Appendix A
NCCP/HCP Conditions for Coverage and Minimization Measures

A-1 General Conditions for Coverage

The following general measures apply to all Covered Species, as listed in Section 2.1 of Appendix B of the NCCP/HCP, and will be implemented on the project:

1. Conduct pre-activity surveys within suitable habitat to ensure that Covered Species are adequately addressed by impact avoidance, minimization, and mitigation. Surveys must be conducted by an Environmental Surveyor during the appropriate field conditions for detection prior to any proposed impacts in the Plan Area.
2. Avoid and minimize impacts to occupied Covered Species habitat or potential migration and/or dispersal corridors for all new facilities and O&M Activities of existing facilities through project design considerations.
3. Establish a habitat buffer when appropriate and feasible around covered plant species populations to support the natural suite of pollinators unless a biologically appropriate mitigation approach is agreed to with the Wildlife Agencies at the time of project-specific environmental review.
4. Fence and/or flag Covered Species populations and sensitive habitat in or adjacent to work areas. Where necessary, install signage to prohibit access and/or flag areas being restored or protected for their biological value.
5. Avoid driving or parking on sensitive and/or occupied habitat by keeping vehicles on roads and in designated staging areas.
6. Deter unauthorized activities (such as trampling and off-road vehicle use) and perform litter abatement, including proper disposal of illegally dumped materials, as part of routine patrol of access roads.
7. Monitor encroachment of non-native and invasive species into Covered Species populations and perform weed abatement as needed to improve the habitat.
8. Stabilize work areas to control erosion or sedimentation problems when working near Covered Species populations within the Plan Area. Populations within or adjacent to work areas would be protected from vehicular traffic, excessive foot traffic, or other activities that result in soil surface disturbance.
9. Control dust when working near Covered Species populations and/or habitat in accordance with applicable regulations.
10. All identified populations of Covered Species within rights-of-ways must be managed to control edge effects to the maximum extent possible.
11. Any restoration and monitoring program prepared as a component of the mitigation plan for impacts to a Covered Species shall include, but not be limited to, species propagation ratios, restoration site selection and assessment, site preparation, implementation strategies, weed control procedures, required management and monitoring in perpetuity, funding commitment, and reporting procedures. The program would be prepared in advance of project impacts and approved by the Wildlife Agencies.
12. Any planting stock used shall be inspected by an Environmental Surveyor to ensure that it is free of pest species that may invade natural areas, including, but not limited to, Argentine ants (*Iridomyrmex humii*), fire ants (*Solenopsis invicta*), and other pests. Any planting stock that is infested would not be allowed within restoration areas or within 300 feet of native areas unless documentation is provided to the Wildlife Agencies that these pests already occur in the native areas around the project site. The stock would be quarantined, treated, or disposed of according to best management principles by qualified experts in a

manner that precludes invasions into native habitat. Runoff from mitigation sites into native habitat would be minimized and managed.

13. To the maximum extent possible, conduct Covered Activities occurring within wetland habitats during the dry season when flows are at their lowest or nonexistent to minimize impacts to aquatic species and/or habitats.
14. Reseed temporary impact areas with an appropriate native seed mix and allow for natural recolonization of the area by adjacent populations.
15. For new facilities adjacent to native habitat, minimize ornamental landscaping or irrigation not associated with native habitat restoration.
16. Collection of covered plant and wildlife species by Water Authority personnel and contractors is prohibited.
17. Maintain and manage dispersal/movement corridors within the Plan Area that contribute to long-term population viability.
18. The use of outdoor lighting within or adjacent to potential Covered Species habitat will be discouraged. If lighting must be used for reasons of safety and security, light sources would be shielded away from habitat and only low-pressure sodium lighting would be used.

A-2 NCCP/HCP Minimization Measures

The following minimization measures listed in Section 6.4 of the NCCP/HCP will be incorporated as design features on the project:

Environmental Surveyor (Section 6.4.1.1)

1. The Water Authority will identify an Environmental Surveyor for the project to oversee pre-project evaluations/needs of Covered Activities and work with the project engineer and contractors to ensure implementation compliance of Covered Activities with Plan commitments.
2. If the Environmental Surveyor discovers that the Water Authority is out of compliance with the permits associated with this Plan, he/she will report the noncompliance to the Water Authority within one working day and to the Wildlife Agencies within five working days so that the Water Authority and Wildlife Agencies can determine how to put the Plan back into compliance.
3. Before any clearing and/or construction activities are performed in habitat areas that may support Covered Species, the Environmental Surveyor will review the site, identify any sensitive plant and animal species, and identify requirements pursuant to the Plan for impact avoidance and minimization. A standard PSF will be prepared for each project and submitted to the Water Authority for review and tracking purposes.
4. The Environmental Surveyor will determine the extent of potential Covered Species habitat and will flag the sensitive resources to be avoided. If a Covered Species is present, the Environmental Surveyor will refer to Appendix B of the NCCP/HCP for species-specific conservation measures. In the case of unavoidable impacts to a Covered Species, the Environmental Surveyor will determine the extent of impact, the appropriate mitigation measures, and recommend to the project engineer additional measures to minimize impacts in accordance with Appendix B of the NCCP/HCP.

5. The Environmental Surveyor will work with the project engineer to identify and mark areas appropriate for staging and temporary equipment storage, placement of heavy machinery, as well as vehicle turn around and access, that will result in the least amount of impact to sensitive vegetation and/or Covered Species. The Environmental Surveyor will verify that all areas specified on the plans to be avoided are marked with flagging in the field prior to construction start.
6. The Environmental Surveyor will attend pre-construction meetings for projects in sensitive areas. The Environmental Surveyor will provide brief presentations to field staff, as needed, to familiarize field personnel with the natural resources to be protected and avoid on project sites and outline environmental expectations. The Environmental Surveyor will also be available to answer questions and address any last-minute construction changes.
7. The Environmental Surveyor will be present during clearing, topsoil salvage, and construction activities located within sensitive habitat. The frequency and duration of required monitoring will be specified in the PSF that is completed by the Environmental Surveyor and submitted to the Water Authority on a project-by-project basis prior to the start of construction.
8. The Environmental Surveyor will advise the construction manager during construction to ensure compliance with all avoidance, minimization, and mitigation measures.
9. The Environmental Surveyor will conduct (and document) monitoring as required by the PSF. At the completion of the Covered Activity, the Environmental Surveyor will prepare a brief report to verify compliance with the avoidance and minimization recommendations in the PSF. This report will include documentation that the flagged areas were avoided and that minimization measures were properly implemented. The Environmental Surveyor will be responsible for the identification and monitoring of any Covered Species that are found on the project site prior to and during construction activities. Monitoring activities will be in accordance with the species-specific measures (see Appendix B of the NCCP/HCP).
10. If any previously unidentified Covered Species or otherwise sensitive species, nests, dens, or burrows are located on a project site during construction activities, the Environmental Surveyor will provide guidance, through the construction manager, as to how best to minimize or avoid impacting the resource(s).
11. The Environmental Surveyor will be on-call (via phone) to respond within 24 hours for potential emergency deployment to assess and monitor potentially critical biological issues.
12. If the Environmental Surveyor determines that the Covered Activity is out of compliance with the requirements of the Plan, the Environmental Surveyor will report it to the Water Authority. The Water Authority will be responsible for bringing the project back into compliance and determine the appropriate remedial action, if necessary, through coordination with the Wildlife Agencies.
13. The Environmental Surveyor or construction manager will be responsible for ensuring the removal of all habitat flagging from the construction site at completion of work.
14. If included in the PSF, the Environmental Surveyor will direct the relocation of Covered Species that can be moved from harm’s way in coordination with the species-specific Conditions of Coverage in Appendix B of the NCCP/HCP (in non-emergency situations) with notification to the Wildlife Agencies.

Pre-Activity Survey Form (Section 6.4.1.2)

1. The PSF will include avoidance, minimization, and mitigation requirements based on the general measures outlined in this section and the species-specific conditions in Appendix B of the NCCP/HCP. USFWS biological survey protocols performed by qualified and appropriately authorized personnel will be conducted where appropriate and required.

2. The pre-activity survey will be valid for 30 days unless the project is scheduled to begin during the avian breeding season, in which case the nesting bird clearance must be conducted within five days of project implementation. If ground disturbance activities have not commenced within 30 days after the survey is completed, the Environmental Surveyor will conduct a verification survey to confirm that biological conditions have not significantly changed that would alter the specified avoidance, minimization and mitigation commitments prior to construction.

Field Personnel Education Training (Section 6.4.1.3)

1. Field personnel working within sensitive habitat areas, including both Water Authority employees and contractors, will participate in an education training program at the start of each project. The program will be conducted on-site by an Environmental Surveyor under the direction of the Water Authority. The training will include: an overview of Covered Species identification and the legal protections afforded to each species; a brief discussion of their biology; habitat requirements; status under ESA and CESA; conservation measures being taken by the project for the protection of the Covered Species and their habitats under this Plan; and penalties for non-compliance. The training program will also educate field personnel in the identification of invasive species that may be removed, as well as desirable seeded and planted species, to ensure that native species are not affected by invasive species control. A fact sheet conveying this information will also be available to all personnel working in the project area. The Water Authority, either directly or through the services of the Environmental Surveyor, will be responsible for the education and training for new field personnel coming on-site after the start of a project.

Field Personnel (and Contractor) Responsibilities (Section 6.4.1.4)

1. Contractors or other project personnel will not collect plants or wildlife, unless specifically authorized and directed by the Environmental Surveyor. Only qualified and appropriately authorized personnel will handle or collect plants or wildlife as required by species-specific measures.
2. Field personnel will not intentionally harm or harass wildlife or damage nests, burrows, rock outcrops, or other habitat components.
3. Drivers on unpaved roads in native habitats will not exceed a speed of 20 miles per hour in order to avoid injury to animals and minimize dust generation.
4. Impacts to adjacent native vegetation that would be significantly affected by excessive fugitive dust will be avoided and minimized through watering of access roads (except in areas with vernal pools) or other appropriate measures, such as reducing the number or speed of vehicles or adding inert materials that reduce dust. Projects with the potential for excessive dust generation include those that involve more than occasional use of roads in dust-prone soils (i.e., more than three to five vehicle roundtrips per day) or require multiple vehicles to transport heavy equipment and supplies.
5. Vehicles will not park in areas where catalytic converters may ignite vegetation. Construction vehicles will be equipped with shovels and fire extinguishers in order to reduce the risk of wildfires.
6. Littering will be strictly prohibited. All trash will be deposited in secured, closed containers or hauled out daily by field personnel.
7. No pets will be allowed on any construction site.
8. No firearms or other weapons will be allowed on any construction site except as carried by governmental law enforcement, or as authorized in writing by Water Authority staff.
9. Field personnel will be prohibited from pushing or dumping soil and brush into sensitive habitats.

10. All vehicles, tools, and machinery will be restricted to access roads, approved staging areas, or within designated construction zones.
11. If any field personnel identify a previously unnoticed Covered Species on a construction site, work activities will cease in order to immediately notify the Water Authority's construction manager, project engineer, and the Environmental Surveyor. In conjunction with Water Authority environmental staff, the Environmental Surveyor will determine what actions would be taken to avoid or minimize impacts to the species according to the species-specific conditions outlined in Appendix B of the NCCP/HCP.
12. Field personnel will notify the project engineer/environmental staff of any sick, injured, or dead wildlife found on site.
13. Parking or driving underneath oak trees, except in established traffic areas, will not be allowed in order to protect root structures.

Design and Construction Controls (Section 6.4.2.5)

1. Projects will be designed to avoid and minimize impacts to biological resources, to the extent feasible.
2. Construction and operation activities will be designed and implemented to avoid and minimize new disturbance, erosion on manufactured and other slopes, and off-site degradation from sedimentation.
3. Storage and staging areas will be located in disturbed areas or within the least biologically sensitive areas established by the Environmental Surveyor. No filling, excavating, trenching, or stockpiling of materials will be permitted outside of the approved construction footprint, unless the area to be used is already disturbed and does not support habitat for Covered Species.
4. Construction footprints will be delineated in the construction documents. In addition, if the construction footprint is located within or near sensitive habitat, the project footprint will be fenced or continuously flagged with streamers or a boundary rope barrier to ensure that habitat is not removed beyond the limits of work. These barriers will be established prior to any grading, grubbing, or clearing, and will be monitored by the Environmental Surveyor.
5. Projects will be refined, where possible, during the engineering and construction phases to further avoid and minimize impacts to Covered Species or their habitat through seasonal timing of work, minor realignments, and narrowing of construction limits.
6. Clearing and grubbing will be performed within the construction areas only as necessary for safe vehicle movement and construction activities.

Stormwater Best Management Practices (Section 6.4.2.6)

1. Prior to the start of ground disturbing activities, the Water Authority or their consultants will prepare a Storm Water Pollution Prevention Plan (SWPPP) to reduce or eliminate pollutants during and after construction. The most current and applicable Best Management Practices (BMPs) will be implemented at all construction sites in or adjacent to native habitat in accordance with the project specifications. In addition to the approved manual, BMPs listed in the most recent National Pollutant Discharge Elimination System (NPDES) General Permit and the BMP Fact Sheet located in State Water Resources Control Board (SWRCB) General Permit for Small Linear Underground/Overhead Projects will apply. The fact sheet is attached as an Appendix G and the SWRCB or RWQCB will be contacted for the latest requirements.

Cleanup (Section 6.4.2.8)

1. Refuse and trash will be regularly removed from activity sites and disposed of in a lawful manner. Timing of refuse and trash removal will be determined by the Environmental Surveyor and comply with the project specifications that require debris to be removed as work is completed. Petroleum products, including gasoline, diesel, and hydraulic fluid, will be used during construction in accordance with all federal, state, and local laws, regulations, and permitting requirements. In the event that hazardous materials are encountered or generated during construction, contractors certified by the responsible regulatory agency will conduct all recovery operations and dispose of hazardous waste in accordance with existing regulations and required permits. As required, petroleum products, trash, and other materials will be taken to a disposal facility authorized to accept such materials.

A-3 Habitat-Based Mitigation

1. The Water Authority will debit the appropriate types and amounts of off-site mitigation credits from available banking credits at Water Authority Habitat Management Areas. Based on impacts and mitigation assumptions available for the project Initial Study/Mitigated Negative Declaration, off-site mitigation will include 0.15 acres of coastal sage scrub (Diegan).

A-4 Wildlife Species Conditions for Coverage

The following conditions for coverage for wildlife species, as listed in Sections 5, 6, 7, and 8 of NCCP/HCP Appendix B, will be incorporated into the project:

Orange-Throated Whiptail (Section 6.3.3)

1. Implement general Conditions for Coverage (see Section F-1).
2. Avoid or minimize impacts to Belding's orange-throated whiptail habitat through project design and placement.
3. Minimize and manage effects from introduced ant species that may exclude the termite prey base during restoration efforts. All nursery stock plants will be checked for nonnative ants before installation at restoration sites. Non-native ants that penetrate native habitats appear to be partially supported by artificial irrigation associated with landscaping (Suarez et al. 1998). Therefore, runoff from mitigation sites in native habitat would be minimized and managed.

Coastal (Western) Whiptail (Section 6.4.3)

1. Implement general Conditions for Coverage (see Section F-1).
2. Avoid or minimize impacts to coastal whiptail habitat through project design and placement.

Northern Red Diamond Rattlesnake (Section 6.9.3)

1. Implement general Conditions for Coverage (see Section F-1).
2. If a northern red diamond rattlesnake is observed in the construction area, the snake should be moved by an Environmental Surveyor to the closest safe, suitable habitat in the area. Exclusionary fences may be used to keep snakes out of construction areas. These fences would be placed and monitored daily.
3. Avoid or minimize impacts to red diamond rattlesnake habitat through project design and placement.

Coastal California Gnatcatcher (Section 7.7.3)

1. Implement general Conditions for Coverage (see Section F-1).
2. Conduct USFWS protocol surveys for the California gnatcatcher under favorable conditions in areas of potential foraging or breeding habitat for all new facilities and O&M Activities, or assume occupancy of potential habitat, to ensure that this species is adequately addressed by impact avoidance, minimization, and mitigation. A permitted Environmental Surveyor would conduct surveys.
3. Minimize impacts through timing of work in suitable California gnatcatcher habitat to avoid the nesting season for upland avian species (February 15 to August 15) whenever possible, or ensure that habitat is removed prior to the initiation of the breeding season. If construction activities must commence during the upland avian breeding season, minimize impacts through conducting nest surveys within 300 feet of all proposed activities (see Section 2.3 of the NCCP/HCP for the Avian Breeding Season Policy). If active nests are encountered, no Covered Activities shall be implemented within a minimum distance of 100 feet of the nest. A greater setback (up to 300 feet) may be required, as determined by the Environmental Surveyor, based on the site specific considerations, phase of the nesting cycle, and species or other biological considerations (see Section 2.4 of the NCCP/HCP).
4. Direct take of individuals and destruction of nests within an active territory are not allowed.
5. For temporary impacts to occupied California gnatcatcher habitat, the work site would be returned to preexisting contours, where feasible, and revegetation with appropriate locally native species. All revegetation plans would require written concurrence of the Wildlife Agencies. Also, see Section 6.4, Plan Minimization Measures, of the NCCP/HCP.

Yellow Warbler (Section 7.8.3)

1. Implement general Conditions for Coverage (see Section F-1).
2. Minimize impacts through timing of work in riparian habitat to avoid the nesting season for riparian avian species (March 15 to September 15) whenever possible, or ensure that habitat is removed prior to the initiation of the breeding season. If construction activities must commence during the riparian avian breeding season, minimize impact through conducting nest surveys within 300 feet of all proposed activities (see Section 2.3 of the NCCP/HCP). If active nests are encountered, no Covered Activities shall be implemented within a minimum distance of 100 feet of the nest. A greater setback (up to 300 feet) may be required, as determined by the Environmental Surveyor, based on the site specific considerations, phase of the nesting cycle, and species or other biological considerations (see Section 2.4 of the NCCP/HCP). Direct take of individuals and destruction of nests within an active territory is not allowed.

A-5 Lake Stream and River Work Conditions

While not anticipated based on the project's current design, the following conditions to avoid or minimize substantial adverse effects on jurisdictional waters features, as listed in Appendix I of the NCCP/HCP, will be incorporated into the project if a design change results in the need for permitting with the California Department of Fish and Wildlife (CDFW):

1. CDFW employees are authorized to conduct on-site inspections relevant to San Diego County Water Authority NCCP/HCP Section 6.6.1.1, upon reasonable notice.
2. Silty/turbid water shall not be discharged into the stream. Such water shall be settled, filtered, or otherwise treated prior to discharge. The Crew's/Contractor's ability to minimize turbidity/siltation shall be the subject of pre-construction planning and design feature implementation.
3. Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.
4. Water containing mud, silt, or other pollutants from equipment washing or other activities shall not be allowed to enter a lake or flowing stream or placed in locations that may be subjected to high storm flows.
5. If off-stream siltation pond(s) is/are used to control sediment, pond(s) shall be constructed in a location, or shall be designed, such that potential spills into the stream/lake during periods of high water levels/flow are precluded.
6. If silt catchment basin(s) is/are used, the basin(s) shall be constructed across the stream immediately downstream of the project site. Catchment basins shall be constructed of materials that are free from mud and silt. Upon completion of the project, all basin materials along with the trapped sediments shall be removed from the stream in such a manner that said removal shall not introduced sediment to the stream.
7. Silt settling basins shall be located away from the stream or lake to prevent discolored, silt-bearing water from reaching the stream or lake during any flow regime.
8. Notwithstanding the use of silt catchment basins, upon Department determination that turbidity/siltation levels resulting from project related activities constitute a significant threat to aquatic life, activities associated with the turbidity/siltation, shall be halted until effective Department approved control devices are installed or abatement procedures are initiated.
9. Precautions to minimize turbidity/siltation shall be taken into account during project planning and shall be installed prior to construction. This may require that the work site be isolated and that water be diverted around the work area by means of a barrier, temporary culvert, new channel, or other means approved by CDFW. Precautions may also include placement of silt fencing, straw bales, sand bags, and/or the construction of silt catchment basins so that silt or other deleterious materials are not allowed to pass to downstream reaches. The method used to prevent siltation shall be monitored and cleaned/repaired weekly, or more frequently if warranted by local conditions. CDFW shall provide any determinations or approvals in writing within 14 days of receiving from the Water Authority or its agents a written request which includes a plan sheet or diagram indicating how the work site will be isolated.
10. No equipment shall be operated in ponded or flowing areas except as otherwise addressed in Water Authority project's Notification of Lake or Streambed Alteration application, contract specifications, and any applicable regulatory permits.

11. Rock, gravel, and/or other materials shall not be imported to, taken from, or moved within the bed or banks of the stream except as otherwise specifically identified in the project's Notification of Lake or Streambed Alteration application.
12. Temporary fills shall be constructed of nonerodible materials and shall be removed immediately upon work completion.
13. If operations require moving equipment across a flowing stream, such operations shall be conducted without substantially increasing stream turbidity. Where repeated crossings could result in a substantial increase in stream turbidly, the Water Authority shall install a permanent or temporary bridge, culvert, or rock-fill crossing as approved by the Water Authority Project Engineer.
14. If a stream channel and/or gradient have been temporarily altered during construction, it shall be returned as nearly as possible to pre-project conditions without creating a possible future bank erosion problem. If a lake margin has been altered, it shall be returned as nearly as possible to pre-project conditions without creating a future bank erosion problem.
15. Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.
16. Spoil sites shall not be located within a stream/lake, or where spoil shall be washed back into a stream/lake, or where it will cover aquatic or riparian vegetation, unless the site is specifically identified in the project's Notification of Lake or Streambed Alteration application.
17. Staging/storage areas for equipment and materials shall be located outside of the stream, unless the area is specifically identified in the project's Notification of Lake or Streambed Alteration application.
18. Access to the work site shall be via existing roads and access ramps when legally available to the Water Authority and its contractors for such use.
19. No equipment maintenance shall be done within or near any stream channel where petroleum products or other pollutants from the equipment may enter these areas under any flow.
20. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into or placed where it may be washed by rainfall or runoff into waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.
21. The Water Authority and its contractors, subcontractors, and employees shall comply with all litter and pollution laws. It is the responsibility of the Water Authority to ensure compliance.
22. Any equipment or vehicles driven and/or operated within or adjacent to the stream/lake shall be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.
23. Stationary equipment such as motors, pumps, generators, and welders located within or adjacent to the stream/lake shall be positioned over drip pans or confined within berms capable of containing any spills.
24. The clean-up of all spills shall begin immediately. CDFW shall be notified immediately by the Water Authority of any spills that affect aquatic habitat, and shall be consulted regarding clean-up procedures.
25. Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.
26. Installation of bridges, culverts, or other structures shall be such that water flow is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade, and bottoms of permanent culverts shall be placed below stream channel grade. Excavation of the streambed and banks shall be limited to the extent

necessary, as determined by the Water Authority Project Engineer, to install bottoms of culverts below stream grade. Temporary culverts placed on existing streambed grade shall be done so with minimal disturbance.

27. The inlet and outlet of all permanent culverts shall be protected by the placement of head walls that shall be constructed of rock riprap, gabions, concrete, or other suitable nonerodible material as determined by the Water Authority project engineer. To prevent undercutting, the head walls shall be keyed in place. To prevent erosion, energy dissipaters will be installed.
28. Culverts shall be long enough to extend completely beyond the toe of the fill (unless both the up and downstream sides of the fill are adequately protected to the maximum high-water mark).
29. All in-stream structures shall be designed so that no sudden change in stream velocity shall occur above, below, or in the structure. If a sudden change in stream velocities occurs upon installation of the structure, the structure shall be removed immediately.
30. If any wildlife is encountered in the stream or lake zone during the course of construction, said wildlife shall be allowed to leave the construction area unharmed.
31. All diversion channels shall be designed to maintain velocities at levels acceptable to all native and recreational fish species determined to be in the project impact area and adjacent upstream and downstream reaches.

Appendix B
Air Quality and Greenhouse Gas Emissions Modeling

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Crossover Pipeline

San Diego County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.39	1000sqft	0.00	45,392.00	0
Industrial Park	2.00	1000sqft	0.00	2,000.00	0
Other Asphalt Surfaces	68.09	1000sqft	1.56	68,088.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2024
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	539.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Surrogate land uses. General Light Industry represents open trench pipeline. Industrial Park represents Jack and Bore pipeline.

Construction Phase - Project-specific data.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Cement and Mortar Mixers" represents grout plant. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment -

Off-road Equipment - Project-specific data.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-road Equipment - Based on data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request.

Off-road Equipment - Given in data request.

Trips and VMT - Given in data request.

Grading - Default CalEEMod equations updated with project-specific information.

Vehicle Trips - No operational trips associated with the project

Off-road Equipment - Based on equipment for normal pipeline installation. "Other construction equipment" represents ventilation fans.

Table Name	Column Name	Default Value	New Value
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tblConstructionPhase	NumDays	10.00	22.00
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tblConstructionPhase	NumDays	200.00	5.00
tblConstructionPhase	NumDays	4.00	370.00
tblConstructionPhase	NumDays	4.00	10.00
tblConstructionPhase	NumDays	4.00	2.00
tblConstructionPhase	NumDays	4.00	20.00
tblConstructionPhase	NumDays	4.00	35.00
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	10.00	45.00
tblGrading	MaterialExported	0.00	37,827.00
tblGrading	MaterialImported	0.00	15,640.00
tblLandUse	LandUseSquareFeet	45,390.00	45,392.00
tblLandUse	LandUseSquareFeet	68,090.00	68,088.00
tblLandUse	LotAcreage	1.04	0.00
tblLandUse	LotAcreage	0.05	0.00
tblOffRoadEquipment	HorsePower	158.00	425.00
tblOffRoadEquipment	HorsePower	172.00	100.00

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tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	10.00
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6,478.00
tblTripsAndVMT	HaulingTripNumber	0.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	76.00
tblTripsAndVMT	HaulingTripNumber	0.00	150.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

tblTripsAndVMT	VendorTripNumber	19.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	19.00	2.00
tblTripsAndVMT	VendorTripNumber	19.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblTripsAndVMT	WorkerTripNumber	10.00	6.00
tblTripsAndVMT	WorkerTripNumber	10.00	4.00
tblTripsAndVMT	WorkerTripNumber	3.00	4.00
tblTripsAndVMT	WorkerTripNumber	49.00	8.00
tblTripsAndVMT	WorkerTripNumber	13.00	6.00
tblTripsAndVMT	WorkerTripNumber	20.00	14.00
tblTripsAndVMT	WorkerTripNumber	49.00	15.00
tblTripsAndVMT	WorkerTripNumber	49.00	8.00
tblTripsAndVMT	WorkerTripNumber	10.00	2.00
tblVehicleTrips	ST_TR	1.99	0.00
tblVehicleTrips	ST_TR	2.54	0.00
tblVehicleTrips	SU_TR	5.00	0.00
tblVehicleTrips	SU_TR	1.24	0.00
tblVehicleTrips	WD_TR	4.96	0.00
tblVehicleTrips	WD_TR	3.37	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.1051	0.9860	1.1513	2.6300e-003	0.0230	0.0472	0.0702	5.8000e-003	0.0446	0.0504	0.0000	235.4022	235.4022	0.0419	7.5100e-003	238.6887
2025	0.4597	4.5801	4.7020	0.0120	0.0707	0.1783	0.2490	0.0188	0.1691	0.1879	0.0000	1,099.9324	1,099.9324	0.1726	0.0239	1,111.3554
2026	1.2396	0.8118	1.0190	2.0100e-003	0.0140	0.0385	0.0525	3.3100e-003	0.0362	0.0395	0.0000	176.8078	176.8078	0.0368	2.2200e-003	178.3910
Maximum	**1.2396**	**4.5801**	**4.7020**	**0.0120**	**0.0707**	**0.1783**	**0.2490**	**0.0188**	**0.1691**	**0.1879**	**0.0000**	**1,099.9324**	**1,099.9324**	**0.1726**	**0.0239**	**1,111.3554**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.1051	0.8354	1.1513	2.6300e-003	0.0230	0.0472	0.0702	5.8000e-003	0.0446	0.0504	0.0000	235.4020	235.4020	0.0419	7.5100e-003	238.6884
2025	0.4597	4.1566	4.7020	0.0120	0.0707	0.1783	0.2490	0.0188	0.1691	0.1879	0.0000	1,099.9313	1,099.9313	0.1726	0.0239	1,111.3543
2026	1.2396	0.7274	1.0190	2.0100e-003	0.0140	0.0385	0.0525	3.3100e-003	0.0362	0.0395	0.0000	176.8076	176.8076	0.0368	2.2200e-003	178.3908
Maximum	**1.2396**	**4.1566**	**4.7020**	**0.0120**	**0.0707**	**0.1783**	**0.2490**	**0.0188**	**0.1691**	**0.1879**	**0.0000**	**1,099.9313**	**1,099.9313**	**0.1726**	**0.0239**	**1,111.3543**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	10.32	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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
8	8-1-2024	10-31-2024	0.5456	0.4702
9	11-1-2024	1-31-2025	0.8051	0.6937
10	2-1-2025	4-30-2025	1.6232	1.5200
11	5-1-2025	7-31-2025	1.7756	1.6690
12	8-1-2025	10-31-2025	0.7607	0.6541
13	11-1-2025	1-31-2026	1.9829	1.8287
14	2-1-2026	4-30-2026	0.6294	0.6294
		Highest	1.9829	1.8287

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2469	1.0000e-005	1.0600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0600e-003	2.0600e-003	1.0000e-005	0.0000	2.2000e-003
Energy	3.0400e-003	0.0276	0.0232	1.7000e-004		2.1000e-003	2.1000e-003		2.1000e-003	2.1000e-003	0.0000	127.3258	127.3258	6.5200e-003	1.2700e-003	127.8677
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	11.9278	0.0000	11.9278	0.7049	0.0000	29.5505
Water						0.0000	0.0000		0.0000	0.0000	3.4768	34.9507	38.4275	0.3592	8.6900e-003	49.9982
Total	**0.2499**	**0.0276**	**0.0242**	**1.7000e-004**	**0.0000**	**2.1000e-003**	**2.1000e-003**	**0.0000**	**2.1000e-003**	**2.1000e-003**	**15.4045**	**162.2786**	**177.6831**	**1.0707**	**9.9600e-003**	**207.4185**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2469	1.0000e-005	1.0600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0600e-003	2.0600e-003	1.0000e-005	0.0000	2.2000e-003
Energy	3.0400e-003	0.0276	0.0232	1.7000e-004		2.1000e-003	2.1000e-003		2.1000e-003	2.1000e-003	0.0000	127.3258	127.3258	6.5200e-003	1.2700e-003	127.8677
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	11.9278	0.0000	11.9278	0.7049	0.0000	29.5505
Water						0.0000	0.0000		0.0000	0.0000	3.4768	34.9507	38.4275	0.3592	8.6900e-003	49.9982
Total	**0.2499**	**0.0276**	**0.0242**	**1.7000e-004**	**0.0000**	**2.1000e-003**	**2.1000e-003**	**0.0000**	**2.1000e-003**	**2.1000e-003**	**15.4045**	**162.2786**	**177.6831**	**1.0707**	**9.9600e-003**	**207.4185**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Open Trench - Grading - Pipeline Installation	Grading	9/1/2024	1/30/2026	5	370	
2	Open Trench - Grading - Crushing	Grading	1/1/2025	1/2/2025	5	2	
3	Jack and Bore - Building Con - Soldier Beam Install	Building Construction	2/25/2025	3/10/2025	5	10	

4	Jack and Bore - Grading - Shaft Excavation	Grading	3/11/2025	4/7/2025	5	20	
5	Jack and Bore - Grading - Tunnel Excavation	Grading	4/8/2025	5/26/2025	5	35	
6	Jack and Bore - Building Con - Install Carrier Pipe	Building Construction	5/27/2025	6/16/2025	5	15	
7	Jack and Bore - Building Con - Backfill Shafts	Building Construction	6/17/2025	6/23/2025	5	5	
8	Open Trench - Paving - Continual	Paving	12/1/2025	1/30/2026	5	45	
9	Open Trench - Arch Coating - Striping, Continual	Architectural Coating	1/1/2026	1/30/2026	5	22	
10	Open Trench - Grading - 24 Hour Period	Grading	1/17/2026	1/30/2026	5	10	
11	Open Trench - Paving - Final	Paving	2/1/2026	2/27/2026	5	20	
12	Open Trench - Arch Coating - Striping, Final	Architectural Coating	2/1/2026	2/27/2026	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 71,088; Non-Residential Outdoor: 23,696; Striped Parking Area: 4,085 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Open Trench - Grading - Pipeline Installation	Excavators	1	8.00	425	0.38
Open Trench - Grading - Pipeline Installation	Generator Sets	1	8.00	84	0.74
Open Trench - Grading - Pipeline Installation	Other Construction Equipment	3	8.00	100	0.42
Open Trench - Grading - Pipeline Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Open Trench - Grading - Crushing	Crushing/Proc. Equipment	1	2.00	440	0.78
Open Trench - Grading - Crushing	Graders	0	8.00	187	0.41
Open Trench - Grading - Crushing	Rubber Tired Dozers	0	8.00	247	0.40
Open Trench - Grading - Crushing	Tractors/Loaders/Backhoes	0	7.00	97	0.37

