plan.

6. Pursuant to the Contract Documents, contaminated materials will be handled and disposed of in the following manner:
 - a. The Contractor shall avoid or minimize excavation in contaminated areas whenever possible.
 - b. Excavated trench material that, in the opinion of RVSD or its appointed Representative, exhibits evidence of petroleum contamination shall be removed from the site and temporarily stockpiled by the Contractor. The location of the temporary stockpile area must be reviewed by RVSD. The contaminated trench materials shall be placed on a 10-mil polyethylene sheeting to prevent contamination of uncontaminated soils and shall be separated from all uncontaminated trench materials. The temporary stockpiles of contaminated trench materials shall be covered securely with 10-mil polyethylene sheeting to limit emissions and prevent rainfall from entering the stockpile. Runoff or drainage from the temporary stockpile shall be prevented from leaving the area and all materials shall be surrounded with 6-ft-high temporary chainlink fence.
 - c. The temporary stockpiles of contaminated trench materials shall be sampled and analyzed by a certified testing laboratory, approved by RVSD or its appointed Representative. Results of the laboratory analysis shall be provided by RVSD or its appointed Representative within calendar days from the date that the material is stockpiled.
 - d. Disposal of the contaminated trench materials will depend on the results of the testing program. The Contractor shall dispose of the contaminated material with the approval of RVSD or its appointed Representative, at either a licensed thermal remediation plant or by disposal at a Class II landfill, following required procedures.

All handling, storing, transporting, treatment, and disposal of contaminated soil and groundwater shall conform with the federal and state environmental regulations, including those of the RWQCB, DTSC, Integrated Waste Management Board, CARB, and the BAAQMD. Transport of contaminated material and groundwater shall be performed by appropriately certified and/or licensed personnel.
7. Groundwater management shall conform with the federal and state environmental regulations, including those of the RWQCB, DTSC, Integrated Waste Management Board, CARB, and the BAAQMD. Transport of contaminated material and groundwater shall be performed by appropriately certified and/or licensed personnel.
 - a. Upon completion of excavation within the contaminated area and the hauling and disposal of contaminated materials, the Contractor shall clean

up the site, including proper removal and disposal of all plastic sheeting, containers, and other materials used.

- b. Any groundwater from trenching activities within the contaminated soil area, as shown on the plan, shall be stored in temporary Baker-type storage tanks. The Contractor shall sample and analyze groundwater, then dispose of the stored groundwater as directed by RVSD or its appointed Representative. Depending on the quality of the groundwater, disposal may be to the sewer system or a suitable offsite disposal facility.

Safety

1. Employ safety provisions conforming to the U.S. Department of Labor Occupational Safety and Health Administration (OSHA), Cal/OSHA, and all other applicable federal, state, county, and local laws, ordinances, and codes. The completed work shall include all necessary permanent safety devices, such as machinery guards and similar ordinary safety items, required by the state and federal industrial authorities and applicable local and national codes. Develop and submit to RVSD for approval a Health and Safety Plan that defines proposed site safety measures.
2. Appoint an employee as safety supervisor who is qualified and authorized to supervise and enforce compliance with the Safety Program. The Safety Program will include an operation plan with emergency contacts.
3. The Contractor shall construct appropriate safety barriers such as temporary fencing, berms, or similar facilities where required or directed by RVSD. To minimize disturbance of existing roads and facilities, safety barriers shall allow for normal maintenance and operation of existing facilities and roads as determined by RVSD or its appointed Representative. The Contractor shall conduct his work so as to ensure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the work, and to ensure the protection of persons and property.
4. Establish, implement, and maintain a written injury prevention program as required by Labor Code Section 6401.7.
5. In case of an emergency, make all necessary repairs and promptly execute such work when required by the Construction Manager.
6. Complete Project construction along Lagunitas Road near Ross School K-8 between mid-June and mid-August of 2019. Contractor to verify school schedules prior to start of construction.
7. Manhole entry and/or entry to any excavation greater than 5 ft deep shall be in full compliance with the confined space entry requirements of OSHA, Cal/OSHA, and RVSD. The RVSD shall have the authority to require the removal from the Project of

the foreman and/or superintendent in responsible charge of the work where safety violations occur.

8. During non-working hours, all trenches in public streets shall either be backfilled and temporarily paved or shall be shored and covered with steel plates in compliance with the requirements of local jurisdictions. The maximum length of trench excavation in advance of the pipe laying operation and the maximum amount of trench remaining open without backfill during the course of the daily pipe installations shall be in accordance with local jurisdictional agencies encroachment and excavation permit requirements or a maximum of 200 ft, whichever is more restrictive.
9. Submit for RVSD review, in accordance with the provisions of Section 6705 of the Labor Code, in advance of excavation of any trench or trenches 5 ft or more in depth, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of ground caving.

Notifications

1. Provide written notice to all private property owners along the alignment three times before work commences in the vicinity of said property. The notices will be provided 7 days before planned construction, 24 hours prior to start of work, and day of construction, and will provide information on Project activities, the construction schedule, protocol for providing complaints relative to hazardous conditions and noise, and vehicle access needs.
2. If complaints are received relative to unsafe conditions, identify the source, evaluate and implement appropriate corrective measures, and notify the complainant(s) of the results.

Dewatering

1. Contractor shall submit a plan for all excavation dewatering procedures to RVSD for approval prior to performing dewatering operations as specified in the Contract Documents. The dewatering plan shall provide for:
 - a. Use of appropriate equipment and means to accomplish dewatering and may include use of wells, well points, sump pumps, storage tanks, settling tanks, filters temporary pipelines for water disposal, rock or gravel placement, standby pumps and/or generators, and other means.
 - b. Compliance with any permitting requirements of RVSD, Central Marin Sanitation Agency, RWQCB, and the Town of Ross.
 - c. A dry excavation and preservation of the final lines and grades of the bottoms of excavation with drawdown of groundwater level a minimum of

2 ft below the trench bottom and beyond excavation sidewalls where shoring is not designed to resist hydrostatic pressures.

- d. Control of the rate and effect of dewatering so as to avoid settlement, subsidence, or damage to the structures or facilities adjacent to areas of proposed dewatering with repair, restoration, or replacement of facilities or structures damaged. Contractor shall establish reference points daily to quickly detect any settlement, subsidence, or damage that may develop during or following dewatering operations.
 - e. Demonstrated compliance with the Contractor–designed shoring and bracing method.
 - f. Disposal of collected groundwater. Discharge options include the sanitary sewer system or the storm drain system. Pretreatment may be required.
 - g. Minimal interference with vehicle or pedestrian traffic.
2. Implement Control Measures listed above for handling and disposal of contaminated soil and groundwater, if encountered.
 3. Comply with the requirements of the approved WPCP.

Noise

1. During the encroachment permit process, the Contractor will coordinate with the Town of Ross and RVSD on allowable work hour limitations that are consistent with the Town of Ross' noise ordinance. Working hour limitations included in the Project Contract Documents will be generally limited to 8 a.m. to 5 p.m. on weekdays. Work hours beyond these referenced limits must be approved by RVSD and the Town of Ross. More specific work hour limitations may be required by the Town of Ross.
2. Avoid the use of loud sound signals in favor of light warnings except those required by safety laws for the protection of personnel.
3. Equip internal combustion engines with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated without said muffler.
4. To minimize noise levels, attempt to obtain electrical power from PG&E in lieu of providing power by portable generator. If use of utility power is not practicable, generator power may be provided by sound-attenuated and enclosed electric generators. Diesel generators shall not be utilized unless they are provided with sound enclosures, as necessary to comply with local ordinances.
5. Use of radio or other music amplification devices will not be permitted in the work area.

6. Implement a vibration monitoring and correction program to protect buildings, structures, and utilities from extensive vibration during construction.
7. If noise complaints are received, identify the source, and evaluate and implement available abatement.

Traffic Management

1. Contractor to prepare a traffic control plan (TCP) and submit it to RVSD and the Town of Ross for review and approval at least 3 weeks prior to start of construction. The TCP shall include, at a minimum, the following provisions:
 - a. Limit construction work or as otherwise required by the Town of Ross.
 - b. Conduct operations to reduce obstruction and inconvenience to public traffic and have under construction no greater length or amount of work than can be properly undertaken with due regard to the rights of the public.
 - c. Avoid blocking driveways or private roads without notifying the property owner, and access must be restored during all non-working hours.
 - d. Maintain safe access for pedestrian and bicyclist traffic throughout the work area at all times.
 - e. To the extent possible, maintain at least one lane of traffic in each direction open at all times. Traffic shall be permitted to use shoulders and the side of the roadbed opposite the one under construction. When sufficient width is available, a passageway wide enough to accommodate one lane of traffic shall be kept open at locations where construction operations are in active progress and it is safe to do so.
 - f. The Contractor shall be responsible for notifying police and fire departments, the school district, ambulance services, and local transit districts as to the hours and dates of closure and routes of detour at least 48 hours in advance of their occurrence, and again to notify them when they are discontinued.
 - g. The Contractor shall call local emergency services dispatcher(s) daily with the location of the work and road status.
 - h. Avoid blocking or obstructing fire lanes at all times. Fire hydrants on or adjacent to the work will be kept accessible to firefighting equipment at all times.
 - i. Utilize certified flagmen to direct vehicular traffic through the construction area and to guard all obstructions to traffic, and illuminate at night. Traffic control will include signs, warning lights, reflectors, barriers, and other necessary safety devices and measures. These measures shall conform to the requirements set forth in the current "Manual of Traffic Controls for

Construction and Maintenance Work Zones,” issued by the State Department of Transportation, latest edition.

- j. Install and maintain temporary bridges of approved construction (ADA compliant) across the trench at all crosswalks, intersections, and at such other points where traffic conditions make it advisable.
- k. Repair excavated areas to the requirements of the Town of Ross.
- l. Use only approved haul routes for all construction traffic on the Project as may be stipulated by the Town of Ross.
- m. A maximum delay of 10 minutes shall be allowed on a roadway if it does not create a significant or dangerous area of traffic congestion away from the traffic control area. The Town of Ross has the right to reduce the 10-minute traffic-related delay if traffic conditions require it in their opinion. The maximum delay for access to a residence or business is 10 minutes. The Contractor shall have materials on site to provide safe passage across the work zone and shall install said material when a person in a vehicle requests access to the residence or business.
- n. Avoid storing or parking material or equipment where it would interfere with the free and safe passage of public traffic, and at the end of each day’s work, and at all times when construction operations are suspended for any reason.
- o. Immediately remove any spillage on local roadways resulting from hauling operations.
- p. The Contractor may organize parking and staging independently. However, no sidewalks or private property adjacent to the site shall be used for storage of equipment and supplies unless prior written approval is obtained from the legal owner and submitted to the Construction Manager a minimum of 14 days before use of the site. Otherwise, parking and staging may be allowed only within the public right-of-way, if any, designated for such use by the Project Manager.
- q. Minimize the removal of curb parking, but if necessary removal shall be in accordance with the approved TCP.
- r. Coordinate with the Central Marin Police Authority and the Town of Ross’ Public Works Department for the location of “No Stopping” and “No Parking” signs.
- s. Where construction work will disrupt the traffic signal loops at an intersection, the Contractor shall install and have operational a temporary detection system that is compatible with the traffic signal controller at that location as approved by the Town of Ross. The temporary detection system for the Project will be dependent on the Contractor’s work sequence. The

temporary detection system is a temporary traffic control device that shall not be removed/relocated until the permanent traffic signal loops are reinstalled and accepted by local jurisdictions.

- t. In the event of a declared emergency by the Central Marin Police Authority Chief of Police, the local Captain of the Highway Patrol, or the Marin County Fire Department Fire Marshal, or their representative, the Contractor shall comply with verbal demands and immediately stop all work and reopen through traffic where work is occurring.
 - u. Provide, install, and maintain for the duration of the Project up to four Project signs pursuant to the requirements of local jurisdictions.
2. Contact the Marin Transit District, inform them of the construction schedule, and coordinate work in areas that may affect access to bus stops.


Ground Movement Monitoring

1. The Contractor shall provide all labor, materials, equipment, and incidentals required to install, operate, and maintain geotechnical instruments and survey monitoring points for the purpose of monitoring ground movement during construction. The Work shall include, but not limited to, installing and monitoring crack gages, settlement markers, and determining ambient vibration levels.
2. The ground movement indicator points shall provide reference points for monitoring vertical and horizontal ground and structure movement and to establish a baseline record of such movement.
3. Measurements of ground and structure movement will provide the basis for the implementation of remedial measures to prevent possible damage to structures and utilities.
4. Remedial measures, if necessary, include modifications to construction procedures, repair or replacement of damaged facilities, and restoration to original conditions of any disturbed property, structure, or utility.
5. The Contractor shall keep the Construction Manager informed of the monitoring measurements; however, it shall be the Contractor's sole responsibility to protect onsite structures and utilities and all adjacent structures and utilities within 50 ft of any excavation, pipe bursting, jack and bore, shoring, and backfill operations. Any damage caused to any of these structures or utilities by the Contractor shall be repaired and restored by the Contractor immediately and at the Contractor's expense.

ATTACHMENT F

ROAD CONSTRUCTION

EMISSIONS MODEL

Road Construction Emissions Model		Version 9.0.0		
Data Entry Worksheet				
<p><small>Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types. Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.</small></p>				
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Input Type</p> <p>Project Name</p> <p>Construction Start Year</p> <p>Project Type</p> <p>Project Construction Time</p> <p>Working Days per Month</p> <p>Predominant Soil/Site Type: Enter 1, 2, or 3 <small>(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)</small></p> <p>Project Length</p> <p>Total Project Area</p> <p>Maximum Area Disturbed/Day</p> <p>Water Trucks Used?</p> </div> <div style="width: 45%;"> <p>LDGS - Total Project</p> <p>2019</p> <p>4</p> <p>8.00</p> <p>20.00</p> <p>1</p> <p>1.33</p> <p>0.90</p> <p>0.06</p> <p>2</p> </div> <div style="width: 45%;"> <p>Enter a Year between 2014 and 2040 (inclusive)</p> <p>1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction</p> <p>months days (assume 22 if unknown)</p> <p>1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)</p> <p>miles acres acres</p> <p>1. Yes 2. No</p> </div> <div style="width: 45%;"> <p>To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.</p>  </div> </div>				
<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><small>Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.</small></p> <p>http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries</p> </div>				
Material Hauling Quantity Input				
Material Type	Phase	Haul Truck Capacity (yd ³) (assume 20 if unknown)	Import Volume (yd ³ /day)	Export Volume (yd ³ /day)
Soil	Grubbing/Land Clearing	10.00	0.00	0.00
	Grading/Excavation	10.00	12.50	15.60
	Drainage/Utilities/Sub-Grade	10.00	0.00	0.00
	Paving	10.00	0.00	0.00
Asphalt	Grubbing/Land Clearing	10.00	0.00	0.00
	Grading/Excavation	10.00	0.00	0.00
	Drainage/Utilities/Sub-Grade	10.00	0.00	0.00
	Paving	10.00	0.32	0.32
Mitigation Options				
On-road Fleet Emissions Mitigation	No Mitigation			
Off-road Equipment Emissions Mitigation	No Mitigation			
<p>Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer</p> <p>Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation).</p> <p>Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard</p>				