Jack and Bore - Building Con - Soldier Beam Install	Bore/Drill Rigs	1	8.00	221	0.50
Jack and Bore - Building Con - Soldier Beam Install	Other Construction Equipment	3	8.00	100	0.42
Jack and Bore - Building Con - Soldier Beam Install	Tractors/Loaders/Backhoes	1	8.00	311	0.37
Jack and Bore - Grading - Shaft Excavation	Excavators	1	8.00	425	0.38
Jack and Bore - Grading - Shaft Excavation	Generator Sets	1	8.00	84	0.74
Jack and Bore - Grading - Shaft Excavation	Other Construction Equipment	3	8.00	100	0.42
Jack and Bore - Grading - Tunnel Excavation	Air Compressors	1	10.00	327	0.48
Jack and Bore - Grading - Tunnel Excavation	Cranes	1	10.00	231	0.29
Jack and Bore - Grading - Tunnel Excavation	Generator Sets	1	10.00	1214	0.74
Jack and Bore - Grading - Tunnel Excavation	Other Construction Equipment	3	10.00	100	0.42
Jack and Bore - Grading - Tunnel Excavation	Tractors/Loaders/Backhoes	1	10.00	311	0.37
Jack and Bore - Grading - Tunnel Excavation	Welders	1	10.00	46	0.45
Jack and Bore - Building Con - Install Carrier Pipe	Air Compressors	1	10.00	270	0.48
Jack and Bore - Building Con - Install Carrier Pipe	Cement and Mortar Mixers	1	10.00	80	0.56
Jack and Bore - Building Con - Install Carrier Pipe	Cranes	1	10.00	231	0.29
Jack and Bore - Building Con - Install Carrier Pipe	Generator Sets	1	10.00	363	0.74
Jack and Bore - Building Con - Install Carrier Pipe	Other Construction Equipment	3	10.00	100	0.42
Jack and Bore - Building Con - Install Carrier Pipe	Welders	1	10.00	46	0.45
Jack and Bore - Building Con - Backfill Shafts	Cranes	1	10.00	231	0.29
Jack and Bore - Building Con - Backfill Shafts	Excavators	1	10.00	425	0.38
Jack and Bore - Building Con - Backfill Shafts	Other Construction Equipment	3	10.00	100	0.42
Open Trench - Paving - Continual	Concrete/Industrial Saws	1	6.00	81	0.73
Open Trench - Paving - Continual	Graders	1	6.00	187	0.41
Open Trench - Paving - Continual	Paving Equipment	1	6.00	132	0.36

Open Trench - Paving - Continual	Plate Compactors	3	6.00	8	0.43
Open Trench - Paving - Continual	Rollers	2	6.00	80	0.38
Open Trench - Arch Coating - Striping, Continual	Air Compressors	1	6.00	78	0.48
Open Trench - Paving - Final	Graders	1	6.00	187	0.41
Open Trench - Paving - Final	Paving Equipment	1	6.00	132	0.36
Open Trench - Paving - Final	Rollers	2	6.00	80	0.38
Open Trench - Arch Coating - Striping, Final	Air Compressors	1	6.00	78	0.48
Open Trench - Grading - Pipeline Installation	Forklifts	1	8.00	89	0.20
Open Trench - Grading - Pipeline Installation	Pumps	1	8.00	84	0.74
Open Trench - Grading - 24 Hour Period	Excavators	1	24.00	425	0.38
Open Trench - Grading - 24 Hour Period	Generator Sets	1	24.00	84	0.74
Open Trench - Grading - 24 Hour Period	Tractors/Loaders/Backhoes	1	24.00	97	0.37
Open Trench - Grading - 24 Hour Period	Welders	1	24.00	46	0.45
Open Trench - Grading - 24 Hour Period	Other Construction Equipment	6	24.00	100	0.42
Open Trench - Grading - 24 Hour Period	Concrete/Industrial Saws	1	24.00	81	0.73
Open Trench - Grading - 24 Hour Period	Forklifts	1	24.00	89	0.20
Open Trench - Grading - 24 Hour Period	Pumps	1	24.00	84	0.74
Open Trench - Grading - Pipeline Installation	Concrete/Industrial Saws	1	8.00	81	0.73

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Open Trench - Grading - Pipeline Inst	6	16.00	2.00	6,478.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Grading - Crushing	1	4.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Building Con - Soldier	5	8.00	2.00	30.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Grading - Shaft Excav	5	6.00	2.00	76.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Jack and Bore - Grading - Tunnel Exca	8	14.00	2.00	150.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Building Con - Install	8	15.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Building Con - Backfill	5	8.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Paving - Continual	8	20.00	6.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Arch Coating - Striping_Co	1	2.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Grading - 24 Hour Peri	0	48.00	6.00	0.00	10.80	7.30				
Open Trench - Paving - Final	4	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Arch Coating - Striping_Fin	1	4.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Open Trench - Grading - Pipeline Installation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7600e-003	0.0000	3.7600e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1016	0.8786	1.1072	2.1200e-003		0.0463	0.0463		0.0438	0.0438	0.0000	184.5121	184.5121	0.0394	0.0000	185.4970
Total	**0.1016**	**0.8786**	**1.1072**	**2.1200e-003**	**3.7600e-003**	**0.0463**	**0.0501**	**5.7000e-004**	**0.0438**	**0.0443**	**0.0000**	**184.5121**	**184.5121**	**0.0394**	**0.0000**	**185.4970**

3.2 Open Trench - Grading - Pipeline Installation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6600e-003	0.1025	0.0279	4.5000e-004	0.0131	8.5000e-004	0.0139	3.5800e-003	8.1000e-004	4.4000e-003	0.0000	44.9029	44.9029	2.3700e-003	7.1500e-003	47.0918
Vendor	1.0000e-004	3.8400e-003	1.3300e-003	2.0000e-005	5.8000e-004	2.0000e-005	6.0000e-004	1.7000e-004	2.0000e-005	1.9000e-004	0.0000	1.7153	1.7153	5.0000e-005	2.5000e-004	1.7907
Worker	1.7700e-003	1.1700e-003	0.0148	5.0000e-005	5.5800e-003	3.0000e-005	5.6100e-003	1.4800e-003	3.0000e-005	1.5100e-003	0.0000	4.2719	4.2719	1.2000e-004	1.2000e-004	4.3092
Total	**3.5300e-003**	**0.1075**	**0.0440**	**5.2000e-004**	**0.0192**	**9.0000e-004**	**0.0201**	**5.2300e-003**	**8.6000e-004**	**6.1000e-003**	**0.0000**	**50.8901**	**50.8901**	**2.5400e-003**	**7.5200e-003**	**53.1917**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7600e-003	0.0000	3.7600e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1016	0.7280	1.1072	2.1200e-003		0.0463	0.0463		0.0438	0.0438	0.0000	184.5119	184.5119	0.0394	0.0000	185.4968
Total	**0.1016**	**0.7280**	**1.1072**	**2.1200e-003**	**3.7600e-003**	**0.0463**	**0.0501**	**5.7000e-004**	**0.0438**	**0.0443**	**0.0000**	**184.5119**	**184.5119**	**0.0394**	**0.0000**	**185.4968**

3.2 Open Trench - Grading - Pipeline Installation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6600e-003	0.1025	0.0279	4.5000e-004	0.0131	8.5000e-004	0.0139	3.5800e-003	8.1000e-004	4.4000e-003	0.0000	44.9029	44.9029	2.3700e-003	7.1500e-003	47.0918
Vendor	1.0000e-004	3.8400e-003	1.3300e-003	2.0000e-005	5.8000e-004	2.0000e-005	6.0000e-004	1.7000e-004	2.0000e-005	1.9000e-004	0.0000	1.7153	1.7153	5.0000e-005	2.5000e-004	1.7907
Worker	1.7700e-003	1.1700e-003	0.0148	5.0000e-005	5.5800e-003	3.0000e-005	5.6100e-003	1.4800e-003	3.0000e-005	1.5100e-003	0.0000	4.2719	4.2719	1.2000e-004	1.2000e-004	4.3092
Total	**3.5300e-003**	**0.1075**	**0.0440**	**5.2000e-004**	**0.0192**	**9.0000e-004**	**0.0201**	**5.2300e-003**	**8.6000e-004**	**6.1000e-003**	**0.0000**	**50.8901**	**50.8901**	**2.5400e-003**	**7.5200e-003**	**53.1917**

3.2 Open Trench - Grading - Pipeline Installation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7600e-003	0.0000	3.7600e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2810	2.4196	3.3069	6.3600e-003		0.1189	0.1189		0.1124	0.1124	0.0000	553.9304	553.9304	0.1176	0.0000	556.8691
Total	**0.2810**	**2.4196**	**3.3069**	**6.3600e-003**	**3.7600e-003**	**0.1189**	**0.1227**	**5.7000e-004**	**0.1124**	**0.1130**	**0.0000**	**553.9304**	**553.9304**	**0.1176**	**0.0000**	**556.8691**

3.2 Open Trench - Grading - Pipeline Installation - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.9200e-003	0.3032	0.0848	1.3100e-003	0.0391	2.5400e-003	0.0417	0.0108	2.4300e-003	0.0132	0.0000	131.9776	131.9776	7.3400e-003	0.0210	138.4253
Vendor	2.9000e-004	0.0114	3.9300e-003	5.0000e-005	1.7300e-003	7.0000e-005	1.8000e-003	5.0000e-004	7.0000e-005	5.7000e-004	0.0000	5.0477	5.0477	1.7000e-004	7.3000e-004	5.2696
Worker	5.0000e-003	3.1800e-003	0.0417	1.4000e-004	0.0167	8.0000e-005	0.0168	4.4500e-003	8.0000e-005	4.5300e-003	0.0000	12.3798	12.3798	3.3000e-004	3.2000e-004	12.4845
Total	**0.0102**	**0.3178**	**0.1304**	**1.5000e-003**	**0.0576**	**2.6900e-003**	**0.0603**	**0.0157**	**2.5800e-003**	**0.0183**	**0.0000**	**149.4050**	**149.4050**	**7.8400e-003**	**0.0221**	**156.1794**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7600e-003	0.0000	3.7600e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2810	1.9962	3.3069	6.3600e-003		0.1189	0.1189		0.1124	0.1124	0.0000	553.9298	553.9298	0.1176	0.0000	556.8684
Total	**0.2810**	**1.9962**	**3.3069**	**6.3600e-003**	**3.7600e-003**	**0.1189**	**0.1227**	**5.7000e-004**	**0.1124**	**0.1130**	**0.0000**	**553.9298**	**553.9298**	**0.1176**	**0.0000**	**556.8684**

3.2 Open Trench - Grading - Pipeline Installation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.9200e-003	0.3032	0.0848	1.3100e-003	0.0391	2.5400e-003	0.0417	0.0108	2.4300e-003	0.0132	0.0000	131.9776	131.9776	7.3400e-003	0.0210	138.4253
Vendor	2.9000e-004	0.0114	3.9300e-003	5.0000e-005	1.7300e-003	7.0000e-005	1.8000e-003	5.0000e-004	7.0000e-005	5.7000e-004	0.0000	5.0477	5.0477	1.7000e-004	7.3000e-004	5.2696
Worker	5.0000e-003	3.1800e-003	0.0417	1.4000e-004	0.0167	8.0000e-005	0.0168	4.4500e-003	8.0000e-005	4.5300e-003	0.0000	12.3798	12.3798	3.3000e-004	3.2000e-004	12.4845
Total	**0.0102**	**0.3178**	**0.1304**	**1.5000e-003**	**0.0576**	**2.6900e-003**	**0.0603**	**0.0157**	**2.5800e-003**	**0.0183**	**0.0000**	**149.4050**	**149.4050**	**7.8400e-003**	**0.0221**	**156.1794**

3.2 Open Trench - Grading - Pipeline Installation - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7600e-003	0.0000	3.7600e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.2040	0.2788	5.4000e-004		0.0100	0.0100		9.4800e-003	9.4800e-003	0.0000	46.6915	46.6915	9.9100e-003	0.0000	46.9392
Total	**0.0237**	**0.2040**	**0.2788**	**5.4000e-004**	**3.7600e-003**	**0.0100**	**0.0138**	**5.7000e-004**	**9.4800e-003**	**0.0101**	**0.0000**	**46.6915**	**46.6915**	**9.9100e-003**	**0.0000**	**46.9392**

3.2 Open Trench - Grading - Pipeline Installation - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0252	7.2500e-003	1.1000e-004	3.3000e-003	2.1000e-004	3.5100e-003	9.1000e-004	2.0000e-004	1.1100e-003	0.0000	10.8924	10.8924	6.4000e-004	1.7400e-003	11.4257
Vendor	2.0000e-005	9.5000e-004	3.3000e-004	0.0000	1.5000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4174	0.4174	1.0000e-005	6.0000e-005	0.4357
Worker	4.0000e-004	2.4000e-004	3.3100e-003	1.0000e-005	1.4100e-003	1.0000e-005	1.4200e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	1.0109	1.0109	3.0000e-005	3.0000e-005	1.0192
Total	**8.3000e-004**	**0.0264**	**0.0109**	**1.2000e-004**	**4.8600e-003**	**2.3000e-004**	**5.0800e-003**	**1.3300e-003**	**2.2000e-004**	**1.5400e-003**	**0.0000**	**12.3206**	**12.3206**	**6.8000e-004**	**1.8300e-003**	**12.8806**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7600e-003	0.0000	3.7600e-003	5.7000e-004	0.0000	5.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.1683	0.2788	5.4000e-004		0.0100	0.0100		9.4800e-003	9.4800e-003	0.0000	46.6914	46.6914	9.9100e-003	0.0000	46.9391
Total	**0.0237**	**0.1683**	**0.2788**	**5.4000e-004**	**3.7600e-003**	**0.0100**	**0.0138**	**5.7000e-004**	**9.4800e-003**	**0.0101**	**0.0000**	**46.6914**	**46.6914**	**9.9100e-003**	**0.0000**	**46.9391**

3.2 Open Trench - Grading - Pipeline Installation - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0252	7.2500e-003	1.1000e-004	3.3000e-003	2.1000e-004	3.5100e-003	9.1000e-004	2.0000e-004	1.1100e-003	0.0000	10.8924	10.8924	6.4000e-004	1.7400e-003	11.4257
Vendor	2.0000e-005	9.5000e-004	3.3000e-004	0.0000	1.5000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4174	0.4174	1.0000e-005	6.0000e-005	0.4357
Worker	4.0000e-004	2.4000e-004	3.3100e-003	1.0000e-005	1.4100e-003	1.0000e-005	1.4200e-003	3.8000e-004	1.0000e-005	3.8000e-004	0.0000	1.0109	1.0109	3.0000e-005	3.0000e-005	1.0192
Total	**8.3000e-004**	**0.0264**	**0.0109**	**1.2000e-004**	**4.8600e-003**	**2.3000e-004**	**5.0800e-003**	**1.3300e-003**	**2.2000e-004**	**1.5400e-003**	**0.0000**	**12.3206**	**12.3206**	**6.8000e-004**	**1.8300e-003**	**12.8806**

3.3 Open Trench - Grading - Crushing - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3000e-004	1.4200e-003	1.6100e-003	1.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7802	0.7802	3.0000e-005	0.0000	0.7809
Total	**3.3000e-004**	**1.4200e-003**	**1.6100e-003**	**1.0000e-005**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.7802**	**0.7802**	**3.0000e-005**	**0.0000**	**0.7809**

3.3 Open Trench - Grading - Crushing - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	9.0000e-005	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0387	0.0387	0.0000	1.0000e-005	0.0404
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0237	0.0237	0.0000	0.0000	0.0239
Total	**1.0000e-005**	**1.0000e-004**	**1.1000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0624**	**0.0624**	**0.0000**	**1.0000e-005**	**0.0643**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3000e-004	1.4200e-003	1.6100e-003	1.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.7802	0.7802	3.0000e-005	0.0000	0.7809
Total	**3.3000e-004**	**1.4200e-003**	**1.6100e-003**	**1.0000e-005**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.7802**	**0.7802**	**3.0000e-005**	**0.0000**	**0.7809**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Open Trench - Grading - Crushing - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr									
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	9.0000e-005	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005
Total	**1.0000e-005**	**1.0000e-004**	**1.1000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**

	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0387	0.0387	0.0000	1.0000e-005	0.0404
Worker	0.0000	0.0237	0.0237	0.0000	0.0000	0.0239
Total	**0.0000**	**0.0624**	**0.0624**	**0.0000**	**1.0000e-005**	**0.0643**

3.4 Jack and Bore - Building Con - Soldier Beam Install - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category	tons/yr									
Off-Road	6.3000e-003	0.0561	0.0625	1.5000e-004		2.9600e-003	2.9600e-003		2.7200e-003	2.7200e-003
Total	**6.3000e-003**	**0.0561**	**0.0625**	**1.5000e-004**		**2.9600e-003**	**2.9600e-003**		**2.7200e-003**	**2.7200e-003**

	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	MT/yr					
Off-Road	0.0000	13.2609	13.2609	4.2900e-003	0.0000	13.3681
Total	**0.0000**	**13.2609**	**13.2609**	**4.2900e-003**	**0.0000**	**13.3681**

3.4 Jack and Bore - Building Con - Soldier Beam Install - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	1.9900e-003	5.6000e-004	1.0000e-005	2.6000e-004	2.0000e-005	2.7000e-004	7.0000e-005	2.0000e-005	9.0000e-005	0.0000	0.8665	0.8665	5.0000e-005	1.4000e-004	0.9088
Vendor	1.0000e-005	4.4000e-004	1.5000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1934	0.1934	1.0000e-005	3.0000e-005	0.2019
Worker	1.0000e-004	6.0000e-005	8.0000e-004	0.0000	3.2000e-004	0.0000	3.2000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2372	0.2372	1.0000e-005	1.0000e-005	0.2392
Total	**1.4000e-004**	**2.4900e-003**	**1.5100e-003**	**1.0000e-005**	**6.5000e-004**	**2.0000e-005**	**6.6000e-004**	**1.8000e-004**	**2.0000e-005**	**2.0000e-004**	**0.0000**	**1.2970**	**1.2970**	**7.0000e-005**	**1.8000e-004**	**1.3499**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.3000e-003	0.0561	0.0625	1.5000e-004		2.9600e-003	2.9600e-003		2.7200e-003	2.7200e-003	0.0000	13.2609	13.2609	4.2900e-003	0.0000	13.3681
Total	**6.3000e-003**	**0.0561**	**0.0625**	**1.5000e-004**		**2.9600e-003**	**2.9600e-003**		**2.7200e-003**	**2.7200e-003**	**0.0000**	**13.2609**	**13.2609**	**4.2900e-003**	**0.0000**	**13.3681**

3.4 Jack and Bore - Building Con - Soldier Beam Install - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-005	1.9900e-003	5.6000e-004	1.0000e-005	2.6000e-004	2.0000e-005	2.7000e-004	7.0000e-005	2.0000e-005	9.0000e-005	0.0000	0.8665	0.8665	5.0000e-005	1.4000e-004	0.9088
Vendor	1.0000e-005	4.4000e-004	1.5000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.1934	0.1934	1.0000e-005	3.0000e-005	0.2019
Worker	1.0000e-004	6.0000e-005	8.0000e-004	0.0000	3.2000e-004	0.0000	3.2000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2372	0.2372	1.0000e-005	1.0000e-005	0.2392
Total	**1.4000e-004**	**2.4900e-003**	**1.5100e-003**	**1.0000e-005**	**6.5000e-004**	**2.0000e-005**	**6.6000e-004**	**1.8000e-004**	**2.0000e-005**	**2.0000e-004**	**0.0000**	**1.2970**	**1.2970**	**7.0000e-005**	**1.8000e-004**	**1.3499**

3.5 Jack and Bore - Grading - Shaft Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0135	0.1169	0.1462	3.1000e-004		6.2000e-003	6.2000e-003		5.7800e-003	5.7800e-003	0.0000	27.3350	27.3350	7.2200e-003	0.0000	27.5156
Total	**0.0135**	**0.1169**	**0.1462**	**3.1000e-004**	**0.0000**	**6.2000e-003**	**6.2000e-003**	**0.0000**	**5.7800e-003**	**5.7800e-003**	**0.0000**	**27.3350**	**27.3350**	**7.2200e-003**	**0.0000**	**27.5156**

3.5 Jack and Bore - Grading - Shaft Excavation - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	5.0400e-003	1.4100e-003	2.0000e-005	6.5000e-004	4.0000e-005	6.9000e-004	1.8000e-004	4.0000e-005	2.2000e-004	0.0000	2.1950	2.1950	1.2000e-004	3.5000e-004	2.3022
Vendor	2.0000e-005	8.7000e-004	3.0000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3868	0.3868	1.0000e-005	6.0000e-005	0.4038
Worker	1.4000e-004	9.0000e-005	1.2000e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3557	0.3557	1.0000e-005	1.0000e-005	0.3588
Total	**2.4000e-004**	**6.0000e-003**	**2.9100e-003**	**2.0000e-005**	**1.2600e-003**	**5.0000e-005**	**1.3100e-003**	**3.5000e-004**	**5.0000e-005**	**3.9000e-004**	**0.0000**	**2.9375**	**2.9375**	**1.4000e-004**	**4.2000e-004**	**3.0648**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0135	0.1169	0.1462	3.1000e-004		6.2000e-003	6.2000e-003		5.7800e-003	5.7800e-003	0.0000	27.3350	27.3350	7.2200e-003	0.0000	27.5155
Total	**0.0135**	**0.1169**	**0.1462**	**3.1000e-004**	**0.0000**	**6.2000e-003**	**6.2000e-003**	**0.0000**	**5.7800e-003**	**5.7800e-003**	**0.0000**	**27.3350**	**27.3350**	**7.2200e-003**	**0.0000**	**27.5155**

3.5 Jack and Bore - Grading - Shaft Excavation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	5.0400e-003	1.4100e-003	2.0000e-005	6.5000e-004	4.0000e-005	6.9000e-004	1.8000e-004	4.0000e-005	2.2000e-004	0.0000	2.1950	2.1950	1.2000e-004	3.5000e-004	2.3022
Vendor	2.0000e-005	8.7000e-004	3.0000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.3868	0.3868	1.0000e-005	6.0000e-005	0.4038
Worker	1.4000e-004	9.0000e-005	1.2000e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3557	0.3557	1.0000e-005	1.0000e-005	0.3588
Total	**2.4000e-004**	**6.0000e-003**	**2.9100e-003**	**2.0000e-005**	**1.2600e-003**	**5.0000e-005**	**1.3100e-003**	**3.5000e-004**	**5.0000e-005**	**3.9000e-004**	**0.0000**	**2.9375**	**2.9375**	**1.4000e-004**	**4.2000e-004**	**3.0648**

3.6 Jack and Bore - Grading - Tunnel Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1078	1.3384	0.7161	2.6700e-003		0.0337	0.0337		0.0325	0.0325	0.0000	264.9290	264.9290	0.0226	0.0000	265.4943
Total	**0.1078**	**1.3384**	**0.7161**	**2.6700e-003**	**0.0000**	**0.0337**	**0.0337**	**0.0000**	**0.0325**	**0.0325**	**0.0000**	**264.9290**	**264.9290**	**0.0226**	**0.0000**	**265.4943**

3.6 Jack and Bore - Grading - Tunnel Excavation - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	9.9500e-003	2.7800e-003	4.0000e-005	1.2800e-003	8.0000e-005	1.3700e-003	3.5000e-004	8.0000e-005	4.3000e-004	0.0000	4.3322	4.3322	2.4000e-004	6.9000e-004	4.5439
Vendor	4.0000e-005	1.5300e-003	5.3000e-004	1.0000e-005	2.3000e-004	1.0000e-005	2.4000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	0.6769	0.6769	2.0000e-005	1.0000e-004	0.7067
Worker	5.9000e-004	3.7000e-004	4.8900e-003	2.0000e-005	1.9600e-003	1.0000e-005	1.9700e-003	5.2000e-004	1.0000e-005	5.3000e-004	0.0000	1.4526	1.4526	4.0000e-005	4.0000e-005	1.4649
Total	**7.9000e-004**	**0.0119**	**8.2000e-003**	**7.0000e-005**	**3.4700e-003**	**1.0000e-004**	**3.5800e-003**	**9.4000e-004**	**1.0000e-004**	**1.0400e-003**	**0.0000**	**6.4617**	**6.4617**	**3.0000e-004**	**8.3000e-004**	**6.7154**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1078	1.3384	0.7161	2.6700e-003		0.0337	0.0337		0.0325	0.0325	0.0000	264.9287	264.9287	0.0226	0.0000	265.4940
Total	**0.1078**	**1.3384**	**0.7161**	**2.6700e-003**	**0.0000**	**0.0337**	**0.0337**	**0.0000**	**0.0325**	**0.0325**	**0.0000**	**264.9287**	**264.9287**	**0.0226**	**0.0000**	**265.4940**

3.6 Jack and Bore - Grading - Tunnel Excavation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.6000e-004	9.9500e-003	2.7800e-003	4.0000e-005	1.2800e-003	8.0000e-005	1.3700e-003	3.5000e-004	8.0000e-005	4.3000e-004	0.0000	4.3322	4.3322	2.4000e-004	6.9000e-004	4.5439
Vendor	4.0000e-005	1.5300e-003	5.3000e-004	1.0000e-005	2.3000e-004	1.0000e-005	2.4000e-004	7.0000e-005	1.0000e-005	8.0000e-005	0.0000	0.6769	0.6769	2.0000e-005	1.0000e-004	0.7067
Worker	5.9000e-004	3.7000e-004	4.8900e-003	2.0000e-005	1.9600e-003	1.0000e-005	1.9700e-003	5.2000e-004	1.0000e-005	5.3000e-004	0.0000	1.4526	1.4526	4.0000e-005	4.0000e-005	1.4649
Total	**7.9000e-004**	**0.0119**	**8.2000e-003**	**7.0000e-005**	**3.4700e-003**	**1.0000e-004**	**3.5800e-003**	**9.4000e-004**	**1.0000e-004**	**1.0400e-003**	**0.0000**	**6.4617**	**6.4617**	**3.0000e-004**	**8.3000e-004**	**6.7154**

3.7 Jack and Bore - Building Con - Install Carrier Pipe - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0232	0.1735	0.1725	5.1000e-004		7.7600e-003	7.7600e-003		7.3200e-003	7.3200e-003	0.0000	49.3985	49.3985	5.4900e-003	0.0000	49.5357
Total	**0.0232**	**0.1735**	**0.1725**	**5.1000e-004**		**7.7600e-003**	**7.7600e-003**		**7.3200e-003**	**7.3200e-003**	**0.0000**	**49.3985**	**49.3985**	**5.4900e-003**	**0.0000**	**49.5357**

3.7 Jack and Bore - Building Con - Install Carrier Pipe - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	6.5000e-004	2.3000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2901	0.2901	1.0000e-005	4.0000e-005	0.3029
Worker	2.7000e-004	1.7000e-004	2.2400e-003	1.0000e-005	9.0000e-004	0.0000	9.1000e-004	2.4000e-004	0.0000	2.4000e-004	0.0000	0.6670	0.6670	2.0000e-005	2.0000e-005	0.6727
Total	**2.9000e-004**	**8.2000e-004**	**2.4700e-003**	**1.0000e-005**	**1.0000e-003**	**0.0000**	**1.0100e-003**	**2.7000e-004**	**0.0000**	**2.7000e-004**	**0.0000**	**0.9571**	**0.9571**	**3.0000e-005**	**6.0000e-005**	**0.9755**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0232	0.1735	0.1725	5.1000e-004		7.7600e-003	7.7600e-003		7.3200e-003	7.3200e-003	0.0000	49.3984	49.3984	5.4900e-003	0.0000	49.5356
Total	**0.0232**	**0.1735**	**0.1725**	**5.1000e-004**		**7.7600e-003**	**7.7600e-003**		**7.3200e-003**	**7.3200e-003**	**0.0000**	**49.3984**	**49.3984**	**5.4900e-003**	**0.0000**	**49.5356**

3.7 Jack and Bore - Building Con - Install Carrier Pipe - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	6.5000e-004	2.3000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.2901	0.2901	1.0000e-005	4.0000e-005	0.3029
Worker	2.7000e-004	1.7000e-004	2.2400e-003	1.0000e-005	9.0000e-004	0.0000	9.1000e-004	2.4000e-004	0.0000	2.4000e-004	0.0000	0.6670	0.6670	2.0000e-005	2.0000e-005	0.6727
Total	**2.9000e-004**	**8.2000e-004**	**2.4700e-003**	**1.0000e-005**	**1.0000e-003**	**0.0000**	**1.0100e-003**	**2.7000e-004**	**0.0000**	**2.7000e-004**	**0.0000**	**0.9571**	**0.9571**	**3.0000e-005**	**6.0000e-005**	**0.9755**

3.8 Jack and Bore - Building Con - Backfill Shafts - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.3700e-003	0.0390	0.0397	1.0000e-004		2.0600e-003	2.0600e-003		1.8900e-003	1.8900e-003	0.0000	8.3602	8.3602	2.7000e-003	0.0000	8.4278
Total	**4.3700e-003**	**0.0390**	**0.0397**	**1.0000e-004**		**2.0600e-003**	**2.0600e-003**		**1.8900e-003**	**1.8900e-003**	**0.0000**	**8.3602**	**8.3602**	**2.7000e-003**	**0.0000**	**8.4278**

3.8 Jack and Bore - Building Con - Backfill Shafts - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.0900e-003	3.8000e-004	0.0000	2.8000e-004	1.0000e-005	2.9000e-004	8.0000e-005	1.0000e-005	8.0000e-005	0.0000	0.4835	0.4835	2.0000e-005	7.0000e-005	0.5048
Worker	5.0000e-005	3.0000e-005	4.0000e-004	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.1186	0.1186	0.0000	0.0000	0.1196
Total	**8.0000e-005**	**1.1200e-003**	**7.8000e-004**	**0.0000**	**5.8000e-004**	**1.0000e-005**	**5.9000e-004**	**1.6000e-004**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**0.6021**	**0.6021**	**2.0000e-005**	**7.0000e-005**	**0.6243**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.3700e-003	0.0390	0.0397	1.0000e-004		2.0600e-003	2.0600e-003		1.8900e-003	1.8900e-003	0.0000	8.3602	8.3602	2.7000e-003	0.0000	8.4278
Total	**4.3700e-003**	**0.0390**	**0.0397**	**1.0000e-004**		**2.0600e-003**	**2.0600e-003**		**1.8900e-003**	**1.8900e-003**	**0.0000**	**8.3602**	**8.3602**	**2.7000e-003**	**0.0000**	**8.4278**

3.8 Jack and Bore - Building Con - Backfill Shafts - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.0900e-003	3.8000e-004	0.0000	2.8000e-004	1.0000e-005	2.9000e-004	8.0000e-005	1.0000e-005	8.0000e-005	0.0000	0.4835	0.4835	2.0000e-005	7.0000e-005	0.5048
Worker	5.0000e-005	3.0000e-005	4.0000e-004	0.0000	3.0000e-004	0.0000	3.0000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.1186	0.1186	0.0000	0.0000	0.1196
Total	**8.0000e-005**	**1.1200e-003**	**7.8000e-004**	**0.0000**	**5.8000e-004**	**1.0000e-005**	**5.9000e-004**	**1.6000e-004**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**0.6021**	**0.6021**	**2.0000e-005**	**7.0000e-005**	**0.6243**

3.9 Open Trench - Paving - Continual - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.9000e-003	0.0917	0.1045	2.0000e-004		3.8000e-003	3.8000e-003		3.5800e-003	3.5800e-003	0.0000	17.5173	17.5173	4.1900e-003	0.0000	17.6221
Paving	1.0400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.0917**	**0.1045**	**2.0000e-004**		**3.8000e-003**	**3.8000e-003**		**3.5800e-003**	**3.5800e-003**	**0.0000**	**17.5173**	**17.5173**	**4.1900e-003**	**0.0000**	**17.6221**

3.9 Open Trench - Paving - Continual - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	3.0100e-003	1.0400e-003	1.0000e-005	4.6000e-004	2.0000e-005	4.8000e-004	1.3000e-004	2.0000e-005	1.5000e-004	0.0000	1.3344	1.3344	4.0000e-005	1.9000e-004	1.3931
Worker	5.5000e-004	3.5000e-004	4.5900e-003	1.0000e-005	1.8400e-003	1.0000e-005	1.8500e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.3637	1.3637	4.0000e-005	4.0000e-005	1.3752
Total	**6.3000e-004**	**3.3600e-003**	**5.6300e-003**	**2.0000e-005**	**2.3000e-003**	**3.0000e-005**	**2.3300e-003**	**6.2000e-004**	**3.0000e-005**	**6.5000e-004**	**0.0000**	**2.6981**	**2.6981**	**8.0000e-005**	**2.3000e-004**	**2.7683**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.9000e-003	0.0917	0.1045	2.0000e-004		3.8000e-003	3.8000e-003		3.5800e-003	3.5800e-003	0.0000	17.5173	17.5173	4.1900e-003	0.0000	17.6221
Paving	1.0400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.0917**	**0.1045**	**2.0000e-004**		**3.8000e-003**	**3.8000e-003**		**3.5800e-003**	**3.5800e-003**	**0.0000**	**17.5173**	**17.5173**	**4.1900e-003**	**0.0000**	**17.6221**

3.9 Open Trench - Paving - Continual - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	3.0100e-003	1.0400e-003	1.0000e-005	4.6000e-004	2.0000e-005	4.8000e-004	1.3000e-004	2.0000e-005	1.5000e-004	0.0000	1.3344	1.3344	4.0000e-005	1.9000e-004	1.3931
Worker	5.5000e-004	3.5000e-004	4.5900e-003	1.0000e-005	1.8400e-003	1.0000e-005	1.8500e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.3637	1.3637	4.0000e-005	4.0000e-005	1.3752
Total	**6.3000e-004**	**3.3600e-003**	**5.6300e-003**	**2.0000e-005**	**2.3000e-003**	**3.0000e-005**	**2.3300e-003**	**6.2000e-004**	**3.0000e-005**	**6.5000e-004**	**0.0000**	**2.6981**	**2.6981**	**8.0000e-005**	**2.3000e-004**	**2.7683**

3.9 Open Trench - Paving - Continual - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.4600e-003	0.0877	0.0999	2.0000e-004		3.6400e-003	3.6400e-003		3.4300e-003	3.4300e-003	0.0000	16.7557	16.7557	4.0100e-003	0.0000	16.8559
Paving	1.0000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0105**	**0.0877**	**0.0999**	**2.0000e-004**		**3.6400e-003**	**3.6400e-003**		**3.4300e-003**	**3.4300e-003**	**0.0000**	**16.7557**	**16.7557**	**4.0100e-003**	**0.0000**	**16.8559**

3.9 Open Trench - Paving - Continual - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-005	2.8500e-003	9.8000e-004	1.0000e-005	4.4000e-004	2.0000e-005	4.6000e-004	1.3000e-004	2.0000e-005	1.4000e-004	0.0000	1.2521	1.2521	4.0000e-005	1.8000e-004	1.3071
Worker	5.0000e-004	3.1000e-004	4.1400e-003	1.0000e-005	1.7600e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.2636	1.2636	3.0000e-005	3.0000e-005	1.2740
Total	**5.7000e-004**	**3.1600e-003**	**5.1200e-003**	**2.0000e-005**	**2.2000e-003**	**3.0000e-005**	**2.2300e-003**	**6.0000e-004**	**3.0000e-005**	**6.2000e-004**	**0.0000**	**2.5157**	**2.5157**	**7.0000e-005**	**2.1000e-004**	**2.5812**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.4600e-003	0.0877	0.0999	2.0000e-004		3.6400e-003	3.6400e-003		3.4300e-003	3.4300e-003	0.0000	16.7557	16.7557	4.0100e-003	0.0000	16.8559
Paving	1.0000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0105**	**0.0877**	**0.0999**	**2.0000e-004**		**3.6400e-003**	**3.6400e-003**		**3.4300e-003**	**3.4300e-003**	**0.0000**	**16.7557**	**16.7557**	**4.0100e-003**	**0.0000**	**16.8559**

3.9 Open Trench - Paving - Continual - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-005	2.8500e-003	9.8000e-004	1.0000e-005	4.4000e-004	2.0000e-005	4.6000e-004	1.3000e-004	2.0000e-005	1.4000e-004	0.0000	1.2521	1.2521	4.0000e-005	1.8000e-004	1.3071
Worker	5.0000e-004	3.1000e-004	4.1400e-003	1.0000e-005	1.7600e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.2636	1.2636	3.0000e-005	3.0000e-005	1.2740
Total	**5.7000e-004**	**3.1600e-003**	**5.1200e-003**	**2.0000e-005**	**2.2000e-003**	**3.0000e-005**	**2.2300e-003**	**6.0000e-004**	**3.0000e-005**	**6.2000e-004**	**0.0000**	**2.5157**	**2.5157**	**7.0000e-005**	**2.1000e-004**	**2.5812**

3.10 Open Trench - Arch Coating - Striping, Continual - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5728					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8800e-003	0.0126	0.0199	3.0000e-005		5.7000e-004	5.7000e-004		5.7000e-004	5.7000e-004	0.0000	2.8086	2.8086	1.5000e-004	0.0000	2.8124
Total	**0.5747**	**0.0126**	**0.0199**	**3.0000e-005**		**5.7000e-004**	**5.7000e-004**		**5.7000e-004**	**5.7000e-004**	**0.0000**	**2.8086**	**2.8086**	**1.5000e-004**	**0.0000**	**2.8124**

3.10 Open Trench - Arch Coating - Striping, Continual - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	9.5000e-004	3.3000e-004	0.0000	1.5000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4174	0.4174	1.0000e-005	6.0000e-005	0.4357
Worker	5.0000e-005	3.0000e-005	4.1000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1264	0.1264	0.0000	0.0000	0.1274
Total	**7.0000e-005**	**9.8000e-004**	**7.4000e-004**	**0.0000**	**3.3000e-004**	**1.0000e-005**	**3.3000e-004**	**9.0000e-005**	**1.0000e-005**	**1.0000e-004**	**0.0000**	**0.5437**	**0.5437**	**1.0000e-005**	**6.0000e-005**	**0.5631**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5728					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8800e-003	0.0126	0.0199	3.0000e-005		5.7000e-004	5.7000e-004		5.7000e-004	5.7000e-004	0.0000	2.8086	2.8086	1.5000e-004	0.0000	2.8124
Total	**0.5747**	**0.0126**	**0.0199**	**3.0000e-005**		**5.7000e-004**	**5.7000e-004**		**5.7000e-004**	**5.7000e-004**	**0.0000**	**2.8086**	**2.8086**	**1.5000e-004**	**0.0000**	**2.8124**

3.10 Open Trench - Arch Coating - Striping, Continual - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	9.5000e-004	3.3000e-004	0.0000	1.5000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4174	0.4174	1.0000e-005	6.0000e-005	0.4357
Worker	5.0000e-005	3.0000e-005	4.1000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1264	0.1264	0.0000	0.0000	0.1274
Total	**7.0000e-005**	**9.8000e-004**	**7.4000e-004**	**0.0000**	**3.3000e-004**	**1.0000e-005**	**3.3000e-004**	**9.0000e-005**	**1.0000e-005**	**1.0000e-004**	**0.0000**	**0.5437**	**0.5437**	**1.0000e-005**	**6.0000e-005**	**0.5631**

3.11 Open Trench - Grading - 24 Hour Period - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0470	0.4067	0.5244	9.3000e-004		0.0211	0.0211		0.0198	0.0198	0.0000	80.7894	80.7894	0.0184	0.0000	81.2495
Total	**0.0470**	**0.4067**	**0.5244**	**9.3000e-004**	**0.0000**	**0.0211**	**0.0211**	**0.0000**	**0.0198**	**0.0198**	**0.0000**	**80.7894**	**80.7894**	**0.0184**	**0.0000**	**81.2495**

3.11 Open Trench - Grading - 24 Hour Period - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					1.4000e-004	0.0000	1.4000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					1.6700e-003	0.0000	1.6700e-003	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**1.8100e-003**	**0.0000**	**1.8100e-003**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0470	0.3580	0.5244	9.3000e-004		0.0211	0.0211		0.0198	0.0198	0.0000	80.7893	80.7893	0.0184	0.0000	81.2494
Total	**0.0470**	**0.3580**	**0.5244**	**9.3000e-004**	**0.0000**	**0.0211**	**0.0211**	**0.0000**	**0.0198**	**0.0198**	**0.0000**	**80.7893**	**80.7893**	**0.0184**	**0.0000**	**81.2494**

3.11 Open Trench - Grading - 24 Hour Period - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					1.4000e-004	0.0000	1.4000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					1.6700e-003	0.0000	1.6700e-003	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**1.8100e-003**	**0.0000**	**1.8100e-003**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.12 Open Trench - Paving - Final - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.4900e-003	0.0571	0.0588	1.2000e-004		2.3900e-003	2.3900e-003		2.2000e-003	2.2000e-003	0.0000	10.4962	10.4962	3.3900e-003	0.0000	10.5811
Paving	2.0400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.5300e-003**	**0.0571**	**0.0588**	**1.2000e-004**		**2.3900e-003**	**2.3900e-003**		**2.2000e-003**	**2.2000e-003**	**0.0000**	**10.4962**	**10.4962**	**3.3900e-003**	**0.0000**	**10.5811**

3.12 Open Trench - Paving - Final - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	8.6000e-004	3.0000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.3794	0.3794	1.0000e-005	5.0000e-005	0.3961
Worker	1.4000e-004	8.0000e-005	1.1300e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3446	0.3446	1.0000e-005	1.0000e-005	0.3475
Total	**1.6000e-004**	**9.4000e-004**	**1.4300e-003**	**0.0000**	**6.1000e-004**	**1.0000e-005**	**6.2000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.7240**	**0.7240**	**2.0000e-005**	**6.0000e-005**	**0.7436**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.4900e-003	0.0571	0.0588	1.2000e-004		2.3900e-003	2.3900e-003		2.2000e-003	2.2000e-003	0.0000	10.4962	10.4962	3.3900e-003	0.0000	10.5811
Paving	2.0400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.5300e-003**	**0.0571**	**0.0588**	**1.2000e-004**		**2.3900e-003**	**2.3900e-003**		**2.2000e-003**	**2.2000e-003**	**0.0000**	**10.4962**	**10.4962**	**3.3900e-003**	**0.0000**	**10.5811**

3.12 Open Trench - Paving - Final - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	8.6000e-004	3.0000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.3794	0.3794	1.0000e-005	5.0000e-005	0.3961
Worker	1.4000e-004	8.0000e-005	1.1300e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3446	0.3446	1.0000e-005	1.0000e-005	0.3475
Total	**1.6000e-004**	**9.4000e-004**	**1.4300e-003**	**0.0000**	**6.1000e-004**	**1.0000e-005**	**6.2000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.7240**	**0.7240**	**2.0000e-005**	**6.0000e-005**	**0.7436**

3.13 Open Trench - Arch Coating - Striping, Final - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5728					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7100e-003	0.0115	0.0181	3.0000e-005		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	2.5533	2.5533	1.4000e-004	0.0000	2.5567
Total	**0.5745**	**0.0115**	**0.0181**	**3.0000e-005**		**5.2000e-004**	**5.2000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.4000e-004**	**0.0000**	**2.5567**

3.13 Open Trench - Arch Coating - Striping, Final - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	8.6000e-004	3.0000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.3794	0.3794	1.0000e-005	5.0000e-005	0.3961
Worker	9.0000e-005	6.0000e-005	7.5000e-004	0.0000	3.2000e-004	0.0000	3.2000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2298	0.2298	1.0000e-005	1.0000e-005	0.2316
Total	**1.1000e-004**	**9.2000e-004**	**1.0500e-003**	**0.0000**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.6092**	**0.6092**	**2.0000e-005**	**6.0000e-005**	**0.6277**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5728					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7100e-003	0.0115	0.0181	3.0000e-005		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	2.5533	2.5533	1.4000e-004	0.0000	2.5567
Total	**0.5745**	**0.0115**	**0.0181**	**3.0000e-005**		**5.2000e-004**	**5.2000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.4000e-004**	**0.0000**	**2.5567**

3.13 Open Trench - Arch Coating - Striping, Final - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	8.6000e-004	3.0000e-004	0.0000	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.3794	0.3794	1.0000e-005	5.0000e-005	0.3961
Worker	9.0000e-005	6.0000e-005	7.5000e-004	0.0000	3.2000e-004	0.0000	3.2000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2298	0.2298	1.0000e-005	1.0000e-005	0.2316
Total	**1.1000e-004**	**9.2000e-004**	**1.0500e-003**	**0.0000**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.6092**	**0.6092**	**2.0000e-005**	**6.0000e-005**	**0.6277**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Industrial Park	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00	79	19	2
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.557888	0.062607	0.178921	0.119061	0.024112	0.006269	0.008734	0.006266	0.000708	0.000566	0.028949	0.000971	0.004949
Industrial Park	0.557888	0.062607	0.178921	0.119061	0.024112	0.006269	0.008734	0.006266	0.000708	0.000566	0.028949	0.000971	0.004949

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Other Asphalt Surfaces	0.557888	0.062607	0.178921	0.119061	0.024112	0.006269	0.008734	0.006266	0.000708	0.000566	0.028949	0.000971	0.004949

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	97.2832	97.2832	5.9500e-003	7.2000e-004	97.6466
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	97.2832	97.2832	5.9500e-003	7.2000e-004	97.6466
NaturalGas Mitigated	3.0400e-003	0.0276	0.0232	1.7000e-004		2.1000e-003	2.1000e-003		2.1000e-003	2.1000e-003	0.0000	30.0425	30.0425	5.8000e-004	5.5000e-004	30.2211
NaturalGas Unmitigated	3.0400e-003	0.0276	0.0232	1.7000e-004		2.1000e-003	2.1000e-003		2.1000e-003	2.1000e-003	0.0000	30.0425	30.0425	5.8000e-004	5.5000e-004	30.2211

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	522916	2.8200e-003	0.0256	0.0215	1.5000e-004		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	27.9048	27.9048	5.3000e-004	5.1000e-004	28.0706
Industrial Park	40060	2.2000e-004	1.9600e-003	1.6500e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	2.1378	2.1378	4.0000e-005	4.0000e-005	2.1505
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**3.0400e-003**	**0.0276**	**0.0232**	**1.6000e-004**		**2.1000e-003**	**2.1000e-003**		**2.1000e-003**	**2.1000e-003**	**0.0000**	**30.0425**	**30.0425**	**5.7000e-004**	**5.5000e-004**	**30.2211**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	522916	2.8200e-003	0.0256	0.0215	1.5000e-004		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	27.9048	27.9048	5.3000e-004	5.1000e-004	28.0706
Industrial Park	40060	2.2000e-004	1.9600e-003	1.6500e-003	1.0000e-005		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	2.1378	2.1378	4.0000e-005	4.0000e-005	2.1505
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**3.0400e-003**	**0.0276**	**0.0232**	**1.6000e-004**		**2.1000e-003**	**2.1000e-003**		**2.1000e-003**	**2.1000e-003**	**0.0000**	**30.0425**	**30.0425**	**5.7000e-004**	**5.5000e-004**	**30.2211**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	371307	90.9444	5.5600e-003	6.7000e-004	91.2841
Industrial Park	25880	6.3388	3.9000e-004	5.0000e-005	6.3625
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**97.2832**	**5.9500e-003**	**7.2000e-004**	**97.6466**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	371307	90.9444	5.5600e-003	6.7000e-004	91.2841
Industrial Park	25880	6.3388	3.9000e-004	5.0000e-005	6.3625
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**97.2832**	**5.9500e-003**	**7.2000e-004**	**97.6466**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2469	1.0000e-005	1.0600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0600e-003	2.0600e-003	1.0000e-005	0.0000	2.2000e-003
Unmitigated	0.2469	1.0000e-005	1.0600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0600e-003	2.0600e-003	1.0000e-005	0.0000	2.2000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0573					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1895					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0600e-003	2.0600e-003	1.0000e-005	0.0000	2.2000e-003
Total	**0.2469**	**1.0000e-005**	**1.0600e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0600e-003**	**2.0600e-003**	**1.0000e-005**	**0.0000**	**2.2000e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0573					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1895					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-004	1.0000e-005	1.0600e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0600e-003	2.0600e-003	1.0000e-005	0.0000	2.2000e-003
Total	**0.2469**	**1.0000e-005**	**1.0600e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0600e-003**	**2.0600e-003**	**1.0000e-005**	**0.0000**	**2.2000e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	38.4275	0.3592	8.6900e-003	49.9982
Unmitigated	38.4275	0.3592	8.6900e-003	49.9982

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	10.4964 / 0	36.8057	0.3441	8.3200e-003	47.8881
Industrial Park	0.4625 / 0	1.6218	0.0152	3.7000e-004	2.1101
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**38.4275**	**0.3592**	**8.6900e-003**	**49.9982**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	10.4964 / 0	36.8057	0.3441	8.3200e-003	47.8881
Industrial Park	0.4625 / 0	1.6218	0.0152	3.7000e-004	2.1101
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**38.4275**	**0.3592**	**8.6900e-003**	**49.9982**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.9278	0.7049	0.0000	29.5505
Unmitigated	11.9278	0.7049	0.0000	29.5505

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	56.28	11.4243	0.6752	0.0000	28.3033
Industrial Park	2.48	0.5034	0.0298	0.0000	1.2472
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**11.9278**	**0.7049**	**0.0000**	**29.5505**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	56.28	11.4243	0.6752	0.0000	28.3033
Industrial Park	2.48	0.5034	0.0298	0.0000	1.2472
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**11.9278**	**0.7049**	**0.0000**	**29.5505**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Crossover Pipeline

San Diego County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.39	1000sqft	0.00	45,392.00	0
Industrial Park	2.00	1000sqft	0.00	2,000.00	0
Other Asphalt Surfaces	68.09	1000sqft	1.56	68,088.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2024
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	539.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Surrogate land uses. General Light Industry represents open trench pipeline. Industrial Park represents Jack and Bore pipeline.

Construction Phase - Project-specific data.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Cement and Mortar Mixers" represents grout plant. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment -

Off-road Equipment - Project-specific data.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-road Equipment - Based on data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request.

Off-road Equipment - Given in data request.

Trips and VMT - Given in data request.

Grading - Default CalEEMod equations updated with project-specific information.

Vehicle Trips - No operational trips associated with the project

Off-road Equipment - Based on equipment for normal pipeline installation. "Other construction equipment" represents ventilation fans.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	200.00	10.00
tblConstructionPhase	NumDays	200.00	15.00
tblConstructionPhase	NumDays	200.00	5.00
tblConstructionPhase	NumDays	4.00	370.00
tblConstructionPhase	NumDays	4.00	10.00
tblConstructionPhase	NumDays	4.00	2.00
tblConstructionPhase	NumDays	4.00	20.00
tblConstructionPhase	NumDays	4.00	35.00
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	10.00	45.00
tblGrading	MaterialExported	0.00	37,827.00
tblGrading	MaterialImported	0.00	15,640.00
tblLandUse	LandUseSquareFeet	45,390.00	45,392.00
tblLandUse	LandUseSquareFeet	68,090.00	68,088.00
tblLandUse	LotAcreage	1.04	0.00
tblLandUse	LotAcreage	0.05	0.00
tblOffRoadEquipment	HorsePower	158.00	425.00
tblOffRoadEquipment	HorsePower	172.00	100.00

tblOffRoadEquipment	HorsePower	85.00	440.00
tblOffRoadEquipment	HorsePower	172.00	100.00
tblOffRoadEquipment	HorsePower	97.00	311.00
tblOffRoadEquipment	HorsePower	158.00	425.00
tblOffRoadEquipment	HorsePower	172.00	100.00
tblOffRoadEquipment	HorsePower	78.00	327.00
tblOffRoadEquipment	HorsePower	84.00	1,214.00
tblOffRoadEquipment	HorsePower	172.00	100.00
tblOffRoadEquipment	HorsePower	97.00	311.00
tblOffRoadEquipment	HorsePower	78.00	270.00
tblOffRoadEquipment	HorsePower	9.00	80.00
tblOffRoadEquipment	HorsePower	84.00	363.00
tblOffRoadEquipment	HorsePower	172.00	100.00
tblOffRoadEquipment	HorsePower	158.00	425.00
tblOffRoadEquipment	HorsePower	172.00	100.00
tblOffRoadEquipment	HorsePower	158.00	425.00
tblOffRoadEquipment	HorsePower	172.00	100.00
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period

tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	10.00
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6,478.00
tblTripsAndVMT	HaulingTripNumber	0.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	76.00
tblTripsAndVMT	HaulingTripNumber	0.00	150.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

tblTripsAndVMT	VendorTripNumber	19.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	19.00	2.00
tblTripsAndVMT	VendorTripNumber	19.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblTripsAndVMT	WorkerTripNumber	10.00	6.00
tblTripsAndVMT	WorkerTripNumber	10.00	4.00
tblTripsAndVMT	WorkerTripNumber	3.00	4.00
tblTripsAndVMT	WorkerTripNumber	49.00	8.00
tblTripsAndVMT	WorkerTripNumber	13.00	6.00
tblTripsAndVMT	WorkerTripNumber	20.00	14.00
tblTripsAndVMT	WorkerTripNumber	49.00	15.00
tblTripsAndVMT	WorkerTripNumber	49.00	8.00
tblTripsAndVMT	WorkerTripNumber	10.00	2.00
tblVehicleTrips	ST_TR	1.99	0.00
tblVehicleTrips	ST_TR	2.54	0.00
tblVehicleTrips	SU_TR	5.00	0.00
tblVehicleTrips	SU_TR	1.24	0.00
tblVehicleTrips	WD_TR	4.96	0.00
tblVehicleTrips	WD_TR	3.37	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.4177	22.5764	26.4798	0.0605	0.4715	1.0850	1.5565	0.1258	1.0260	1.1518	0.0000	5,969.9860	5,969.9860	1.0627	0.1900	6,053.1831
2025	8.4355	98.0199	67.7562	0.2167	0.7103	2.8623	3.5373	0.1886	2.7448	2.9255	0.0000	23,044.5431	23,044.5431	2.5024	0.2381	23,178.0461
2026	64.8793	111.6599	142.6549	0.2701	1.0781	5.5261	6.6041	0.2805	5.1985	5.4791	0.0000	26,002.8220	26,002.8220	5.5440	0.2099	26,203.9722
Maximum	**64.8793**	**111.6599**	**142.6549**	**0.2701**	**1.0781**	**5.5261**	**6.6041**	**0.2805**	**5.1985**	**5.4791**	**0.0000**	**26,002.8220**	**26,002.8220**	**5.5440**	**0.2381**	**26,203.9722**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.4177	19.1144	26.4798	0.0605	0.4715	1.0850	1.5565	0.1258	1.0260	1.1518	0.0000	5,969.9860	5,969.9860	1.0627	0.1900	6,053.1831
2025	8.4355	94.7752	67.7562	0.2167	0.7103	2.8623	3.5373	0.1886	2.7448	2.9255	0.0000	23,044.5431	23,044.5431	2.5024	0.2381	23,178.0461
2026	64.8793	98.6811	142.6549	0.2701	1.0781	5.5261	6.6041	0.2805	5.1985	5.4791	0.0000	26,002.8219	26,002.8219	5.5440	0.2099	26,203.9721
Maximum	**64.8793**	**98.6811**	**142.6549**	**0.2701**	**1.0781**	**5.5261**	**6.6041**	**0.2805**	**5.1985**	**5.4791**	**0.0000**	**26,002.8219**	**26,002.8219**	**5.5440**	**0.2381**	**26,203.9721**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	8.48	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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.3533	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269
Energy	0.0166	0.1512	0.1270	9.1000e-004		0.0115	0.0115		0.0115	0.0115		181.4588	181.4588	3.4800e-003	3.3300e-003	182.5371
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.3699**	**0.1513**	**0.1388**	**9.1000e-004**	**0.0000**	**0.0115**	**0.0115**	**0.0000**	**0.0115**	**0.0115**		**181.4840**	**181.4840**	**3.5500e-003**	**3.3300e-003**	**182.5640**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.3533	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269
Energy	0.0166	0.1512	0.1270	9.1000e-004		0.0115	0.0115		0.0115	0.0115		181.4588	181.4588	3.4800e-003	3.3300e-003	182.5371
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.3699**	**0.1513**	**0.1388**	**9.1000e-004**	**0.0000**	**0.0115**	**0.0115**	**0.0000**	**0.0115**	**0.0115**		**181.4840**	**181.4840**	**3.5500e-003**	**3.3300e-003**	**182.5640**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Open Trench - Grading - Pipeline Installation	Grading	9/1/2024	1/30/2026	5	370	
2	Open Trench - Grading - Crushing	Grading	1/1/2025	1/2/2025	5	2	
3	Jack and Bore - Building Con - Soldier Beam Install	Building Construction	2/25/2025	3/10/2025	5	10	
4	Jack and Bore - Grading - Shaft Excavation	Grading	3/11/2025	4/7/2025	5	20	
5	Jack and Bore - Grading - Tunnel Excavation	Grading	4/8/2025	5/26/2025	5	35	
6	Jack and Bore - Building Con - Install Carrier Pipe	Building Construction	5/27/2025	6/16/2025	5	15	
7	Jack and Bore - Building Con - Backfill Shafts	Building Construction	6/17/2025	6/23/2025	5	5	
8	Open Trench - Paving - Continual	Paving	12/1/2025	1/30/2026	5	45	
9	Open Trench - Arch Coating - Striping, Continual	Architectural Coating	1/1/2026	1/30/2026	5	22	
10	Open Trench - Grading - 24 Hour Period	Grading	1/17/2026	1/30/2026	5	10	
11	Open Trench - Paving - Final	Paving	2/1/2026	2/27/2026	5	20	
12	Open Trench - Arch Coating - Striping, Final	Architectural Coating	2/1/2026	2/27/2026	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 71,088; Non-Residential Outdoor: 23,696; Striped Parking Area: 4,085 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Open Trench - Grading - Pipeline Installation	Excavators	1	8.00	425	0.38
Open Trench - Grading - Pipeline Installation	Generator Sets	1	8.00	84	0.74
Open Trench - Grading - Pipeline Installation	Other Construction Equipment	3	8.00	100	0.42
Open Trench - Grading - Pipeline Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Open Trench - Grading - Crushing	Crushing/Proc. Equipment	1	2.00	440	0.78
Open Trench - Grading - Crushing	Graders	0	8.00	187	0.41
Open Trench - Grading - Crushing	Rubber Tired Dozers	0	8.00	247	0.40
Open Trench - Grading - Crushing	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Jack and Bore - Building Con - Soldier Beam Install	Bore/Drill Rigs	1	8.00	221	0.50
Jack and Bore - Building Con - Soldier Beam Install	Other Construction Equipment	3	8.00	100	0.42
Jack and Bore - Building Con - Soldier Beam Install	Tractors/Loaders/Backhoes	1	8.00	311	0.37
Jack and Bore - Grading - Shaft Excavation	Excavators	1	8.00	425	0.38
Jack and Bore - Grading - Shaft Excavation	Generator Sets	1	8.00	84	0.74
Jack and Bore - Grading - Shaft Excavation	Other Construction Equipment	3	8.00	100	0.42
Jack and Bore - Grading - Tunnel Excavation	Air Compressors	1	10.00	327	0.48
Jack and Bore - Grading - Tunnel Excavation	Cranes	1	10.00	231	0.29
Jack and Bore - Grading - Tunnel Excavation	Generator Sets	1	10.00	1214	0.74
Jack and Bore - Grading - Tunnel Excavation	Other Construction Equipment	3	10.00	100	0.42
Jack and Bore - Grading - Tunnel Excavation	Tractors/Loaders/Backhoes	1	10.00	311	0.37
Jack and Bore - Grading - Tunnel Excavation	Welders	1	10.00	46	0.45
Jack and Bore - Building Con - Install Carrier Pipe	Air Compressors	1	10.00	270	0.48
Jack and Bore - Building Con - Install Carrier Pipe	Cement and Mortar Mixers	1	10.00	80	0.56

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Jack and Bore - Building Con - Install Carrier Pipe	Cranes	1	10.00	231	0.29
Jack and Bore - Building Con - Install Carrier Pipe	Generator Sets	1	10.00	363	0.74
Jack and Bore - Building Con - Install Carrier Pipe	Other Construction Equipment	3	10.00	100	0.42
Jack and Bore - Building Con - Install Carrier Pipe	Welders	1	10.00	46	0.45
Jack and Bore - Building Con - Backfill Shafts	Cranes	1	10.00	231	0.29
Jack and Bore - Building Con - Backfill Shafts	Excavators	1	10.00	425	0.38
Jack and Bore - Building Con - Backfill Shafts	Other Construction Equipment	3	10.00	100	0.42
Open Trench - Paving - Continual	Concrete/Industrial Saws	1	6.00	81	0.73
Open Trench - Paving - Continual	Graders	1	6.00	187	0.41
Open Trench - Paving - Continual	Paving Equipment	1	6.00	132	0.36
Open Trench - Paving - Continual	Plate Compactors	3	6.00	8	0.43
Open Trench - Paving - Continual	Rollers	2	6.00	80	0.38
Open Trench - Arch Coating - Striping, Continual	Air Compressors	1	6.00	78	0.48
Open Trench - Paving - Final	Graders	1	6.00	187	0.41
Open Trench - Paving - Final	Paving Equipment	1	6.00	132	0.36
Open Trench - Paving - Final	Rollers	2	6.00	80	0.38
Open Trench - Arch Coating - Striping, Final	Air Compressors	1	6.00	78	0.48
Open Trench - Grading - Pipeline Installation	Forklifts	1	8.00	89	0.20
Open Trench - Grading - Pipeline Installation	Pumps	1	8.00	84	0.74
Open Trench - Grading - 24 Hour Period	Excavators	1	24.00	425	0.38
Open Trench - Grading - 24 Hour Period	Generator Sets	1	24.00	84	0.74
Open Trench - Grading - 24 Hour Period	Tractors/Loaders/Backhoes	1	24.00	97	0.37
Open Trench - Grading - 24 Hour Period	Welders	1	24.00	46	0.45
Open Trench - Grading - 24 Hour Period	Other Construction Equipment	6	24.00	100	0.42
Open Trench - Grading - 24 Hour Period	Concrete/Industrial Saws	1	24.00	81	0.73

Open Trench - Grading - 24 Hour Period	Forklifts	1	24.00	89	0.20
Open Trench - Grading - 24 Hour Period	Pumps	1	24.00	84	0.74
Open Trench - Grading - Pipeline Installation	Concrete/Industrial Saws	1	8.00	81	0.73

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Open Trench - Grading - Pipeline Inst	6	16.00	2.00	6,478.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Grading - Crushing	1	4.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Building Con - Soldier	5	8.00	2.00	30.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Grading - Shaft Excav	5	6.00	2.00	76.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Grading - Tunnel Exca	8	14.00	2.00	150.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Building Con - Install	8	15.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Building Con - Backfill	5	8.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Paving - Continual	8	20.00	6.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Arch Coating - Striping_Co	1	2.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Grading - 24 Hour Peri	0	48.00	6.00	0.00	10.80	7.30				
Open Trench - Paving - Final	4	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Arch Coating - Striping_Fin	1	4.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Open Trench - Grading - Pipeline Installation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.3351	20.1965	25.4536	0.0487		1.0642	1.0642		1.0062	1.0062		4,675.6279	4,675.6279	0.9983		4,700.5851
Total	**2.3351**	**20.1965**	**25.4536**	**0.0487**	**0.0203**	**1.0642**	**1.0846**	**3.0700e-003**	**1.0062**	**1.0093**		**4,675.6279**	**4,675.6279**	**0.9983**		**4,700.5851**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0392	2.2704	0.6379	0.0103	0.3062	0.0196	0.3258	0.0839	0.0187	0.1026		1,137.3902	1,137.3902	0.0601	0.1810	1,192.8342
Vendor	2.3000e-003	0.0852	0.0302	4.0000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		43.4386	43.4386	1.3700e-003	6.2900e-003	45.3471
Worker	0.0411	0.0244	0.3582	1.1200e-003	0.1314	6.7000e-004	0.1321	0.0349	6.2000e-004	0.0355		113.5294	113.5294	2.9000e-003	2.7300e-003	114.4167
Total	**0.0825**	**2.3799**	**1.0262**	**0.0118**	**0.4512**	**0.0207**	**0.4720**	**0.1227**	**0.0198**	**0.1425**		**1,294.3582**	**1,294.3582**	**0.0644**	**0.1900**	**1,352.5980**

3.2 Open Trench - Grading - Pipeline Installation - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.3351	16.7344	25.4536	0.0487		1.0642	1.0642		1.0062	1.0062	0.0000	4,675.6279	4,675.6279	0.9983		4,700.5851
Total	**2.3351**	**16.7344**	**25.4536**	**0.0487**	**0.0203**	**1.0642**	**1.0846**	**3.0700e-003**	**1.0062**	**1.0093**	**0.0000**	**4,675.6279**	**4,675.6279**	**0.9983**		**4,700.5851**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0392	2.2704	0.6379	0.0103	0.3062	0.0196	0.3258	0.0839	0.0187	0.1026		1,137.3902	1,137.3902	0.0601	0.1810	1,192.8342
Vendor	2.3000e-003	0.0852	0.0302	4.0000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		43.4386	43.4386	1.3700e-003	6.2900e-003	45.3471
Worker	0.0411	0.0244	0.3582	1.1200e-003	0.1314	6.7000e-004	0.1321	0.0349	6.2000e-004	0.0355		113.5294	113.5294	2.9000e-003	2.7300e-003	114.4167
Total	**0.0825**	**2.3799**	**1.0262**	**0.0118**	**0.4512**	**0.0207**	**0.4720**	**0.1227**	**0.0198**	**0.1425**		**1,294.3582**	**1,294.3582**	**0.0644**	**0.1900**	**1,352.5980**