The remaining sections of this sheet contain areas that require modification when "Other Project Type" is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.80		1/1/2019
Grading/Excavation		3.20		1/26/2019
Drainage/Utilities/Sub-Grade		2.80		5/4/2019
Paving		1.20		7/29/2019
Totals (Months)		8		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT					
User Input											
Miles/round trip: Grubbing/Land Clearing					0	0.00					
Miles/round trip: Grading/Excavation	40.00				3	120.00					
Miles/round trip: Drainage/Utilities/Sub-Grade					0	0.00					
Miles/round trip: Paving					0	0.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Grubbing/Land Clearing (grams/mile)	0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90	
Grading/Excavation (grams/mile)	0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90	
Draining/Utilities/Sub-Grade (grams/mile)	0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90	
Paving (grams/mile)	0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90	
Grubbing/Land Clearing (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Grading/Excavation (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Paving (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Hauling Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Pounds per day - Grading/Excavation	0.21	0.48	2.41	0.09	0.07	0.00	505.43	0.01	0.08	529.35	
Tons per const. Period - Grading/Excavation	0.01	0.02	0.08	0.00	0.00	0.00	16.17	0.00	0.00	16.94	
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total tons per construction project	0.01	0.02	0.08	0.00	0.00	0.00	16.17	0.00	0.00	16.94	

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input						
Miles/round trip: Grubbing/Land Clearing				0	0.00	
Miles/round trip: Grading/Excavation				0	0.00	
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00	
Miles/round trip: Paving	60.00			1	60.00	

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90
Grading/Excavation (grams/mile)	0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90
Draining/Utilities/Sub-Grade (grams/mile)	0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90
Paving (grams/mile)	0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90
Grubbing/Land Clearing (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.10	0.24	1.20	0.04	0.03	0.00	252.72	0.00	0.04	264.67
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	3.03	0.00	0.00	3.18
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	3.03	0.00	0.00	3.18

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions		User Override of Worker Commute Default Values		Default Values		Calculated					
User Input											
Miles/ one-way trip		30				Calculated					
One-way trips/day		1				Daily Trips		Calculated			
No. of employees: Grubbing/Land Clearing						0		Daily VMT			
No. of employees: Grading/Excavation						0		0.00			
No. of employees: Drainage/Utilities/Sub-Grade		21				21		630.00			
No. of employees: Paving						0		0.00			
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Grading/Excavation (grams/mile)		0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Draining/Utilities/Sub-Grade (grams/mile)		0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Paving (grams/mile)		0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Grubbing/Land Clearing (grams/trip)		1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Grading/Excavation (grams/trip)		1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Draining/Utilities/Sub-Grade (grams/trip)		1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Paving (grams/trip)		1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade		0.10	2.04	0.20	0.06	0.03	0.01	505.88	0.01	0.02	510.84
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.06	0.01	0.00	0.00	0.00	14.16	0.00	0.00	14.30
Pounds per day - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project		0.00	0.06	0.01	0.00	0.00	0.00	14.16	0.00	0.00	14.30

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions		User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated	User Override of	Default Values	Calculated		
User Input		Default # Water Trucks	Number of Water Trucks	Round Trips/Vehicle/Day	Round Trips/Vehicle/Day	Trips/day	Miles/Round Trip	Miles/Round Trip	Daily VMT		
Grubbing/Land Clearing - Exhaust									0.00		
Grading/Excavation - Exhaust		0							0.00		
Drainage/Utilities/Subgrade									0.00		
Paving									0.00		
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90
Grading/Excavation (grams/mile)		0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90
Draining/Utilities/Sub-Grade (grams/mile)		0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90
Paving (grams/mile)		0.79	1.80	9.06	0.32	0.25	0.02	1,910.50	0.04	0.30	2,000.90
Grubbing/Land Clearing (grams/trip)		0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)		0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)		0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)		0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust		User Override of Max Acreage Disturbed/Day		Default Maximum Acreage/Day		PM10	PM10	PM2.5	PM2.5
						pounds/day	tons/per period	pounds/day	tons/per period
Fugitive Dust - Grubbing/Land Clearing						1.20	0.01	0.25	0.00
Fugitive Dust - Grading/Excavation						1.20	0.04	0.25	0.01
Fugitive Dust - Drainage/Utilities/Subgrade						1.20	0.03	0.25	0.01

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions													
Grubbing/Land Clearing		Default Number of Vehicles	Mitigation Option Override of	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	
Override of Default Number of Vehicles	Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

User-Defined Off-road Equipment		If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Number of Vehicles		Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing		pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing		tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	Default	Mitigation Option	Default	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Number of Vehicles	Override of										
	Override of Default Number of Vehicles	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)										
	Program-estimate	Equipment Tier			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Model Default Tier		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00		Model Default Tier		Concrete/Industrial Saws	0.01	0.04	0.08	0.00	0.00	0.00	10.06	0.00
		Model Default Tier		Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00		Model Default Tier		Excavators	0.22	1.32	2.63	0.08	0.07	0.01	565.61	0.18
		Model Default Tier		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00		Model Default Tier		Pumps	0.09	0.45	0.58	0.03	0.03	0.00	71.39	0.01
		Model Default Tier		Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab												
Number of Vehicles		Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation			pounds per day		0.32	1.81	3.29	0.11	0.11	0.01	647.06	0.19
Grading/Excavation			tons per phase		0.01	0.06	0.11	0.00	0.00	0.00	20.71	0.01

Default		Mitigation Option										
Drainage/Utilities/Subgrade	Number of Vehicles	Override of	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	
Override of Default Number of Vehicles	Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment				If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab								
	Number of Vehicles		Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade			pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade			tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	Default	Mitigation Option	Default	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Number of Vehicles	Override of										
	Override of Default Number of Vehicles	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)										
	Program-estimate	Equipment Tier			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
		Model Default Tier		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00		Model Default Tier		Rollers	0.03	0.13	0.12	0.01	0.01	0.00	14.41	0.00
		Model Default Tier		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00		Model Default Tier		Skid Steer Loaders	0.02	0.40	0.32	0.01	0.01	0.00	58.24	0.02
		Model Default Tier		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00		Model Default Tier		Sweepers/Scrubbers	0.02	0.12	0.15	0.01	0.01	0.00	15.73	0.00
		Model Default Tier		Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Model Default Tier		Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Number of Vehicles	Equipment Tier		Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving			pounds per day	0.07	0.65	0.60	0.04	0.03	0.00	88.37	0.03
	Paving			tons per phase	0.00	0.01	0.01	0.00	0.00	0.00	1.06	0.00
Total Emissions all Phases (tons per construction period) =>					0.01	0.07	0.11	0.00	0.00	0.00	21.77	0.01

[illegible]

[illegible]

[illegible]

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	14.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	58.85
0.00	0.00
0.00	15.89
0.00	0.00
0.00	0.00
0.00	0.00
N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	89.31
0.00	1.07
0.00	21.98

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws	11.00	81	1.00	8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators	200.00	158	7.00	8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps	11.00	84	7.00	8
Rollers	32.00	80	1.00	8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders	74.00	65	2.00	8
Surfacing Equipment		263		8
Sweepers/Scrubbers	64.00	64	0.50	8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> LDGS - Total Project														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.00	0.00	0.00	1.20	0.00	1.20	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.53	2.29	5.70	1.40	0.20	1.20	0.42	0.17	0.25	0.01	1,152.49	0.20	0.09	1,182.82
Drainage/Utilities/Sub-Grade	0.10	2.04	0.20	1.26	0.06	1.20	0.28	0.03	0.25	0.01	505.88	0.01	0.02	510.84
Paving	0.17	0.89	1.80	0.08	0.08	0.00	0.07	0.07	0.00	0.00	341.09	0.03	0.04	353.98
Maximum (pounds/day)	0.53	2.29	5.70	1.40	0.20	1.20	0.42	0.17	0.25	0.01	1,152.49	0.20	0.09	1,182.82
Total (tons/construction project)	0.02	0.14	0.21	0.09	0.01	0.08	0.02	0.01	0.02	0.00	55.14	0.01	0.00	56.40
Notes: Project Start Year -> 2019														
Project Length (months) -> 8														
Total Project Area (acres) -> 1														
Maximum Area Disturbed/Day (acres) -> 0														
Water Truck Used? -> No														
Total Material Imported/Exported Volume (yd³/day)														
Daily VMT (miles/day)														
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck								
Grubbing/Land Clearing	0	0	0	0	0	0								
Grading/Excavation	28	0	120	0	0	0								
Drainage/Utilities/Sub-Grade	0	0	0	0	630	0								
Paving	0	1	0	60	0	0								
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
Total Emission Estimates by Phase for -> LDGS - Total Project														
Project Phases	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
(Tons for all except CO2e. Metric tonnes for CO2e)														
Grubbing/Land Clearing	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.02	0.07	0.18	0.04	0.01	0.04	0.01	0.01	0.01	0.00	36.88	0.01	0.00	34.34
Drainage/Utilities/Sub-Grade	0.00	0.06	0.01	0.04	0.00	0.03	0.01	0.00	0.01	0.00	14.16	0.00	0.00	12.98
Paving	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.09	0.00	0.00	3.85
Maximum (tons/phase)	0.02	0.07	0.18	0.04	0.01	0.04	0.01	0.01	0.01	0.00	36.88	0.01	0.00	34.34
Total (tons/construction project)	0.02	0.14	0.21	0.09	0.01	0.08	0.02	0.01	0.02	0.00	55.14	0.01	0.00	51.17
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
The CO2e emissions are reported as metric tons per phase.														

ATTACHMENT G

BIOLOGICAL RESOURCE ASSESSMENT

ENVIRONMENTAL COLLABORATIVE

Consultation • Documentation • Restoration
41 Jeanette Court • Walnut Creek, CA 94596
Phone 510-393-0770 • beach127@aol.com

MEMORANDUM

TO: Mr. Paul Scheidegger
Scheidegger & Associates
201 North Civic Drive, Suite 115
Walnut Creek, California 94608

FROM: Jim Martin
ENVIRONMENTAL COLLABORATIVE

DATE: 6 January 2017

SUBJECT: Biological Resource Assessment
Ross Valley Sanitary District Large Diameter Gravity Sewer Rehabilitation Project
Ross, California

As you requested, I have conducted a Biological Resource Assessment (BRA) of the proposed Ross Valley Sanitary District (RVSD) Large Diameter Gravity Sewer Rehabilitation Project (Project) in Ross, California. The project involves rehabilitation of an existing sewer alignment for a distance of approximately 4,300 feet along Shady Lane, Lagunitas Road, and Poplar Avenue. Primary pipe rehabilitation method is cast-in-place (CIPP), and the replacement/upsized method will be pipe bursting. There will be areas where open cut construction will be required, including a new sewer segment. Brick manholes will be lined with cementitious material to stop infiltration and provide structural reinforcement. A steel casing will be installed underneath Ross Creek using the bore-and-jack method, with no direct disturbance to the creek bed or banks. An aerial map of the area of potential effect (APE) and project components are contained in **Appendix A**.

The environmental documentation for the Clean Water State Revolving Fund Program administered by the State Water Resources Control Board, Division of Financial Assistance, requires completion of a BRA to confirm presence or absence of any federally-listed species and to ensure compliance with the federal Endangered Species Act, the Clean Water Act, the Migratory Bird Treaty Act, and the Magnuson-Stevens Fishery Conservation and Management Act, among other legislation. This BRA has been prepared to address potential effects of the proposed improvements on biological resources, based on the results of a background information review and field reconnaissance survey. This BRA provides a description of existing conditions in the APE, and an assessment of potential effects on biological and wetland resources. No additional field surveys are considered necessary based on the highly disturbed conditions of the APE.

SETTING

Background and Methods

Biological resources associated with the APE were identified through a review of available background information and a field reconnaissance survey. Available documentation was reviewed to provide information on general resources in the Ross area, presence of sensitive natural communities, and the distribution and habitat requirements of special-status species which have been recorded from or are suspected to occur in the Project vicinity. Literature review included: the occurrence records of the California Natural Diversity Data Base (CNDDB) of the California Department of Fish and Wildlife (CDFW); the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants*; and a list of federally-listed and candidate species prepared by the U.S. Fish and Wildlife Service (USFWS) for the Project site vicinity (dated January 2, 2017). A field reconnaissance survey was conducted by James Martin, a biologist and principal of Environmental Collaborative, on October 12, 2016 to determine the vegetation and wildlife resources, absence of any sensitive resources such as potential jurisdictional wetlands, and potential suitability of the APEs to support populations of special-status species. The CNDDB, USFWS and CNPS species list are contained in **Appendix B**.

Existing Vegetation and Wildlife Habitat Conditions

The APE consists largely of road rights-of-ways that have been developed with roadways, roadside ditches, planted street trees and adjacent landscaping, with no remaining natural habitat. The one exception to this is the Ross Creek channel, which passes through the APE at the Shady Lane bridge crossing. Ross Creek remains a natural channel where it passes through the APE, with the existing sewer line exposed on a man-made weir across the channel bottom. Vegetation along the creek banks is dominated by invasive groundcover species such as English ivy (*Hedera helix*) and Algerian ivy (*Hedera canariensis* var. *algeriensis*), with a few remnant native California bay (*Umbellularia californica*) and coast live oaks (*Quercus agrifolia*) growing near the top of bank.

Landscaping along the roadway frontages consists of native and non-native trees, shrubs and groundcovers. Native tree species growing along the roadway frontages include: valley oak (*Quercus lobata*), coast live oak, California bay, and coast redwood (*Sequoia sempervirens*), of varying size and condition. Some larger sized specimens most likely predate the residential development in the area, such as the scattered valley oaks in Commons Park. Non-native tree species growing along the roadway frontages include: blackwood acacia (*Acacia melanoxylon*), olive (*Olea europaea*), magnolia (*Magnolia* spp.), London Plane Tree (*Platanus acerifolia*), and liquid amber (*Liquidambar styraciflua*), among others. Shrubs and groundcovers are generally non-native ornamental species such as ivy, periwinkle (*Vinca* spp.), oleander (*Nerium oleander*), pyracantha (*Pyracantha* sp.), privet (*Ligustrum* spp.), rose (*Rosa* spp.), camellia (*Camellia* spp.), and irrigated lawns.

Most of the APE generally provides very little in terms of wildlife habitat given its developed condition as roadway and adjacent residential frontages. The limited vegetative cover, intensity of human disturbance and activity, and risk of vehicle strikes limits its importance as foraging and dispersal habitat. Species typical of residential development utilize the mature trees and well-developed landscape for foraging, perching and possibly nesting substrate. These include: house finch (*Haemorhous mexicanus*), house sparrow (*Passer domesticus*), northern mockingbird (*Mimus polyglottos*), American robin (*Turdus migratorius*), scrub jay (*Aphelocoma californica*), mourning dove (*Zenaidura macroura*), and California towhee (*Melospiza crissalis*), among others. Common mammals include naturalized pest species such as house mouse (*Mus*

musculus), Norway rat (*Rattus norvegicus*), and raccoon (*Procyon lotor*). The introduced marsupial Virginia opossum (*Didelphis virginiana*) is also common throughout east Marin, including the Ross area. There was no evidence of any bird nesting observed in the trees and other landscaping along the APE during the field reconnaissance.

The Ross Creek channel does provide for movement of terrestrial and aquatic species across the APE through the Shady Lane bridge undercrossing. Habitat conditions along the creek are limited due to the dominance by non-native groundcovers along the creek bank, the lack of pools and other aquatic refugia, and presence of concrete and rubble on much of the channel bottom. However, seasonal flows in the creek allow for movement of the federally-threatened steelhead trout (*Oncorhynchus mykiss*) along Ross Creek, which is designated as critical habitat for this species by the U.S. Fish and Wildlife Service. Surface water was absent from the immediate vicinity of the existing sewer line crossing at the time of the field reconnaissance survey, but the creek corridor may serve as a movement corridor for other fish species, and possibly western pond turtle (*Actinemys marmorata*), aquatic garter snake (*Thamnophis atratus*), amphibians such as Pacific chorus frog (*Pseudacris regilla*) and western toad (*Anaxyrus boreas*), and a number of aquatic invertebrates when surface water is present.