3.2 Open Trench - Grading - Pipeline Installation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.1530	18.5408	25.3405	0.0488		0.9112	0.9112		0.8614	0.8614		4,678.9561	4,678.9561	0.9929		4,703.7784
Total	**2.1530**	**18.5408**	**25.3405**	**0.0488**	**0.0203**	**0.9112**	**0.9315**	**3.0700e-003**	**0.8614**	**0.8645**		**4,678.9561**	**4,678.9561**	**0.9929**		**4,703.7784**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0387	2.2395	0.6470	0.0100	0.3062	0.0195	0.3257	0.0839	0.0186	0.1026		1,114.3223	1,114.3223	0.0621	0.1775	1,168.7617
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	0.0387	0.0221	0.3354	1.0800e-003	0.1314	6.4000e-004	0.1321	0.0349	5.9000e-004	0.0355		109.6571	109.6571	2.6400e-003	2.5700e-003	110.4881
Total	**0.0796**	**2.3460**	**1.0120**	**0.0115**	**0.4512**	**0.0206**	**0.4719**	**0.1227**	**0.0197**	**0.1424**		**1,266.5894**	**1,266.5894**	**0.0661**	**0.1862**	**1,323.7324**

3.2 Open Trench - Grading - Pipeline Installation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.1530	15.2962	25.3405	0.0488		0.9112	0.9112		0.8614	0.8614	0.0000	4,678.9560	4,678.9560	0.9929		4,703.7784
Total	**2.1530**	**15.2962**	**25.3405**	**0.0488**	**0.0203**	**0.9112**	**0.9315**	**3.0700e-003**	**0.8614**	**0.8645**	**0.0000**	**4,678.9560**	**4,678.9560**	**0.9929**		**4,703.7784**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0387	2.2395	0.6470	0.0100	0.3062	0.0195	0.3257	0.0839	0.0186	0.1026		1,114.3223	1,114.3223	0.0621	0.1775	1,168.7617
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	0.0387	0.0221	0.3354	1.0800e-003	0.1314	6.4000e-004	0.1321	0.0349	5.9000e-004	0.0355		109.6571	109.6571	2.6400e-003	2.5700e-003	110.4881
Total	**0.0796**	**2.3460**	**1.0120**	**0.0115**	**0.4512**	**0.0206**	**0.4719**	**0.1227**	**0.0197**	**0.1424**		**1,266.5894**	**1,266.5894**	**0.0661**	**0.1862**	**1,323.7324**

3.2 Open Trench - Grading - Pipeline Installation - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.1530	18.5408	25.3405	0.0488		0.9112	0.9112		0.8614	0.8614		4,678.956 1	4,678.956 1	0.9929		4,703.778 4
Total	**2.1530**	**18.5408**	**25.3405**	**0.0488**	**0.0203**	**0.9112**	**0.9315**	**3.0700e-003**	**0.8614**	**0.8645**		**4,678.956 1**	**4,678.956 1**	**0.9929**		**4,703.778 4**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0383	2.2052	0.6557	9.7900e-003	0.3062	0.0193	0.3255	0.0839	0.0185	0.1024		1,091.059 5	1,091.059 5	0.0639	0.1739	1,144.480 3
Vendor	2.1700e-003	0.0834	0.0293	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.7959	41.7959	1.4400e-003	6.0500e-003	43.6336
Worker	0.0365	0.0202	0.3159	1.0500e-003	0.1314	6.1000e-004	0.1321	0.0349	5.6000e-004	0.0354		106.2235	106.2235	2.4100e-003	2.4300e-003	107.0070
Total	**0.0769**	**2.3088**	**1.0008**	**0.0112**	**0.4512**	**0.0204**	**0.4717**	**0.1227**	**0.0195**	**0.1422**		**1,239.078 9**	**1,239.078 9**	**0.0677**	**0.1824**	**1,295.121 0**

3.2 Open Trench - Grading - Pipeline Installation - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.1530	15.2962	25.3405	0.0488		0.9112	0.9112		0.8614	0.8614	0.0000	4,678.9560	4,678.9560	0.9929		4,703.7784
Total	**2.1530**	**15.2962**	**25.3405**	**0.0488**	**0.0203**	**0.9112**	**0.9315**	**3.0700e-003**	**0.8614**	**0.8645**	**0.0000**	**4,678.9560**	**4,678.9560**	**0.9929**		**4,703.7784**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0383	2.2052	0.6557	9.7900e-003	0.3062	0.0193	0.3255	0.0839	0.0185	0.1024		1,091.0595	1,091.0595	0.0639	0.1739	1,144.4803
Vendor	2.1700e-003	0.0834	0.0293	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.7959	41.7959	1.4400e-003	6.0500e-003	43.6336
Worker	0.0365	0.0202	0.3159	1.0500e-003	0.1314	6.1000e-004	0.1321	0.0349	5.6000e-004	0.0354		106.2235	106.2235	2.4100e-003	2.4300e-003	107.0070
Total	**0.0769**	**2.3088**	**1.0008**	**0.0112**	**0.4512**	**0.0204**	**0.4717**	**0.1227**	**0.0195**	**0.1422**		**1,239.0789**	**1,239.0789**	**0.0677**	**0.1824**	**1,295.1210**

3.3 Open Trench - Grading - Crushing - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3344	1.4179	1.6056	7.5700e-003		0.0454	0.0454		0.0454	0.0454		859.9802	859.9802	0.0303		860.7368
Total	**0.3344**	**1.4179**	**1.6056**	**7.5700e-003**	**0.0000**	**0.0454**	**0.0454**	**0.0000**	**0.0454**	**0.0454**		**859.9802**	**859.9802**	**0.0303**		**860.7368**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	9.6700e-003	5.5200e-003	0.0838	2.7000e-004	0.0329	1.6000e-004	0.0330	8.7200e-003	1.5000e-004	8.8600e-003		27.4143	27.4143	6.6000e-004	6.4000e-004	27.6220
Total	**0.0119**	**0.0898**	**0.1135**	**6.6000e-004**	**0.0464**	**6.8000e-004**	**0.0471**	**0.0126**	**6.5000e-004**	**0.0133**		**70.0243**	**70.0243**	**2.0700e-003**	**6.8100e-003**	**72.1046**

3.3 Open Trench - Grading - Crushing - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3344	1.4179	1.6056	7.5700e-003		0.0454	0.0454		0.0454	0.0454	0.0000	859.9802	859.9802	0.0303		860.7368
Total	**0.3344**	**1.4179**	**1.6056**	**7.5700e-003**	**0.0000**	**0.0454**	**0.0454**	**0.0000**	**0.0454**	**0.0454**	**0.0000**	**859.9802**	**859.9802**	**0.0303**		**860.7368**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	9.6700e-003	5.5200e-003	0.0838	2.7000e-004	0.0329	1.6000e-004	0.0330	8.7200e-003	1.5000e-004	8.8600e-003		27.4143	27.4143	6.6000e-004	6.4000e-004	27.6220
Total	**0.0119**	**0.0898**	**0.1135**	**6.6000e-004**	**0.0464**	**6.8000e-004**	**0.0471**	**0.0126**	**6.5000e-004**	**0.0133**		**70.0243**	**70.0243**	**2.0700e-003**	**6.8100e-003**	**72.1046**

3.4 Jack and Bore - Building Con - Soldier Beam Install - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2607	11.2150	12.5053	0.0302		0.5921	0.5921		0.5447	0.5447		2,923.5259	2,923.5259	0.9455		2,947.1641
Total	**1.2607**	**11.2150**	**12.5053**	**0.0302**		**0.5921**	**0.5921**		**0.5447**	**0.5447**		**2,923.5259**	**2,923.5259**	**0.9455**		**2,947.1641**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.6400e-003	0.3837	0.1109	1.7200e-003	0.0525	3.3400e-003	0.0558	0.0144	3.1900e-003	0.0176		190.9382	190.9382	0.0106	0.0304	200.2664
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	0.0193	0.0111	0.1677	5.4000e-004	0.0657	3.2000e-004	0.0660	0.0174	2.9000e-004	0.0177		54.8286	54.8286	1.3200e-003	1.2800e-003	55.2440
Total	**0.0282**	**0.4791**	**0.3082**	**2.6500e-003**	**0.1317**	**4.1800e-003**	**0.1359**	**0.0357**	**3.9800e-003**	**0.0397**		**288.3768**	**288.3768**	**0.0134**	**0.0379**	**299.9930**

3.4 Jack and Bore - Building Con - Soldier Beam Install - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2607	11.2150	12.5053	0.0302		0.5921	0.5921		0.5447	0.5447	0.0000	2,923.5259	2,923.5259	0.9455		2,947.1641
Total	**1.2607**	**11.2150**	**12.5053**	**0.0302**		**0.5921**	**0.5921**		**0.5447**	**0.5447**	**0.0000**	**2,923.5259**	**2,923.5259**	**0.9455**		**2,947.1641**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.6400e-003	0.3837	0.1109	1.7200e-003	0.0525	3.3400e-003	0.0558	0.0144	3.1900e-003	0.0176		190.9382	190.9382	0.0106	0.0304	200.2664
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	0.0193	0.0111	0.1677	5.4000e-004	0.0657	3.2000e-004	0.0660	0.0174	2.9000e-004	0.0177		54.8286	54.8286	1.3200e-003	1.2800e-003	55.2440
Total	**0.0282**	**0.4791**	**0.3082**	**2.6500e-003**	**0.1317**	**4.1800e-003**	**0.1359**	**0.0357**	**3.9800e-003**	**0.0397**		**288.3768**	**288.3768**	**0.0134**	**0.0379**	**299.9930**

3.5 Jack and Bore - Grading - Shaft Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.3528	11.6918	14.6169	0.0313		0.6196	0.6196		0.5777	0.5777		3,013.169 1	3,013.169 1	0.7960		3,033.070 1
Total	**1.3528**	**11.6918**	**14.6169**	**0.0313**	**0.0000**	**0.6196**	**0.6196**	**0.0000**	**0.5777**	**0.5777**		**3,013.169 1**	**3,013.169 1**	**0.7960**		**3,033.070 1**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.4100e-003	0.4861	0.1404	2.1800e-003	0.0665	4.2300e-003	0.0707	0.0182	4.0500e-003	0.0223		241.8551	241.8551	0.0135	0.0385	253.6707
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	0.0145	8.2900e-003	0.1258	4.1000e-004	0.0493	2.4000e-004	0.0495	0.0131	2.2000e-004	0.0133		41.1214	41.1214	9.9000e-004	9.6000e-004	41.4330
Total	**0.0251**	**0.5787**	**0.2959**	**2.9800e-003**	**0.1293**	**4.9900e-003**	**0.1343**	**0.0352**	**4.7700e-003**	**0.0400**		**325.5865**	**325.5865**	**0.0159**	**0.0457**	**339.5864**

3.5 Jack and Bore - Grading - Shaft Excavation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.3528	11.6918	14.6169	0.0313		0.6196	0.6196		0.5777	0.5777	0.0000	3,013.169 1	3,013.169 1	0.7960		3,033.070 1
Total	**1.3528**	**11.6918**	**14.6169**	**0.0313**	**0.0000**	**0.6196**	**0.6196**	**0.0000**	**0.5777**	**0.5777**	**0.0000**	**3,013.169 1**	**3,013.169 1**	**0.7960**		**3,033.070 1**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.4100e-003	0.4861	0.1404	2.1800e-003	0.0665	4.2300e-003	0.0707	0.0182	4.0500e-003	0.0223		241.8551	241.8551	0.0135	0.0385	253.6707
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	0.0145	8.2900e-003	0.1258	4.1000e-004	0.0493	2.4000e-004	0.0495	0.0131	2.2000e-004	0.0133		41.1214	41.1214	9.9000e-004	9.6000e-004	41.4330
Total	**0.0251**	**0.5787**	**0.2959**	**2.9800e-003**	**0.1293**	**4.9900e-003**	**0.1343**	**0.0352**	**4.7700e-003**	**0.0400**		**325.5865**	**325.5865**	**0.0159**	**0.0457**	**339.5864**

3.6 Jack and Bore - Grading - Tunnel Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	6.1573	76.4812	40.9221	0.1526		1.9246	1.9246		1.8581	1.8581		16,687.6688	16,687.6688	1.4245		16,723.2808
Total	**6.1573**	**76.4812**	**40.9221**	**0.1526**	**0.0000**	**1.9246**	**1.9246**	**0.0000**	**1.8581**	**1.8581**		**16,687.6688**	**16,687.6688**	**1.4245**		**16,723.2808**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.4800e-003	0.5482	0.1584	2.4500e-003	0.0750	4.7700e-003	0.0797	0.0206	4.5600e-003	0.0251		272.7689	272.7689	0.0152	0.0434	286.0948
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	0.0338	0.0193	0.2934	9.5000e-004	0.1150	5.6000e-004	0.1156	0.0305	5.2000e-004	0.0310		95.9500	95.9500	2.3100e-003	2.2500e-003	96.6771
Total	**0.0455**	**0.6519**	**0.4815**	**3.7900e-003**	**0.2035**	**5.8500e-003**	**0.2094**	**0.0550**	**5.5800e-003**	**0.0605**		**411.3288**	**411.3288**	**0.0189**	**0.0519**	**427.2545**

3.6 Jack and Bore - Grading - Tunnel Excavation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	6.1573	76.4812	40.9221	0.1526		1.9246	1.9246		1.8581	1.8581	0.0000	16,687.66 88	16,687.66 88	1.4245		16,723.28 08
Total	**6.1573**	**76.4812**	**40.9221**	**0.1526**	**0.0000**	**1.9246**	**1.9246**	**0.0000**	**1.8581**	**1.8581**	**0.0000**	**16,687.66 88**	**16,687.66 88**	**1.4245**		**16,723.28 08**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.4800e-003	0.5482	0.1584	2.4500e-003	0.0750	4.7700e-003	0.0797	0.0206	4.5600e-003	0.0251		272.7689	272.7689	0.0152	0.0434	286.0948
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	0.0338	0.0193	0.2934	9.5000e-004	0.1150	5.6000e-004	0.1156	0.0305	5.2000e-004	0.0310		95.9500	95.9500	2.3100e-003	2.2500e-003	96.6771
Total	**0.0455**	**0.6519**	**0.4815**	**3.7900e-003**	**0.2035**	**5.8500e-003**	**0.2094**	**0.0550**	**5.5800e-003**	**0.0605**		**411.3288**	**411.3288**	**0.0189**	**0.0519**	**427.2545**

3.7 Jack and Bore - Building Con - Install Carrier Pipe - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0865	23.1279	23.0032	0.0679		1.0345	1.0345		0.9760	0.9760		7,260.3355	7,260.3355	0.8066		7,280.4994
Total	**3.0865**	**23.1279**	**23.0032**	**0.0679**		**1.0345**	**1.0345**		**0.9760**	**0.9760**		**7,260.3355**	**7,260.3355**	**0.8066**		**7,280.4994**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	0.0363	0.0207	0.3144	1.0200e-003	0.1232	6.0000e-004	0.1238	0.0327	5.5000e-004	0.0332		102.8036	102.8036	2.4700e-003	2.4100e-003	103.5826
Total	**0.0385**	**0.1050**	**0.3441**	**1.4100e-003**	**0.1368**	**1.1200e-003**	**0.1379**	**0.0366**	**1.0500e-003**	**0.0376**		**145.4135**	**145.4135**	**3.8800e-003**	**8.5800e-003**	**148.0652**

3.7 Jack and Bore - Building Con - Install Carrier Pipe - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0865	23.1279	23.0032	0.0679		1.0345	1.0345		0.9760	0.9760	0.0000	7,260.3355	7,260.3355	0.8066		7,280.4994
Total	**3.0865**	**23.1279**	**23.0032**	**0.0679**		**1.0345**	**1.0345**		**0.9760**	**0.9760**	**0.0000**	**7,260.3355**	**7,260.3355**	**0.8066**		**7,280.4994**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2300e-003	0.0843	0.0297	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6100	42.6100	1.4100e-003	6.1700e-003	44.4826
Worker	0.0363	0.0207	0.3144	1.0200e-003	0.1232	6.0000e-004	0.1238	0.0327	5.5000e-004	0.0332		102.8036	102.8036	2.4700e-003	2.4100e-003	103.5826
Total	**0.0385**	**0.1050**	**0.3441**	**1.4100e-003**	**0.1368**	**1.1200e-003**	**0.1379**	**0.0366**	**1.0500e-003**	**0.0376**		**145.4135**	**145.4135**	**3.8800e-003**	**8.5800e-003**	**148.0652**

3.8 Jack and Bore - Building Con - Backfill Shafts - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7489	15.5803	15.8673	0.0381		0.8236	0.8236		0.7577	0.7577		3,686.2010	3,686.2010	1.1922		3,716.0058
Total	**1.7489**	**15.5803**	**15.8673**	**0.0381**		**0.8236**	**0.8236**		**0.7577**	**0.7577**		**3,686.2010**	**3,686.2010**	**1.1922**		**3,716.0058**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0112	0.4216	0.1483	1.9700e-003	0.1160	2.6200e-003	0.1186	0.0313	2.5000e-003	0.0339		213.0498	213.0498	7.0300e-003	0.0308	222.4130
Worker	0.0193	0.0111	0.1677	5.4000e-004	0.1228	3.2000e-004	0.1232	0.0315	2.9000e-004	0.0318		54.8286	54.8286	1.3200e-003	1.2800e-003	55.2440
Total	**0.0305**	**0.4326**	**0.3160**	**2.5100e-003**	**0.2388**	**2.9400e-003**	**0.2418**	**0.0628**	**2.7900e-003**	**0.0656**		**267.8784**	**267.8784**	**8.3500e-003**	**0.0321**	**277.6570**

3.8 Jack and Bore - Building Con - Backfill Shafts - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7489	15.5803	15.8673	0.0381		0.8236	0.8236		0.7577	0.7577	0.0000	3,686.2010	3,686.2010	1.1922		3,716.0058
Total	**1.7489**	**15.5803**	**15.8673**	**0.0381**		**0.8236**	**0.8236**		**0.7577**	**0.7577**	**0.0000**	**3,686.2010**	**3,686.2010**	**1.1922**		**3,716.0058**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0112	0.4216	0.1483	1.9700e-003	0.1160	2.6200e-003	0.1186	0.0313	2.5000e-003	0.0339		213.0498	213.0498	7.0300e-003	0.0308	222.4130
Worker	0.0193	0.0111	0.1677	5.4000e-004	0.1228	3.2000e-004	0.1232	0.0315	2.9000e-004	0.0318		54.8286	54.8286	1.3200e-003	1.2800e-003	55.2440
Total	**0.0305**	**0.4326**	**0.3160**	**2.5100e-003**	**0.2388**	**2.9400e-003**	**0.2418**	**0.0628**	**2.7900e-003**	**0.0656**		**267.8784**	**267.8784**	**8.3500e-003**	**0.0321**	**277.6570**

3.9 Open Trench - Paving - Continual - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8604	7.9730	9.0827	0.0177		0.3308	0.3308		0.3117	0.3117		1,679.0886	1,679.0886	0.4018		1,689.1338
Paving	0.0908					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9513**	**7.9730**	**9.0827**	**0.0177**		**0.3308**	**0.3308**		**0.3117**	**0.3117**		**1,679.0886**	**1,679.0886**	**0.4018**		**1,689.1338**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6900e-003	0.2529	0.0890	1.1800e-003	0.0406	1.5700e-003	0.0422	0.0117	1.5000e-003	0.0132		127.8299	127.8299	4.2200e-003	0.0185	133.4478
Worker	0.0483	0.0276	0.4192	1.3600e-003	0.1643	8.0000e-004	0.1651	0.0436	7.4000e-004	0.0443		137.0714	137.0714	3.3000e-003	3.2100e-003	138.1101
Total	**0.0550**	**0.2806**	**0.5082**	**2.5400e-003**	**0.2049**	**2.3700e-003**	**0.2073**	**0.0553**	**2.2400e-003**	**0.0575**		**264.9013**	**264.9013**	**7.5200e-003**	**0.0217**	**271.5579**

3.9 Open Trench - Paving - Continual - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8604	7.9730	9.0827	0.0177		0.3308	0.3308		0.3117	0.3117	0.0000	1,679.0886	1,679.0886	0.4018		1,689.1338
Paving	0.0908					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9513**	**7.9730**	**9.0827**	**0.0177**		**0.3308**	**0.3308**		**0.3117**	**0.3117**	**0.0000**	**1,679.0886**	**1,679.0886**	**0.4018**		**1,689.1338**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6900e-003	0.2529	0.0890	1.1800e-003	0.0406	1.5700e-003	0.0422	0.0117	1.5000e-003	0.0132		127.8299	127.8299	4.2200e-003	0.0185	133.4478
Worker	0.0483	0.0276	0.4192	1.3600e-003	0.1643	8.0000e-004	0.1651	0.0436	7.4000e-004	0.0443		137.0714	137.0714	3.3000e-003	3.2100e-003	138.1101
Total	**0.0550**	**0.2806**	**0.5082**	**2.5400e-003**	**0.2049**	**2.3700e-003**	**0.2073**	**0.0553**	**2.2400e-003**	**0.0575**		**264.9013**	**264.9013**	**7.5200e-003**	**0.0217**	**271.5579**

3.9 Open Trench - Paving - Continual - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8604	7.9730	9.0827	0.0177		0.3308	0.3308		0.3117	0.3117		1,679.088 6	1,679.088 6	0.4018		1,689.133 8
Paving	0.0908					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9513**	**7.9730**	**9.0827**	**0.0177**		**0.3308**	**0.3308**		**0.3117**	**0.3117**		**1,679.088 6**	**1,679.088 6**	**0.4018**		**1,689.133 8**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5100e-003	0.2502	0.0879	1.1600e-003	0.0406	1.5600e-003	0.0422	0.0117	1.4900e-003	0.0132		125.3878	125.3878	4.3200e-003	0.0181	130.9008
Worker	0.0457	0.0252	0.3949	1.3100e-003	0.1643	7.6000e-004	0.1651	0.0436	7.0000e-004	0.0443		132.7794	132.7794	3.0200e-003	3.0300e-003	133.7588
Total	**0.0522**	**0.2754**	**0.4828**	**2.4700e-003**	**0.2049**	**2.3200e-003**	**0.2073**	**0.0553**	**2.1900e-003**	**0.0575**		**258.1672**	**258.1672**	**7.3400e-003**	**0.0212**	**264.6596**

3.9 Open Trench - Paving - Continual - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8604	7.9730	9.0827	0.0177		0.3308	0.3308		0.3117	0.3117	0.0000	1,679.088 6	1,679.088 6	0.4018		1,689.133 8
Paving	0.0908					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9513**	**7.9730**	**9.0827**	**0.0177**		**0.3308**	**0.3308**		**0.3117**	**0.3117**	**0.0000**	**1,679.088 6**	**1,679.088 6**	**0.4018**		**1,689.133 8**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5100e-003	0.2502	0.0879	1.1600e-003	0.0406	1.5600e-003	0.0422	0.0117	1.4900e-003	0.0132		125.3878	125.3878	4.3200e-003	0.0181	130.9008
Worker	0.0457	0.0252	0.3949	1.3100e-003	0.1643	7.6000e-004	0.1651	0.0436	7.0000e-004	0.0443		132.7794	132.7794	3.0200e-003	3.0300e-003	133.7588
Total	**0.0522**	**0.2754**	**0.4828**	**2.4700e-003**	**0.2049**	**2.3200e-003**	**0.2073**	**0.0553**	**2.1900e-003**	**0.0575**		**258.1672**	**258.1672**	**7.3400e-003**	**0.0212**	**264.6596**

3.10 Open Trench - Arch Coating - Striping, Continual - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	52.0748					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**52.2456**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1700e-003	0.0834	0.0293	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.7959	41.7959	1.4400e-003	6.0500e-003	43.6336
Worker	4.5700e-003	2.5200e-003	0.0395	1.3000e-004	0.0164	8.0000e-005	0.0165	4.3600e-003	7.0000e-005	4.4300e-003		13.2779	13.2779	3.0000e-004	3.0000e-004	13.3759
Total	**6.7400e-003**	**0.0859**	**0.0688**	**5.2000e-004**	**0.0300**	**6.0000e-004**	**0.0306**	**8.2600e-003**	**5.7000e-004**	**8.8300e-003**		**55.0739**	**55.0739**	**1.7400e-003**	**6.3500e-003**	**57.0095**

3.10 Open Trench - Arch Coating - Striping, Continual - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	52.0748					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**52.2456**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1700e-003	0.0834	0.0293	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.7959	41.7959	1.4400e-003	6.0500e-003	43.6336
Worker	4.5700e-003	2.5200e-003	0.0395	1.3000e-004	0.0164	8.0000e-005	0.0165	4.3600e-003	7.0000e-005	4.4300e-003		13.2779	13.2779	3.0000e-004	3.0000e-004	13.3759
Total	**6.7400e-003**	**0.0859**	**0.0688**	**5.2000e-004**	**0.0300**	**6.0000e-004**	**0.0306**	**8.2600e-003**	**5.7000e-004**	**8.8300e-003**		**55.0739**	**55.0739**	**1.7400e-003**	**6.3500e-003**	**57.0095**

3.11 Open Trench - Grading - 24 Hour Period - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	9.3935	81.3304	104.8701	0.1865		4.2092	4.2092		3.9517	3.9517		17,811.0093	17,811.0093	4.0572		17,912.4382
Total	**9.3935**	**81.3304**	**104.8701**	**0.1865**	**0.0000**	**4.2092**	**4.2092**	**0.0000**	**3.9517**	**3.9517**		**17,811.0093**	**17,811.0093**	**4.0572**		**17,912.4382**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0290	0.0000	0.0290	7.1100e-003	0.0000	7.1100e-003			0.0000			0.0000
Worker					0.3427	0.0000	0.3427	0.0841	0.0000	0.0841			0.0000			0.0000
Total					**0.3716**	**0.0000**	**0.3716**	**0.0912**	**0.0000**	**0.0912**			**0.0000**			**0.0000**

3.11 Open Trench - Grading - 24 Hour Period - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	9.3935	71.5964	104.8701	0.1865		4.2092	4.2092		3.9517	3.9517	0.0000	17,811.0093	17,811.0093	4.0572		17,912.4382
Total	**9.3935**	**71.5964**	**104.8701**	**0.1865**	**0.0000**	**4.2092**	**4.2092**	**0.0000**	**3.9517**	**3.9517**	**0.0000**	**17,811.0093**	**17,811.0093**	**4.0572**		**17,912.4382**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0290	0.0000	0.0290	7.1100e-003	0.0000	7.1100e-003			0.0000			0.0000
Worker					0.3427	0.0000	0.3427	0.0841	0.0000	0.0841			0.0000			0.0000
Total					**0.3716**	**0.0000**	**0.3716**	**0.0912**	**0.0000**	**0.0912**			**0.0000**			**0.0000**

3.12 Open Trench - Paving - Final - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5489	5.7056	5.8755	0.0120		0.2392	0.2392		0.2201	0.2201		1,157.010 7	1,157.010 7	0.3742		1,166.365 7
Paving	0.2044					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7532**	**5.7056**	**5.8755**	**0.0120**		**0.2392**	**0.2392**		**0.2201**	**0.2201**		**1,157.010 7**	**1,157.010 7**	**0.3742**		**1,166.365 7**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1700e-003	0.0834	0.0293	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.7959	41.7959	1.4400e-003	6.0500e-003	43.6336
Worker	0.0137	7.5600e-003	0.1185	3.9000e-004	0.0493	2.3000e-004	0.0495	0.0131	2.1000e-004	0.0133		39.8338	39.8338	9.0000e-004	9.1000e-004	40.1276
Total	**0.0159**	**0.0910**	**0.1478**	**7.8000e-004**	**0.0628**	**7.5000e-004**	**0.0636**	**0.0170**	**7.1000e-004**	**0.0177**		**81.6298**	**81.6298**	**2.3400e-003**	**6.9600e-003**	**83.7612**

3.12 Open Trench - Paving - Final - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5489	5.7056	5.8755	0.0120		0.2392	0.2392		0.2201	0.2201	0.0000	1,157.0107	1,157.0107	0.3742		1,166.3657
Paving	0.2044					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7532**	**5.7056**	**5.8755**	**0.0120**		**0.2392**	**0.2392**		**0.2201**	**0.2201**	**0.0000**	**1,157.0107**	**1,157.0107**	**0.3742**		**1,166.3657**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1700e-003	0.0834	0.0293	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.7959	41.7959	1.4400e-003	6.0500e-003	43.6336
Worker	0.0137	7.5600e-003	0.1185	3.9000e-004	0.0493	2.3000e-004	0.0495	0.0131	2.1000e-004	0.0133		39.8338	39.8338	9.0000e-004	9.1000e-004	40.1276
Total	**0.0159**	**0.0910**	**0.1478**	**7.8000e-004**	**0.0628**	**7.5000e-004**	**0.0636**	**0.0170**	**7.1000e-004**	**0.0177**		**81.6298**	**81.6298**	**2.3400e-003**	**6.9600e-003**	**83.7612**

3.13 Open Trench - Arch Coating - Striping, Final - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	57.2822					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**57.4531**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1700e-003	0.0834	0.0293	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.7959	41.7959	1.4400e-003	6.0500e-003	43.6336
Worker	9.1300e-003	5.0400e-003	0.0790	2.6000e-004	0.0329	1.5000e-004	0.0330	8.7200e-003	1.4000e-004	8.8600e-003		26.5559	26.5559	6.0000e-004	6.1000e-004	26.7518
Total	**0.0113**	**0.0885**	**0.1083**	**6.5000e-004**	**0.0464**	**6.7000e-004**	**0.0471**	**0.0126**	**6.4000e-004**	**0.0133**		**68.3518**	**68.3518**	**2.0400e-003**	**6.6600e-003**	**70.3853**

3.13 Open Trench - Arch Coating - Striping, Final - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	57.2822					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**57.4531**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1700e-003	0.0834	0.0293	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.7959	41.7959	1.4400e-003	6.0500e-003	43.6336
Worker	9.1300e-003	5.0400e-003	0.0790	2.6000e-004	0.0329	1.5000e-004	0.0330	8.7200e-003	1.4000e-004	8.8600e-003		26.5559	26.5559	6.0000e-004	6.1000e-004	26.7518
Total	**0.0113**	**0.0885**	**0.1083**	**6.5000e-004**	**0.0464**	**6.7000e-004**	**0.0471**	**0.0126**	**6.4000e-004**	**0.0133**		**68.3518**	**68.3518**	**2.0400e-003**	**6.6600e-003**	**70.3853**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Industrial Park	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00	79	19	2
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.557888	0.062607	0.178921	0.119061	0.024112	0.006269	0.008734	0.006266	0.000708	0.000566	0.028949	0.000971	0.004949
Industrial Park	0.557888	0.062607	0.178921	0.119061	0.024112	0.006269	0.008734	0.006266	0.000708	0.000566	0.028949	0.000971	0.004949
Other Asphalt Surfaces	0.557888	0.062607	0.178921	0.119061	0.024112	0.006269	0.008734	0.006266	0.000708	0.000566	0.028949	0.000971	0.004949

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0166	0.1512	0.1270	9.1000e-004		0.0115	0.0115		0.0115	0.0115		181.4588	181.4588	3.4800e-003	3.3300e-003	182.5371
NaturalGas Unmitigated	0.0166	0.1512	0.1270	9.1000e-004		0.0115	0.0115		0.0115	0.0115		181.4588	181.4588	3.4800e-003	3.3300e-003	182.5371

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	1432.65	0.0155	0.1405	0.1180	8.4000e-004		0.0107	0.0107		0.0107	0.0107		168.5466	168.5466	3.2300e-003	3.0900e-003	169.5482
Industrial Park	109.753	1.1800e-003	0.0108	9.0400e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004		12.9122	12.9122	2.5000e-004	2.4000e-004	12.9889
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0166**	**0.1512**	**0.1270**	**9.0000e-004**		**0.0115**	**0.0115**		**0.0115**	**0.0115**		**181.4588**	**181.4588**	**3.4800e-003**	**3.3300e-003**	**182.5371**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	1.43265	0.0155	0.1405	0.1180	8.4000e-004		0.0107	0.0107		0.0107	0.0107		168.5466	168.5466	3.2300e-003	3.0900e-003	169.5482
Industrial Park	0.109753	1.1800e-003	0.0108	9.0400e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004		12.9122	12.9122	2.5000e-004	2.4000e-004	12.9889
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0166**	**0.1512**	**0.1270**	**9.0000e-004**		**0.0115**	**0.0115**		**0.0115**	**0.0115**		**181.4588**	**181.4588**	**3.4800e-003**	**3.3300e-003**	**182.5371**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.3533	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269
Unmitigated	1.3533	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3139					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.0383					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0900e-003	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269
Total	**1.3533**	**1.1000e-004**	**0.0118**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0253**	**0.0253**	**7.0000e-005**		**0.0269**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3139					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.0383					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0900e-003	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269
Total	**1.3533**	**1.1000e-004**	**0.0118**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0253**	**0.0253**	**7.0000e-005**		**0.0269**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Crossover Pipeline

San Diego County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	45.39	1000sqft	0.00	45,392.00	0
Industrial Park	2.00	1000sqft	0.00	2,000.00	0
Other Asphalt Surfaces	68.09	1000sqft	1.56	68,088.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2024
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	539.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Surrogate land uses. General Light Industry represents open trench pipeline. Industrial Park represents Jack and Bore pipeline.

Construction Phase - Project-specific data.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Cement and Mortar Mixers" represents grout plant. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment -

Off-road Equipment - Project-specific data.

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-road Equipment - Based on data request. "Other construction equipment" represents ventilation fan.

Off-road Equipment - Given in data request.

Off-road Equipment - Given in data request.

Trips and VMT - Given in data request.

Grading - Default CalEEMod equations updated with project-specific information.

Vehicle Trips - No operational trips associated with the project

Off-road Equipment - Based on equipment for normal pipeline installation. "Other construction equipment" represents ventilation fans.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	200.00	10.00
tblConstructionPhase	NumDays	200.00	15.00
tblConstructionPhase	NumDays	200.00	5.00
tblConstructionPhase	NumDays	4.00	370.00
tblConstructionPhase	NumDays	4.00	10.00
tblConstructionPhase	NumDays	4.00	2.00
tblConstructionPhase	NumDays	4.00	20.00
tblConstructionPhase	NumDays	4.00	35.00
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	10.00	45.00
tblGrading	MaterialExported	0.00	37,827.00
tblGrading	MaterialImported	0.00	15,640.00
tblLandUse	LandUseSquareFeet	45,390.00	45,392.00
tblLandUse	LandUseSquareFeet	68,090.00	68,088.00
tblLandUse	LotAcreage	1.04	0.00
tblLandUse	LotAcreage	0.05	0.00
tblOffRoadEquipment	HorsePower	158.00	425.00
tblOffRoadEquipment	HorsePower	172.00	100.00

tblOffRoadEquipment	HorsePower	85.00	440.00
tblOffRoadEquipment	HorsePower	172.00	100.00
tblOffRoadEquipment	HorsePower	97.00	311.00
tblOffRoadEquipment	HorsePower	158.00	425.00
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tblOffRoadEquipment	HorsePower	78.00	327.00
tblOffRoadEquipment	HorsePower	84.00	1,214.00
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tblOffRoadEquipment	HorsePower	84.00	363.00
tblOffRoadEquipment	HorsePower	172.00	100.00
tblOffRoadEquipment	HorsePower	158.00	425.00
tblOffRoadEquipment	HorsePower	172.00	100.00
tblOffRoadEquipment	HorsePower	158.00	425.00
tblOffRoadEquipment	HorsePower	172.00	100.00
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	6.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - Pipeline Installation
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period

tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
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tblOffRoadEquipment	PhaseName		Open Trench - Grading - 24 Hour Period
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tblOffRoadEquipment	UsageHours	7.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6,478.00
tblTripsAndVMT	HaulingTripNumber	0.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	76.00
tblTripsAndVMT	HaulingTripNumber	0.00	150.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

tblTripsAndVMT	VendorTripNumber	19.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	19.00	2.00
tblTripsAndVMT	VendorTripNumber	19.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblTripsAndVMT	WorkerTripNumber	10.00	6.00
tblTripsAndVMT	WorkerTripNumber	10.00	4.00
tblTripsAndVMT	WorkerTripNumber	3.00	4.00
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tblTripsAndVMT	WorkerTripNumber	49.00	8.00
tblTripsAndVMT	WorkerTripNumber	10.00	2.00
tblVehicleTrips	ST_TR	1.99	0.00
tblVehicleTrips	ST_TR	2.54	0.00
tblVehicleTrips	SU_TR	5.00	0.00
tblVehicleTrips	SU_TR	1.24	0.00
tblVehicleTrips	WD_TR	4.96	0.00
tblVehicleTrips	WD_TR	3.37	0.00

2.0 Emissions Summary

Crossover Pipeline - San Diego County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.4188	22.6748	26.4715	0.0605	0.4715	1.0850	1.5566	0.1258	1.0261	1.1518	0.0000	5,964.9489	5,964.9489	1.0627	0.1905	6,048.2731
2025	8.4389	98.1451	67.7385	0.2166	0.7103	2.8623	3.5374	0.1886	2.7448	2.9255	0.0000	23,034.8116	23,034.8116	2.5025	0.2387	23,168.5119
2026	64.8845	111.7731	142.6332	0.2700	1.0781	5.5261	6.6042	0.2805	5.1986	5.4791	0.0000	25,990.4663	25,990.4663	5.5442	0.2106	26,191.8368
Maximum	**64.8845**	**111.7731**	**142.6332**	**0.2700**	**1.0781**	**5.5261**	**6.6042**	**0.2805**	**5.1986**	**5.4791**	**0.0000**	**25,990.4663**	**25,990.4663**	**5.5442**	**0.2387**	**26,191.8368**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	2.4188	19.2127	26.4715	0.0605	0.4715	1.0850	1.5566	0.1258	1.0261	1.1518	0.0000	5,964.9489	5,964.9489	1.0627	0.1905	6,048.2731
2025	8.4389	94.9005	67.7385	0.2166	0.7103	2.8623	3.5374	0.1886	2.7448	2.9255	0.0000	23,034.8116	23,034.8116	2.5025	0.2387	23,168.5119
2026	64.8845	98.7944	142.6332	0.2700	1.0781	5.5261	6.6042	0.2805	5.1986	5.4791	0.0000	25,990.4663	25,990.4663	5.5442	0.2106	26,191.8368
Maximum	**64.8845**	**98.7944**	**142.6332**	**0.2700**	**1.0781**	**5.5261**	**6.6042**	**0.2805**	**5.1986**	**5.4791**	**0.0000**	**25,990.4663**	**25,990.4663**	**5.5442**	**0.2387**	**26,191.8368**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	8.46	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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.3533	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269
Energy	0.0166	0.1512	0.1270	9.1000e-004		0.0115	0.0115		0.0115	0.0115		181.4588	181.4588	3.4800e-003	3.3300e-003	182.5371
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.3699**	**0.1513**	**0.1388**	**9.1000e-004**	**0.0000**	**0.0115**	**0.0115**	**0.0000**	**0.0115**	**0.0115**		**181.4840**	**181.4840**	**3.5500e-003**	**3.3300e-003**	**182.5640**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.3533	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269
Energy	0.0166	0.1512	0.1270	9.1000e-004		0.0115	0.0115		0.0115	0.0115		181.4588	181.4588	3.4800e-003	3.3300e-003	182.5371
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.3699**	**0.1513**	**0.1388**	**9.1000e-004**	**0.0000**	**0.0115**	**0.0115**	**0.0000**	**0.0115**	**0.0115**		**181.4840**	**181.4840**	**3.5500e-003**	**3.3300e-003**	**182.5640**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Open Trench - Grading - Pipeline Installation	Grading	9/1/2024	1/30/2026	5	370	
2	Open Trench - Grading - Crushing	Grading	1/1/2025	1/2/2025	5	2	
3	Jack and Bore - Building Con - Soldier Beam Install	Building Construction	2/25/2025	3/10/2025	5	10	
4	Jack and Bore - Grading - Shaft Excavation	Grading	3/11/2025	4/7/2025	5	20	
5	Jack and Bore - Grading - Tunnel Excavation	Grading	4/8/2025	5/26/2025	5	35	
6	Jack and Bore - Building Con - Install Carrier Pipe	Building Construction	5/27/2025	6/16/2025	5	15	
7	Jack and Bore - Building Con - Backfill Shafts	Building Construction	6/17/2025	6/23/2025	5	5	
8	Open Trench - Paving - Continual	Paving	12/1/2025	1/30/2026	5	45	
9	Open Trench - Arch Coating - Striping, Continual	Architectural Coating	1/1/2026	1/30/2026	5	22	
10	Open Trench - Grading - 24 Hour Period	Grading	1/17/2026	1/30/2026	5	10	
11	Open Trench - Paving - Final	Paving	2/1/2026	2/27/2026	5	20	
12	Open Trench - Arch Coating - Striping, Final	Architectural Coating	2/1/2026	2/27/2026	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.56

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 71,088; Non-Residential Outdoor: 23,696; Striped Parking Area: 4,085 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Open Trench - Grading - Pipeline Installation	Excavators	1	8.00	425	0.38
Open Trench - Grading - Pipeline Installation	Generator Sets	1	8.00	84	0.74
Open Trench - Grading - Pipeline Installation	Other Construction Equipment	3	8.00	100	0.42
Open Trench - Grading - Pipeline Installation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Open Trench - Grading - Crushing	Crushing/Proc. Equipment	1	2.00	440	0.78
Open Trench - Grading - Crushing	Graders	0	8.00	187	0.41
Open Trench - Grading - Crushing	Rubber Tired Dozers	0	8.00	247	0.40
Open Trench - Grading - Crushing	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Jack and Bore - Building Con - Soldier Beam Install	Bore/Drill Rigs	1	8.00	221	0.50
Jack and Bore - Building Con - Soldier Beam Install	Other Construction Equipment	3	8.00	100	0.42
Jack and Bore - Building Con - Soldier Beam Install	Tractors/Loaders/Backhoes	1	8.00	311	0.37
Jack and Bore - Grading - Shaft Excavation	Excavators	1	8.00	425	0.38
Jack and Bore - Grading - Shaft Excavation	Generator Sets	1	8.00	84	0.74
Jack and Bore - Grading - Shaft Excavation	Other Construction Equipment	3	8.00	100	0.42
Jack and Bore - Grading - Tunnel Excavation	Air Compressors	1	10.00	327	0.48
Jack and Bore - Grading - Tunnel Excavation	Cranes	1	10.00	231	0.29
Jack and Bore - Grading - Tunnel Excavation	Generator Sets	1	10.00	1214	0.74
Jack and Bore - Grading - Tunnel Excavation	Other Construction Equipment	3	10.00	100	0.42
Jack and Bore - Grading - Tunnel Excavation	Tractors/Loaders/Backhoes	1	10.00	311	0.37
Jack and Bore - Grading - Tunnel Excavation	Welders	1	10.00	46	0.45
Jack and Bore - Building Con - Install Carrier Pipe	Air Compressors	1	10.00	270	0.48
Jack and Bore - Building Con - Install Carrier Pipe	Cement and Mortar Mixers	1	10.00	80	0.56

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Jack and Bore - Building Con - Install Carrier Pipe	Cranes	1	10.00	231	0.29
Jack and Bore - Building Con - Install Carrier Pipe	Generator Sets	1	10.00	363	0.74
Jack and Bore - Building Con - Install Carrier Pipe	Other Construction Equipment	3	10.00	100	0.42
Jack and Bore - Building Con - Install Carrier Pipe	Welders	1	10.00	46	0.45
Jack and Bore - Building Con - Backfill Shafts	Cranes	1	10.00	231	0.29
Jack and Bore - Building Con - Backfill Shafts	Excavators	1	10.00	425	0.38
Jack and Bore - Building Con - Backfill Shafts	Other Construction Equipment	3	10.00	100	0.42
Open Trench - Paving - Continual	Concrete/Industrial Saws	1	6.00	81	0.73
Open Trench - Paving - Continual	Graders	1	6.00	187	0.41
Open Trench - Paving - Continual	Paving Equipment	1	6.00	132	0.36
Open Trench - Paving - Continual	Plate Compactors	3	6.00	8	0.43
Open Trench - Paving - Continual	Rollers	2	6.00	80	0.38
Open Trench - Arch Coating - Striping, Continual	Air Compressors	1	6.00	78	0.48
Open Trench - Paving - Final	Graders	1	6.00	187	0.41
Open Trench - Paving - Final	Paving Equipment	1	6.00	132	0.36
Open Trench - Paving - Final	Rollers	2	6.00	80	0.38
Open Trench - Arch Coating - Striping, Final	Air Compressors	1	6.00	78	0.48
Open Trench - Grading - Pipeline Installation	Forklifts	1	8.00	89	0.20
Open Trench - Grading - Pipeline Installation	Pumps	1	8.00	84	0.74
Open Trench - Grading - 24 Hour Period	Excavators	1	24.00	425	0.38
Open Trench - Grading - 24 Hour Period	Generator Sets	1	24.00	84	0.74
Open Trench - Grading - 24 Hour Period	Tractors/Loaders/Backhoes	1	24.00	97	0.37
Open Trench - Grading - 24 Hour Period	Welders	1	24.00	46	0.45
Open Trench - Grading - 24 Hour Period	Other Construction Equipment	6	24.00	100	0.42
Open Trench - Grading - 24 Hour Period	Concrete/Industrial Saws	1	24.00	81	0.73

Open Trench - Grading - 24 Hour Period	Forklifts	1	24.00	89	0.20
Open Trench - Grading - 24 Hour Period	Pumps	1	24.00	84	0.74
Open Trench - Grading - Pipeline Installation	Concrete/Industrial Saws	1	8.00	81	0.73

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Open Trench - Grading - Pipeline Inst	6	16.00	2.00	6,478.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Grading - Crushing	1	4.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Building Con - Soldier	5	8.00	2.00	30.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Grading - Shaft Excav	5	6.00	2.00	76.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Grading - Tunnel Exca	8	14.00	2.00	150.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Building Con - Install	8	15.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Jack and Bore - Building Con - Backfill	5	8.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Paving - Continual	8	20.00	6.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Arch Coating - Striping_Co	1	2.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Grading - 24 Hour Peri	0	48.00	6.00	0.00	10.80	7.30				
Open Trench - Paving - Final	4	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Open Trench - Arch Coating - Striping_Fin	1	4.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Open Trench - Grading - Pipeline Installation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.3351	20.1965	25.4536	0.0487		1.0642	1.0642		1.0062	1.0062		4,675.6279	4,675.6279	0.9983		4,700.5851
Total	**2.3351**	**20.1965**	**25.4536**	**0.0487**	**0.0203**	**1.0642**	**1.0846**	**3.0700e-003**	**1.0062**	**1.0093**		**4,675.6279**	**4,675.6279**	**0.9983**		**4,700.5851**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0368	2.3621	0.6457	0.0103	0.3062	0.0196	0.3258	0.0839	0.0187	0.1027		1,138.5153	1,138.5153	0.0600	0.1812	1,194.0113
Vendor	2.2300e-003	0.0887	0.0311	4.0000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		43.5021	43.5021	1.3600e-003	6.3000e-003	45.4148
Worker	0.0446	0.0275	0.3411	1.0600e-003	0.1314	6.7000e-004	0.1321	0.0349	6.2000e-004	0.0355		107.3036	107.3036	3.0900e-003	2.9600e-003	108.2620
Total	**0.0837**	**2.4783**	**1.0179**	**0.0117**	**0.4512**	**0.0208**	**0.4720**	**0.1227**	**0.0199**	**0.1426**		**1,289.3210**	**1,289.3210**	**0.0644**	**0.1905**	**1,347.6880**

3.2 Open Trench - Grading - Pipeline Installation - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.3351	16.7344	25.4536	0.0487		1.0642	1.0642		1.0062	1.0062	0.0000	4,675.6279	4,675.6279	0.9983		4,700.5851
Total	**2.3351**	**16.7344**	**25.4536**	**0.0487**	**0.0203**	**1.0642**	**1.0846**	**3.0700e-003**	**1.0062**	**1.0093**	**0.0000**	**4,675.6279**	**4,675.6279**	**0.9983**		**4,700.5851**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0368	2.3621	0.6457	0.0103	0.3062	0.0196	0.3258	0.0839	0.0187	0.1027		1,138.5153	1,138.5153	0.0600	0.1812	1,194.0113
Vendor	2.2300e-003	0.0887	0.0311	4.0000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		43.5021	43.5021	1.3600e-003	6.3000e-003	45.4148
Worker	0.0446	0.0275	0.3411	1.0600e-003	0.1314	6.7000e-004	0.1321	0.0349	6.2000e-004	0.0355		107.3036	107.3036	3.0900e-003	2.9600e-003	108.2620
Total	**0.0837**	**2.4783**	**1.0179**	**0.0117**	**0.4512**	**0.0208**	**0.4720**	**0.1227**	**0.0199**	**0.1426**		**1,289.3210**	**1,289.3210**	**0.0644**	**0.1905**	**1,347.6880**

3.2 Open Trench - Grading - Pipeline Installation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.1530	18.5408	25.3405	0.0488		0.9112	0.9112		0.8614	0.8614		4,678.9561	4,678.9561	0.9929		4,703.7784
Total	**2.1530**	**18.5408**	**25.3405**	**0.0488**	**0.0203**	**0.9112**	**0.9315**	**3.0700e-003**	**0.8614**	**0.8645**		**4,678.9561**	**4,678.9561**	**0.9929**		**4,703.7784**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0364	2.3303	0.6548	0.0100	0.3062	0.0195	0.3258	0.0839	0.0187	0.1026		1,115.4421	1,115.4421	0.0619	0.1777	1,169.9332
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0421	0.0249	0.3198	1.0300e-003	0.1314	6.4000e-004	0.1321	0.0349	5.9000e-004	0.0355		103.6555	103.6555	2.8200e-003	2.7800e-003	104.5531
Total	**0.0806**	**2.4430**	**1.0052**	**0.0115**	**0.4512**	**0.0207**	**0.4719**	**0.1227**	**0.0198**	**0.1425**		**1,261.7714**	**1,261.7714**	**0.0661**	**0.1866**	**1,319.0367**

3.2 Open Trench - Grading - Pipeline Installation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.1530	15.2962	25.3405	0.0488		0.9112	0.9112		0.8614	0.8614	0.0000	4,678.956 0	4,678.956 0	0.9929		4,703.778 4
Total	**2.1530**	**15.2962**	**25.3405**	**0.0488**	**0.0203**	**0.9112**	**0.9315**	**3.0700e-003**	**0.8614**	**0.8645**	**0.0000**	**4,678.956 0**	**4,678.956 0**	**0.9929**		**4,703.778 4**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0364	2.3303	0.6548	0.0100	0.3062	0.0195	0.3258	0.0839	0.0187	0.1026		1,115.442 1	1,115.442 1	0.0619	0.1777	1,169.933 2
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0421	0.0249	0.3198	1.0300e-003	0.1314	6.4000e-004	0.1321	0.0349	5.9000e-004	0.0355		103.6555	103.6555	2.8200e-003	2.7800e-003	104.5531
Total	**0.0806**	**2.4430**	**1.0052**	**0.0115**	**0.4512**	**0.0207**	**0.4719**	**0.1227**	**0.0198**	**0.1425**		**1,261.771 4**	**1,261.771 4**	**0.0661**	**0.1866**	**1,319.036 7**

3.2 Open Trench - Grading - Pipeline Installation - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.1530	18.5408	25.3405	0.0488		0.9112	0.9112		0.8614	0.8614		4,678.956 1	4,678.956 1	0.9929		4,703.778 4
Total	**2.1530**	**18.5408**	**25.3405**	**0.0488**	**0.0203**	**0.9112**	**0.9315**	**3.0700e-003**	**0.8614**	**0.8645**		**4,678.956 1**	**4,678.956 1**	**0.9929**		**4,703.778 4**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0359	2.2948	0.6634	9.8000e-003	0.3062	0.0193	0.3256	0.0839	0.0185	0.1024		1,092.172 4	1,092.172 4	0.0638	0.1741	1,145.644 4
Vendor	2.0900e-003	0.0870	0.0302	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.8598	41.8598	1.4300e-003	6.0600e-003	43.7015
Worker	0.0399	0.0227	0.3016	9.9000e-004	0.1314	6.1000e-004	0.1321	0.0349	5.6000e-004	0.0354		100.4180	100.4180	2.5800e-003	2.6200e-003	101.2643
Total	**0.0779**	**2.4044**	**0.9952**	**0.0112**	**0.4512**	**0.0205**	**0.4717**	**0.1227**	**0.0196**	**0.1423**		**1,234.450 3**	**1,234.450 3**	**0.0678**	**0.1828**	**1,290.610 2**

Crossover Pipeline - San Diego County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Open Trench - Grading - Pipeline Installation - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0203	0.0000	0.0203	3.0700e-003	0.0000	3.0700e-003			0.0000			0.0000
Off-Road	2.1530	15.2962	25.3405	0.0488		0.9112	0.9112		0.8614	0.8614	0.0000	4,678.956 0	4,678.956 0	0.9929		4,703.778 4
Total	**2.1530**	**15.2962**	**25.3405**	**0.0488**	**0.0203**	**0.9112**	**0.9315**	**3.0700e-003**	**0.8614**	**0.8645**	**0.0000**	**4,678.956 0**	**4,678.956 0**	**0.9929**		**4,703.778 4**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0359	2.2948	0.6634	9.8000e-003	0.3062	0.0193	0.3256	0.0839	0.0185	0.1024		1,092.172 4	1,092.172 4	0.0638	0.1741	1,145.644 4
Vendor	2.0900e-003	0.0870	0.0302	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.8598	41.8598	1.4300e-003	6.0600e-003	43.7015
Worker	0.0399	0.0227	0.3016	9.9000e-004	0.1314	6.1000e-004	0.1321	0.0349	5.6000e-004	0.0354		100.4180	100.4180	2.5800e-003	2.6200e-003	101.2643
Total	**0.0779**	**2.4044**	**0.9952**	**0.0112**	**0.4512**	**0.0205**	**0.4717**	**0.1227**	**0.0196**	**0.1423**		**1,234.450 3**	**1,234.450 3**	**0.0678**	**0.1828**	**1,290.610 2**

3.3 Open Trench - Grading - Crushing - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3344	1.4179	1.6056	7.5700e-003		0.0454	0.0454		0.0454	0.0454		859.9802	859.9802	0.0303		860.7368
Total	**0.3344**	**1.4179**	**1.6056**	**7.5700e-003**	**0.0000**	**0.0454**	**0.0454**	**0.0000**	**0.0454**	**0.0454**		**859.9802**	**859.9802**	**0.0303**		**860.7368**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0105	6.2100e-003	0.0799	2.6000e-004	0.0329	1.6000e-004	0.0330	8.7200e-003	1.5000e-004	8.8600e-003		25.9139	25.9139	7.1000e-004	6.9000e-004	26.1383
Total	**0.0127**	**0.0941**	**0.1105**	**6.5000e-004**	**0.0464**	**6.9000e-004**	**0.0471**	**0.0126**	**6.5000e-004**	**0.0133**		**68.5876**	**68.5876**	**2.1100e-003**	**6.8700e-003**	**70.6888**

3.3 Open Trench - Grading - Crushing - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.3344	1.4179	1.6056	7.5700e-003		0.0454	0.0454		0.0454	0.0454	0.0000	859.9802	859.9802	0.0303		860.7368
Total	**0.3344**	**1.4179**	**1.6056**	**7.5700e-003**	**0.0000**	**0.0454**	**0.0454**	**0.0000**	**0.0454**	**0.0454**	**0.0000**	**859.9802**	**859.9802**	**0.0303**		**860.7368**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0105	6.2100e-003	0.0799	2.6000e-004	0.0329	1.6000e-004	0.0330	8.7200e-003	1.5000e-004	8.8600e-003		25.9139	25.9139	7.1000e-004	6.9000e-004	26.1383
Total	**0.0127**	**0.0941**	**0.1105**	**6.5000e-004**	**0.0464**	**6.9000e-004**	**0.0471**	**0.0126**	**6.5000e-004**	**0.0133**		**68.5876**	**68.5876**	**2.1100e-003**	**6.8700e-003**	**70.6888**

3.4 Jack and Bore - Building Con - Soldier Beam Install - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2607	11.2150	12.5053	0.0302		0.5921	0.5921		0.5447	0.5447		2,923.5259	2,923.5259	0.9455		2,947.1641
Total	**1.2607**	**11.2150**	**12.5053**	**0.0302**		**0.5921**	**0.5921**		**0.5447**	**0.5447**		**2,923.5259**	**2,923.5259**	**0.9455**		**2,947.1641**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.2300e-003	0.3993	0.1122	1.7200e-003	0.0525	3.3400e-003	0.0558	0.0144	3.2000e-003	0.0176		191.1301	191.1301	0.0106	0.0304	200.4671
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0211	0.0124	0.1599	5.1000e-004	0.0657	3.2000e-004	0.0660	0.0174	2.9000e-004	0.0177		51.8278	51.8278	1.4100e-003	1.3900e-003	52.2765
Total	**0.0295**	**0.4996**	**0.3027**	**2.6200e-003**	**0.1317**	**4.1900e-003**	**0.1359**	**0.0357**	**3.9900e-003**	**0.0397**		**285.6316**	**285.6316**	**0.0134**	**0.0380**	**297.2941**

3.4 Jack and Bore - Building Con - Soldier Beam Install - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2607	11.2150	12.5053	0.0302		0.5921	0.5921		0.5447	0.5447	0.0000	2,923.5259	2,923.5259	0.9455		2,947.1641
Total	**1.2607**	**11.2150**	**12.5053**	**0.0302**		**0.5921**	**0.5921**		**0.5447**	**0.5447**	**0.0000**	**2,923.5259**	**2,923.5259**	**0.9455**		**2,947.1641**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.2300e-003	0.3993	0.1122	1.7200e-003	0.0525	3.3400e-003	0.0558	0.0144	3.2000e-003	0.0176		191.1301	191.1301	0.0106	0.0304	200.4671
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0211	0.0124	0.1599	5.1000e-004	0.0657	3.2000e-004	0.0660	0.0174	2.9000e-004	0.0177		51.8278	51.8278	1.4100e-003	1.3900e-003	52.2765
Total	**0.0295**	**0.4996**	**0.3027**	**2.6200e-003**	**0.1317**	**4.1900e-003**	**0.1359**	**0.0357**	**3.9900e-003**	**0.0397**		**285.6316**	**285.6316**	**0.0134**	**0.0380**	**297.2941**

3.5 Jack and Bore - Grading - Shaft Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.3528	11.6918	14.6169	0.0313		0.6196	0.6196		0.5777	0.5777		3,013.1691	3,013.1691	0.7960		3,033.0701
Total	**1.3528**	**11.6918**	**14.6169**	**0.0313**	**0.0000**	**0.6196**	**0.6196**	**0.0000**	**0.5777**	**0.5777**		**3,013.1691**	**3,013.1691**	**0.7960**		**3,033.0701**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8900e-003	0.5058	0.1421	2.1800e-003	0.0665	4.2400e-003	0.0707	0.0182	4.0500e-003	0.0223		242.0981	242.0981	0.0134	0.0386	253.9250
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0158	9.3200e-003	0.1199	3.8000e-004	0.0493	2.4000e-004	0.0495	0.0131	2.2000e-004	0.0133		38.8708	38.8708	1.0600e-003	1.0400e-003	39.2074
Total	**0.0259**	**0.6030**	**0.2926**	**2.9500e-003**	**0.1293**	**5.0100e-003**	**0.1343**	**0.0352**	**4.7700e-003**	**0.0400**		**323.6427**	**323.6427**	**0.0159**	**0.0458**	**337.6829**

3.5 Jack and Bore - Grading - Shaft Excavation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.3528	11.6918	14.6169	0.0313		0.6196	0.6196		0.5777	0.5777	0.0000	3,013.169 1	3,013.169 1	0.7960		3,033.070 1
Total	**1.3528**	**11.6918**	**14.6169**	**0.0313**	**0.0000**	**0.6196**	**0.6196**	**0.0000**	**0.5777**	**0.5777**	**0.0000**	**3,013.169 1**	**3,013.169 1**	**0.7960**		**3,033.070 1**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.8900e-003	0.5058	0.1421	2.1800e-003	0.0665	4.2400e-003	0.0707	0.0182	4.0500e-003	0.0223		242.0981	242.0981	0.0134	0.0386	253.9250
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0158	9.3200e-003	0.1199	3.8000e-004	0.0493	2.4000e-004	0.0495	0.0131	2.2000e-004	0.0133		38.8708	38.8708	1.0600e-003	1.0400e-003	39.2074
Total	**0.0259**	**0.6030**	**0.2926**	**2.9500e-003**	**0.1293**	**5.0100e-003**	**0.1343**	**0.0352**	**4.7700e-003**	**0.0400**		**323.6427**	**323.6427**	**0.0159**	**0.0458**	**337.6829**

3.6 Jack and Bore - Grading - Tunnel Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	6.1573	76.4812	40.9221	0.1526		1.9246	1.9246		1.8581	1.8581		16,687.66 88	16,687.66 88	1.4245		16,723.28 08
Total	**6.1573**	**76.4812**	**40.9221**	**0.1526**	**0.0000**	**1.9246**	**1.9246**	**0.0000**	**1.8581**	**1.8581**		**16,687.66 88**	**16,687.66 88**	**1.4245**		**16,723.28 08**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.9000e-003	0.5704	0.1603	2.4600e-003	0.0750	4.7800e-003	0.0797	0.0206	4.5700e-003	0.0251		273.0430	273.0430	0.0152	0.0435	286.3816
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0369	0.0217	0.2798	9.0000e-004	0.1150	5.6000e-004	0.1156	0.0305	5.2000e-004	0.0310		90.6986	90.6986	2.4700e-003	2.4300e-003	91.4839
Total	**0.0479**	**0.6800**	**0.4707**	**3.7500e-003**	**0.2035**	**5.8700e-003**	**0.2094**	**0.0550**	**5.5900e-003**	**0.0605**		**406.4153**	**406.4153**	**0.0190**	**0.0521**	**422.4160**

3.6 Jack and Bore - Grading - Tunnel Excavation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	6.1573	76.4812	40.9221	0.1526		1.9246	1.9246		1.8581	1.8581	0.0000	16,687.6688	16,687.6688	1.4245		16,723.2808
Total	**6.1573**	**76.4812**	**40.9221**	**0.1526**	**0.0000**	**1.9246**	**1.9246**	**0.0000**	**1.8581**	**1.8581**	**0.0000**	**16,687.6688**	**16,687.6688**	**1.4245**		**16,723.2808**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.9000e-003	0.5704	0.1603	2.4600e-003	0.0750	4.7800e-003	0.0797	0.0206	4.5700e-003	0.0251		273.0430	273.0430	0.0152	0.0435	286.3816
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0369	0.0217	0.2798	9.0000e-004	0.1150	5.6000e-004	0.1156	0.0305	5.2000e-004	0.0310		90.6986	90.6986	2.4700e-003	2.4300e-003	91.4839
Total	**0.0479**	**0.6800**	**0.4707**	**3.7500e-003**	**0.2035**	**5.8700e-003**	**0.2094**	**0.0550**	**5.5900e-003**	**0.0605**		**406.4153**	**406.4153**	**0.0190**	**0.0521**	**422.4160**

3.7 Jack and Bore - Building Con - Install Carrier Pipe - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Off-Road	3.0865	23.1279	23.0032	0.0679		1.0345	1.0345		0.9760	0.9760		7,260.3355	7,260.3355	0.8066		7,280.4994
Total	**3.0865**	**23.1279**	**23.0032**	**0.0679**		**1.0345**	**1.0345**		**0.9760**	**0.9760**		**7,260.3355**	**7,260.3355**	**0.8066**		**7,280.4994**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0395	0.0233	0.2998	9.6000e-004	0.1232	6.0000e-004	0.1238	0.0327	5.5000e-004	0.0332		97.1771	97.1771	2.6400e-003	2.6000e-003	98.0185
Total	**0.0417**	**0.1112**	**0.3304**	**1.3500e-003**	**0.1368**	**1.1300e-003**	**0.1379**	**0.0366**	**1.0500e-003**	**0.0376**		**139.8508**	**139.8508**	**4.0400e-003**	**8.7800e-003**	**142.5690**

3.7 Jack and Bore - Building Con - Install Carrier Pipe - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0865	23.1279	23.0032	0.0679		1.0345	1.0345		0.9760	0.9760	0.0000	7,260.3355	7,260.3355	0.8066		7,280.4994
Total	**3.0865**	**23.1279**	**23.0032**	**0.0679**		**1.0345**	**1.0345**		**0.9760**	**0.9760**	**0.0000**	**7,260.3355**	**7,260.3355**	**0.8066**		**7,280.4994**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1600e-003	0.0879	0.0306	3.9000e-004	0.0136	5.3000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		42.6738	42.6738	1.4000e-003	6.1800e-003	44.5505
Worker	0.0395	0.0233	0.2998	9.6000e-004	0.1232	6.0000e-004	0.1238	0.0327	5.5000e-004	0.0332		97.1771	97.1771	2.6400e-003	2.6000e-003	98.0185
Total	**0.0417**	**0.1112**	**0.3304**	**1.3500e-003**	**0.1368**	**1.1300e-003**	**0.1379**	**0.0366**	**1.0500e-003**	**0.0376**		**139.8508**	**139.8508**	**4.0400e-003**	**8.7800e-003**	**142.5690**

3.8 Jack and Bore - Building Con - Backfill Shafts - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7489	15.5803	15.8673	0.0381		0.8236	0.8236		0.7577	0.7577		3,686.2010	3,686.2010	1.1922		3,716.0058
Total	**1.7489**	**15.5803**	**15.8673**	**0.0381**		**0.8236**	**0.8236**		**0.7577**	**0.7577**		**3,686.2010**	**3,686.2010**	**1.1922**		**3,716.0058**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0108	0.4394	0.1530	1.9700e-003	0.1160	2.6300e-003	0.1186	0.0313	2.5100e-003	0.0339		213.3688	213.3688	6.9900e-003	0.0309	222.7524
Worker	0.0211	0.0124	0.1599	5.1000e-004	0.1228	3.2000e-004	0.1232	0.0315	2.9000e-004	0.0318		51.8278	51.8278	1.4100e-003	1.3900e-003	52.2765
Total	**0.0318**	**0.4518**	**0.3128**	**2.4800e-003**	**0.2388**	**2.9500e-003**	**0.2418**	**0.0628**	**2.8000e-003**	**0.0656**		**265.1966**	**265.1966**	**8.4000e-003**	**0.0323**	**275.0289**