Special-Status Species

Special-status species are plants and animals that are legally protected under the state and/or federal Endangered Species Acts¹ or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts and other essential habitat. Species with legal protection under the Endangered Species Acts often represent major constraints to development, particularly when they are wide-ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take" ² of these species.

A record search conducted by the CNDDDB, together with review of lists from the USFWS and CNPS indicates that occurrences of numerous plant and animal species with special-status have been recorded from or are suspected to occur in the Ross area of Marin County. **Figures 1 and 2** show the known occurrences of special-status plants and animals, respectively, as mapped by the CNDDDB in an approximately two mile radius of the APE. The attached lists from the CNDDDB, USFWS, and CNPS (see **Appendix B**) show the broad list of special-status plants and animals known from a wide range of habitat types found in Marin County, none of which contain suitable habitat any longer within in the APE due to the extent of past and on-going development and disturbance. The following provides a summary of the plant and animal species suspected to occur in the surrounding area away from the APE where natural habitat remains.

¹ The federal Endangered Species Act (FESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal species. The California Endangered Species Act (CESA) of 1984 parallels the policies of FESA and pertains to native California species.

² "Take" as defined by the FESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect" a threatened or endangered species. "Harm" is further defined by the U.S. Fish and Wildlife Service (USFWS) to include the killing or harming of wildlife due to significant obstruction of essential behavior patterns (i.e., breeding, feeding, or sheltering) through significant habitat modification or degradation. The CDFW also considers the loss of listed species habitat as take, although this policy lacks statutory authority and case law support under the CESA.

Animal Species. Based on the review of CNDDDB data and the USFWS species list (see **Appendix B**), a total of 59 special-status mammal, birds, reptiles, amphibians, fish, and invertebrate species are known or suspected to occur in the vicinity of the APE. **Table 1** located at the end of this BRA provides a summary of each of these 59 species, their status, typical habitat characteristics, and conclusion regarding absence from the APE. Suitable habitat for all of these species is absent from the limits of construction disturbance within the APE. This includes absence of coastal salt marsh and open water habitat for many of the fish, mammal, and bird species known from the Baylands, forest and woodland habitat necessary to support the federally-threatened northern spotted owl (*Strix occidentalis caurina*), and suitable nesting habitat for special-status bird species.

As noted above, the Ross Creek corridor is known to support the federally threatened steelhead, and is designated by the USFWS as critical habitat for this species (see **Figure 1**). The segment of the creek within the APE provides dispersal to upstream and downstream locations, but has been lined with concrete as part of the weir where the existing sewer line is located, and has no habitat value for foraging or retreat pools. A number of other aquatic-dependent species may also move along the Ross Creek channel through the APE, such as western pond turtle and California giant salamander (*Dicamptodon ensatus*). But again, not essential habitat features are present for these species that would provide anything other than dispersal through the APE. No occurrences of foothill-yellow legged frog (*Rana boylei*) or California red-legged frog (*Rana draytonii*) have been reported by the CNDDDB anywhere within the surrounding watersheds, and their presence in the Ross vicinity is highly unlikely.

No evidence of any bird nesting was observed during the field reconnaissance survey. The intensity of human activity and absence of suitable habitat limits the likelihood that any special-status bird species listed in **Table 1** nest in or near the APE, including northern spotted owl. But there is a possibility that new nests of more common bird species could be established in the future in advance of project construction. Nests in active use of both special-status and more common bird species are protected under the federal Migratory Bird Treaty Act and State Fish and Game code.

Plant Species. Based on the review of CNDDDB data, the USFWS species list, and the CNPS Inventory (see **Appendix B**), a total of 44 special-status plant species were suspected to possibly occur in the Ross vicinity. **Table 2** provides a summary of each of these species, their status, typical habitat characteristics, and conclusion regarding absence from the APE. These have varied status, and most are considered rare (list 1B) by the CNPS in their electronic *Inventory of Rare and Endangered Plants of California*. However, suitable habitat for special-status plant species known from the surrounding area is absent and none are expected to occur in the APE due to past development and on-going disturbance observed during the field reconnaissance. The APE has been completely disturbed by past grading, installation of pavement, ornamental landscaping, and existing sewer line facilities, which precludes the possibility of presence of any special-status plant species in the APE. This includes the Ross Creek crossing, which now supports a near continuous cover of invasive ivy, with the exception of the concrete and gravel channel bottom.

Jurisdictional Waters

Although definitions vary, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or groundwater, and support vegetation adapted life in saturated soil. Wetlands are recognized as important features on a regional and national level

due to their inherent value to fish and wildlife, use as storage areas for storm and floodwaters, and water recharge, filtration and purification functions. Jurisdiction of the U.S. Army Corps of Engineers (Corps) is established through provisions of Section 404 of the Clean Water Act, which prohibits the discharge of dredged or fill material into “waters of the U.S.” without a permit. The Regional Water Quality Control Board (RWQCB) jurisdiction is established through Section 401 of the Clean Water Act, which requires certification or waiver to control discharges in water quality whenever a Corps permit is required under Section 404 of the Clean Water Act, and State waters as regulated under the Porter-Cologne Act. Jurisdictional authority of the CDFW over wetland areas is established under Sections 1600-1607 of the State Fish and Wildlife Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed or bank of any lake, river or stream.

Based on a review of the National Wetland Inventory mapping and the observations made during the field reconnaissance survey, Ross Creek is the only potential jurisdictional wetlands or regulated unvegetated “other waters of the U.S.” in the vicinity of the APE. Ross Creek passes under Shady Lane as an open channel with banks covered by ivy, with a few scattered remnant native California bay and oak trees near the top of bank. The low flow channel below the Ordinary High Water Mark (OHWM) is an estimated 10 feet where the existing sewer line crosses the creek bottom. The proposed sewer rehabilitation would involve installation of a new sewer line under the creek channel at a depth that would avoid any disturbance to the bed or banks of Ross Creek. And Best Management Practices would be used to prevent any construction-generated sediment or other debris from entering the storm drain systems and eventually entering Ross Creek.

IMPACT ANALYSIS

Control Measures Incorporated by RVSD

The following control measures will be implemented by RVSD during construction to prevent potential impacts on sensitive biological resources and to ensure that trees and other landscaping affected by the Project will be replaced.

BIO-1. Adequate measures shall be taken to avoid inadvertent take of bird nests protected under the federal Migratory Bird Treaty Act and State Fish and Game Code when in active use. This shall be accomplished by taking the following steps.

- If initial construction is proposed during the nesting season (February 1 to August 31), a focused survey for nesting raptors and other migratory birds shall be conducted by a qualified biologist within 7 days prior to the onset of construction in order to determine whether any active nests are present in the APEs and surrounding area within 100 feet of proposed construction. The survey shall be reconducted any time construction has been delayed or curtailed for more than 7 days during the nesting season.
- If no active nests are identified during the construction survey period, or development is initiated during the non-breeding season (September 1 to January 31), construction may proceed with no restrictions.
- If bird nests are found, an adequate setback shall be established around the nest location and construction activities restricted within this no-disturbance zone until the qualified biologist has confirmed that any young birds have fledged and are able to function outside the nest location. Required setback distances for the no-disturbance zone shall be based on input received from the CDFW, and may vary depending on species and sensitivity to disturbance. As necessary, the no-disturbance zone shall be

fenced with temporary orange construction fencing if construction is to be initiated elsewhere in the APEs.

- A report of findings shall be prepared by the qualified biologist and submitted to the RVSD for review and approval prior to initiation of construction during the nesting season (February 1 to August 31). The report shall either confirm absence of any active nests or should confirm that any young are located within a designated no-disturbance zone and construction can proceed. No report of findings is required if construction is initiated during the non-nesting season (September 1 to January 31) and continues uninterrupted according to the above criteria.

BIO-2. The RVSD shall secure any required authorizations from regulatory agencies, conform with any conditions included in these authorizations, and comply with all applicable State and federal laws related to biological and wetland resources. This shall include submittal of a Notification to the CDFW for the new Ross Creek Siphon, which would avoid disturbance to the bed or bank of the channel, but involves drilling under the creek using bore-and-jack method.

BIO-3. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared by a qualified engineer retained by RVSD and shall comply with the provisions of the state's General Construction Stormwater Permit. Provisions shall be incorporated into the SWPPP to prevent any construction debris from entering Ross Creek and other drainages in the project vicinity. This shall include use of Best Management Practices such as filter fabric over storm drain culvert inlets, fiber-rolls around culvert inlets, and other practices.

BIO-4. Trees and other landscaping removed during construction shall be replaced by RVSD on-site. If required, RVSD shall obtain a permit from the Town of Ross for the removal of any trees of regulated size and shall comply with relevant permit conditions of Chapter 12.24 of the Municipal Code (Ordinance No. 659).

BIO-5. The contractor shall exercise due diligence and implement necessary precautions to avoid needlessly damaging or destroying trees, shrubs or other landscaping in the Project limits.

Significance Criteria

Resource Category/Significance Criteria	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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BIOLOGICAL RESOURCES. Would the Project:

1) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
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Resource Category/Significance Criteria	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
2) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
3) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
4) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
5) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
6) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

Discussion

1) Less than Significant Impact.

Due to the extent of past development and absence of suitable habitat, no special-status species are believed to occur within the construction area in the APE, and no adverse effects are anticipated. Most of the APE is located in developed upland, composed of existing roadways and landscaped frontages, unsuitable for special-status species known from the Ross vicinity and east Marin County. The Ross Creek siphon would be constructed outside and below the existing channel, with no direct disturbance of any kind anticipated. The new siphon under the creek channel would be installed using bore-and-jack method, at a depth that would account for any future scour in the creek, with no potential for a frackout as liquid slurry would not be necessary during drilling. The existing sewer line would be left in place, access pits would be located within the edge of roadway. No disturbance to the bed or banks of Ross Creek would occur, and no disturbance to the habitat it provides steelhead, other fish species, western pond turtle, and other aquatic-dependent species would occur as a result of project implementation. Suitable habitat for other federally-listed or candidate species such as northern spotted owl, California red-legged frog, San Bruno elfin butterfly (*Callophrys mossii bayensis*), Mission blue butterfly (*Plebejus icarioides missionensis*), and Myrtle's silverspot butterfly (*Speyeria zerene myrtilae*), among others, is absent from the APE. Thus pursuant to CEQA-Plus requirements,

no federally-listed species would be affected and there would be no impact relative to the federal ESA as a result of Project implementation.

There was no evidence of any bird nesting within the APE observed during the field reconnaissance survey. Although the limited habitat values and extent of on-going disturbance generally precludes the potential for nesting birds in the APE, there remains a remote possibility that new bird nests could be established in the trees and other vegetation in and near the APE. If construction were initiated during the bird nesting season (March 1 – August 31) construction-related disturbance could result in abandonment of the nests if any are present in the immediate vicinity. If construction-related noise and disturbance resulted in destruction or abandonment of a nest in active use and loss of any eggs or young in the nest, this would be a significant adverse impact and violation of the federal Migratory Bird Treaty Act and State Fish and Game Code sections. **Control Measure BIO-1**, however, has been incorporated into the Project by RVSD which would serve to avoid this potential for violation of federal and state regulations by conducting a preconstruction survey and implementing appropriate construction restrictions if any active nests are encountered until any young birds have successfully fledged.

Thus, impacts on special-status species would be less-than-significant.

2) **No Impact.**

The APE does not contain any riparian habitat or other sensitive natural community types, and no impacts are anticipated. The segment of the Ross Creek corridor where the proposed siphon is to be constructed is dominated by non-native ivy and a few remnant native trees, and does not contain well-developed riparian or other sensitive natural community types. And the Ross Creek siphon would be drilled below the creek bed, avoiding any disturbance to the bed and bank of the channel. No adverse impacts on sensitive natural communities are anticipated.

3) **No Impact.**

The Ross Creek channel is the only federally protected waters within the APE. The proposed siphon under Ross Creek would be installed by bore-and-jack method, and would avoid any disturbance to the bed or bank of the channel. No liquids would be required during drilling under the channel and the new siphon would be installed at an adequate depth to avoid future exposure as a result of channel incision, thereby avoiding the remote potential for a frackout during construction. The existing sewer line at the surface of the channel bottom would be abandoned in place, eliminating the risk of future leaks or rupture and the associated contamination that would occur if the existing crossing were left intact. This would be a long-term benefit of the project through the reduction of possible future contamination of downstream waters. Appropriate controls would be implemented during construction to prevent any materials from entering the Ross Creek corridor, and Best Management Practices would be followed to prevent sediments and other construction-generated pollutants from reaching downstream waters, as called for in **Control Measure BIO-3**.

Given that disturbance to the Ross Creek waters (within or outside the OHWM) is not anticipated, authorization from the Corps or RWQCB under the provisions of the Clean Water Act do not appear necessary. The CDFW typically requires notification any time modifications are proposed under or over a regulated drainage, such as Ross Creek. **Control Measure BIO-2** requires that the RVSD secure any required authorizations from regulatory agencies and conform with any conditions included in these authorizations. This includes submittal of a Notification to the CDFW for the new Ross Creek Siphon, even though disturbance to the bed or bank are not anticipated.

Thus, pursuant to CEQA-Plus requirements, the Project is consistent with Executive Order 11990 – Protection of Wetlands. Because California does not have a Coastal Barriers Resources System, no impacts relative to the Coastal Barriers Resources Act will occur.

4) **Less than Significant Impact.**

The proposed Project would not have any significant adverse impacts on wildlife movement opportunities or adversely impact native wildlife nursery sites. Wildlife in the vicinity of the APE are already acclimated to human activity, and construction-related disturbance would not cause any significant impacts on wildlife movement in the surrounding area. Species common to the area would continue to utilize the surrounding area, even during construction.

Pursuant to CEQA-Plus requirements, no essential fish habitat would be affected and the Project is consistent with the Magnuson-Stevens Fishery Conservation and Management Act. The proposed siphon under Ross Creek would be installed by bore-and-jack method, and would avoid any disturbance to the bed or bank of the channel. None of the mature trees near the top of the creek bank would be removed or adversely affected, and no impacts to fish habitat would occur as a result of project implementation. The existing crossing at the surface of the channel bottom would be abandoned in place, eliminating the risk of future leaks or rupture and the associated contamination that would occur if the existing crossing were left intact. This would be a long-term benefit of the project through the reduction of possible future contamination of downstream waters known to support steelhead and other listed species.

5) **Less than Significant Impact.**

Policies in the *Town of Ross General Plan 2007-2025* address the protection of sensitive biological and wetland resources, including creeks, trees and tree groves, threatened and endangered species habitat, riparian vegetation, and other resources. With the exception of Ross Creek and the trees which grow along the roadways in the APE, there are no other sensitive biological resources in the vicinity. As discussed above, no direct impacts are anticipated with installation and operation of the Ross Creek siphon, which would avoid direct disturbance to the bed and bank of the channel. And tree removal and damage would be minimized, and replacement provided where avoidance was infeasible, as called for in **Control Measures BIO-4 and BIO-5**. No conflicts with the Town's General Plan are anticipated as a result of Project implementation.

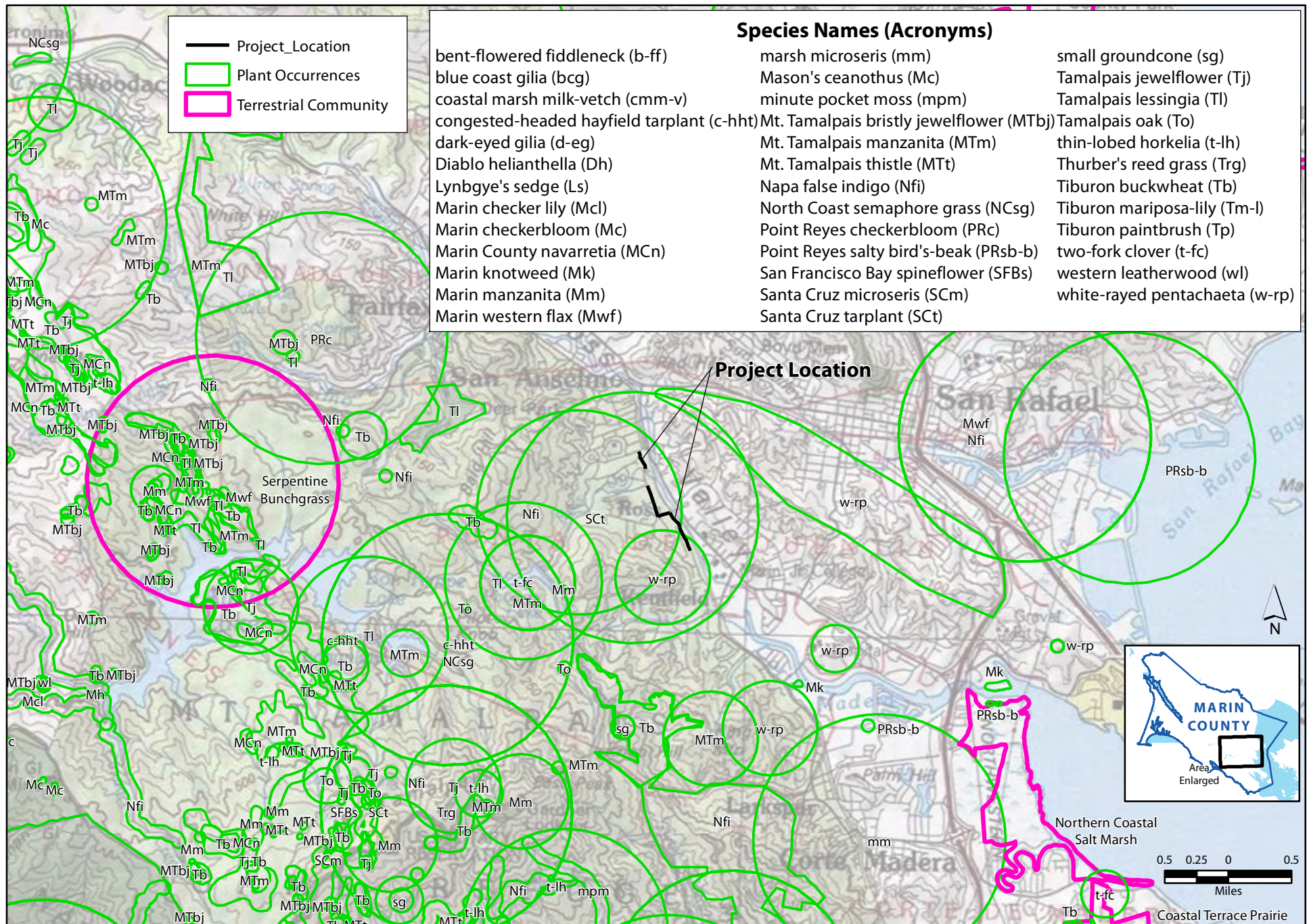
The Town of Ross Ordinance No. 659 establishes regulations governing the removal of trees. The ordinance defines a "Significant Tree" as a tree with a single trunk diameter greater than 12 inches. Under the ordinance, any tree six inches or greater in diameter and designated for removal requires a permit.

Some of the project improvements could affect a number of trees along the APE, including both non-native ornamentals and remnant native oaks and California bay trees. Damage to the tree root zones, limbs, and trunk could occur as a result of trenching and other construction activities. And in some locations tree removal may be required to accommodate replacement facilities, where avoidance is infeasible. As discussed above, trees and other landscaping removed to accommodate improvements associated with the Project would be replaced by RVSD. And any inadvertent damage to the trees in the vicinity of construction would be addressed by the Contractor, as required under **Control Measure BIO-5**. No major conflicts with local plans and policies are anticipated, and potential impact would be less than significant.

6) **No Impact.**

No habitat conservation plans have been prepared addressing the APE, and the Project would therefore not conflict with any adopted habitat conservation plans. As indicated in **Figure 2**, Ross Creek and Corte Madera Creek has been identified as Critical Habitat for steelhead and other species. However, the proposed Ross Creek siphon would be installed under the Ross Creek channel and would not result in any direct or indirect impacts to the creek corridor of suitable habitat for steelhead or other special-status species. And the RVSD has committed to securing all authorizations required under State or federal laws related to biological and wetland resources, as called for in Control Measure BIO-1. As a result, no impact would occur.

Figure 1. Special-Status Plants and Sensitive Natural Communities



SOURCE: California Natural Diversity Database accessed on December 19th, 2016; Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed.

Project Location

Steelhead Critical Habitat

Special Status Animals

Marbled murrelet Critical Habitat

Northern spotted owl Critical Habitat

Species Names (Acronyms)

black-crowned night heron (b-cn)	hoary bat (hb)	San Bruno elfin butterfly (SBeb)
burrowing owl (bo)	longfin smelt (ls)	SF Bay Area leaf-cutter bee (SFBAL-cb)
California black rail (Cbr)	Marin hesperian (Mh)	San Pablo song sparrow (SBss)
California clapper rail (CCR)	mimic tryonia (mt)	snowy egret (se)
California giant salamander (Cgs)	monarch (mon)	steelhead (sh)
California red-legged frog (Cr-lf)	obscure bumble bee (obb)	tidewater goby (tg)
coho salmon (cs)	Opler's longhorn moth (Olm)	Tomaes roach (Tr)
foothill yellow-legged frog (fy-lf)	palid bat (pb)	western bumble bee (wbb)
great blue heron (gbh)	robust walker (rw)	western pond turtle (wpt)
great egret (ge)	salt-marsh harvest mouse (s-mhm)	

The map displays the Project Location (indicated by a black line) and various Special Status Animals (indicated by red circles). The map also shows Steelhead Critical Habitat (blue line), Marbled murrelet Critical Habitat (yellow hatched area), and Northern spotted owl Critical Habitat (green hatched area). The map includes labels for various locations such as San Rafael, San Anselmo, San Francisco, and San Geronimo. A scale bar indicates distances up to 0.5 miles. An inset map shows the location of the study area within Marin County.

SOURCE: California Natural Diversity Database accessed on December 19th, 2016; Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed.

Table 1: Special-Status Animal Species Known to Occur or Potentially Occurring in Ross Vicinity

Species	Status ^a	Habitat	Distribution and Potential for Occurrence within APE
Fish			
Coho salmon (Central California Coast ESU ^b) <i>Oncorhynchus kisutch</i>	FE, SE	Coastal streams from Punta Gorda in northern California down to and including the San Lorenzo River in central California, as well as some tributaries to San Francisco Bay	Species historically occurred in Corte Madera Creek but is considered extinct in the watershed. ¹ Species last recorded from San Francisco Bay tributary during early-to-mid 1980s. ² Corte Madera Creek is designated as critical habitat (San Pablo Bay hydrologic unit #18050002) and essential fish habitat for this species. No suitable habitat in APE.
Chinook salmon (Central Valley Spring-run ESU) <i>Oncorhynchus tshawytscha</i>	FT, ST	Requires clear, cool streams with pools and riffles, with coarse gravel beds for spawning. Sacramento River and its tributaries	Known to occasionally occur in Corte Madera Creek, but fish may be of hatchery origin. Both native and hatchery fish may occur in the Corte Madera Creek watershed. ³ No suitable habitat in APE.
Steelhead (Central California Coast ESU) <i>Oncorhynchus mykiss</i>	FT	Coastal streams from Russian River south to Aptos Creek (Santa Cruz Co.), including streams tributary to San Francisco and San Pablo Bays	Known to occur in Corte Madera Creek and tributary drainages, including Ross Creek. ⁴ Corte Madera Creek and Ross Creek are designated as critical habitat. Suitable habitat at Ross Creek crossing in APE. However, no direct or indirect effects are anticipated by construction of the Ross Creek Siphon component of the project, which would be drilled under the channel bottom and would avoid both banks, with no disturbance to the creek corridor.
Green sturgeon <i>Acipenser medirostris</i>	FT, SSC	Oceanic waters, bays, and estuaries; spawns in deep pools in large, turbulent freshwater river mainstems; known to forage in estuaries and bays from San Francisco Bay to British Columbia	May occur at the mouth of Corte Madera Creek and in the Corte Madera Channel, but not suspected from Ross Creek. No suitable habitat in APE.
Tidewater goby <i>Eucyclogobius newberryi</i>	FE, SSC	Brackish shallow lagoons and lower stream reaches where water is fairly still but not stagnant	Closest CNDDDB record is of an extirpated population recorded in 1961 in Corte Madera Creek. Species is considered extirpated in the region. No suitable habitat in APE.
Delta smelt <i>Hypomesus transpacificus</i>	FT	Found in the Sacramento-San Joaquin estuary in saltwater, brackish and freshwater habitats	Reported from San Pablo Bay. No suitable habitat in APE.

¹ Leidy, R.A., C.S. Becker, and B.N. Harvey, 2007, *Historical Status of Coho Salmon in Streams of the Urbanized San Francisco Estuary, California*.

² Ibid.

³ Leidy, R.A., G.S. Becker, and B.N. Harvey, 2005. *Historical distribution and current status of steelhead/rainbow trout (Oncorhynchus mykiss) in streams of the San Francisco Estuary, California*. Center for Ecosystem and Restoration, Oakland, California.

⁴ Ibid.

Species	Status ^a	Habitat	Distribution and Potential for Occurrence within APE
Tomales roach <i>Lavinia symmetricus</i>	SSC	Known only from Walker Creek and Lagunitas Creek watersheds, in a variety of habitat conditions.	No CNDDB reported occurrences in the Ross Area. No suitable habitat in APE.
Longfin smelt <i>Spirinchus thaleichthys</i>	FC, ST, SSC	Open water estuaries and bays, both in saltwater and freshwater areas	Reported from San Pablo Bay. No suitable habitat in APE.
Amphibians and Reptiles			
Foothill yellow-legged frog <i>Rana boylei</i>	SSC	Perennial streams and drainages with cobble substrate.	CNDDB does not contain any occurrence records within four miles of the Ross area. Marginally suitable habitat at Ross Creek crossing in APE. However, no direct or indirect effects are anticipated by construction of the Ross Creek Siphon component of the project, which would be drilled under the channel bottom and would avoid both banks, with no disturbance to the creek corridor.
California red-legged frog <i>Rana draytonii</i>	FT, SSC	Ponds, streams, drainages and associated uplands; requires areas of deep, still, and/or slow-moving water for breeding.	CNDDB does not contain any occurrence records within four miles of the Ross area. Marginally suitable habitat at Ross Creek crossing in APE. However, no direct or indirect effects are anticipated by construction of the Ross Creek Siphon component of the project, which would be drilled under the channel bottom and would avoid both banks, with no disturbance to the creek corridor.
California giant salamander <i>Dicamptodon ensatus</i>	SSC	Ponds, streams, drainages and associated uplands; prefers fast moving water in coastal forests and valley-foothill riparian habitats with cover.	A general occurrence is reported by the CNDDB from the Corte Madera vicinity. Marginally suitable habitat at Ross Creek crossing in APE. However, no direct or indirect effects are anticipated by construction of the Ross Creek Siphon component of the project, which would be drilled under the channel bottom and would avoid both banks, with no disturbance to the creek corridor
Western pond turtle <i>Actinemys marmorata</i>	SSC	Ponds, streams with deep pools, drainages and associated uplands for egg laying	May occur in Corte Madera Creek, Phoenix Lake, and other freshwater/brackish features where suitable basking areas (sandy banks and rocks) are present. Marginally suitable habitat at Ross Creek crossing in APE. However, no direct or indirect effects are anticipated by construction of the Ross Creek Siphon component of the project, which would be drilled under the channel bottom and would avoid both banks, with no disturbance to the creek corridor.

Species	Status ^a	Habitat	Distribution and Potential for Occurrence within APE
Invertebrates			
Opler's longhorn moth <i>Adela oplerella</i>	none	Typically found on serpentine grasslands where larval host plant, <i>Platystemon californicus</i> , is present.	Reported by the CNDDDB from Ring Mountain Preserve in 1967. No suitable habitat in APE.
Obscure bumble bee <i>Bombus caliginosus</i>	none	Coastal areas from Santa Barbara County to Washington.	Reported by the CNDDDB from the Mill Valley area in 1949 and 1959, Mt. Tamalpais, and other locations in Marin County. No suitable habitat in APE.
Western bumble bee <i>Bombus occidentalis</i>	none	Found in a variety of habitats. Once common and widespread. Species has declined precipitously, perhaps from disease	Reported from general occurrences in the Corte Madera area, and may remain in a variety of habitats. No suitable habitat in APE.
San Bruno elfin butterfly <i>Callophrys mossil bayensis</i>	FE	Colonies are located on steep, north-facing slopes where larval host plant, <i>Sedum spathulifolium</i> , is present	Reported from a general occurrence in the vicinity of Alpine Lake. No suitable habitat in APE.
Monarch butterfly <i>Danaus plexippus</i>	none	Relatively common species in decline throughout its range. Overwintering colonies found in eucalyptus groves and conifer forests along coastal California. Overwintering colonies are of concern to CDFW	No CNDDDB reported occurrences in the Ross Area. No suitable habitat in APE.
Mission blue butterfly <i>Plebuju icarioides missionensis</i>	FE	Found in coastal chaparral, scrub and grassland habitat where larval host plant, <i>Lupinus</i> spp., are present	No CNDDDB reported occurrences in the Ross area. No suitable habitat in APE.
Robust walker <i>Pomatiopsis binneyi</i>	none	Amphibious snail living in humid habitat along the Coast Range, on marshy ground and periodically flooded soil. Typically associated with perennial seeps and rivulets.	No CNDDDB reported occurrences in the Ross area. No suitable habitat in APE.
Myrtle's silverspot butterfly <i>Speyeria zerene myrtleae</i>	FE	Found in coastal prairie, coastal scrub and sand dunes where larval host plant, <i>Viola adunca</i> , is present	No reported occurrences in the Ross area. No suitable habitat in APEs.
San Francisco Bay Area leaf-cutter bee <i>Trachusa gummifera</i>	none	A pollen-collecting bee known from grassland habitat and areas with suitable nectaring plants	Reported by the CNDDDB from a general occurrence on Carson Ridge in 1962. No suitable habitat in APE.
Mimic tryonia (California brackishwater snail) <i>Tryonia imitator</i>	none	Inhabits coastal lagoons, estuaries and salt marshes from Sonoma County to San Diego County, typically found in permanently submerged areas	Reported by the CNDDDB from a general occurrence in the San Rafael vicinity. No suitable habitat in APE.
Marin Hesperian <i>Vespericola marinensis</i>	none	Found in moist areas in coastal brushfields and chaparral, in riparian and mixed forest habitats	Reported by the CNDDDB from the general vicinity of Fairfax, Ross, and Muir Woods. No suitable habitat in APE.
Birds			
Redhead <i>Aythya americana</i>	SSC	Large, deep bodies of water; nests in freshwater emergent wetlands	May winter in small numbers on open water habitats along Corte Madera Creek and San Francisco Bay. No suitable habitat in APE.
American white pelican <i>Pelecanus erythrorhynchos</i>	SSC	Forages over shallow inland waters and coastal marine habitats, nests on isolated islands or peninsulas	May forage and roost in the open water habitat in San Francisco Bay from late summer through spring; does not breed in San Francisco Bay. No suitable habitat in APE.