3.8 Jack and Bore - Building Con - Backfill Shafts - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7489	15.5803	15.8673	0.0381		0.8236	0.8236		0.7577	0.7577	0.0000	3,686.2010	3,686.2010	1.1922		3,716.0058
Total	**1.7489**	**15.5803**	**15.8673**	**0.0381**		**0.8236**	**0.8236**		**0.7577**	**0.7577**	**0.0000**	**3,686.2010**	**3,686.2010**	**1.1922**		**3,716.0058**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0108	0.4394	0.1530	1.9700e-003	0.1160	2.6300e-003	0.1186	0.0313	2.5100e-003	0.0339		213.3688	213.3688	6.9900e-003	0.0309	222.7524
Worker	0.0211	0.0124	0.1599	5.1000e-004	0.1228	3.2000e-004	0.1232	0.0315	2.9000e-004	0.0318		51.8278	51.8278	1.4100e-003	1.3900e-003	52.2765
Total	**0.0318**	**0.4518**	**0.3128**	**2.4800e-003**	**0.2388**	**2.9500e-003**	**0.2418**	**0.0628**	**2.8000e-003**	**0.0656**		**265.1966**	**265.1966**	**8.4000e-003**	**0.0323**	**275.0289**

3.9 Open Trench - Paving - Continual - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8604	7.9730	9.0827	0.0177		0.3308	0.3308		0.3117	0.3117		1,679.0886	1,679.0886	0.4018		1,689.1338
Paving	0.0908					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9513**	**7.9730**	**9.0827**	**0.0177**		**0.3308**	**0.3308**		**0.3117**	**0.3117**		**1,679.0886**	**1,679.0886**	**0.4018**		**1,689.1338**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4700e-003	0.2636	0.0918	1.1800e-003	0.0406	1.5800e-003	0.0422	0.0117	1.5100e-003	0.0132		128.0213	128.0213	4.2000e-003	0.0185	133.6514
Worker	0.0527	0.0311	0.3997	1.2800e-003	0.1643	8.0000e-004	0.1651	0.0436	7.4000e-004	0.0443		129.5694	129.5694	3.5300e-003	3.4700e-003	130.6913
Total	**0.0591**	**0.2947**	**0.4915**	**2.4600e-003**	**0.2049**	**2.3800e-003**	**0.2073**	**0.0553**	**2.2500e-003**	**0.0575**		**257.5907**	**257.5907**	**7.7300e-003**	**0.0220**	**264.3428**

3.9 Open Trench - Paving - Continual - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8604	7.9730	9.0827	0.0177		0.3308	0.3308		0.3117	0.3117	0.0000	1,679.0886	1,679.0886	0.4018		1,689.1338
Paving	0.0908					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9513**	**7.9730**	**9.0827**	**0.0177**		**0.3308**	**0.3308**		**0.3117**	**0.3117**	**0.0000**	**1,679.0886**	**1,679.0886**	**0.4018**		**1,689.1338**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4700e-003	0.2636	0.0918	1.1800e-003	0.0406	1.5800e-003	0.0422	0.0117	1.5100e-003	0.0132		128.0213	128.0213	4.2000e-003	0.0185	133.6514
Worker	0.0527	0.0311	0.3997	1.2800e-003	0.1643	8.0000e-004	0.1651	0.0436	7.4000e-004	0.0443		129.5694	129.5694	3.5300e-003	3.4700e-003	130.6913
Total	**0.0591**	**0.2947**	**0.4915**	**2.4600e-003**	**0.2049**	**2.3800e-003**	**0.2073**	**0.0553**	**2.2500e-003**	**0.0575**		**257.5907**	**257.5907**	**7.7300e-003**	**0.0220**	**264.3428**

3.9 Open Trench - Paving - Continual - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8604	7.9730	9.0827	0.0177		0.3308	0.3308		0.3117	0.3117		1,679.0886	1,679.0886	0.4018		1,689.1338
Paving	0.0908					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9513**	**7.9730**	**9.0827**	**0.0177**		**0.3308**	**0.3308**		**0.3117**	**0.3117**		**1,679.0886**	**1,679.0886**	**0.4018**		**1,689.1338**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2800e-003	0.2608	0.0907	1.1600e-003	0.0406	1.5600e-003	0.0422	0.0117	1.5000e-003	0.0132		125.5795	125.5795	4.3000e-003	0.0182	131.1045
Worker	0.0499	0.0284	0.3770	1.2400e-003	0.1643	7.6000e-004	0.1651	0.0436	7.0000e-004	0.0443		125.5225	125.5225	3.2300e-003	3.2800e-003	126.5804
Total	**0.0561**	**0.2892**	**0.4676**	**2.4000e-003**	**0.2049**	**2.3200e-003**	**0.2073**	**0.0553**	**2.2000e-003**	**0.0575**		**251.1020**	**251.1020**	**7.5300e-003**	**0.0215**	**257.6849**

3.9 Open Trench - Paving - Continual - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8604	7.9730	9.0827	0.0177		0.3308	0.3308		0.3117	0.3117	0.0000	1,679.0886	1,679.0886	0.4018		1,689.1338
Paving	0.0908					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9513**	**7.9730**	**9.0827**	**0.0177**		**0.3308**	**0.3308**		**0.3117**	**0.3117**	**0.0000**	**1,679.0886**	**1,679.0886**	**0.4018**		**1,689.1338**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2800e-003	0.2608	0.0907	1.1600e-003	0.0406	1.5600e-003	0.0422	0.0117	1.5000e-003	0.0132		125.5795	125.5795	4.3000e-003	0.0182	131.1045
Worker	0.0499	0.0284	0.3770	1.2400e-003	0.1643	7.6000e-004	0.1651	0.0436	7.0000e-004	0.0443		125.5225	125.5225	3.2300e-003	3.2800e-003	126.5804
Total	**0.0561**	**0.2892**	**0.4676**	**2.4000e-003**	**0.2049**	**2.3200e-003**	**0.2073**	**0.0553**	**2.2000e-003**	**0.0575**		**251.1020**	**251.1020**	**7.5300e-003**	**0.0215**	**257.6849**

3.10 Open Trench - Arch Coating - Striping, Continual - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	52.0748					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**52.2456**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0900e-003	0.0870	0.0302	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.8598	41.8598	1.4300e-003	6.0600e-003	43.7015
Worker	4.9900e-003	2.8300e-003	0.0377	1.2000e-004	0.0164	8.0000e-005	0.0165	4.3600e-003	7.0000e-005	4.4300e-003		12.5523	12.5523	3.2000e-004	3.3000e-004	12.6580
Total	**7.0800e-003**	**0.0898**	**0.0679**	**5.1000e-004**	**0.0300**	**6.0000e-004**	**0.0306**	**8.2600e-003**	**5.7000e-004**	**8.8300e-003**		**54.4121**	**54.4121**	**1.7500e-003**	**6.3900e-003**	**56.3595**

3.10 Open Trench - Arch Coating - Striping, Continual - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	52.0748					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**52.2456**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0900e-003	0.0870	0.0302	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.8598	41.8598	1.4300e-003	6.0600e-003	43.7015
Worker	4.9900e-003	2.8300e-003	0.0377	1.2000e-004	0.0164	8.0000e-005	0.0165	4.3600e-003	7.0000e-005	4.4300e-003		12.5523	12.5523	3.2000e-004	3.3000e-004	12.6580
Total	**7.0800e-003**	**0.0898**	**0.0679**	**5.1000e-004**	**0.0300**	**6.0000e-004**	**0.0306**	**8.2600e-003**	**5.7000e-004**	**8.8300e-003**		**54.4121**	**54.4121**	**1.7500e-003**	**6.3900e-003**	**56.3595**

3.11 Open Trench - Grading - 24 Hour Period - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	9.3935	81.3304	104.8701	0.1865		4.2092	4.2092		3.9517	3.9517		17,811.0093	17,811.0093	4.0572		17,912.4382
Total	**9.3935**	**81.3304**	**104.8701**	**0.1865**	**0.0000**	**4.2092**	**4.2092**	**0.0000**	**3.9517**	**3.9517**		**17,811.0093**	**17,811.0093**	**4.0572**		**17,912.4382**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0290	0.0000	0.0290	7.1100e-003	0.0000	7.1100e-003			0.0000			0.0000
Worker					0.3427	0.0000	0.3427	0.0841	0.0000	0.0841			0.0000			0.0000
Total					**0.3716**	**0.0000**	**0.3716**	**0.0912**	**0.0000**	**0.0912**			**0.0000**			**0.0000**

3.11 Open Trench - Grading - 24 Hour Period - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	9.3935	71.5964	104.8701	0.1865		4.2092	4.2092		3.9517	3.9517	0.0000	17,811.0093	17,811.0093	4.0572		17,912.4382
Total	**9.3935**	**71.5964**	**104.8701**	**0.1865**	**0.0000**	**4.2092**	**4.2092**	**0.0000**	**3.9517**	**3.9517**	**0.0000**	**17,811.0093**	**17,811.0093**	**4.0572**		**17,912.4382**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0290	0.0000	0.0290	7.1100e-003	0.0000	7.1100e-003			0.0000			0.0000
Worker					0.3427	0.0000	0.3427	0.0841	0.0000	0.0841			0.0000			0.0000
Total					**0.3716**	**0.0000**	**0.3716**	**0.0912**	**0.0000**	**0.0912**			**0.0000**			**0.0000**

3.12 Open Trench - Paving - Final - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5489	5.7056	5.8755	0.0120		0.2392	0.2392		0.2201	0.2201		1,157.010 7	1,157.010 7	0.3742		1,166.365 7
Paving	0.2044					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7532**	**5.7056**	**5.8755**	**0.0120**		**0.2392**	**0.2392**		**0.2201**	**0.2201**		**1,157.010 7**	**1,157.010 7**	**0.3742**		**1,166.365 7**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0900e-003	0.0870	0.0302	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.8598	41.8598	1.4300e-003	6.0600e-003	43.7015
Worker	0.0150	8.5000e-003	0.1131	3.7000e-004	0.0493	2.3000e-004	0.0495	0.0131	2.1000e-004	0.0133		37.6568	37.6568	9.7000e-004	9.8000e-004	37.9741
Total	**0.0171**	**0.0955**	**0.1433**	**7.6000e-004**	**0.0628**	**7.5000e-004**	**0.0636**	**0.0170**	**7.1000e-004**	**0.0177**		**79.5166**	**79.5166**	**2.4000e-003**	**7.0400e-003**	**81.6756**

3.12 Open Trench - Paving - Final - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5489	5.7056	5.8755	0.0120		0.2392	0.2392		0.2201	0.2201	0.0000	1,157.0107	1,157.0107	0.3742		1,166.3657
Paving	0.2044					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7532**	**5.7056**	**5.8755**	**0.0120**		**0.2392**	**0.2392**		**0.2201**	**0.2201**	**0.0000**	**1,157.0107**	**1,157.0107**	**0.3742**		**1,166.3657**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0900e-003	0.0870	0.0302	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.8598	41.8598	1.4300e-003	6.0600e-003	43.7015
Worker	0.0150	8.5000e-003	0.1131	3.7000e-004	0.0493	2.3000e-004	0.0495	0.0131	2.1000e-004	0.0133		37.6568	37.6568	9.7000e-004	9.8000e-004	37.9741
Total	**0.0171**	**0.0955**	**0.1433**	**7.6000e-004**	**0.0628**	**7.5000e-004**	**0.0636**	**0.0170**	**7.1000e-004**	**0.0177**		**79.5166**	**79.5166**	**2.4000e-003**	**7.0400e-003**	**81.6756**

3.13 Open Trench - Arch Coating - Striping, Final - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	57.2822					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**57.4531**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0900e-003	0.0870	0.0302	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.8598	41.8598	1.4300e-003	6.0600e-003	43.7015
Worker	9.9700e-003	5.6700e-003	0.0754	2.5000e-004	0.0329	1.5000e-004	0.0330	8.7200e-003	1.4000e-004	8.8600e-003		25.1045	25.1045	6.5000e-004	6.6000e-004	25.3161
Total	**0.0121**	**0.0926**	**0.1056**	**6.4000e-004**	**0.0464**	**6.7000e-004**	**0.0471**	**0.0126**	**6.4000e-004**	**0.0133**		**66.9643**	**66.9643**	**2.0800e-003**	**6.7200e-003**	**69.0176**

3.13 Open Trench - Arch Coating - Striping, Final - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	57.2822					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**57.4531**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0900e-003	0.0870	0.0302	3.9000e-004	0.0136	5.2000e-004	0.0141	3.9000e-003	5.0000e-004	4.4000e-003		41.8598	41.8598	1.4300e-003	6.0600e-003	43.7015
Worker	9.9700e-003	5.6700e-003	0.0754	2.5000e-004	0.0329	1.5000e-004	0.0330	8.7200e-003	1.4000e-004	8.8600e-003		25.1045	25.1045	6.5000e-004	6.6000e-004	25.3161
Total	**0.0121**	**0.0926**	**0.1056**	**6.4000e-004**	**0.0464**	**6.7000e-004**	**0.0471**	**0.0126**	**6.4000e-004**	**0.0133**		**66.9643**	**66.9643**	**2.0800e-003**	**6.7200e-003**	**69.0176**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Industrial Park	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00	79	19	2
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.557888	0.062607	0.178921	0.119061	0.024112	0.006269	0.008734	0.006266	0.000708	0.000566	0.028949	0.000971	0.004949
Industrial Park	0.557888	0.062607	0.178921	0.119061	0.024112	0.006269	0.008734	0.006266	0.000708	0.000566	0.028949	0.000971	0.004949
Other Asphalt Surfaces	0.557888	0.062607	0.178921	0.119061	0.024112	0.006269	0.008734	0.006266	0.000708	0.000566	0.028949	0.000971	0.004949

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0166	0.1512	0.1270	9.1000e-004		0.0115	0.0115		0.0115	0.0115		181.4588	181.4588	3.4800e-003	3.3300e-003	182.5371
NaturalGas Unmitigated	0.0166	0.1512	0.1270	9.1000e-004		0.0115	0.0115		0.0115	0.0115		181.4588	181.4588	3.4800e-003	3.3300e-003	182.5371

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	1432.65	0.0155	0.1405	0.1180	8.4000e-004		0.0107	0.0107		0.0107	0.0107		168.5466	168.5466	3.2300e-003	3.0900e-003	169.5482
Industrial Park	109.753	1.1800e-003	0.0108	9.0400e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004		12.9122	12.9122	2.5000e-004	2.4000e-004	12.9889
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0166**	**0.1512**	**0.1270**	**9.0000e-004**		**0.0115**	**0.0115**		**0.0115**	**0.0115**		**181.4588**	**181.4588**	**3.4800e-003**	**3.3300e-003**	**182.5371**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	1.43265	0.0155	0.1405	0.1180	8.4000e-004		0.0107	0.0107		0.0107	0.0107		168.5466	168.5466	3.2300e-003	3.0900e-003	169.5482
Industrial Park	0.109753	1.1800e-003	0.0108	9.0400e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004		12.9122	12.9122	2.5000e-004	2.4000e-004	12.9889
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0166**	**0.1512**	**0.1270**	**9.0000e-004**		**0.0115**	**0.0115**		**0.0115**	**0.0115**		**181.4588**	**181.4588**	**3.4800e-003**	**3.3300e-003**	**182.5371**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.3533	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269
Unmitigated	1.3533	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3139					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.0383					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0900e-003	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269
Total	**1.3533**	**1.1000e-004**	**0.0118**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0253**	**0.0253**	**7.0000e-005**		**0.0269**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.3139					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.0383					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0900e-003	1.1000e-004	0.0118	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0253	0.0253	7.0000e-005		0.0269
Total	**1.3533**	**1.1000e-004**	**0.0118**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0253**	**0.0253**	**7.0000e-005**		**0.0269**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Blasting Criteria Air Pollutant and Greenhouse Gas Emissions

Anticipated blasting activities is assumed to include the following:

Assumptions:

2,000	cubic yard/blast
1	blast/day
2.67	ton explosives/per 2,000 CY blast (maximum blast)
16.00	feet average depth

Project Phase Estimates:

6,000	total cubic yard/phase
3.0	total blasts
8.01	total ton explosives/phase
2.67	maximum ton explosives/day
375	total square feet blasted/phase
375	maxmimum square feet blasted/day

Emissions Calculations:

Pollutant	Source	Emission Factor	Units	Maximum Daily (lbs/day)	Annual (lbs/year)	Annual (ton/year)
ROG	1	N/A	lb/ton	—	—	—
NOx	1	17	lb/ton	45.39	136.17	0.07
CO	1	67	lb/ton	178.89	536.67	0.27
SOx	1	2	lb/ton	5.34	16.02	0.01
PM_{10}	2	—	lb/blast	0.05	0.05	0.00
$PM_{2.5}$	2	—	lb/blast	0.00	0.00	0.00

Source/Reference:
1. AP-42, Section 13.3, Table 13.3-1 for ANFO.
2. AP-42, Section 11.9, Table 11.9-1.

$PM_{10} = 0.52 \times 0.000014 \times (A)^{1.5}$, where A is the horizontal area blasted.

$PM_{2.5} = 0.03 \times 0.000014 \times (A)^{1.5}$, where A is the horizontal area blasted.

Notes:
lb = pounds

GHG Emissions Calculation Comparison:

Pollutant	Source	Emission Factor	Units	Maximum Daily (lbs/day)	Annual (lbs/year)	Annual (MT/year)
CO_2	1	10.35	kg/gallon	--	--	1.34
CO_2	2	0.1670	MT/MT	--	--	1.21

Source/Reference:
1. The Climate Registry. 2018 Emission Factors. Table 12.1 U.S. Default Factors for Calculating CO2 Emissions from Combustion of Fossil Fuel and Biomass.
2. Australian Government - Department of Heritage Australian Greenhouse Office. *AGO Factors and Methods Workbook.* December 2006

Conversion Values:

7.41	lbs/gallon fuel oil
6.00%	composition of fuel oil #2 in ANFO
10.35	kg CO2/gallon fuel oil #2
2000	lbs/ton
1000	kg/MT
1.102	tons/MT

Notes:
MT = metric tons
kg = kilograms
lb = pounds

Blasting Criteria Air Pollutant and Greenhouse Gas Emissions

Equation:

Drop Operations Formula

$EF(PM) = (k*0.0032)*(U/5)^{1.3}/(M/2)^{1.4}$

k (PM_{10}) =	0.35	
k ($PM_{2.5}$) =	0.053	
U =	2.98	mph
M =	3	%
EF PM_{10} =	0.000323	
EF PM_{10} =	0.000049	

Where:

EF = emission factor (pounds per ton)

k =particle size multiplier (dimensionsless)

U = mean wind speed, meters per second (m/s) (miles per hour (mph))

M = material moisture content (%)

Reference:

AP42 Section 13.2.4.3 - Predictive Emission Factor Equations

Assumptions:

Production Rate Information

357	cubic yard/day
2.16	tons/cubic yard
772	ton/day

Emissions Calculations:

Equipment Type	Throughput	PM_{10}		$PM_{2.5}$		
	Tons/day	Emission Factor (lb/ton)	Daily (lb/day)	Emission Factor (lb/ton)	Daily (lb/day)	Daily (lb/hour)
Hopper Loading	772	0.000323	0.25	0.000049	0.038	1.58E-03
Primary Crusher	772	0.00054	0.42	0.0001	0.077	3.22E-03
Conveyor Transfer	772	0.000046	0.04	0.000013	0.010	4.18E-04
Screen 1	772	0.00074	0.57	0.00005	0.039	1.61E-03
Conveyor Transfer	232	0.000046	0.01	0.000013	0.003	1.25E-04
Conveyor Transfer to Pile	232	0.000323	0.07	0.000049	0.011	4.18E-04
Conveyor Transfer	540	0.000046	0.02	0.000013	0.007	1.61E-03
Secondary Crusher	540	0.00054	0.29	0.000100	0.054	2.25E-03
Conveyor Transfer	540	0.000046	0.02	0.000013	0.007	2.93E-04
Screen 2	540	0.00074	0.40	0.00005	0.027	1.61E-03
Conveyor Transfer	540	0.000046	0.02	0.000013	0.007	1.25E-04
Conveyor Transfer to Pile	540	0.000323	0.17	0.000049	0.026	4.73E-04
Total Rock Crushing			*2.30*		*0.31*	*0.33*

References/Notes:

Emission Factors from AP-42, Section 11.19.2 (Crushed Stone Processing), Table 11.19.2-2 (controlled factors).

Emission Factor for drop operation (conveyor to product pile) from AP-42, Section 13.2.4 (Aggregate Handling and Storage Piles), Equation 1. Wind speed is obtained from mean of Escondido 2010-2012 meteorlogical data. Moisture content is assumed to be 3%.

Appendix C
Biological Resources Technical Report

Biological Resources Report

Crossover Pipeline Interstate 15 Bypass Project

DECEMBER 2022

Prepared for:

SAN DIEGO COUNTY WATER AUTHORITY
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SDCWA Project No.	R0309	SDCWA Project Name	Crossover Pipeline I-15 Bypass
SDCWA ENV No.	E2022-03	SDCWA Contract ID/Task No.	061904/21
Associated Permits	2810-2011-001-05; TE03216A-0		

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FIGURES

APPENDICES

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CIP	Capital Improvement Program
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
ESA	Endangered Species Act
FP	Fully Protected
HCP	habitat conservation plan
LSAA	Lake and Streambed Alteration Agreement
NCCP	natural community conservation plan
PMPP	Programmatic Master Plan Permit
project	Crossover Pipeline Project
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
Water Authority	San Diego County Water Authority

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Executive Summary

This Biological Resources Technical Report (report) provides an assessment of existing conditions with respect to biological resources and analysis of potential impacts to those resources associated with the San Diego County Water Authority's (Water Authority) Crossover Pipeline Interstate 15 Bypass Project (project) located in central western San Diego County, California. As described in greater detail below, this biological resources assessment addresses impacts from project-related construction and infrastructure improvements within the project study area (containing various pipeline structures and trenches, laydown areas, access points, and all lands within a 300-foot survey buffer) where project impacts may occur. This report also provides recommendations to avoid and reduce potential project impacts on biological resources as required by the Water Authority's Subregional Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP).

The project is primarily located in unincorporated areas of the County of San Diego (County), just north the City of Escondido. Construction activities are anticipated to be located within a mixture of Water Authority right-of-way (ROW), County ROW, and private property; the entire tunneled portion of the proposed pipeline would be located within Caltrans ROW. One potential construction laydown area (referred to as Laydown Area B) is located within the City of Escondido municipal boundaries. The project spans primarily developed/disturbed land in a rural area, crosses beneath I-15, and travels along N. Centre City Parkway. The project alignment is surrounded by semi-rural residential development, commercial uses (plant nurseries and a golf driving range), undeveloped land, and local roadways.

All areas subject to project-related temporary impacts would be restored to their pre-project conditions per NCCP/HCP requirements. Limited permanent impacts associated with structure replacement will occur in coastal sage scrub (Diegan) and disturbed land; mitigation for permanent impacts on native vegetation communities would be achieved by debiting mitigation credits pursuant to ratios specified in the NCCP/HCP.

Dudek's biological reconnaissance survey included vegetation mapping, a general plant and wildlife survey (including a habitat assessment for special-status and NCCP/HCP Covered Species and Narrow Endemic species), and an informal jurisdictional delineation to define potential aquatic resources subject to federal and state regulations. The project study area includes potential work area locations around existing and proposed Water Authority structures. Dudek also assessed the potential for special-status species to occur within the study area through a desktop analysis of the California Natural Diversity Database and U.S. Fish and Wildlife Service (USFWS) data and project specific field surveys.

Based on species composition and general appearance, 8 different vegetation communities and land cover types were mapped within the study area.. These can be summarized as follows: disturbed/developed, agricultural, chaparral, grasslands, oak woodland, coastal sage scrub, and riparian. Five sensitive vegetation communities occur within the project study area: coast live oak woodland, southern coast live oak riparian forest, coastal sage scrub (Diegan), southern mixed chaparral, and non-native grassland (grassland). All temporarily impacted vegetation communities would be restored to pre-project conditions in accordance with the NCCP/HCP. Impact acreages provided in this report are based on the current design and may be subject to modifications prior to construction.

No plant or wildlife species covered by the NCCP/HCP were detected within the study area during field surveys. No other special-status or plant Covered Species are expected to have a high potential to occur. Subsequently, no special-status plant species are expected to be directly impacted by project activities.

Four wildlife species covered by the NCCP/HCP were determined to have a moderate potential to occur within the study area: Belding's orange-throated whiptail (*Aspidoscelis hyperythra*), coastal (western) whiptail (*Aspidoscelis tigris stejnegeri*), northern red diamond rattlesnake (*Crotalus ruber*), and yellow warbler (*Setophaga petechia*). One wildlife Covered Species, coastal California gnatcatcher (*Polioptila californica californica*), was determined to have a high potential to occur within in the project study area and work areas. Two Non-Covered Species, pallid bat (*Antrozous pallidus*) and Cooper's Hawk (*Accipiter cooperii*), were determined to have a moderate potential to occur in the project study area. No other federally/state endangered, rare, or threatened species, and no special status species or fully protected species that are not Covered Species under the NCCP/HCP were determined to have a moderate or high potential to occur in the study area. Of these species, only coastal California gnatcatcher is assumed present as it was determined to have a high potential to occur; moderate potential does not indicate a potential species-based impact pursuant to the NCCP/HCP.

An informal delineation of jurisdictional aquatic resources conducted at the project identified resources within or adjacent to the project study area. Most of the identified aquatic resources are considered non-jurisdictional however one non-wetland water/streambed feature assumed to be under the jurisdiction of the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and Regional Water Quality Control Board (RWQCB) was observed in the project study area. CDFW riparian habitat exists in the study area where the vegetation is dominated by hydrophytic plant species. No potential USACE/RWQCB 3-parameter wetlands were identified during the delineation. Impact acreages provided in this report are based on the current design and are subject to modifications. However, every attempt was made to delineate the maximum impact footprint required to accommodate project construction.

The project would remain consistent with the NCCP/HCP through compliance with the General Conditions for Coverage (see Sections 2.2 through 2.6 of Appendix B of the NCCP/HCP), species-specific special conditions for coverage (see Appendix B, Sections 5.0 through 9.0 of the NCCP/HCP), and applicable minimization measures (Section 6.4 of the NCCP/HCP) (SDCWA 2010). No permanent impacts to biologically significant resource areas are expected, as defined in the NCCP/HCP.

Mitigation measures for potential direct and indirect impacts to sensitive vegetation communities would follow the requirements outlined in the NCCP/HCP. Since most impacts to vegetation communities would be one-time, temporary impacts, restoration and revegetation of the impacted areas would be implemented on site at a 1:1 ratio in accordance with the NCCP/HCP. Permanent impacts to vegetation communities are anticipated. No permanent or temporary impacts to jurisdictional aquatic resources are anticipated.

As required by the NCCP/HCP, a pre-activity survey would be performed prior to project-related ground disturbance to verify there are no substantial changes to the biological baseline conditions documented in this report. During pre-activity surveys required at all project work areas, additional investigations into habitat suitability and/or species presence/ absence surveys would be performed to determine the need to implement additional species-specific avoidance and minimization measures.

1 Introduction

This Biological Resources Technical Report (report) provides an assessment of existing conditions with respect to biological resources and analysis of potential impacts to those resources associated with the San Diego County Water Authority's (Water Authority) Crossover Pipeline Interstate 15 Bypass Project (project) located in central San Diego County, California. As described in greater detail below, this biological resources assessment addresses impacts from project-related construction and infrastructure improvements within the study area (containing various pipeline structures and trenches, laydown areas, access points, and all lands within a 300-foot survey buffer) where project impacts may occur. This report also provides recommendations to avoid and reduce potential project impacts on biological resources as required by the Water Authority's Subregional Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) (SDCWA 2010).

The project is a "Covered Activity" under the NCCP/HCP as a Water Authority Capital Improvement Program (CIP) project, Section 5.1.7 (access road construction, re-establishment, and improvements), and as an operations and maintenance activity pursuant to Section 5.2.2 of the NCCP/HCP (replacement of pipelines and minor support facilities/appurtenances). The NCCP/HCP addresses the potential "take" of Covered Species and habitats associated with new construction, operation, and maintenance of certain types of CIP projects and operations and maintenance activities (SDCWA 2010).

1.1 Project Location

The project is primarily located in unincorporated areas of the County of San Diego (County), just north the City of Escondido, as shown on Figures 2-1, 2-2, and2-3. Construction activities are anticipated to be located within a mixture of Water Authority right-of-way (ROW), County ROW, and private property; the entire tunneled portion of the proposed pipeline would be located within Caltrans ROW. One potential construction laydown area (referred to as Laydown Area 4) is located within the City of Escondido municipal boundaries. The project spans primarily developed/disturbed land in a rural area, crosses beneath I-15, and travels along N. Centre City Parkway. The project alignment is surrounded by semi-rural residential development, commercial uses (plant nurseries and a golf driving range), undeveloped land, and local roadways. Additional details regarding the environmental setting of each work area is discussed below in Section 1.2.

The project entails replacement and improvement of existing Crossover Pipeline infrastructure. This section describes the characteristics of project construction, proposed permanent and temporary features of the project, and work areas that will experience temporary and permanent impacts related to project implementation. Refer to Figures 2-1 thru 2-3 for all project components discussed below.

1.1.1 Project Construction Areas, Access, and Staging

An overview of the work areas assumed for project-related construction impacts in this document are shown in Figures 2-1 thru 2-3. These work areas and their respective boundaries were identified by Water Authority project engineers as likely sites needed to implement the proposed project, which include areas for excavation, trenching, staging, and storage. These areas are mostly limited to previously developed and disturbed land. Potential work and laydown areas have been numbered sequentially from north to south for convenient identification and description in this document; these numbers are not part of project design and may be renamed or renumbered further along in the design process. Additionally, it is unlikely that all laydown areas described in this document would be used for construction, but several options under consideration have been identified. For purposes of conservative analysis, this document assumes that all laydown areas would be used.

Work Area 1/Northern Tie-In

Work Area 1 is located within the private Moon Valley Nursery property and Water Authority ROW, west of I-15 and Mesa Rock Road, as shown on Figure 2-1. The active work and staging area would be approximately 1.1 acres and would be located entirely within the Moon Valley Nursery property. Work Area 1 would house an approximately 15-by-32-foot-wide by 15-foot-deep jacking pit for the tunneling portion of the proposed pipeline alignment, and would also be the location where the contractor would construct the upstream connection between the existing Crossover Pipeline and the pipeline's realigned portion. Access to Work Area 1 would occur via Mesa Rock Road. Work Area 1 would be returned to existing conditions upon completion of construction.

Work Area 2

Work Area 2 is located within County ROW, east of I-15 and N. Centre City Parkway, as shown on Figure 2-1. The active work area would be approximately 1 acre and would be located entirely within disturbed land. Work Area 2 would house an approximately 20-by-25-foot-wide by 20-foot-deep receiving pit for the tunneling portion of the proposed pipeline alignment. Access to Work Area 2 would occur via N. Centre City Parkway or Tierra Libertia Road. Work Area 2 would be returned to existing conditions upon completion of construction.

N. Centre City Parkway Trenching

The proposed pipeline alignment from the eastern tunnel pit to the southern tie-in with the existing Crossover Pipeline would be constructed using an approximately 8-foot wide open-cut trench within the southbound lane of N. Centre City Parkway. The northbound lane and shoulder of N. Centre City Parkway would remain unchanged and used for construction vehicle access. Figures 2-1 and 2-2 show the proposed trenching alignment; the entire area, including both lanes of the roadway, to be affected by construction is approximately 3.8 acres, within the developed County ROW. During active construction, the affected segment of N. Centre City Parkway would be fully closed, and all traffic would be detoured along Mesa Rock Road and Deer Springs Road. The intent of the construction sequence is to construct the proposed pipeline in segments in between the local access roads to allow diversion of traffic to the north or south, outside of the active work area. All areas disturbed by construction would be returned to existing conditions.

Work Area 3/Southern Tie-In

Approximately 2,000 feet north of the intersection of N. Centre City Parkway / Mesa Rock Road, the proposed pipeline would turn east through County ROW via 8-foot wide open-cut trench before connected to the existing Crossover Pipeline within the Water Authority's existing easement, as shown on in Figure 2-2. Construction of this segment would require vegetation clearing of an approximately 0.4-acre area. A new 12-foot-wide access road would be installed over the pipeline alignment between N. Centre City and the Water Authority ROW. Post-construction restoration would occur as required by the Water Authority's NCCP/HCP.

Access Structures and Air Vents

At five locations shown on Figures 2-1 and 2-2, the project would construct new permanent pipeline access structures. These structures would provide access into the replacement pipeline for inspection and maintenance personnel and equipment.