Species	Status ^a	Habitat	Distribution and Potential for Occurrence within APE
California brown pelican <i>Pelecanus occidentalis californicus</i>	FE, SE, CFP	Coastal shorelines and bays; rarely found on fresh water	May forage and roost in the open water habitat in San Francisco Bay from late summer through spring; does not breed in San Francisco Bay. No suitable habitat in APE.
California least tern (nesting colony) <i>Sterna antillarum browni</i>	FE, CE, CFP	Found along the Pacific coast, foraging in shallow estuaries and lagoons, and nesting on open beaches	Not reported from eastern Marin by the CNDDDB. No suitable habitat in APE.
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	FT, SSC	Found along the Pacific coast and nests in barren to sparsely vegetated beaches and other shoreline areas	Not reported from eastern Marin by the CNDDDB. No suitable habitat in APE.
Great egret (nesting colony) <i>Ardea alba</i>	none	Relatively common species, found foraging in a variety of aquatic habitats including shorelines of lakes, ponds, and drainages. Colonial nesting areas are of concern to CDFW	Observed in a variety of habitats in the Ross area where suitable foraging habitat is present. No suitable habitat in APE.
Great blue heron (nesting colony) <i>Ardea herodias</i>	none	Relatively common species, found foraging in a variety of aquatic habitats including shorelines of lakes, ponds, and drainages. Colonial nesting areas are of concern to CDFW	Observed in a variety of habitats in the Ross area where suitable foraging habitat is present. No suitable habitat in APE.
Snowy egret (nesting colony) <i>Egretta thula</i>	none	Relatively common species, found foraging in a variety of aquatic habitats including shorelines of lakes, ponds, and drainages. Colonial nesting areas are of concern to CDFW	Observed in a variety of habitats in the Ross area where suitable foraging habitat is present. No suitable habitat in APE.
Black-crowned night heron (nesting colony) <i>Nycticorax nycticorax</i>	none	Relatively common species, found foraging in a variety of aquatic habitats including shorelines of lakes, ponds, and drainages. Colonial nesting areas are of concern to CDFW	Observed in a variety of habitats in the Ross area where suitable foraging habitat is present. No suitable habitat in APE.
Marbled murrelet <i>Brachyramphus marmoratus</i>	FT, CE	Forages at sea and utilizes mature conifer forest for nesting	Suitable nesting and foraging habitat is absent in the Ross area. Designated critical habitat in west Marin, over four miles to the southwest. No suitable habitat in APE.
White-tailed kite <i>Elanus leucurus</i>	CFP	Open grasslands, meadows, or marshes; require dense-topped trees or shrubs for nesting and perching	Suitable nesting and foraging habitat present in the general Ross vicinity. No evidence of nesting in APE.
Bald eagle <i>Haliaeetus leucocephalus</i>	SE	Ocean shorelines, lake margins, and rivers for both nesting and wintering; nests in large trees with open branches	Known to occasionally forage along lower reaches of Corte Madera Creek during winter, but not likely to remain for long periods or breed in the Ross area. No suitable habitat in APE.
Northern harrier <i>Circus cyaneus</i>	SSC	Nests in wet meadows and marshes, forages over open grasslands and agricultural fields	Suitable foraging and nesting habitat present in the grassland and marshland habitat in the Ross area. No suitable habitat in APE.
Golden eagle <i>Aquila chrysaetos</i>	SSC, CFP	Rolling foothills and mountain areas. Nests in cliff-walled canyons or large trees in open areas	May occasionally forage in the Ross area, but not likely to remain for long periods or breed due to the lack of high quality nesting and foraging habitat. No suitable habitat in APE.
American peregrine falcon <i>Falco peregrinus</i>	SE, CFP	A variety of open habitats including coastlines, mountains, marshes, bay shorelines, and urban areas. Nest on cliffs, bridges, and tall buildings	May occasionally forage in the Ross area, but not likely to breed due to the lack of high quality nesting habitat. No suitable habitat in APE.
California black rail <i>Laterallus jamaicensis coturniculus</i>	FT, CFP	Salt marshes bordering larger bays, also found in brackish and freshwater marshes	Reported by CNDDDB from Corte Madera Marsh State Ecological Reserve and Creekside Park, and most likely forages along Corte Madera Creek, but suitable habitat is absent in Ross area. No suitable habitat in APE.

Species	Status ^a	Habitat	Distribution and Potential for Occurrence within APE
Ridgway's rail/California clapper rail <i>Rallus longirostris obsoletus</i>	FE, SE, CFP	Tidal salt marshes with sloughs and substantial cordgrass (<i>Spartina</i> sp.) cover	Reported by CNDDDB from Corte Madera Marsh State Ecological Reserve and Creekside Park, and most likely forages along Corte Madera Creek, but suitable habitat is absent in Ross area. No suitable habitat in APE.
Burrowing owl <i>Athene cunicularia</i>	SSC	Open, dry grasslands that contain abundant ground squirrel burrows	May winter in the tidal marsh, ruderal/non-native grasslands, and rock rip-rap along Corte Madera Creek, but suitable habitat is absent in Ross area. No suitable habitat in APE.
Long-eared owl <i>Asio otus</i>	SSC	Conifer, oak, riparian, pinyon-juniper, and desert woodlands adjacent to grasslands, meadows, or shrublands	May pass through or winter in the woodland habitat within the Ross area. Not likely to nest due to the limited extent of woodland habitat and relatively suburban setting. No suitable habitat in APE.
Northern spotted owl <i>Strix occidentalis caurina</i>	FT, SC, SSC	Dense forest and woodland, with suitable prey	Reported by the CNDDDB from forests on the northeastern slopes of Mt. Tamalpais. Designated critical habitat extends over the dense forest and woodlands of western Ross, over a mile to the west. No suitable habitat in APE.
Short-tailed albatross <i>Phoebastria albatrus</i>	FE, SSC	A large sea bird that nests in the Hawaiian archipelago, foraging over the open ocean	May occasionally forage along the Marin coastline, but suitable habitat is absent in the Ross area. No suitable habitat in APE.
Olive-sided flycatcher <i>Contopus cooperi</i>	SSC	Coniferous forests with open canopies	May occur in coniferous forest habitat in the Ross area. No suitable habitat in APE.
Loggerhead shrike <i>Lanius ludovicianus</i>	SSC	Open grasslands and woodlands with scattered shrubs, fence posts, utility lines, or other perches; nests in dense shrubs and lower branches of trees	Suitable foraging and nesting habitat present within areas of ruderal/grasslands and marshland fringes the Ross area. No suitable habitat in APE.
Purple martin <i>Progne subis</i>	SSC	Woodlands; nests in tree snags and abandoned woodpecker cavities and human-made structures	May forage in Ross area, but not likely to nest due to limited extent of suitable habitat. No suitable habitat in APE.
San Francisco (salt marsh) common yellowthroat <i>Geothlypis trichas sinuosa</i>	SSC	Salt, brackish, and freshwater marshes; and riparian woodlands; nests on or near ground in low vegetation	Suitable breeding and foraging habitat in the tidal marsh and freshwater/brackish marsh habitat along Corte Madera Creek, but suitable habitat is absent in the Ross area. No suitable habitat in APE.
Bryant's savannah sparrow <i>Passerculus sandwichensis alaudinus</i>	SSC	Tidal marshes and adjacent ruderal habitat, moist grasslands in the coastal fog belt, and infrequently, drier grasslands further inland; in South Bay, nests primarily on levee tops overgrown with annual grasses and levee banks dominated by pickleweed	May forage and breed in tidal marsh habitat along Corte Madera Creek, but suitable habitat is absent in the Ross area. No suitable habitat in APE.
Grasshopper sparrow <i>Ammodramus savannarum</i>	SSC	Grasslands with scattered shrubs.	May forage and breed in remaining large tracts of open grasslands in Ross area. No suitable habitat in APE.
San Pablo (Samuels) song sparrow <i>Melospiza melodia samuelis</i>	SSC	Tidal salt marshes dominated by pickleweed; nests primarily in pickleweed and marsh gumplant	Reported by CNDDDB from Corte Madera Marsh State Ecological Reserve and may occur in suitable tidal marsh habitat along Corte Madera Creek, but suitable habitat is absent in the Ross area. No suitable habitat in APE.

Species	Status ^a	Habitat	Distribution and Potential for Occurrence within APE
Tricolored blackbird <i>Agelaius tricolor</i>	SSC	Nests in dense vegetation near open water; forages in grasslands and agricultural fields.	May forage in remaining grasslands during nonbreeding season, but not likely to breed in Ross area due to lack of large stands of freshwater marsh habitat. No suitable habitat in APE.
Mammals			
Salt marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE, SE, CFP	Tidal salt marshes of San Francisco Bay and its tributaries. Requires tall, dense pickleweed for cover	Reported by CNDDDB from Corte Madera Marsh State Ecological Reserve and Creekside Park, and may disperse along suitable tidal habitat along Corte Madera Creek, which is not present in the Ross area. No suitable habitat in APE.
Suisun shrew <i>Sorex ornatus sinuosus</i>	SSC	Tidal and brackish marshes of the northern shores of San Pablo and Suisun Bays. Requires dense low-lying cover above the mean high tide line.	Suitable habitat is present within tidal and brackish marsh habitat, but the Ross area is outside of the known range for this species. No suitable habitat in APE.
Pallid bat <i>Antrozous pallidus</i>	SSC	A variety of open arid habitats (e.g., chaparral, open woodland, deserts); primary roost sites include bridges, old buildings, and in tree hollows and/or bark; sometimes roost in caves and rock crevices	May forage over open grassland and marshland habitats, but no active roosts are known from the Ross area. The CNDDDB records include occurrences from 1891 and 1961 collected at unknown locations in the vicinity of San Rafael and Ross, respectively. No suitable habitat in APE.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	SC, SSC	Roots in the open in a variety of habitats, including tree cavities, caves and old buildings. Extremely sensitive to human disturbance.	Suitable habitat is present in forest and woodland habitat in the Ross area, but no active roosts have been reported by the CNDDDB. No suitable habitat in APE.
Western red bat <i>Lasiurus blossevillei</i>	SSC	Forested canyons and riparian woodlands for roosting, a variety of open habitats for foraging; typically roosts in snags and trees with moderately dense canopies	Suitable habitat is present in coniferous forest and woodland habitat in the Ross area, but no active roosts have been reported by the CNDDDB. No suitable habitat in APE.
Hoary bat <i>Lasiurus cinereus</i>	none	Prefers open habitats with access to trees for cover, roosting in dense foliage.	Reported by the CNDDDB from a general occurrence at Phoenix Lake in 1948. No suitable habitat in APE.
American badger <i>Taxidea taxus</i>	SSC	Open habitats with friable soils	Marginal habitat present in remaining grassland habitat, but the relative small size and relative isolation of this habitat most likely precludes presence of this species in the Ross area. No suitable habitat in APE.

^a Status:
FE = federally endangered
FT = federally threatened
FC = federal candidate
ST = State endangered
SC = State candidate
SSC = California Species of Special Concern
CFP = California Fully Protected Species

^b ESU = Evolutionarily Significant Unit

Source: Based on CNDDDB occurrences unless otherwise noted.

Table 2: Special-Status Plant Species Known to Occur or Potentially Occurring in Ross Vicinity

Species	Status ^a	Habitat/Blooming Period	Potential for Occurrence in APEs
<i>Amorpha californica</i> var. <i>napensis</i> Napa false indigo	1B	Openings in broadleaved upland forest, chaparral, cismontane woodland. April-July	Suitable habitat occurs in forest, woodland and chaparral habitat absent in the APE. Closest CNDDDB occurrence is from just west of the Ross vicinity. No potential for occurrence in APEs.
<i>Amsinckia lunaris</i> Bent-flowered fiddleneck	1B	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. March-June	Suitable grassland and woodland habitat absent in the APE. No potential for occurrence in APEs.
<i>Arctostaphylos hookeri</i> ssp. <i>montana</i> Mt. Tamalpais Manzanita	1B	Chaparral, valley and foothill grassland/serpentine, rocky. February-April	Suitable chaparral and grassland habitat absent in the APE. Closest CNDDDB occurrence is approximately one mile west of the Ross vicinity. No potential for occurrence in APE.
<i>Arctostaphylos virgate</i> Marin Manzanita	1B	Broadleaved upland forest, closed-cone coniferous forest, chaparral, North Coast coniferous forest on sandstone, or granitic substrates. January-March	Suitable chaparral and forest habitat absent in the APE. Closest CNDDDB occurrence is approximately one mile west of Ross vicinity. No potential for occurrence in APE.
<i>Astragalus pycnostachyus</i> Coastal marsh milk-vetch	1B	Coastal dunes and scrub, marshes, swamps, and streamside. April-October	Suitable habitat absent in APE. No potential for occurrence in APE.
<i>Calochortus tiburonensis</i> Tiburon mariposa-lily	FT/ST	Open, rocky slopes in serpentine grassland. March-June	Suitable grassland habitat is absent in APE. No potential for occurrence in APE.
<i>Calamagrostis crassiglumis</i> Thurber's reed grass	2	Freshwater marsh in northern coastal scrub, freshwater wetlands and riparian wetlands. March-July	Suitable freshwater marsh habitat is absent in the APE. No potential for occurrence in APE.
<i>Carex lyngbyei</i> Lyngbye's sedge	2	Coastal salt marsh. April-August	Suitable coastal salt marsh habitat is absent in the APE. No potential for occurrence in APE.
<i>Castilleja affinis</i> ssp. <i>neglecta</i> Tiburon paintbrush	FE/ST	Rocky serpentine sites in grasslands. April-June	Suitable grassland habitat is absent in the APEs. Closest CNDDDB occurrence is approximately five miles from the Ross vicinity. No potential for occurrence in APE.
<i>Ceanothus masonii</i> Mason's ceanothus	1B	Chaparral, typically with serpentine substrate. March-April	Suitable habitat absent in APE. No potential for occurrence in APE.
<i>Chloropyron maritimum</i> ssp. <i>palustre</i> Point Reyes bird's-beak	1B	Marshes and swamps (coastal salt), usually in coastal salt marsh with <i>Salicornia</i> , <i>Distichlis</i> , <i>Jaumea</i> and <i>Spartina</i> ; 0-10 meters. June-October	Suitable habitat in tidal marshlands absent in APE. Reported by CNDDDB along the south bank of Corte Madera Creek, south of the Greenbrae boardwalk. No potential for occurrence in APE.
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i> San Francisco Bay spineflower	1B	Sandy soil on terraces and slopes in coastal bluff, coastal dunes, coastal scrub, and coastal prairie habitat. April-July (August rarely)	Suitable grassland and scrub habitat absent in APE. No potential for occurrence in APEs.
<i>Cirsium hydrophilum</i> var. <i>vaseyi</i> Mt. Tamalpais thistle	1B	Serpentine seeps and streams in chaparral and woodland. May-August	Suitable seep habitat in chaparral and woodlands absent in APE. No potential for occurrence in APEs.
<i>Cordylanthus maritimus</i> ssp. <i>palustris</i> Point Reyes salty bird's-beak	1B	Coastal salt marsh and swamps. June-October	Suitable habitat absent in APE. No potential for occurrence in APE.
<i>Dirca occidentalis</i> Western leatherwood	1B	Wetland seeps and riparian areas in chaparral, foothill woodland, and forest habitats. January-March	Suitable habitat absent in APE. No potential for occurrence in APE.
<i>Eriogonum luteolum</i> var. <i>caninum</i> Tiburon buckwheat	1B	Serpentine soils; sandy to gravelly sites. May-September	Suitable grassland habitat absent in APE. Closest CNDDDB occurrence is over one mile south of the Ross vicinity. No

Species	Status ^a	Habitat/Blooming Period	Potential for Occurrence in APEs
			potential for occurrence in APE.
<i>Fissidens pauperculus</i> Minute pocket moss	1B	Moss growing on damp soil in coniferous forests along the coast; in dry streambeds and stream banks.	Suitable coniferous forest absent in APE. Closest CNDDDB occurrence is approximately two miles south of the Ross vicinity. No potential for occurrence in APE.
<i>Fritillaria lanceolata</i> var. <i>tristulis</i> Marin checker lily	1B	Coastal scrub, valley and foothill grassland, and coastal prairie; often on serpentine; various soils reported though usually clay. February-April	Suitable grassland habitat absent in APE. No potential for occurrence in APE.
<i>Gilia capitata</i> ssp. <i>chamissonis</i> Blue coast gilia	1B	Coastal dunes and scrub. April-July	Suitable habitat absent in APE. No potential for occurrence in APE.
<i>Gilia millefoliata</i> Dark-eyed gilia	1B	Found in coastal strand habitat. April-July	Suitable habitat absent in APE. No potential for occurrence in APE.
<i>Helianthella castanea</i> Diablo helianthella	1B	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. March-June	Suitable interface of chaparral, forest, woodland, and grassland habitat absent in APE. No potential for occurrence in APE.
<i>Hemizonia congesta</i> ssp. <i>leucocephala</i> Congested-headed hayfield tarplant	1B	Valley and foothill grasslands, sometimes roadside. April-November	Suitable habitat absent in APE. No potential for occurrence in APE.
<i>Hesperolinon congestum</i> Marin western flax	FT/ST	Serpentine barrens and serpentine grassland and chaparral. April-July	Suitable grassland habitat absent in APE. Closest CNDDDB occurrence is from a record in the 1880s generally reported from the vicinity of San Rafael. No potential for occurrence in APE.
<i>Holocarpha macradenia</i> Santa Cruz tarplant	FT/SE	Light, sandy soil or sandy clay, often with non-natives in coastal prairie and grasslands. June-October	Suitable grassland habitat absent in APE. A general occurrence from a record in 1883 extends over the Ross vicinity, including a portion of the APE. No potential for occurrence in APE.
<i>Horkelia tenuiloba</i> Thin-lobed horkelia	1B	Broadleafed upland forest, chaparral, valley and foothill grassland on sandy soils, mesic openings. May-July	Suitable forest, chaparral, and grassland habitat absent in APE. Closest CNDDDB record is from an occurrence over two miles southwest of the Ross vicinity. No potential for occurrence in APE.
<i>Kopsiopsis hookeri</i> Small groundcone	2	Open woods, shrubby places, generally on <i>Gaultheria shallon</i> . April-August	Suitable forest and woodland habitat where host species is present absent in APE. Closest CNDDDB occurrence from a 1970 record about two miles southwest of APE. No potential for occurrence in APE.
<i>Lessingia micradenia</i> var. <i>micradenia</i> Tamalpais lessingia	1B	Usually on serpentine, in serpentine grassland or chaparral, often on roadsides. (June rarely) July-October	Suitable grassland habitat absent in APE. Closest CNDDDB occurrence is from a general record in 1960 that extends over Phoenix Lake and the Ross vicinity, including most of the APE. No potential for occurrence in APE.
<i>Microseris decipiens</i> Santa Cruz microseris	1B	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. April-May	Suitable habitat absent in APE. No potential for occurrence in APE.
<i>Microseris paludosa</i> Marsh microseris	1B	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. April-June	Suitable forest, woodland, scrub and grassland habitat absent in APE. Reported by CNDDDB from a general occurrence over

Species	Status ^a	Habitat/Blooming Period	Potential for Occurrence in APEs
			the southern portion of the Ross vicinity. No potential for occurrence in APE.
<i>Navarretia rosulata</i> Marin County navarretia	1B	Closed-cone coniferous forest and chaparral on serpentinite. May-July	Suitable forest and chaparral habitat absent in APE. Closest CNDDDB occurrence is on Mount Tamalpais, over three miles to the west of the Ross vicinity. No potential for occurrence in APE.
<i>Pentachaeta bellidiflora</i> White-rayed pentachaeta	FE/SE	Cismontane woodland, valley and foothill grassland on open, dry rocky slopes and grassy areas, often on serpentinite. March-May	Suitable grassland and woodland habitat absent in APE. Several occurrences have been reported by the CNDDDB from the Ross vicinity, including the southern edge of the APE. No potential for occurrence in APE.
<i>Plagiobothrys glaber</i> Hairless popcorn-flower	1A	Coastal salt marshes, alkaline meadows, and seeps. March-May	Suitable marshland habitat absent in APE. Closest CNDDDB record is from a record in 1924 approximately four miles south of the Ross vicinity. No potential for occurrence in APE.
<i>Pleuropogon hooverianus</i> North Coast semaphore grass	1B	Wet grassy, usually shady areas, sometimes in freshwater marsh, associated with forest environments. April-June	Suitable freshwater marsh habitat is limited in the Ross vicinity. Closest CNDDDB record is from a record in the 1940s approximately one mile west of Ross vicinity. No potential for occurrence in APE.
<i>Polypogon marinense</i> Marin knotweed	3	Coastal salt marshes, brackish water marsh, and riparian wetlands. May-August	Suitable habitat is present in areas of coastal salt marsh and riparian wetlands. Occurrences have been reported by the CNDDDB along Corte Madera Creek over two miles downstream of Ross vicinity. No potential for occurrence in APE.
<i>Quercus parvula</i> var. <i>tamalpaisensis</i> Tamalpais oak	1B	Lower montane coniferous forest. March-April	Suitable habitat is present in areas of forest and woodland. Closest CNDDDB record is from an unknown location in the Mill Valley vicinity approximately one mile south of APE. No potential for occurrence in APE.
<i>Sidalcea calycosa</i> ssp. <i>rhizomata</i> Point Reyes checkerbloom	1B	Freshwater marshes near the coast. April-September	Suitable marshland habitat is limited in Ross vicinity. Closest CNDDDB record is from an occurrence over one mile west of Ross vicinity. No potential for occurrence in APE.
<i>Sidalcea hichmanii</i> ssp. <i>viridis</i> Marin checkerbloom	1B	Chaparral, typically with serpentine substrate. May-June	Suitable habitat absent in APE. No potential for occurrence in APE.
<i>Stebbinsoseris decipiens</i> Santa Cruz microseris	1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland in open areas, sometimes on serpentinite. April-May	Suitable habitat is present in areas of forest, chaparral, and grassland. No potential for occurrence in APE.
<i>Streptanthus batrachopus</i> Tamalpais jewel-flower	1B	Closed-cone coniferous forest, chaparral, Talus serpentine outcrops. April-June	Suitable forest and chaparral habitat is generally limited in Ross vicinity. No potential for occurrence in APE.
<i>Streptanthus glandulosus</i> ssp. <i>Niger</i> Tiburon jewel-flower	FE/SE	Shallow, rocky serpentine slopes in grasslands. May- June	Suitable grassland habitat is generally limited in Larkspur vicinity. Closest CNDDDB record is from an occurrence approximately three miles from Larkspur. No potential for occurrence in APEs.

Species	Status ^a	Habitat/Blooming Period	Potential for Occurrence in APEs
<i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i> Mount Tamalpais bristly jewel-flower	1B	Serpentine slopes. May-July (August rarely)	Suitable habitat is generally absent from Ross vicinity. Closest CNDDDB record is from an occurrence over three miles southwest of APE. No potential for occurrence in APE.
<i>Symphotrichum lentum</i> Suisun Marsh aster	1B	Marshes and swamps (brackish and freshwater); most often seen along sloughs with <i>Phragmites</i> , <i>Scirpus</i> , blackberry, <i>Typha</i> , etc. May-November	Suitable marshland habitat is generally absent from Ross vicinity. Closest CNDDDB record is from an occurrence over three miles southwest of APE. No potential for occurrence in APE.
<i>Trifolium amoenum</i> Showy Rancheria (two-fork) clover	FE/1B	Coastal bluff scrub, valley and foothill grassland, sometimes on serpentinite. April-June	Suitable grassland and scrub habitat is generally absent from Ross vicinity. A general occurrence extends over the Ross vicinity, including most of the APE. No potential for occurrence in APE.
<i>Triquetrella californica</i> Coastal triquetrella	1B	Grows within 30 miles from the coast in coastal scrub, grasslands, and in open gravels on roadsides, hillsides, rocky slopes	Suitable grassland and scrub habitat is generally absent from Ross vicinity. Closest CNDDDB record is from an unknown location east of Ring Mountain over three miles southeast of Ross. No potential for occurrence in APE.

- ^a Status: FE = federally endangered
SE = State endangered
FT = federally threatened
ST = State threatened
1A = Presumed extinct in California
1B = Rare, threatened or endangered in California and elsewhere
2 = Rare, threatened, or endangered in California, but more common elsewhere
3 = A review list

Source: Compiled by Environmental Collaborative based on CNDDDB occurrence records, CNPS Inventory and other information. Nearest records are based on CNDDDB occurrences unless otherwise noted.

APPENDIX A

Project Description and Map of APE

RVSD Large Diameter Gravity Sewer (LDGS)

Rehabilitation Project II-3

PROJECT DESCRIPTION

Background

The Ross Valley Sanitary District (RVSD) is obligated to implement its capital program (the IAMP) under the cease and desist order No. R2- 2013-0020 (CDO). The IAMP presents projects to rehabilitate and replace the District's deficient wastewater facilities through the year 2020. The LDGS Project II-3 (Project) is one of these projects. Figure 1 shows the locations of the proposed improvements and their construction characteristics. Further discussion is provided below.

Overview of Construction Methods

The Project includes the replacement of existing sewer pipes and the installation of new pipes by a variety of methods. These methods are:

- *Open Cut:* Existing sewer line would be exposed and removed by means of construction excavation equipment. A new pipe would then be installed and the trench would be backfilled.
- *Pipe Bursting:* Pipe bursting is a trenchless method whereby a new pipe is inserted into an existing pipe by means of a hydraulic winch. First, an insertion pit (typically 3 feet wide by 10 feet long) and a receiving pit (typically 4 feet wide by 4 feet long) are excavated at each end of a pipe segment. The locations of these pits are determined by the Contractor in the field based on site access. Prior to insertion of the new pipe, existing lateral connections are excavated and disconnected. A new pipe is then attached to a bursting head and pulled into the existing pipe. The bursting head breaks apart the existing pipe and creates a cavity for the new pipe. Once the new pipe is installed the existing laterals are reconnected and trenches are backfilled.
- *Pipe Reaming:* This trenchless method is similar to pipe bursting, but instead of using a fixed bursting head, pipe reaming uses a rotating reaming head that grinds up the existing pipe rather than bursting it into the surrounding soil. First, a horizontal directional drilling (HDD) rig is positioned at one end of the pipe segment and a pipe insertion pit is dug at the other end (typically 3 feet wide by 10 feet long, but it can be longer for deeper pipes). Then the HDD rig bores into the ground with a small diameter drilling rod (typically 4-inch-diameter), bores through the manhole wall, and pushes the drilling rod through the existing pipe to the insertion pit at the other end. At that end, the drilling head is replaced with a large-diameter, rotating reaming head, the new pipe is attached to the back of the reaming head, and the HDD rig pulls the reaming head and new pipe back through the existing pipe and into the manhole at the beginning of the segment. Drilling fluid, typically bentonite, is pumped through the reaming head to lubricate the passage for the new pipe. Existing laterals are disconnected and reconnected the same way as with pipe bursting.
- *Cured in Place Pipe (CIPP):* This process involves a liquid thermoset resin-saturated felt tube material that is inserted into the existing pipe by hydrostatic or air inversion through a manhole. Then, the tube is expanded against the wall of the existing pipe by water, air or steam and cured by hot water or steam. After curing, the new pipe is cooled and drained. This process results in a seamless, jointless pipe with a smooth, continuous inner surface. Laterals are reinstated by

trenchless robotic methods after the CIPP liner has cured. Prior to installing the CIPP liner, certain defects would have to be repaired by open cut method. Lengths of these “spot repairs” vary from 3 feet wide by 6-76 feet long by 3-12 feet deep. An alternate CIPP method is also available whereby the liner is cured using ultraviolet (UV) light rather than steam or hot water. With this method, the liner material is made of fiberglass matting instead of felt, and it is pulled into place rather than inverted. The liner resin is similar in composition to standard CIPP resin, but this resin hardens with exposure to UV light rather than with heat.

- *Bore and Jack*: This is a trenchless tunneling method that is suited to installing new underground pipes in a straight alignment at a constant slope (or horizontally level). Typically, a steel casing pipe is installed first, then the host pipe(s) (sewer, water, etc.) are positioned inside the encasement, and then the annular space between casing pipe and host pipe(s) is filled with sand, grout, or another material. Bore and jack requires pits to be excavated at both ends of the segment; pit size depends on the size and length of the bore. For the LDGS project, the boring pit is expected to be about 8 feet wide by 35 feet long, and the receiving pit approximately 8 feet wide by 15-20 feet long. Both pits will be approximately 25 feet deep. Boring is accomplished using an auger bit mounted on a rotating shaft, which works inside the steel casing to be installed. As the auger bores through the earth, the casing is jacked forward by hydraulic jacks that are positioned in the boring pit. Spoils are removed from the boring pit, and drilling fluid (bentonite) may or may not be required depending on the size and length of the bore and the subsurface conditions. Once the casing and host pipes are installed, the connecting upstream and downstream pipes are typically installed by open cut construction. Lastly, all pits and trenches are backfilled and the surface is restored. For the LDGS project, the connecting pipes will likely be about 50 feet long on each end, but part of this length will be within the boring and receiving pits and will not require additional open cut construction.

Project Summary

The Project includes rehabilitation or replacement of approximately 4,500 feet of existing trunk sewers with diameters from 21-inch to 24-inch, rehabilitation or replacement of approximately 12 degraded manholes, and construction of approximately 2,650 feet of new 15-inch diameter sanitary sewer with approximately 10 new manholes in the Town of Ross. The primary pipe rehabilitation method is cured-in-place pipe (CIPP) and the replacement/upsized method will be pipe reaming. One location will likely use bore-and-jack construction for a new inverted siphon under a creek. There will also be several areas where open cut construction will be required including the new sewer through the Town of Ross that will serve to receive flow from local laterals and provide additional capacity in the trunk sewer system. Brick manholes will be lined with cementitious material to stop infiltration and to provide structural reinforcement. All areas will require flow bypassing and traffic control measures during construction. Excavated soils will be hauled away and replaced with suitable material from off-site on a continuous basis, avoiding the need for stockpiling.

Description by Area

Downtown Ross

The portion of the existing 21-inch-diameter trunk sewer to be rehabilitated using the CIPP process starts at the corner of Lagunitas Avenue and Shady Lane. It then crosses Ross Commons Park and runs south down Poplar Avenue, through downtown Ross, and ends at the Ross/Kentfield border. The pipeline in Poplar Avenue has numerous commercial and residential lateral service connections, which will be disconnected from the trunk sewer and connected to a new parallel 15-inch-diameter sewer to be

installed with open cut construction, likely to a maximum depth of 8 feet. This new sewer is anticipated to be constructed entirely within the existing street but may include disturbance of native soils due to its depth and a previously unused alignment.