Laydown Areas A through E

Five prospective laydown areas have been identified for construction of the proposed project and are summarized in Table 1. All laydown areas would be used for the same general purpose of storing equipment and materials for the duration of construction. Access to the laydown areas would be occur via Mesa Rock Road, N. Centre City Parkway, Jesmond Dene Drive, and Woodland Heights Glen. Laydown Area B would require vegetation clearing and laying of gravel to create a flat and stable surface. Laydown Areas A, C, D, and E are either developed or sufficiently maintained that no vegetation clearing is anticipated. All laydown areas would be surrounded by a chain-link fence for security purposes. Existing structures, foundations, and landscaping would be fenced off and avoided during all phases of construction.

Pipeline Abandonment

At the north and south connection points between the existing pipeline and the realigned pipeline, the proposed project would entail excavating pits around the existing pipe to remove sections of pipe and allow construction of the new joints, which would be encased in concrete blocks. An approximately 80-foot-long segment of pipe would be removed within the Moon Valley Nursery property to allow for northern tie-in of new pipe; an approximately 20-foot-long segment of the existing Crossover Pipeline would be removed at the intersection of N. Centre City Parkway and Jesmond Dene Road to allow the realigned pipe's downstream connection to the existing pipeline; and an approximately 90-foot-long segment of pipe would be removed within the Water Authority ROW to allow for the southern tie-in of new pipe. The ends of the existing Crossover Pipeline that would be bypassed by the replacement alignment would be capped. Additionally, three existing, partially subgrade, structures would be removed from the existing pipeline, which would involve demolition of the aboveground portion to just below the existing grade and restoration of the disturbed area. The disturbed area would be limited to the existing Water Authority ROW. All remaining portions of the bypassed existing Crossover Pipeline (approximately 5,210 feet long) would be abandoned in place, which would entail filling the existing pipeline with sand or concrete. Although the existing pipeline would be abandoned and portions would be removed, the Water Authority would maintain its existing easements

All work areas are listed in Table 1 along with their respective center coordinates. Figure 1 shows an overview of the project alignment, and Figures 2-1 to 2-3, Biological Resources, show the study area in greater detail.

Table 1. Water Authority Crossover Pipeline Work Areas Included in Biological Resources Report

Construction Area	Anticipated Activity	Work Area Center Coordinates (Decimal Degrees)
Work Area 1/ Northern Tie-In	Open-cut trenching; Tunneling pit; Installation of other pipeline access structures; Staging and storage of construction equipment and materials	33.19145, -117.1237
Work Area 2	Tunneling pit; Open-cut trenching; Installation of other pipeline access structures; Staging and storage of construction equipment and materials	33.19175, -117.1218
N. Centre City Parkway Trenching	Open-cut trenching; Installation of other pipeline access structures; Temporary road closure	33.18556, -117.1184
Work Area 3/Southern Tie-In Trenching	Open-cut trenching; Installation of other pipeline access structures; Installation of new access road	33.1796, -117.1147
Work Area 4/Air Valve Vault Work Area	Excavation and grading; Installation of subgrade access structure	33.18793, -117.1195
Laydown Area A	Staging and storage of construction equipment and materials	33.19059, -117.1209
Laydown Area B	Staging and storage of construction equipment and materials	33.18879, -117.1196
Laydown Area C	Staging and storage of construction equipment and materials	33.18093, -117.1187
Laydown Area D	Staging and storage of construction equipment and materials	33.17308, -117.1081
Laydown Area E	Staging and storage of construction equipment and materials	33.17124, -117.1059

1.2 Environmental Setting

The project alignment occurs in an area that features a mixture of public roadways, agricultural and commercial areas, and various undeveloped lands. Surrounding habitats are generally characterized by a mixture of existing rural properties, undeveloped open space and native vegetation (including non-native grassland, mixed chaparral, sage scrub, oak woodland and riparian forest), plant nurseries, and a variety of roads and public infrastructure.

The project alignment is generally flat with topography that rises slightly towards its northern extent. Elevations along the project alignment range from approximately 950 feet to 1,030 feet above mean sea level. Several drainage features and streams of varying size traverse the study area and project alignment. The structures and work areas within the study area are located within or near the Water Authority ROW and are typically directly accessible from adjacent roadways or dirt access paths.

1.3 Regulatory Setting

Subregional Natural Community Conservation Plan/Habitat Conservation Plan

The Water Authority prepared its NCCP/HCP (SDCWA 2010) pursuant to Section 2800 et seq. of the California Fish and Game Code and Section 10(a) of the Endangered Species Act (ESA) of 1973, as amended. The purpose of the NCCP/HCP is to fulfill the requirements for issuance of incidental take authorization under Section 2835 of the Natural Community Conservation Planning Act and an incidental take permit under Section 10 of the ESA. The NCCP/HCP identifies the types of activities proposed for coverage and an assessment of expected impacts. The NCCP/HCP does not preclude the Water Authority from processing federal permits or state permits with the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW), respectively (collectively, the Wildlife Agencies), if required for individual future projects that are not covered by the NCCP/HCP. The entire project is within the Water Authority's Probable Impact Zone covered by the NCCP/HCP.

The Water Authority's NCCP/HCP provides the mechanism for take authority of Covered Species consistent with the Natural Community Conservation Planning Act and federal and state ESAs. Section 6.3 of the NCCP/HCP (SDCWA 2010) explains the verification process whereby a project is assessed for compliance with the NCCP/HCP. This report is the first step in the verification process for the project, which is a Covered Activity under the NCCP/HCP. Section 4 of this report provides a discussion of project consistency with the NCCP/HCP.

Clean Water Act Section 404 Programmatic Master Plan Permit

The Water Authority obtained a Programmatic Master Plan Permit (PMPP) (Permit No. SPL-2012-00106-PJB) from USACE in May 2015. The PMPP establishes a framework to authorize impacts on waters of the United States resulting from the Capital Improvement Program (CIP) and Operations and Maintenance projects described in the Water Authority's 2013 Regional Water Facilities Optimization and Master Plan Update. The PMPP identifies conditions that must be met by the Water Authority in implementing projects with impacts on waters of the United States and defines the Water Authority's habitat-based mitigation commitments. The project is not anticipated to require permission under the PMPP because impacts on USACE jurisdiction are avoided based on current design.

CDFW Lake and Streambed Alteration Program/Programmatic Routine Operations and Maintenance Streambed Alteration Agreement

The proposed project will be subject to CDFW authorization pursuant to Sections 1600–1603 of the California Fish and Game Code. In November of 2019 the Water Authority signed a Final Lake or Streambed Alteration Agreement (Maintenance Agreement; Notification No. 1600-2019-0153-R5) with CDFW for programmatic authorization of routine operations and maintenance projects that result in minor impacts on jurisdictional waters features regulated by CDFW pursuant to the California Fish and Game Code. The Maintenance Agreement applies to a variety of Water Authority activities involving maintenance and repairs at existing culverts, headwalls, Arizona crossings, access roads, unimproved stream crossings and inline structures/facilities (e.g., blow offs and pump wells).

Avoidance, minimization, and mitigation requirements of the Maintenance Agreement primarily reiterate commitments made by the Water Authority in the NCCP/HCP, but the Maintenance Agreement also specifies additional conditions pertaining to flow diversion, impacts on aquatic species, and pouring concrete, when those are relevant to the permitted activity. Compensatory mitigation pursuant to the Maintenance Agreement is limited to the mitigation obligations outlined in the NCCP/HCP.

The Water Authority will consult with CDFW to determine whether the proposed project is covered under the programmatic agreement or if a separate Lake and Streambed Alteration Agreement (LSAA) specific to the project will be required. In the event the project is covered under the programmatic agreement, the Water Authority will submit a package of project information to CDFW as required by Section 2.1 of the Maintenance Agreement, provide fee payment as required by Section 2.2 of the Maintenance Agreement, and conduct post-construction reporting as required by Section 2.3 of the Maintenance Agreement. In the event a separate LSAA specific to the project is required, the project will qualify for a streamlined permitting process with CDFW, as set forth in Section 6.7.2 of the NCCP/HCP. These streamlining provisions state that implementing NCCP/HCP minimization measures are sufficient to serve as permit conditions for a project's LSAA, and that no additional mitigation would be required as part of the CDFW authorization.

California Environmental Quality Act

Approval by the Water Authority Board of Directors to award a construction contract to build the project constitutes a discretionary action that triggers environmental review requirements pursuant to the California Environmental Quality Act (CEQA), with the Water Authority serving as lead agency under CEQA. The Water Authority prepared a CEQA Initial Study Declaration (IS) to analyze and consider the environmental impacts of implementing the project, which is presented herein. Based on the results of the IS, the Water Authority has made the determination that a Mitigated Negative Declaration (MND) is the appropriate environmental document for compliance with CEQA (California Public Resources Code, Section 21000 et seq.). As stated in CEQA Section 21064, an MND may be prepared for a project subject to CEQA when an IS has identified no potentially significant effects on the environment when mitigation is identified that can reduce impacts to less than significant levels.

2 Survey Methods and Limitations

2.1 Desktop and Literature Review

Prior to commencing biological resources fieldwork and reporting for the project, Dudek reviewed the following resources to assist with the biological resources analysis:

- University of California, Davis/NRCS SoilWeb (UC Davis/NRCS 2022)
- CDFW California Natural Diversity Database – RareFind, Version 5 (CDFW 2022)
- The Calflora Database (Calflora 2022)
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2022)
- USFWS Species Occurrence Data (USFWS 2022)
- San Diego Natural History Museum's Plant Atlas (SDNHM 2022)
- Aerial imagery (Google Earth 2022)

2.2 Field Reconnaissance

Biological field surveys for the project were conducted in July 2022 by a qualified Dudek biologist. The survey conducted along the project alignment included general biological reconnaissance (including a habitat assessment for special-status and NCCP/HCP Covered Species and Narrow Endemic species) and vegetation mapping. An informal jurisdictional delineation was also conducted in the study area. Surveys focused on the portions of the study area within the Water Authority's ROW due to legal access limitations; portions of the study area outside of the ROW were visually surveyed from accessible portions of the ROW or public roads. Access to some private properties within the study area was permitted. Table 2 lists the survey date, times, surveying biologists, and weather conditions during the survey.

Table 2. Schedule of Surveys

Date	Time	Personnel	Survey Type	Conditions
07/14/2022	8:30 AM – 12:33 PM	Dylan Ayers	Biological Reconnaissance, Vegetation Mapping, and Jurisdictional Delineation	67–80°F; 10–60% cloud cover; 0–5 mph wind

Notes: °F = degrees Fahrenheit; cc = cloud cover; mph = miles per hour

2.2.1 Resource Mapping

Vegetation communities and land cover types within the study area were mapped in the field using an ArcGIS mobile application (Esri 2022). Once in ArcGIS, the acreage of each vegetation community and land cover present within the study area was determined. The vegetation community and land cover mapping follow the NCCP/HCP (SDCWA 2010).

2.2.2 Flora and Fauna

All plant species encountered during field surveys were identified and recorded directly in a field notebook. Those species that could not be identified immediately were brought into the laboratory for further investigation and final identification. A compiled list of plant species observed in the study area is presented in Appendix A, Plant Compendium.

All wildlife species detected during the field survey by sight, calls, tracks, scat, or other signs were recorded directly into a field notebook. Binoculars (10×42 magnification) were used to aid in the identification of wildlife. A list of wildlife species observed in the study area is presented in Appendix B, Wildlife Compendium.

No formal, protocol-level wildlife surveys or focused sensitive plant surveys were performed for this assessment, but sensitive species were recorded if encountered during general surveys. The survey was performed in mid-summer when most annual plants are no longer blooming and identifiable.

2.2.3 Jurisdictional Delineation

Dudek completed an informal jurisdictional delineation of the extent of potentially jurisdictional aquatic features in the study area. The delineation defined resources under the jurisdiction of CDFW pursuant to Sections 1600– 1603 of the California Fish and Game Code, under the jurisdiction of the USACE pursuant to Section 404 of the federal Clean Water Act, and under the jurisdiction of the RWQCB pursuant to Clean Water Act Section 401 and the Porter–Cologne Water Quality Control Act.

For purposes of impact analysis pursuant to CEQA and the NCCP/HCP, results of the delineation and potential jurisdictional aquatic resources are discussed in Section 3.4.5, Potentially Jurisdictional Aquatic Resources, of this report.

2.3 Special-Status Species Assessments

Potential for special-status species occurrence within the study area, as discussed in this report, was determined by known habitat preferences of local species and knowledge of their relative distributions in the area. After conducting biological field surveys, Dudek staff conducted a targeted search of the CDFW's California Natural Diversity Database (CNDDB) (CDFW 2022) and the USFWS's critical habitat data (USFWS 2022) around the study area and a corresponding 1-mile buffer to assist in the determination of potential for special-status and NCCP/HCP Covered Species (including Narrow Endemic species) to occur within the study area. Section 3.4, Special-Status Resources, of this report describes this process and the results of the assessments in greater detail.

2.4 Survey Limitations

Site visits were conducted during daylight hours. Complete inventories of biological resources present on a site often require numerous focused surveys at different times of day during different seasons. Some species, such as annual plants, may only be observable in the early spring, and nocturnal animals are difficult to detect during the day. Other species may be present in such low numbers that they could be missed. Due to such timing and seasonal variations, survey results are not an absolute list of all species that the study area may support. Special-status plant and wildlife species with potential to occur in the study area are described in Section 3.4.1, Special-Status Plants; Section 3.4.2, Special-Status Wildlife; Appendix C, Special-Status Plant Species Potentially Occurring within the Biological Study Area; and Appendix D, Special-Status Wildlife Species Potentially Occurring within the Biological Study Area.

3 Results

3.1 Vegetation Communities and Land Cover Types

The vegetation communities and land covers within the study area were mapped according to the Water Authority's NCCP/HCP (SDCWA 2010). There are 8 vegetation communities and land cover types mapped within the study area (Figures 2-1 to 2-3). Table 3 provides an overview of the acreages of each vegetation community and land cover mapped within the overall project alignment, with communities and land cover types organized into three categories consisting of native, non-native and disturbed, and wetland including non-wetland waters. Table 3 also identifies the applicable habitat tier from the Water Authority's NCCP/HCP for each vegetation community and land cover type.

Table 3. Vegetation Communities and Land Cover Types in the Project Study Area

Vegetation Community/ Land Cover Type	Water Authority NCCP/HCP Tier[a]	Acreage[b]
Upland Habitats		
Coast Live Oak Woodland	I	5.83
Diegan Coastal Sage Scrub	II	23.18
Disturbed	IV	28.58
General Agriculture	IV	0.82
Non-Native Grassland (Grassland)	III	5.75
Southern Mixed Chaparral	III	5.83
Urban/Developed Land	IV	79.67
	Subtotal	*149.66*
Wetland Habitats		
Southern Coast Live Oak Riparian Forest	I	9.68
	Subtotal	*9.68*
	Total	**159.34**

Notes:
HCP = habitat conservation plan; NCCP = natural community conservation plan.
[a] SDCWA 2010.
[b] Some numbers may not sum due to rounding.

Vegetation communities, land cover types, and their general descriptions follow Section 4.2 of the NCCP/HCP (SDCWA 2010). The spatial distributions of vegetation communities and land cover types in the study area are presented in Figures 2-1 thru 2-3. Each of these communities and land cover types is described in detail in the following discussion: many of the descriptions are derived from Oberbauer et al. (2008).

3.1.1 Upland Habitats

Coast Live Oak Woodland

Coast live oak woodland is dominated by a single evergreen species: coast live oak (*Quercus agrifolia*) and has a generally closed canopy. The shrub layer is often poorly developed, and the herbaceous species component, if present, is typically composed of grasses and/or vines. This community is classified as a Tier I under the NCCP/HCP (SDCWA 2010); therefore, impacts to coast live oak woodland would require mitigation.

This vegetation community occurs in several small patches in the study area (Figures 2-1 through 2-3). At these locations, coast live oak is the dominant species and forms a closed canopy. The understory consists of mainly leaf litter with a low cover of mixed non-native grasses, other herbaceous species, and few shrubs.

Coastal Sage Scrub (Diegan) (including disturbed)

Diegan coastal sage scrub is composed of relatively short, aromatic, drought-deciduous species. This community is characteristically dominated by shrubs such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), California encelia (*Encelia californica*), and sages (*Salvia* spp.), with scattered evergreen shrubs, including sugarbush (*Rhus ovata*) and laurel sumac (*Malosma laurina*). Coastal sage scrub is classified as a Tier II under the NCCP/HCP (SDCWA 2010); impacts to this native vegetation community would require mitigation.

This vegetation community is present at several locations in the study area (Figures 2-1 through 2-3). Within these areas, coastal sage scrub somewhat resembles the above description, with dominant shrubs including sagebrush, buckwheat, black sage (*Salvia mellifera*), sugarbush, and laurel sumac. Multiple thin, disjointed sections of this community were observed to be disturbed as a result of nearby human activities (landscaping, road traffic, trash dumping) with non-native species being actively recruited. (These disturbed areas still meet the NCCP/HCP definition of coastal sage scrub (Diegan) and do not qualify as the disturbed landcover type.)

Non-Native Grassland (Grassland)

Non-native grassland consists of areas with dense to sparse cover of non-native annual grasses. If shrubs or trees are present, they occupy less than 15% of the vegetation. The presence of wild oat, bromes, stork's bill (*Erodium cicutarium*), and mustard are common indicators. Impacts to this vegetation community may require mitigation due to the potential for this habitat to support reptiles, small mammals, and foraging for other wildlife. This community is classified as Tier III under the NCCP/HCP (SDCWA 2010).

This vegetation community occurs within the study area in small patches adjacent to N. Centre City Parkway (Figures 2-1 and 2-2). Non-native grassland was often dominated by a mix of invasive species such as foxtail brome (*Bromus rubens*), slender wild oat (*Avena barbata*), and bermudagrass (*Cynodon dactylon*); native herbaceous annuals like western ragweed (*Ambrosia psilostachya*) and invasive, non-native species like Maltese star-thistle (*Centaurea melitensis*) were also present at low cover. Most non-native grassland occurs in adjacent to the existing roadways or in areas adjacent to existing commercial and residential buildings.

Southern Mixed Chaparral

This vegetation community is characterized by medium to tall woody chaparral with limited understory diversity. Chamise is typically a dominant species, but there are several other characteristic species, including blue-colored lilacs (*Ceanothus* sp.), toyon (*Heteromeles arbutifolia*), and mountain mahogany (*Cercocarpus minutiflorus*). Southern mixed chaparral is classified as Tier III under the NCCP/HCP (SDCWA 2010); impacts to this native vegetation community would require mitigation.

Southern mixed chaparral is the dominant vegetation community on the sloped land that occurs in the study area near the southern edge of Laydown Area D (Figure 2-2). Dominant species include chamise, laurel sumac, sugarbush, and toyon.

Urban/Developed Land

Urban/developed land refers to areas that have been constructed on or disturbed so severely that native vegetation is no longer supported. This includes areas with permanent or semi-permanent buildings, pavement or hardscape, and ornamental landscaping. This land cover is classified as Tier IV under the NCCP/HCP (SDCWA 2010); therefore, impacts to urban/developed land do not require mitigation.

Urban/developed land was mapped throughout the study area (Figures 2-1 through 2-3) and typically consists of pavement or existing buildings.

Disturbed Land

Disturbed land refers to areas that support less than 20% cover of native plants at the time the area is assessed. Since this land cover type is classified as Tier IV under the NCCP/HCP (SDCWA 2010), impacts to disturbed land do not require mitigation.

Disturbed land was mapped throughout the study area (Figures 2-1 through 2-3). Areas mapped as disturbed land within the study area generally have a very low cover of native vegetation and/or grasses. These areas are associated with existing storage yards, construction sites, or right-of-way.

General Agriculture

General agriculture includes lands that support a range of agricultural activities including orchards, row crops, vineyards, or field and pastures for livestock. This community is classified as Tier IV under the NCCP/HCP (SDCWA 2010); therefore, impacts to general agriculture would not require mitigation.

This land cover type was only mapped in the northwestern portion of study area (Figure 2-1), where an orchard with row plantings is present.

3.1.2 Wetland Habitats

Southern Coast Live Oak Riparian Forest

Southern coast live oak riparian forest usually occurs along rivers or streams and refers to areas where moderately tall broad-leafed winter-deciduous riparian forests are present. They are typically dominated by coast live oak and have closed or nearly-closed canopies. Southern coast live oak riparian forest is classified as Tier I under the NCCP/HCP (SDCWA 2010); impacts to this vegetation community would require mitigation. Sub-dominant species include toyon (*Heteromeles arbutifolia*), wild rose (*Rosa californica*), and poison oak (*Toxicodendron diversilobum*). Other associated species include mugwort (*Artemisia douglasiana*) and elderberry (*Sambucus* sp.).

This vegetation community occurs in two locations within the study area, adjacent to the project alignment near N. Centre City Parkway and the laydown yards at the southern edge of the study area (Figures 2-2 and 2-3).

3.2 Plant Species Observed within the Project Study Area

A total of 39 species of vascular plants, 19 native (49%) and 20 non-native (51%), were recorded during the biological reconnaissance survey for the project; none are considered NCCP/HCP Covered Species or Narrow Endemic Species. A cumulative list of all plant species observed in the study area is provided in Appendix A.

3.3 Wildlife Species Observed within the Project Study Area

The study area contains lands supporting coastal sage scrub, chaparral, oak woodland, riparian forest, and grassland wildlife species. These habitats provide foraging and nesting habitat for migratory and resident bird species. Open habitats in the project alignment likely provide foraging opportunities for raptors. Areas of dense cover within vegetated communities in the project alignment also likely provide cover and foraging opportunities for small reptiles and mammal species. Riparian areas may be suitable for certain amphibians and aquatic invertebrates.

As noted in Section 2.2, Field Reconnaissance, wildlife species that were detected during the field survey by sight, calls, tracks, scat, or other signs were recorded directly in a field notebook. Binoculars (10×42) were used to aid in the identification of wildlife. A total of 8 wildlife species were recorded during reconnaissance surveys. Of the 8 wildlife species observed during surveys, none is an NCCP/HCP Covered Species. A cumulative list of wildlife species observed in the study area during field surveys is provided in Appendix B.

3.4 Special-Status Resources

Special-status (or sensitive) biological resources can include certain plant and wildlife species, native vegetation communities, and jurisdictional aquatic resources. For the purpose of analysis within a California Environmental Quality Act document, the Water Authority typically defines sensitive plant and wildlife species as those identified as Covered Species in the Water Authority's NCCP/HCP; those listed as endangered, rare, or threatened by the state or federal ESA; or those classified as Species of Special Concern (SSC), Fully Protected (FP), or Watch List (WL) species by CDFW. Sensitive plant species also include those with a CNPS CRPR of 1A, 1B, 2A, or 2B (CNPS 2021). For non-listed species and non-Covered Species, significance of impact is dependent on the severity of impact relative to the species' known populations and range, as well as other factors.

Dudek biologists assessed the potential for special-status species to occur within the project study area through an analysis of CNDDB and USFWS data, field surveys and professional expertise related to species distribution in the region. Special-status species with potential to occur in the project alignment are listed in Appendices C and D with a rank of low, moderate, or high/present for each applicable study area where that species was listed as historically occurring or having potential to occur. The specific reasoning for the ranking of particular species is not listed in the table itself but generally follows the ranking scheme provided below:

Low: A species is recorded within a 1-mile radius of the study area based on CNDDB/USFWS records but the record is outdated (20 years or older), has unique habitat/soil/microclimate requirements that are not present within the study area, or is unlikely to move into the study area due to a highly restricted range/habitat requirement that the study area does not possess. Some conspicuous perennial plant species with low potential to occur that are easily observable year-round may have been downgraded to "no potential to occur" (and subsequently excluded from the tables) if they were not directly observed during field surveys.

Moderate: A species is recorded within a 1-mile radius of the study area based on CNDDB/USFWS records, the record is somewhat recent (within the last 20 years), some suitable habitat is present within the study area, and there is some degree of habitat connectivity between the occurrence and the study area. The potential work areas within the study area do not contain much (if any) suitable habitat. Additionally, some animal species with moderate potential to occur in the project alignment may have been downgraded to low within the potential work area due to the generally disturbed nature of the immediate area surrounding potential work areas. Moderate potential would not indicate a species-based impact pursuant to the NCCP/HCP.

High/Present: A species is observed within the project study area or corresponding potential work area during field surveys; a species is recorded within a 1-mile radius of the study area based on recent (within the last 15 to 20 years) CNDDB/USFWS records; and/or high quality, suitable habitat/soil conditions are present within the study area. There may be contiguous suitable habitat connectivity between the occurrence and the study area. High potential would indicate a species-based impact pursuant to the NCCP/HCP. For the purposes of NCCP/HCP compliance, impacts to these species are assumed only when they are observed within the study area during surveys or if they are considered to have a high potential to occur in the study area and/or the corresponding potential work area.

Additionally, if a special-status species was not listed in CNDDB/USFWS records but was believed to have some potential to occur based on habitats observed during field surveys and Dudek's professional knowledge, Dudek biologists included them in the analysis for potential to occur.

If a special-status species is not listed in the tables in Appendices C and D, it can be assumed that the species does not have potential to occur within the project impact or study area due to a complete and obvious lack of suitable habitat within the study area, extremely outdated CNDDB/USFWS records (50 years or older), or no applicable CNDDB/USFWS records within 1 mile. Some of the species excluded from the tables in Appendices C and D are Covered Species that have no potential to occur.

3.4.1 Special-Status Plants

The Water Authority's NCCP/HCP provides coverage for 26 plant species plus two major amendment plant species.[1] These 28 species were evaluated for potential to occur within the study area based on presence of suitable habitat and occurrences within a 1-mile radius of the study area using the CNDDB (CDFW 2022). Twenty-eight sensitive plant species have a potential to occur within the project alignment; of those, thirteen are NCCP/HCP Covered Species. The remaining Non-Covered Species are special-status plant species not mentioned in the NCCP/HCP with CRPRs of 1B.1 through 2B.2 were determined to have some level of potential to occur. These plants are listed, along with their potential to occur at the study area, in Appendix C. Dudek's knowledge of biological resources, the regional distribution of each species, and the results from field surveys, as well as elevation, habitat, and soils present within the potential work and study area, were evaluated to determine the potential for various special-status species to occur.

The reconnaissance survey was conducted in summer of 2022 (outside the bloom period for many annual plant species) and focused on habitat within the ROW; focused surveys for special-status plant species were not conducted. Of the special-status plant species evaluated for potential to occur within the project alignment, none were observed during surveys. No plant species listed as threatened or endangered under the federal or state ESA were observed in

1 Three species, California Orcutt grass (*Orcuttia californica*), Munz's onion (*Allium munzii*), and vernal pool fairy shrimp (*Branchinecta lynchi*), are identified as Major Amendment species in the NCCP/HCP, specific to the Riverside County portion of the NCCP/HCP Plan Area.

the project alignment or determined to have high potential to occur. No Covered Species (including Narrow Endemic species) under the NCCP/HCP were observed or have a high potential to occur in the project alignment.

No NCCP/HCP plant Covered Species were determined to have a high potential to occur in the study area but six were determined to have moderate potential to occur in project work areas (Appendix C). In addition, three other special-status plant species (not mentioned in the NCCP/HCP but possessing CRPRs 1B.1 through 1B.2) were determined to have moderate potential to occur (Appendix C). Moderate potential to occur does not constitute an impact pursuant to the NCCP/HCP.

As required by the NCCP/HCP (SDCWA 2010), a pre-activity survey would be performed prior to project-related ground disturbance to verify there are no substantial changes to the biological baseline conditions described in this report, and to verify the absence of any plant Covered Species that could be impacted by the project.

3.4.2 Special-Status Wildlife

The Water Authority's NCCP/HCP provides coverage for 37 wildlife species and one major amendment species (vernal pool fairy shrimp [*Branchinecta lynchi*]) (SDCWA 2010). Species covered by the NCCP/HCP are federally listed and/or state-listed as rare, threatened, or endangered, or are likely candidates for future listing as rare, threatened, or endangered based on present population declines, diminishing habitat, or existing levels of sensitivity. These 37 species, in addition to those listed as endangered, rare, or threatened by the state or federal ESA, or those classified as SSC, FP, or WL by CDFW, were evaluated for potential to occur within the study area based on known range and presence of suitable habitat.

No Covered Species were observed during the summer 2022 reconnaissance survey.

No additional federally/state endangered, rare, or threatened species and no SSC or FP species that are not Covered Species under the NCCP/HCP were observed during surveys.

Review of CNDDB (CDFW 2022) data within a 1-mile radius of the study area in addition to Dudek's knowledge of special-status species distribution was used to evaluate the potential for special-status wildlife species to occur within the study area (Appendix D). Four Covered Species were determined to have a moderate potential to occur within the study area: coastal (western) whiptail (*Aspidoscelis tigris stejnegeri*), northern red diamond rattlesnake (*Crotalus ruber*), and yellow warbler (*Setophaga petechia*). One wildlife Covered Species, coastal California gnatcatcher (*Polioptila californica californica*), was determined to have a high potential to occur within the project study area and work areas. Two Non-Covered Species, pallid bat (*Antrozous pallidus*) and Cooper's Hawk (*Accipiter cooperii*), were determined to have a moderate potential to occur in the project study area. No other federally/state endangered, rare, or threatened species, and no SSC or FP species that are not Covered Species under the NCCP/HCP were determined to have a moderate or high potential to occur in the study area. Of these six species, only coastal California gnatcatcher is assumed present as it was determined to have a high potential to occur; moderate potential does not indicate a potential species-based impact pursuant to the NCCP/HCP. Covered and Non-Covered Species deemed to have moderate or high potential to occur within the project study area are described in detail below.

Orange-Throated Whiptail (*Aspidoscelis hyperythra*)

The orange-throated whiptail is a WL reptile species and is a NCCP/HCP Covered Species known to occur in low elevation coastal scrub, chapparal, and hardwood forests. The species was not detected within any study area or the CNDDB search conducted for the project, but high-quality mixed chaparral and disturbed coastal scrub occur and Dudek's knowledge of wildlife distribution in the region give this species moderate potential to occur within the potential work areas 1 and 3, and adjacent habitat at study areas 1, 2, and 3.

Coastal (Western) Whiptail (Aspidoscelis tigris stejnegeri)

Coastal (western) whiptail is an SSC and NCCP/HCP Covered Species of reptile known to occupy hot and dry areas with sparse foliage, including chaparral, woodland, and riparian areas. The species was not detected within the study area or the CNDDB record search conducted for the project, but the presence of high-quality coastal sage scrub, riparian, and chaparral habitat and Dudek's knowledge of wildlife distribution in the region give this species moderate potential to occur within the study area.

Northern Red Diamond Rattlesnake (*Crotalus ruber*)

Northern red diamond rattlesnake is an SSC and NCCP/HCP Covered Species of reptile known to occupy coastal scrub, chaparral, oak and pine woodlands, rocky grasslands, cultivated areas, and desert flats. The species was not detected within the study area or the CNDDB record search conducted for the project, but the presence of high-quality coastal sage scrub, chaparral, and woodland habitat and Dudek's knowledge of wildlife distribution in the region give this species moderate potential to occur within the study area.

Pallid Bat (Antrozous pallidus)

Pallid bat is a SSC mammal species known to forage in a wide variety of habitats including grasslands, woodlands, agriculture fields, riparian habitat, deserts, and scrub habitats. It may roost in a variety of natural and manmade habitats. It is a non-Covered Species. Although it was not directly observed during field surveys, presence of suitable foraging habitat and Dudek's knowledge of regional wildlife distribution give this species moderate potential to occur within the study area. Since this species can forage in trees, boulders, and buildings, there is limited potential for roosting within the overall study area. There is no potential for roosting within the work areas.

Coastal California Gnatcatcher (*Polioptila californica californica*)

Coastal California gnatcatcher is an avian species that is listed as threatened under the federal ESA, is a SSC, and a NCCP/HCP Covered Species that is known to nest and forage in various sage scrub communities, often dominated by California sagebrush and buckwheat. Although it was not directly observed during field surveys, nearby occurrence records found in the CNDDB record search conducted for the project, the presence of nearby critical habitat, and Dudek's knowledge of regional wildlife distribution give this species high potential to occur within the potential work areas and adjacent habitat in the surrounding project study area.

Cooper's Hawk (Accipiter cooperii)

Coopers hawk is a WL avian species and is not covered under the NCCP/HCP. It is known to occupy the edges of habitats, particularly woodlands with patchy stands of tree and shrubs. This species was not detected within any study areas or the CNDDB search conducted for the project, but high-quality oak woodland and riparian habitats occur and Dudek's knowledge of wildlife distribution in the region give this species moderate potential to occur within the potential work areas and adjacent habitat at study areas 1, 2, and 3.

Yellow Warbler (*Setophaga petechia*)

Yellow warbler is a USFWS Bird of Conservation Concern, SSC, and NCCP/HCP Covered Species of bird known to nest and forage in mature riparian woodlands. This species was not detected in any part of the study area during surveys nor found in the CNDDB record search conducted for the project, but high-quality riparian woodland/scrub habitat and Dudek's knowledge of regional wildlife distribution gives this species moderate potential to occur within habitat adjacent to the study area.