Shady Lane, Bolinas Avenue to Locust Avenue

This segment includes restoring/upsizing an abandoned 21-inch-diameter sewer in Shady Lane to 24-inch-diameter HDPE, reconfiguring local sewers in Bolinas Avenue so that they connect to the reactivated Shady Lane trunk sewer instead of the 36-inch-diameter Ross Valley Trunk Sewer (RVTS), and constructing a new inverted siphon beneath Ross Creek at Locust Avenue.

Pipe bursting or reaming is the proposed method to reactivate the abandoned 21-inch-diameter sewer in Shady Lane between Bolinas Avenue and Locust Avenue. The final 20 to 30 feet at the downstream end at Locust Avenue will require open cut construction to connect to a new manhole, which will be the influent manhole structure for the new inverted siphon under Ross Creek. However, if the existing 21-inch-diameter sewer is not able to be burst or reamed, the sewer will be relocated onto the edge of the street by open cut construction. The potential alignment along the edge of the Shady Lane is very close to the RVTS alignment and would likely consist of excavation of both previously undisturbed soils and fill materials from the construction of the RVTS.

The new inverted siphon under Ross Creek will have parallel double barrels and an air jumper, which will all be installed inside a 42-inch-diameter steel casing. The steel casing will be installed underneath Ross Creek using the bore-and-jack method. The proposed alignment being studied is beneath/adjacent to the existing trunk sewer creek crossing to the west of the Shady Lane bridge. The siphon will emerge into a new effluent manhole structure on the south of the creek. From there, new pipe will be installed by open cut along the existing sewer alignment to connect to the existing pipe south of the bridge.

The depth of the creek crossing will be set beneath the projected scouring depth of the creek plus a safety factor. A scour analysis of the creek is being conducted to determine the anticipated scour depth for this Project. In addition to scour depth, the method of construction also affects the depth of the crossing. Bore and jack operations may only require 5 ft to 10 ft of cover depending on casing size and geotechnical conditions, and will be coordinated with the anticipated scour depth.

One jacking and one receiving pit will be excavated on either side of the creek. The jacking pit will be approximately 8 feet wide by 35 feet long, and the receiving pit will be approximately 8 feet wide by 15 feet long; both pits will be approximately 20 to 25 feet deep. Both pits are anticipated to disturb native soil due to their width and depth. Because the alignment is relatively short and being constructed by bore and jack, the use of drilling fluids will not be required.

Pipe reaming is the proposed method to replace and upsize the existing 21-inch-diameter sewer to 24-inches in diameter along Shady Lane from approximately Southwood Avenue to Lagunitas Road. Along with this work, two to three manholes will be replaced. The pipe remaining activities will require excavation of an insertion trench in Lagunitas Road and a pit at the upstream termination. The insertion trench will cross a number of existing utilities and the excavation is anticipated to be mainly in fill materials with some areas of previously undisturbed soils being encountered. Additionally, a section of 21-inch-diameter sewer (approximately 140 ft) at the upstream end of the reaming reach will be realigned by open cut construction within Shady Lane and will have one new manhole added to the sewer. Portions of this open cut work are expected to be in previously undisturbed soils.

Construction Staging

Prior to the start of construction, the Contractor for each project would determine appropriate staging areas. It is anticipated that the contractor would stage in paved areas. However, the contract documents will require that any staging that takes place in unpaved areas would include proper stormwater control measures.

Bypass Pumping

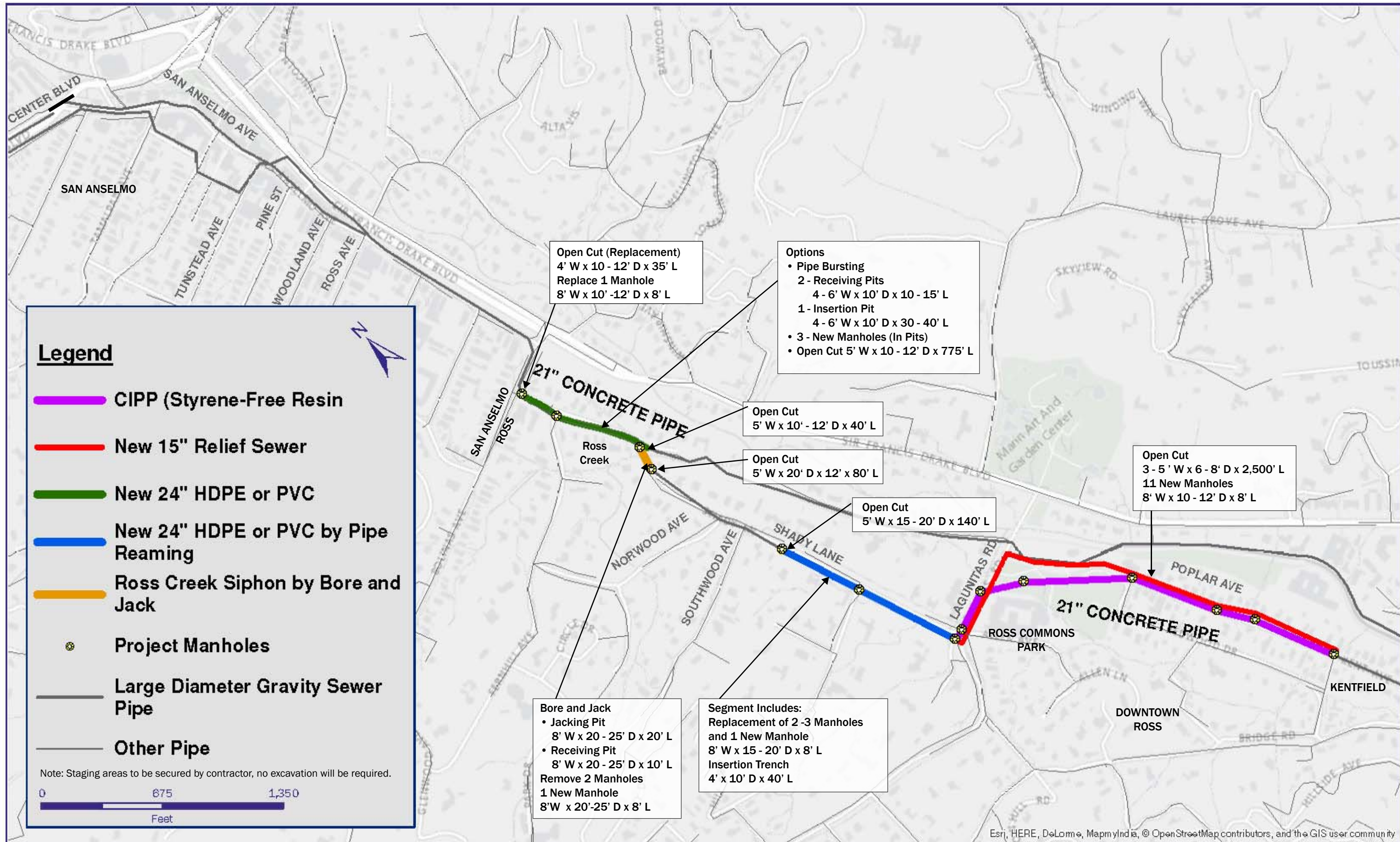
Bypass pumping will be required for the Project. We anticipate the contractor will pump the sewage flow from a manhole upstream of the work area to a manhole downstream of the work area. Residents who have sewer lateral connections within the work area or will be asked to minimize water use during work in their area. The Contractor shall notify residents to not use washing machines or dishwashers, not to perform swimming pool discharges into the sanitary sewer system, and to limit the use of sinks, showers and toilets during the period determined by the Contractor as these activities will affect work. The Contractor will be required to submit a bypass pumping plan adequate to bypass all flows around the work site. The bypass pumping plan must be approved by the Engineer prior to the start of work.

Overview of Environmental Control Measures

Numerous control measures will be incorporated into the Project's Contract Documents by RVSD to address environmental and public health and safety issues. Control measures are procedures known to further reduce the potential for impacts based on regulatory agency requirements, standards in the industry, and construction/operating experiences of RVSD and the design engineer.

Regulatory agency requirements will be contained in the permits for the projects. The Contractor for the Project will be required to obtain encroachment permits from the Town of Ross and possibly Marin County. These permits will contain specific requirements for traffic control and parking, emergency access, pavement restoration, noise control, allowable work hours, and provide for the safety of residents, pedestrians, and motorists. The Contractor will be required to comply with all conditions set forth in the encroachment permits and corresponding RVSD standards. A creek crossing is necessary via trenchless borings but will avoid direct impact to jurisdictional areas. Notification will still be required with the California Department of Fish and Wildlife, and if a Streambed Alteration Agreement is required, the Contractor will comply with stipulated conditions.

Coordination will be established and maintained with local residents and businesses along the alignment and a mechanism for monitoring construction activities and addressing any complaints will be implemented. Any damaged landscaped and/or hardscaped areas will be restored, and a series of best management practices (BMPs) will be enforced to maintain site appearance; control dust, erosion, and stormwater discharge; and provide noise attenuation if needed. Biological and cultural resources technical reports have been completed which have identified measures that will be included in the Contract Documents to address potential impacts. Deep excavations will be needed in some areas to support the construction methods as shown in Figure 1. A variety of geotechnical and regulatory agency control measures will be included to provide for the constructability of the Project and its environmental compatibility, and to ensure the protection of workers' and the public's health and safety.



Source: Brown and Caldwell January 2017

Figure 1
 Area of Potential Effects Map for Large Diameter Gravity Sewer Rehab Project II - 3

APPENDIX B

Species Lists from USFWS, CNDDB and CNPS



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office

FEDERAL BUILDING, 2800 COTTAGE WAY, ROOM W-2605

SACRAMENTO, CA 95825

PHONE: (916)414-6600 FAX: (916)414-6713



Consultation Code: 08ESMF00-2017-SLI-0733

January 02, 2017

Event Code: 08ESMF00-2017-E-01504

Project Name: RVSD Large Diameter Gravity Sewer Rehab Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2)

of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment



United States Department of Interior
Fish and Wildlife Service

Project name: RVSD Large Diameter Gravity Sewer Rehab Project

Official Species List

Provided by:

Sacramento Fish and Wildlife Office
FEDERAL BUILDING
2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
(916) 414-6600

Consultation Code: 08ESMF00-2017-SLI-0733

Event Code: 08ESMF00-2017-E-01504

Project Type: WASTEWATER PIPELINE

Project Name: RVSD Large Diameter Gravity Sewer Rehab Project

Project Description: Project involves rehabilitation of an existing sewer alignment by Ross Valley Sanitary District (RVSD). Approximately one mile of existing trunk sewers with diameters from 18-inch to 36-inch and associated manholes will be rehabilitated. Primary pipe rehabilitation method is cast-in-place (CIPP) and the replacement/upsized method will be pipe bursting. Brick manholes will be lined with cementitious material to stop infiltration and provide structural reinforcement. A steel casing will be installed underneath Ross Creek using the bore-and-jack method, with no direct disturbance to the creek bed or banks.

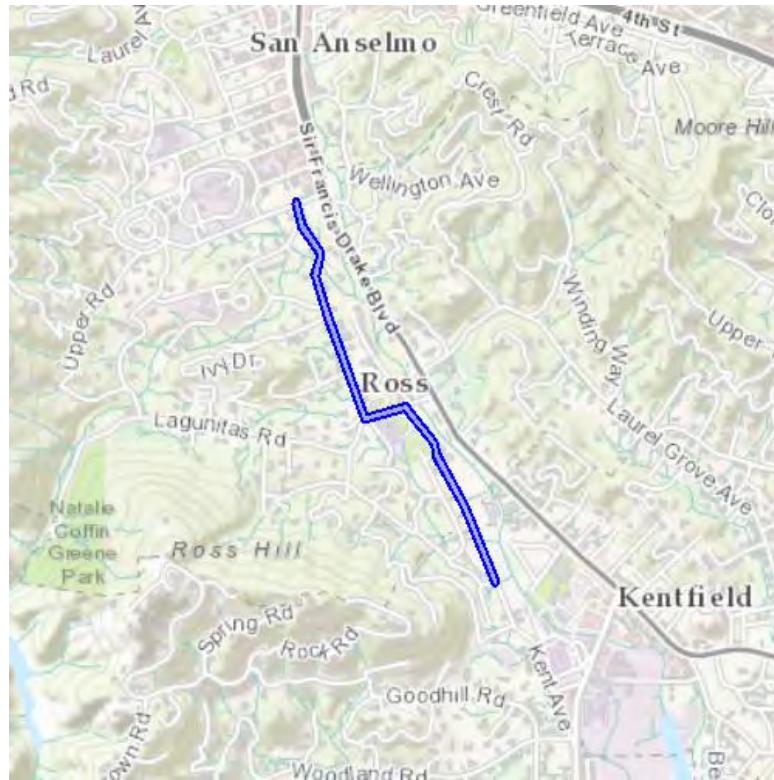
Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior
Fish and Wildlife Service

Project name: RVSD Large Diameter Gravity Sewer Rehab Project

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Marin, CA



United States Department of Interior
Fish and Wildlife Service

Project name: RVSD Large Diameter Gravity Sewer Rehab Project

Endangered Species Act Species List

There are a total of 18 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	Status	Has Critical Habitat	Condition(s)
California red-legged frog (<i>Rana draytonii</i>) Population: Wherever found	Threatened	Final designated	
Birds			
California Clapper rail (<i>Rallus longirostris obsoletus</i>) Population: Wherever found	Endangered		
California Least tern (<i>Sterna antillarum browni</i>) Population: Wherever found	Endangered		
Marbled murrelet (<i>Brachyramphus marmoratus</i>) Population: U.S.A. (CA, OR, WA)	Threatened	Final designated	
Northern Spotted owl (<i>Strix occidentalis caurina</i>) Population: Wherever found	Threatened	Final designated	
Short-Tailed albatross (<i>Phoebastria (=diomedea) albatrus</i>) Population: Wherever found	Endangered		



United States Department of Interior
Fish and Wildlife Service

Project name: RVSD Large Diameter Gravity Sewer Rehab Project

western snowy plover (<i>Charadrius nivosus</i> ssp. <i>nivosus</i>) Population: Pacific Coast population DPS- U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast)	Threatened	Final designated	
Fishes			
Delta smelt (<i>Hypomesus transpacificus</i>) Population: Wherever found	Threatened	Final designated	
steelhead (<i>Oncorhynchus</i> (=salmo) <i>mykiss</i>) Population: Northern California DPS	Threatened	Final designated	
Tidewater goby (<i>Eucyclogobius newberryi</i>) Population: Wherever found	Endangered	Final designated	
Flowering Plants			
Marin dwarf-flax (<i>Hesperolinon congestum</i>) Population: Wherever found	Threatened		
Santa Cruz tarplant (<i>Holocarpha macradenia</i>) Population: Wherever found	Threatened	Final designated	
Showy Indian clover (<i>Trifolium amoenum</i>) Population: Wherever found	Endangered		
White-Rayed pentachaeta (<i>Pentachaeta bellidiflora</i>) Population: Wherever found	Endangered		
Insects			



United States Department of Interior
Fish and Wildlife Service

Project name: RVSD Large Diameter Gravity Sewer Rehab Project

Mission Blue butterfly (<i>Icaricia icarioides missionensis</i>) Population: Wherever found	Endangered		
Myrtle's Silverspot butterfly (<i>Speyeria zerene myrtleae</i>) Population: Wherever found	Endangered		
San Bruno Elfin butterfly (<i>Callophrys mossii bayensis</i>) Population: Wherever found	Endangered		
Mammals			
Salt Marsh Harvest mouse (<i>Reithrodontomys raviventris</i>) Population: wherever found	Endangered		



United States Department of Interior
Fish and Wildlife Service

Project name: RVSD Large Diameter Gravity Sewer Rehab Project

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Fishes	Critical Habitat Type
steelhead (<i>Oncorhynchus</i> (=salmo) <i>mykiss</i>) Population: Northern California DPS	Final designated



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Taxonomic Group IS (Dune OR Scrub OR Herbaceous OR Marsh OR Riparian OR Woodland OR Forest OR Alpine OR Inland Waters OR Marine OR Estuarine OR Riverine OR Palustrine OR Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)
 AND Quad IS (San Rafael (3712285))

San Rafael Quad Special Status Occurrences
(report generated 2016-10-31)

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Adela oplerella</i> Opler's longhorn moth	G2 S2	None None		400 400	14 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Amorpha californica var. napensis</i> Napa false indigo	G4T2 S2	None None	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden	500 2,000	69 S:9	0	0	0	0	1	8	4	5	8	1	0
<i>Antrozous pallidus</i> pallid bat	G5 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	40 45	405 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Arctostaphylos montana ssp. montana</i> Mt. Tamalpais manzanita	G3T3 S3	None None	Rare Plant Rank - 1B.3	500 2,220	15 S:9	0	1	0	0	0	8	6	3	9	0	0
<i>Arctostaphylos virgata</i> Marin manzanita	G2 S2	None None	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden SB_USDA-US Dept of Agriculture	200 2,625	32 S:8	0	0	0	1	0	7	7	1	8	0	0
<i>Ardea herodias</i> great blue heron	G5 S4	None None	CDF_S-Sensitive IUCN_LC-Least Concern	80 100	137 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Bombus caliginosus</i> obscure bumble bee	G4? S1S2	None None	IUCN_VU-Vulnerable	100 2,500	181 S:5	0	0	0	0	0	5	5	0	5	0	0
<i>Bombus occidentalis</i> western bumble bee	G2G3 S1	None None	USFS_S-Sensitive XERCES_IM-Imperiled	50 2,000	282 S:5	0	0	0	0	0	5	5	0	5	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Calamagrostis crassiglumis</i> Thurber's reed grass	G3Q S2	None None	Rare Plant Rank - 2B.1		15 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Callophrys mossii bayensis</i> San Bruno elfin butterfly	G4T1 S1	Endangered None	XERCES_CI-Critically Imperiled	780 780	10 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Chloropyron maritimum ssp. palustre</i> Point Reyes salty bird's-beak	G4?T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	4 5	68 S:7	0	2	0	0	1	4	3	4	6	1	0
<i>Chorizanthe cuspidata var. cuspidata</i> San Francisco Bay spineflower	G2T1 S1	None None	Rare Plant Rank - 1B.2	1,800 1,800	17 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Cirsium hydrophilum var. vaseyi</i> Mt. Tamalpais thistle	G2T1 S1	None None	Rare Plant Rank - 1B.2	760 2,000	14 S:7	1	4	0	0	0	2	3	4	7	0	0
<i>Coastal Brackish Marsh</i> Coastal Brackish Marsh	G2 S2.1	None None		15 15	30 S:1	0	0	1	0	0	0	1	0	1	0	0
<i>Coastal Terrace Prairie</i> Coastal Terrace Prairie	G2 S2.1	None None		400 400	8 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	G3G4 S2	None Candidate Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	150 280	624 S:2	0	1	0	0	0	1	0	2	2	0	0
<i>Dicamptodon ensatus</i> California giant salamander	G3 S2S3	None None	CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	75 1,300	227 S:8	2	3	0	1	0	2	4	4	8	0	0
<i>Emys marmorata</i> western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	180 784	1188 S:3	0	0	2	0	0	1	0	3	3	0	0
<i>Eriogonum luteolum var. caninum</i> Tiburon buckwheat	G5T2 S2	None None	Rare Plant Rank - 1B.2	312 2,100	26 S:10	0	0	0	0	0	10	7	3	10	0	0
<i>Eucyclogobius newberryi</i> tidewater goby	G3 S3	Endangered None	AFS_EN-Endangered CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	10 10	117 S:1	0	0	0	0	1	0	1	0	0	0	1



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Fissidens pauperculus</i> minute pocket moss	G3? S2	None None	Rare Plant Rank - 1B.2 USFS_S-Sensitive	1,000 1,000	22 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Fritillaria lanceolata</i> var. <i>tristulis</i> Marin checker lily	G5T2 S2	None None	Rare Plant Rank - 1B.1	600 600	32 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Gilia millefoliata</i> dark-eyed gilia	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive		54 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Helianthella castanea</i> Diablo helianthella	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive		107 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Hemizonia congesta</i> ssp. <i>congesta</i> congested-headed hayfield tarplant	G5T1T2 S1S2	None None	Rare Plant Rank - 1B.2	492 492	33 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Hesperolinon congestum</i> Marin western flax	G1 S1	Threatened Threatened	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	1,120 1,120	26 S:2	0	1	0	0	0	1	1	1	2	0	0
<i>Holocarpha macradenia</i> Santa Cruz tarplant	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	120 120	37 S:2	0	0	0	0	1	1	2	0	1	1	0
<i>Horkelia tenuiloba</i> thin-lobed horkelia	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden	1,100 2,100	27 S:4	1	2	0	0	0	1	2	2	4	0	0
<i>Kopsiopsis hookeri</i> small groundcone	G4? S1S2	None None	Rare Plant Rank - 2B.3	400 1,785	21 S:4	0	0	1	0	0	3	3	1	4	0	0
<i>Lasiurus cinereus</i> hoary bat	G5 S4	None None	IUCN_LC-Least Concern WBWG_M-Medium Priority	180 180	235 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Laterallus jamaicensis coturniculus</i> California black rail	G3G4T1 S1	None Threatened	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_NT-Near Threatened NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	10 20	243 S:3	0	1	0	0	0	2	1	2	3	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Lessingia micradenia</i> var. <i>micradenia</i> Tamalpais lessingia	G2T2 S2	None None	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden SB_USDA-US Dept of Agriculture	200 1,000	9 S:6	0	1	0	0	0	5	3	3	6	0	0
<i>Melospiza melodia samuelis</i> San Pablo song sparrow	G5T2? S2?	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	5 10	41 S:3	0	1	0	0	0	2	2	1	3	0	0
<i>Microseris paludosa</i> marsh microseris	G2 S2	None None	Rare Plant Rank - 1B.2	500 500	39 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Navarretia rosulata</i> Marin County navarretia	G2 S2	None None	Rare Plant Rank - 1B.2	1,150 1,980	13 S:4	0	1	0	0	0	3	4	0	4	0	0
<i>Northern Coastal Salt Marsh</i> Northern Coastal Salt Marsh	G3 S3.2	None None		10 15	53 S:2	0	1	1	0	0	0	2	0	2	0	0
<i>Oncorhynchus kisutch</i> coho salmon - central California coast ESU	G4 S2?	Endangered Endangered	AFS_EN-Endangered	130 130	22 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Pentachaeta bellidiflora</i> white-rayed pentachaeta	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_UCBBG-UC Berkeley Botanical Garden	120 400	14 S:6	0	0	0	0	5	1	6	0	1	0	5
<i>Plagiobothrys glaber</i> hairless popcornflower	GH SH	None None	Rare Plant Rank - 1A	15 15	9 S:1	0	0	0	0	0	1	1	0	0	1	0
<i>Pleuropogon hooverianus</i> North Coast semaphore grass	G2 S2	None Threatened	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_BerrySB-Berry Seed Bank SB_RSABG-Rancho Santa Ana Botanic Garden		26 S:1	0	0	0	0	1	0	1	0	0	1	0
<i>Polygonum marinense</i> Marin knotweed	G2Q S2	None None	Rare Plant Rank - 3.1	5 5	32 S:2	0	0	2	0	0	0	2	0	2	0	0
<i>Pomatiopsis binneyi</i> robust walker	G1 S1	None None		2,040 2,040	2 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Quercus parvula</i> var. <i>tamalpaisensis</i> Tamalpais oak	G4T2 S2	None None	Rare Plant Rank - 1B.3	500 2,000	9 S:6	0	1	0	1	0	4	5	1	6	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Rallus longirostris obsoletus</i> California clapper rail	G5T1 S1	Endangered Endangered	CDFW_FP-Fully Protected NABCI_RWL-Red Watch List	2 10	98 S:4	0	0	0	0	1	3	3	1	3	1	0
<i>Rana boylei</i> foothill yellow-legged frog	G3 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened USFS_S-Sensitive	1,600 1,600	877 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Reithrodontomys raviventris</i> salt-marsh harvest mouse	G1G2 S1S2	Endangered Endangered	CDFW_FP-Fully Protected IUCN_EN-Endangered	1 4	144 S:4	0	0	0	2	1	1	4	0	3	1	0
<i>Serpentine Bunchgrass</i> Serpentine Bunchgrass	G2 S2.2	None None		1,000 1,000	22 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Sidalcea calycosa ssp. rhizomata</i> Point Reyes checkerbloom	G5T2 S2	None None	Rare Plant Rank - 1B.2	300 300	34 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Sidalcea hickmanii ssp. viridis</i> Marin checkerbloom	G3T1T2 S1S2	None None	Rare Plant Rank - 1B.3	500 500	4 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Spirinchus thaleichthys</i> longfin smelt	G5 S1	Candidate Threatened	CDFW_SSC-Species of Special Concern	0 0	45 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Stebbinsoseris decipiens</i> Santa Cruz microseris	G2 S2	None None	Rare Plant Rank - 1B.2	450 2,450	16 S:2	0	0	0	0	1	1	1	1	1	1	0
<i>Streptanthus batrachopus</i> Tamalpais jewelflower	G2 S2	None None	Rare Plant Rank - 1B.3	1,840 2,200	8 S:5	0	1	1	0	0	3	2	3	5	0	0
<i>Streptanthus glandulosus ssp. pulchellus</i> Mt. Tamalpais bristly jewelflower	G4T2 S2	None None	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden	500 2,200	24 S:8	3	2	0	0	0	3	3	5	8	0	0
<i>Trachusa gummifera</i> San Francisco Bay Area leaf-cutter bee	G1 S1	None None		1,130 1,130	2 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Trifolium amoenum</i> two-fork clover	G1 S1	Endangered None	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden SB_USDA-US Dept of Agriculture		26 S:1	0	0	0	0	0	1	1	0	1	0	0



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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Tryonia imitator</i> mimic tryonia (=California brackishwater snail)	G2 S2	None None	IUCN_DD-Data Deficient	0 0	39 S:1	0	0	0	0	1	0	1	0	0	0	1
<i>Vespericola marinensis</i> Marin hesperian	G2 S2	None None		25 600	23 S:3	0	0	0	0	0	3	3	0	3	0	0

Plant List

35 matches found. *Click on scientific name for details*

Search Criteria

Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3], Found in Quad 37122H5

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
<u>Amorpha californica var. napensis</u>	Napa false indigo	Fabaceae	perennial deciduous shrub	1B.2	S2	G4T2
<u>Arctostaphylos montana ssp. montana</u>	Mt. Tamalpais manzanita	Ericaceae	perennial evergreen shrub	1B.3	S3	G3T3
<u>Arctostaphylos virgata</u>	Marin manzanita	Ericaceae	perennial evergreen shrub	1B.2	S2	G2
<u>Calamagrostis crassiglumis</u>	Thurber's reed grass	Poaceae	perennial rhizomatous herb	2B.1	S2	G3Q
<u>Chloropyron maritimum ssp. palustre</u>	Point Reyes bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	1B.2	S2	G4?T2
<u>Chorizanthe cuspidata var. cuspidata</u>	San Francisco Bay spineflower	Polygonaceae	annual herb	1B.2	S1	G2T1
<u>Cirsium hydrophilum var. vaseyi</u>	Mt. Tamalpais thistle	Asteraceae	perennial herb	1B.2	S1	G2T1
<u>Eriogonum luteolum var. caninum</u>	Tiburon buckwheat	Polygonaceae	annual herb	1B.2	S2	G5T2
<u>Fissidens pauperculus</u>	minute pocket moss	Fissidentaceae	moss	1B.2	S2	G3?
<u>Fritillaria lanceolata var. tristulis</u>	Marin checker lily	Liliaceae	perennial bulbiferous herb	1B.1	S2	G5T2
<u>Gilia capitata ssp. tomentosa</u>	woolly-headed gilia	Polemoniaceae	annual herb	1B.1	S1	G5T1
<u>Gilia millefoliata</u>	dark-eyed gilia	Polemoniaceae	annual herb	1B.2	S2	G2
<u>Grindelia hirsutula var. maritima</u>	San Francisco gumplant	Asteraceae	perennial herb	3.2	S1	G5T1Q
<u>Helianthella castanea</u>	Diablo helianthella	Asteraceae	perennial herb	1B.2	S2	G2
<u>Hemizonia congesta ssp. congesta</u>	congested-headed hayfield tarplant	Asteraceae	annual herb	1B.2	S1S2	G5T1T2
<u>Hesperolinon congestum</u>	Marin western flax	Linaceae	annual herb	1B.1	S1	G1
<u>Holocarpha macradenia</u>	Santa Cruz tarplant	Asteraceae	annual herb	1B.1	S1	G1
<u>Horkelia tenuiloba</u>	thin-lobed horkelia	Rosaceae	perennial herb	1B.2	S2	G2
<u>Kopsiopsis hookeri</u>	small groundcone	Orobanchaceae	perennial rhizomatous herb (parasitic)	2B.3	S1S2	G4?
<u>Lessingia hololeuca</u>	woolly-headed lessingia	Asteraceae	annual herb	3	S3?	G3?

<u>Lessingia micradenia var. micradenia</u>	Tamalpais lessingia	Asteraceae	annual herb	1B.2	S2	G2T2
<u>Micropus amphibolus</u>	Mt. Diablo cottonweed	Asteraceae	annual herb	3.2	S3S4	G3G4
<u>Microseris paludosa</u>	marsh microseris	Asteraceae	perennial herb	1B.2	S2	G2
<u>Navarretia leucocephala ssp. bakeri</u>	Baker's navarretia	Polemoniaceae	annual herb	1B.1	S2	G4T2
<u>Navarretia rosulata</u>	Marin County navarretia	Polemoniaceae	annual herb	1B.2	S2	G2
<u>Pentachaeta bellidiflora</u>	white-rayed pentachaeta	Asteraceae	annual herb	1B.1	S1	G1
<u>Plagiobothrys glaber</u>	hairless popcornflower	Boraginaceae	annual herb	1A	SH	GH
<u>Pleuropogon hooverianus</u>	North Coast semaphore grass	Poaceae	perennial rhizomatous herb	1B.1	S2	G2
<u>Polygonum marinense</u>	Marin knotweed	Polygonaceae	annual herb	3.1	S2	G2Q
<u>Quercus parvula var. tamalpaisensis</u>	Tamalpais oak	Fagaceae	perennial evergreen shrub	1B.3	S2	G4T2
<u>Sidalcea calycosa ssp. rhizomata</u>	Point Reyes checkerbloom	Malvaceae	perennial rhizomatous herb	1B.2	S2	G5T2
<u>Stebbinsoseris decipiens</u>	Santa Cruz microseris	Asteraceae	annual herb	1B.2	S2	G2
<u>Streptanthus batrachopus</u>	Tamalpais jewelflower	Brassicaceae	annual herb	1B.3	S2	G2
<u>Streptanthus glandulosus ssp. pulchellus</u>	Mt. Tamalpais bristly jewelflower	Brassicaceae	annual herb	1B.2	S2	G4T2
<u>Trifolium amoenum</u>	two-fork clover	Fabaceae	annual herb	1B.1	S1	G1

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