Other Species

As previously stated, moderate potential to occur does not constitute an impact pursuant to the NCCP/HCP. Pre-activity surveys would be conducted prior to construction to verify that there are no substantial changes to the biological baseline conditions described in this report, and to verify the absence of any Covered Species within or adjacent to project impact areas.

Several SSC bat species have potential to forage over the project alignment and study area without any direct project impacts. Generally, bats were analyzed for potential to occur based on the possibility of roosting within a study and/or potential work area. This roosting assessment limited the number of bats concluded to have potential to occur because most SSC bats that occur in the area roost in caves, cliffs, cavities, and crevices, and these types of features were not observed within any part of the study area during surveys. The few bats included in Appendix D are foliage roosters that had low to moderate potential to roost in foliage within the project study area. Indirect impacts to bat species would likely be avoided through implementation of the General Conditions for Coverage outlined in Section 2.1 of Appendix B of the Water Authority's NCCP/HCP (SDCWA 2010).

All sensitive species with a potential to occur within the project study area are listed within Appendix D. Most of the Covered Species are more likely to occur within the larger study area than within potential work areas, primarily because of the presence of higher-quality habitat. Appendix E shows representative study area photographs of the habitats surrounding all potential work areas.

3.4.3 Critical Habitat

Portions of the project study area and work areas occur within USFWS-designated critical habitat for coastal California gnatcatcher (Figure 4, USFWS Critical Habitat). No other critical habitat occurs in the vicinity of the project. Project activities are likely to impact the functions of critical habitat because they would result in both permanent and temporary modification of lands within the designated critical habitat areas for this species. The Water Authority's NCCP/HCP was designed to satisfy the legal requirements of wildlife agencies, in particular in the event of incidental take of USFWS Critical Habitat or Covered Species during otherwise lawful activities (SDCWA 2010). As such, the NCCP/HCP provides appropriate measures to compensate for the loss of Critical Habitat, discussed further in Section 5.1.5.

3.4.4 Special-Status Vegetation Communities

All of the vegetation communities/land cover types known to occur within the Water Authority's NCCP/HCP Plan Area are grouped into tiers (see Section 6.5.1.3 and Table 6-5 of the Water Authority's NCCP/HCP) (SDCWA 2010) deemed to have similar ecological values based on rarity, Covered Species diversity, and environmental sensitivity. The vegetation and land cover categories and tiers into which vegetation communities are assigned are comparable to those used in other conservation plans within San Diego County (see Tables 4-2 and 6-5 of the Water Authority's

NCCP/HCP) (SDCWA 2010). Tier I, II, and III vegetation communities are considered sensitive and declining habitats. Tier IV includes land cover types (agriculture, disturbed habitat, and urban/developed land) that are not considered sensitive and do not require mitigation.

Five sensitive vegetation communities occur within the project study area: coast live oak woodland, southern coast live oak riparian forest, coastal sage scrub, southern mixed chaparral, and non-native grassland (grassland) (see Table 3).

3.4.5 Potentially Jurisdictional Aquatic Resources

Dudek biologists conducted an informal delineation of jurisdictional aquatic resources within the project study area during the biological resource reconnaissance survey. Aquatic features were identified throughout the project study area (Figures 2-1 through 2-3).

Only two of the identified aquatic resources, which are located outside of the project's proposed work areas, could potentially be considered under the jurisdiction of USACE, CDFW, and RWQCB. In addition, approximately 10.97 acres of potential CDFW riparian habitat was recorded within the project study area. No 3-parameter USACE/RWQCB/CDFW wetlands were identified during the informal delineation. In total, 11.22 acres of potentially jurisdictional aquatic resources were recorded in the study area. Potentially jurisdictional areas are described further below.

Non-Wetland Waters

Multiple sections of an unnamed non-wetland water feature were recorded near the southern end of the study area, between Laydown Area B and C. No sections of this aquatic feature enter onto any part of the proposed work areas. Another potential stream feature occurs near the N. Centre City Parkway work area, but would similarly not be impacted by the project. These stream features are surrounded by riparian habitat and appear to exhibit consistent indicators of an ordinary high-water mark in areas surveyed. No standing or flowing water was observed in these features during the surveys conducted for this project (Figures 2-1, 2-2, and 2-3).

Riparian Habitat

Riparian vegetation was observed adjacent to the non-wetland water feature recorded between Laydown Areas B and C (Figure 2-3). Riparian vegetation was also observed adjacent to a portion of the trench alignment within N. Centre City Parkway (Figures 2-1 and 2-2). This riparian habitat was dominated by coast live oak and other characteristic species of the southern coast live oak riparian forest community.

All other aquatic resources observed during the informal delineation were found to be manmade ditches or swales associated with stormwater runoff; these would likely not fall under the jurisdiction of the USACE, CDFW, or RWQCB.

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4 Consistency with the NCCP/HCP, PMPP, and CDFW Programmatic Agreement

The Water Authority's NCCP/HCP provides the mechanism for "take" authority of Covered Species consistent with the Natural Community Conservation Planning Act and federal and state ESAs. Section 6.3 of the NCCP/HCP (SDCWA 2010) explains the verification process whereby a project is assessed for compliance with the NCCP/HCP. This report is the first step in the verification process for the project, which is a Covered Activity under the NCCP/HCP. This section provides a discussion of project consistency with the NCCP/HCP. The section also addresses project consistency with the Water Authority's PMPP with the USACE and the Maintenance Agreement with CDFW, as described in Section 1.4, Regulatory Setting.

4.1 Covered Species General Conditions for Coverage

Section 2.1 of Appendix B of the Water Authority's NCCP/HCP discusses conservation policies for sensitive species. Specifically, Section 2.1 contains 18 conditions for coverage that apply to projects that may have an effect on sensitive species, unless it can be demonstrated that the conditions are not applicable. These 18 conditions for coverage, which are included in Appendix F of this document (Section F-1), would be implemented for this project, as applicable.

4.2 Consistency with Other NCCP/HCP Policies

Sections 2.2 through 2.5 of Appendix B of the Water Authority's NCCP/HCP outline other policies that a project must either demonstrate that it complies with or that the conditions are not applicable: Narrow Endemic Policy, Vernal Pool Protection Policy, Avian Breeding Season Policy, Buffers, and Biologically Superior Alternatives. Compliance with these policies is discussed in the following list.

1. The Narrow Endemic Policy is not applicable to this project since no Narrow Endemic species were observed during the general wildlife survey or were deemed to have high potential to occur in any of the project study area.
2. No vernal pools or swales were observed during reconnaissance surveys within the study area. Therefore, the conditions related to the Vernal Pool Protection Policy do not apply to this project. If vernal pools are discovered during pre-activity surveys, this policy will be revisited and reviewed for inclusion.
3. The project would comply with the Avian Breeding Season Policy, as discussed in Section 4.3, Special Conditions for Covered Species.
4. Species-specific buffers, where applicable, are identified in Section 4.3, Special Conditions for Covered Species.
5. No Biologically Superior Alternatives to the NCCP/HCP provisions are being proposed; therefore, the related requirements are not applicable.

4.3 Special Conditions for Covered Species

In addition to the General Conditions for Coverage (see Section 4.1, Covered Species General Conditions for Coverage), the Water Authority's NCCP/HCP identifies species-specific conditions for coverage for some Covered Species that may be impacted by a proposed project. These species-specific special conditions are addressed in Appendix B, Sections 5.0 through 9.0 of the NCCP/HCP (SDCWA 2010).

No Covered Species were detected within the study area during the general wildlife survey; one Covered Species, coastal California gnatcatcher, has a high potential to occur within or adjacent to the project's potential work areas. Appendix F, NCCP/HCP Conditions for Coverage, of this report (Section F-3) lists the special conditions the project must follow to protect Covered Species determined to be potentially impacted by this project. Most special conditions involve implementing the general conditions for coverage described in Section 4.1 and avoiding or minimizing impacts to species habitat through project design and placement.

Certain special conditions for Covered Species require focused surveys or implementation of trapping programs; the Covered Species potentially impacted by this project with such conditions are highlighted below. The full special conditions of coverage for the 12 Covered Species determined to be potentially impacted by the project are listed in Appendix F of this report (Section F-3). Additional information on implementation of these measures can be found in Section 6.1.3.

Coastal California Gnatcatcher: Time work so that it occurs outside of the nesting season (February 15 to August 15 for the coastal California gnatcatcher). If work must occur during the nesting season, surveys to detect active nests must be conducted within 300 feet of all proposed activities. If encountered, no work shall occur within 100 feet of active nests.

Complete analysis of the project's impacts to Covered Species (and the study area where these conditions would apply) is provided in Section 5.1.4, Direct Impacts to Special-Status Wildlife.

4.4 NCCP/HCP Minimization Measures

Section 6.4 of the NCCP/HCP presents the minimization measures that the Water Authority has committed to implementing during the planning, design, and construction of new facilities, and for operations and maintenance of existing facilities (SDCWA 2010). The project would implement the following NCCP/HCP minimization measures accordingly (see Appendix F of this report [Section F-2] for a complete list of these measures):

- Environmental Surveyor (Section 6.4.1.1 of the NCCP/HCP)
- Pre-Activity Survey Form (Section 6.4.1.2 of the NCCP/HCP)
- Field Personnel Education Training (Section 6.4.1.3 of the NCCP/HCP)
- Field Personnel (and Contractor) Responsibilities (Section 6.4.1.4 of the NCCP/HCP)
- Design and Construction Controls (Section 6.4.2.5 of the NCCP/HCP)
- Stormwater Best Management Practices (Section 6.4.2.6 of the NCCP/HCP)
- Cleanup (Section 6.4.2.8 of the NCCP/HCP)

The Water Authority would conduct a pre-activity survey and prepare a survey report prior to construction as a design measure for this project, which would review habitat conditions and potential species presence to ensure that no significant changes in existing conditions occur compared to those documented in this report. Appropriate minimization and avoidance measures, as required by the NCCP/HCP, have been incorporated into the project and will be included in the Mitigation and Monitoring Reporting Program. By implementing the appropriate minimization measures stated in Section 6.4 of the NCCP/HCP, the project would comply with this aspect of the NCCP/HCP.

Additionally, certain applicable NCCP/HCP minimization measures would be incorporated into the construction specifications to further ensure compliance with the NCCP/HCP.

4.5 Biologically Significant Resource Areas

County of San Diego Multiple Species Conservation Plan Pre-Approved Mitigation Areas land occurs within and immediately adjacent to the study area. Therefore, the study area overlaps with biologically significant resource areas (BSRAs), as defined in the NCCP/HCP. Figure 3, Regional Planning Context, depicts the locations of Pre-Approved Mitigation Areas within and around the various project features and study area.

Potential work areas associated with the project are located within a mixture of Water Authority ROW, County ROW, Caltrans ROW, and private property. Impacts to existing Water Authority ROW is exempt from BSRA designation and would not require mitigation. One temporary impact will occur within BRSA; no permanent impacts would occur within any BSRA.

4.6 Consistency with the PMPP and CDFW Programmatic Maintenance Agreement

4.6.1 Programmatic Master Plan Permit

The proposed project does not anticipate impacts to aquatic resources potentially under the jurisdiction of the USACE. Therefore, the Water Authority is not required to obtain a Letter of Permission from USACE to implement the project. Accordingly, the project will be consistent with the PMPP.

4.6.2 CDFW Programmatic Maintenance Agreement

The proposed project is not anticipated to result in an impact on aquatic resources potentially under the jurisdictional authority of the CDFW that occur in the study area. Minor tree trimming in CDFW-jurisdictional aquatic resources (riparian vegetation) may occur to facilitate access during construction. This activity would not require a project-specific LSAA. If necessary, the Water Authority would cover this tree trimming under their Maintenance Agreement with CDFW.

If the project requires coverage under the Maintenance Agreement, the project would adhere to all administrative measures, notification and reporting, avoidance/minimization, and mitigation measures for temporary and permanent impacts occurring within CDFW jurisdiction. The Water Authority will submit fees and prepare a pre-construction notification package to CDFW for each activity at the study area where impacts to CDFW streambed or riparian vegetation are proposed. A post-construction memorandum will include all required project information.

The Water Authority will mitigate all authorized project impacts in accordance with the NCCP/HCP, as required by the Maintenance Agreement. NCCP/HCP conditions for CDFW permitting, as set forth in Appendix I of the NCCP/HCP, are listed in Appendix F of this report (Section F-4). These general conditions would only be implemented if project activities subject to CDFW permitting are planned. If the Water Authority and CDFW determine the project requires a project specific LSAA, the Water Authority will submit a permit application that identifies anticipated impacts on CDFW jurisdiction and describes relevant avoidance, minimization, and mitigation pursuant to the NCCP/HCP.

5 Project Impacts

Project impacts may be considered direct or indirect for the purposes of analyzing impacts under the Water Authority's NCCP/HCP.

Direct impacts include both the loss of on-site habitat and the plant and wildlife species that it contains. Direct impacts associated with the project would likely occur from the preparation/grading of work areas, associated removal of vegetation. Impacts were quantified by overlaying the proposed impact areas onto the biological resources map and evaluating the impacts by vegetation community. As required by the NCCP/HCP, impacts will be checked and confirmed prior to construction, and as-built impacts will be calculated after project completion.

The NCCP/HCP considers direct impacts to be either permanent or temporary. As stated in the NCCP/HCP, permanent impacts result from Covered Activities that cause the removal of habitat (e.g., sensitive vegetation community or Covered Species) that cannot be mitigated on site through revegetation or other restoration efforts. Temporary impacts may be a one-time disturbance during construction or a repeated disturbance during routine operation and maintenance activities within ROWs and around facilities. In areas where one-time temporary impacts occur, the Water Authority would restore the area to its original condition; native species would be used except in locations where the surrounding area is landscaped with non-native species. If the Water Authority determines that repeated disturbances would occur to an area, the Water Authority would treat the area of repeated disturbance as a permanent impact and would mitigate off site by debiting from a Water Authority's Preserve area established for that purpose. Future impacts to the same area would be revegetated on site with no additional requirement for off-site mitigation. The Water Authority would then be limited to conducting on-site revegetation for subsequent disturbances. Within the ROW, the Water Authority may decide to treat a one-time temporary impact as a "repeat impact," meaning the impact is known or expected to occur more frequently than the time period in which the restored area is scheduled to return to its fully restored status, and the Water Authority may mitigate for the impact off site. The decision to classify a one-time temporary impact as "repeated" is made by the Water Authority on a case-by-case basis, considering known future activities at that same location and the availability of credits at its habitat management areas.

For this project, most impacts are anticipated to be temporary, one-time impacts. Permanent direct project impacts are small and will be associated with the new structures and ancillary components that would be constructed to provide personnel and equipment access to the interior of the pipe and facilitate future maintenance of the pipeline. These structures and facilities include access structures, air vents, corrosion test stations, and fiber-optic pull boxes. This impact would occur mostly in developed areas but also involves small impacts to native disturbed coastal sage scrub habitat.

Indirect impacts refer to off-site and on-site effects that are short-term impacts (i.e., temporary) due to project construction, or long-term impacts (i.e., permanent) due to the design of the project and the effects it may have on adjacent resources. For this project, it is assumed that the potential short-term indirect impacts resulting from construction activities may include dust, noise, lighting, construction-related soil erosion/runoff, and general human presence that may temporarily disrupt species and habitat vitality. Long-term indirect impacts are not expected given that Water Authority structures already exist at project locations. After maintenance and restoration associated with the project is complete, the study area would return to pre-project conditions and indirect impacts would no longer occur.

5.1 Direct Impacts

5.1.1 Vegetation Communities and Land Cover Types

Implementation of the project will result in direct temporary and permanent impacts to coastal sage scrub (Diegan) and disturbed habitat, and direct temporary impacts to urban/developed land (Figures 2-1 through 2-3). Permanent project features that are proposed in urban/developed land are not considered permanent impacts, because the project would not result in a land cover type conversion of these areas that are already developed. Impact acreages are estimates based on the current project design and footprint. The project is also anticipated to result in minor tree trimming and other indirect impacts on coast live oak woodland and southern coast live oak riparian forest. These temporary impacts, which are anticipated by and covered under the NCCP/HCP, are not included in Table 4 because they do not entail vegetation removal and do not warrant post-construction restoration. The Water Authority would restore areas of temporary vegetation impacts on site at a 1:1 ratio after completion of construction, in accordance with Section 6.5.1.4.2 of the Water Authority's NCCP/HCP (SDCWA 2010), as discussed in greater detail below in Section 6.1.1. In total, the proposed project will result in 18.54 acres of temporary impact, and 0.18 acre of permanent impact. Table 4 lists potential direct impacts to each vegetation community and land cover type that would occur within the project alignment. Corresponding Water Authority NCCP/HCP habitats and their associated tiers are also listed.

Table 4. Potential Direct Impacts to Vegetation Communities and Land Cover Types

Vegetation Community/ Land Cover Type	Water Authority NCCP/HCP Tier[a]	Temporary Impacts (Acres)[b]	Permanent Impacts (Acres)[b]
Coastal Sage Scrub (Diegan)	II	4.17	0.13
Urban/Developed Land	IV	10.37	—
Disturbed Land	IV	4.38	0.05
	Project Total	**18.61**	**0.18**

Notes:
HCP = habitat conservation plan; NCCP = natural community conservation plan
[a] SDCWA 2010.
[b] Some totals may not sum due to rounding.

5.1.2 Potentially Jurisdictional Aquatic Resources

As currently designed, no direct impacts would occur to any potentially jurisdictional aquatic resource or riparian vegetation community. Minor trimming of branches within potentially jurisdictional areas may occur adjacent to N. Centre City Parkway where trees slightly hang over the roadway; no removal of trees is planned. No permanent impacts to potentially jurisdictional aquatic resources are proposed. Table 5 lists proposed direct impacts to all aquatic resources within the currently identified study area. Impact acreage is subject to change but represents the most current project design and footprint.

Table 5. Proposed Direct Impacts to Aquatic Resources at Project

Aquatic Resource	Jurisdiction	Temporary Impacts (Acres)	Permanent Impacts (Acres)
Drainage Ditch	None	0.02	—
	Total	**0.02**	**—**

Notes:
CDFW = California Department of Fish and Wildlife

5.1.3 Direct Impacts to Special-Status Plants

No plant species listed as threatened or endangered under the federal or state ESA were observed in any of the part of the project study area. No Covered Species under the NCCP/HCP were observed or have a high potential to occur in the potential work areas. Therefore, no listed plant species or Covered Species plant impacts are expected to occur.

5.1.4 Direct Impacts to Special-Status Wildlife

Coastal California gnatcatcher is assumed to be present and occupying the project study area (see Section 3.4.2. Special-Status Wildlife). However, with the required implementation of NCCP/HCP conditions of coverage for this species (briefly summarized in Section 4.3, Special Conditions for Covered Species, and listed in Appendix F of this report [Section F-3]) potential project impacts would be avoided and minimized to the fullest extent possible. If additional sensitive species are identified during the project's pre-activity surveys, which are required by the NCCP/HCP, then additional conditions of coverage for those species would be required prior to the start of construction. In summary, NCCP/HCP requirements would ensure that the project would avoid all potential impacts to the special-status wildlife species with high potential to occur within proposed project impact areas.

5.1.5 Direct Impacts to Critical Habitat

As currently designed, the project would result in permanent and temporary impacts to lands within the USFWS-designated Critical Habitat for the coastal California gnatcatcher. Temporary and permanent impacts to Critical Habitat would be mitigated in accordance with the NCCP/HCP, including on-site restoration of temporary impact areas and debit of mitigation acreage from one of the Water Authority's Habitat Management Areas (HMAs) or acquire other lands that are designated as Critical Habitat.

5.2 Indirect Impacts

Indirect impacts associated with project work would be temporary and minimized through incorporation of the NCCP/HCP minimization measures listed in Appendix F of this report (Section F-2). No long-term indirect impacts are expected from the relatively small permanent impacts associated with placement of a structure on disturbed land.

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6 Mitigation and Avoidance/ Minimization Measures

6.1 Measures for Direct Impacts

6.1.1 Sensitive Vegetation Communities

Pursuant to Section 6.5.1.4.2 of the NCCP/HCP (SDCWA 2010), the project would mitigate all one-time temporary impacts to sensitive vegetation communities by on-site restoration and revegetation of the impacted area at a 1:1 ratio. Section 6.6.1 of the NCCP/HCP states that, under Water Authority supervision, a qualified restoration specialist would prepare and submit a restoration plan for each restoration site exceeding 0.25 acres to the Wildlife Agencies for their review and concurrence (SDCWA 2010). The Water Authority would implement a plan for the study area where native habitats are temporarily impacted. Restoration measures would be developed to restore a site's previous biological resources and minimize establishment of invasive nonnative plant species in accordance with Section 6.6 of the NCCP/HCP. Habitat restoration activities would occur under the supervision and direction of an environmental surveyor who has experience developing and implementing native restoration plans in Southern California. Required components of the restoration plan are outlined in Section 6.6.1 of the NCCP/HCP and would generally include defining plant/seed palettes and success criteria appropriate for each affected habitat type, establishing a maintenance and monitoring program generally lasting 5-years, or until success criteria is met, and an exotic plant control and removal program. The Water Authority must receive concurrence from the Wildlife Agencies that each restoration effort is successful, as discussed in Section 6.6.1 of the NCCP/HCP.

Temporary impacts to Tier IV communities (i.e., agriculture, disturbed habitat, and urban/developed land) do not require on-site habitat restoration because these communities are not sensitive. Developed areas that are currently paved would be repaved; disturbed areas that were previously vegetated would be stabilized with a native seed mix for erosion-control purposes and would be returned to their pre-activity state; unvegetated disturbed areas would be returned to their pre-activity state for use again by the property owner after construction is complete. Erosion control stabilization sites are monitored and maintained by the Water Authority for 2 years during the project's 5-year restoration maintenance and monitoring period.

One permanent impact to a Tier II sensitive vegetation community, coastal sage scrub, is anticipated and would be mitigated off-site using credits at the San Miguel Conservation Bank/Habitat Management Area. Credits would be determined at a 1:1 ratio as described in Tables 6-6 and 6-7 of the NCCP/HCP since the impact does not occur in a biologically significant resource area and the mitigation would occur within a biologically significant resource area (SDCWA 2010). Impacts to Tier IV communities (i.e., agriculture, disturbed habitat, and urban/developed land) would not require off-site habitat mitigation because these communities are not considered sensitive resources under the NCCP/HCP.

As proposed, the project would not have a significant impact to sensitive vegetation communities. Mitigation for all potential impacts to sensitive vegetation communities is subject to change but was calculated using the most current project design and footprint.

Estimated mitigation acreages for the project's temporary and permanent impacts to sensitive vegetation communities are presented in Table 6.

Table 6. Mitigation for Impacts to Sensitive Vegetation Communities

Vegetation Community/ Land Cover Type	Water Authority NCCP/ HCP Tier[a]	Temporary Impacts (acres)[b]	Permanent Impacts (acres)[b]	On-Site Restoration Required (acres)[c]	Off-Site Mitigation Required (acres)
Coastal Sage Scrub (Diegan)	II	4.17	0.13	4.17	0.13
Urban/Developed Land	IV	10.37 [c]	—	0 [c]	—
Disturbed Habitat	IV	4.38 [c]	0.05 [c]	0 [c]	—
	Project Total	**18.61**	**0.18**	**4.17**	**0.13**

Notes:
HCP = habitat conservation plan; NCCP = natural community conservation plan.
[a] SDCWA 2010.
[b] Some numbers may not sum due to rounding.
[c] Impacts to Tier IV communities do not require on-site restoration or off-site mitigation because these communities are not sensitive. Regardless, developed areas that are currently paved would be repaved; all other Tier IV habitats (excluding agricultural areas) would be stabilized with a native seed mix for erosion-control purposes after construction is complete.

6.1.2 Potentially Jurisdictional Aquatic Resources

According to the NCCP/HCP, for projects or portions of projects with one-time temporary impacts, restoration and revegetation of the impacted area would be implemented on site at a 1:1 ratio; this includes temporarily impacted jurisdictional aquatic resources within those areas. None of the potential temporary or permanent impacts noted in Section 6.1.1, Sensitive Vegetation Communities, include jurisdictional aquatic resources; accordingly, no off-site mitigation for permanent impacts is required.

6.1.3 Special-Status Wildlife and Plant Species

No NCCP/HCP plant Covered Species were detected or have high potential to occur, and therefore NCCP/HCP conditions of coverage or avoidance/minimization measures are necessary for plant species. As required by the NCCP/HCP, a pre-activity survey would be performed prior to project-related ground disturbance to verify that there are no substantial changes to the biological baseline conditions established by this report. If a sensitive/Covered Species is detected during the pre-activity survey and could be impacted by the project, applicable species-specific measures listed in Appendix B of the NCCP/HCP would be identified in the pre-activity survey report and implemented accordingly.

No wildlife Covered Species were detected within the study area during the general wildlife survey. One Covered Species has a high potential to occur within the potential work areas or study area based on CNDDB/USFWS occurrence data and Dudek's knowledge of species habitat preference and distribution. NCCP/HCP conditions of coverage relevant to coastal California gnatcatcher would be implemented by the Water Authority. These species-specific conditions of coverage, listed in NCCP/HCP Appendix B, are included in Appendix F of this report (Section F-3). The implementation of these conditions would serve as avoidance and minimization measures for the project; as such, no significant project impacts to special-status wildlife species would occur. These measures are summarized below:

Coastal California Gnatcatcher:

The Water Authority shall conduct USFWS protocol surveys (or occupancy shall be assumed) within the project study area where coastal California gnatcatcher has potential to occur within or adjacent to potential work areas. If habitat is found to be occupied (or if occupancy is assumed and surveys are not performed), work shall be timed so that it occurs outside of the nesting season. If work is initiated during the nesting season, surveys for active nests must be conducted within 300 feet of all proposed activities. If encountered, no work shall occur within 100 feet of active nests.

6.2 Avoidance and Minimization Measures for Indirect Impacts

All potential indirect impacts associated with project work would be temporary due to the limited duration of project construction and the project's commitment to return all temporarily impacted areas to pre-project conditions. The new permanent above-ground structures would be constructed in an area that is generally developed and accustomed to human activity; routine access to these structures and occasional maintenance work would not present new impacts on adjacent habitat. Negligible permanent project impacts would not indirectly impact adjacent habitat function or value in the long-term. Indirect impacts during construction would be minimized through incorporation of the NCCP/HCP minimization measures listed in Appendix F of this report (Section F-2).

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7 Acknowledgments

This report was prepared by Dudek biologist Dylan Ayers with senior review by Callie Amoaku, Alex Hardy, and Andrew Talbert. Graphics were provided by Jason Greenstein, and formatting was provided by Summer Forsman. Water Authority personnel providing input and guidance include Sean Paver, project manager, and Summer Adleberg, principal water resources specialist.

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8 References Cited

Brehme, C.S., D.R. Clark, and C.J. Rochester. 2011. “Wildfires Alter Rodent Community Structure Across Four Vegetation Types in Southern California, USA.” *Fire Ecology* 7, 81–98 (2011). https://doi.org/10.4996/fireecology.0702081.

Calflora. 2022. “Calflora: Information on Wild California plants.” Online database. Berkeley, California. http://www.calflora.org.

CDFW (California Department of Fish and Wildlife). 2022. “CNDDB Maps and Data.” California Natural Diversity Database. RareFind, Version 5. (Commercial Subscription). Sacramento: CDFW, Biogeographic Data Branch. https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data.

CNPS (California Native Plant Society). 2022. “Inventory of Rare and Endangered Plants” (online edition, v8-03 0.39). Sacramento: CNPS. http://www.rareplants.cnps.org.

Esri. 2022. FieldMaps for ArcGIS. Version 20.1.0.

Google Earth. 2022. Aerial Photographs. 1:200 scale.

Marschalek, D. and D. Deutschman. 2015. *Initial Investigation of Critical Biological Uncertainties for Harbison’s dun skipper* (Euphyes vestris harbisoni) *on Conserved Lands in San Diego County*. San Diego State University. March 18, 2015. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=105216.

Oberbauer, T., M. Kelly, and J. Buegge. 2008. *Draft Vegetation Communities of San Diego County*. March 2008. https://www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/Soitec-Documents/Final-EIR-Files/references/rtcref/ch9.0/rtcrefaletters/014%202014-12-19_OberbauerTM2008.pdf.

SDCWA (San Diego County Water Authority). 2010. *Subregional Natural Community Conservation Plan/Habitat Conservation Plan*. October.

SDNHM (San Diego Natural History Museum). 2022. “San Diego County Plant Atlas.”https://www.sdplantatlas.org/.

UC Davis/NRCS (University of California, Davis, California Soil Resource Lab; University of California, Division of Agriculture and Natural Resources; Natural Resources Conservation Service). 2022. SoilWeb. University of California; USDA-NRCS. https://data.nal.usda.gov/dataset/soilweb.

USFWS (U.S. Fish and Wildlife Service). 2022. “Critical Habitat and Occurrence Data” [map]. USFWS Geospatial Services. https://www.fws.gov/gis/data/national/index.html.

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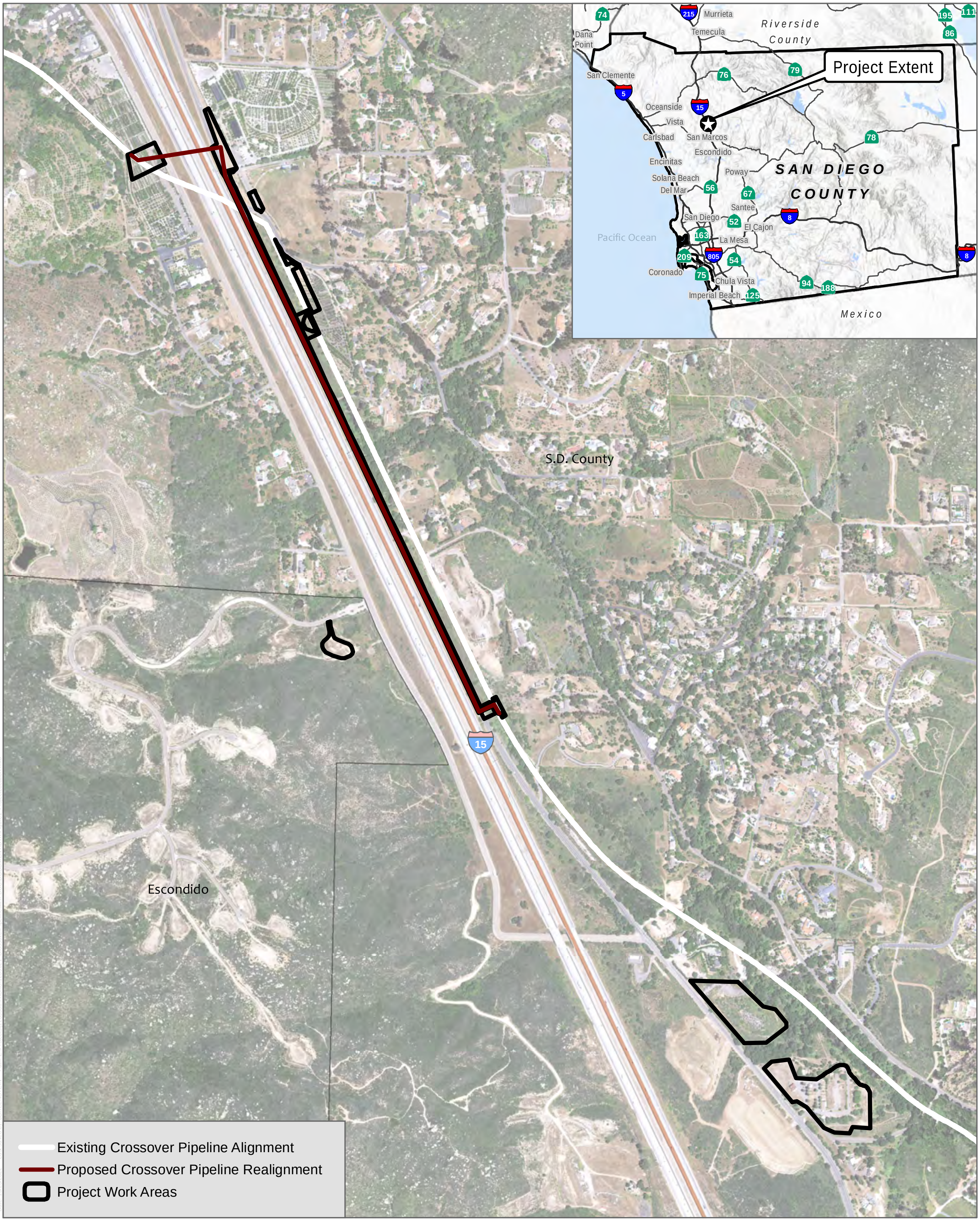

SOURCE: NAIP 2022; SanGIS 2022; SDCWA 2011, 2022

DUDEK

0 500 1,000 Feet

FIGURE 1

Project Location and Vicinity

Crossover Pipeline I-15 Bypass Project Biological Resources Technical Report

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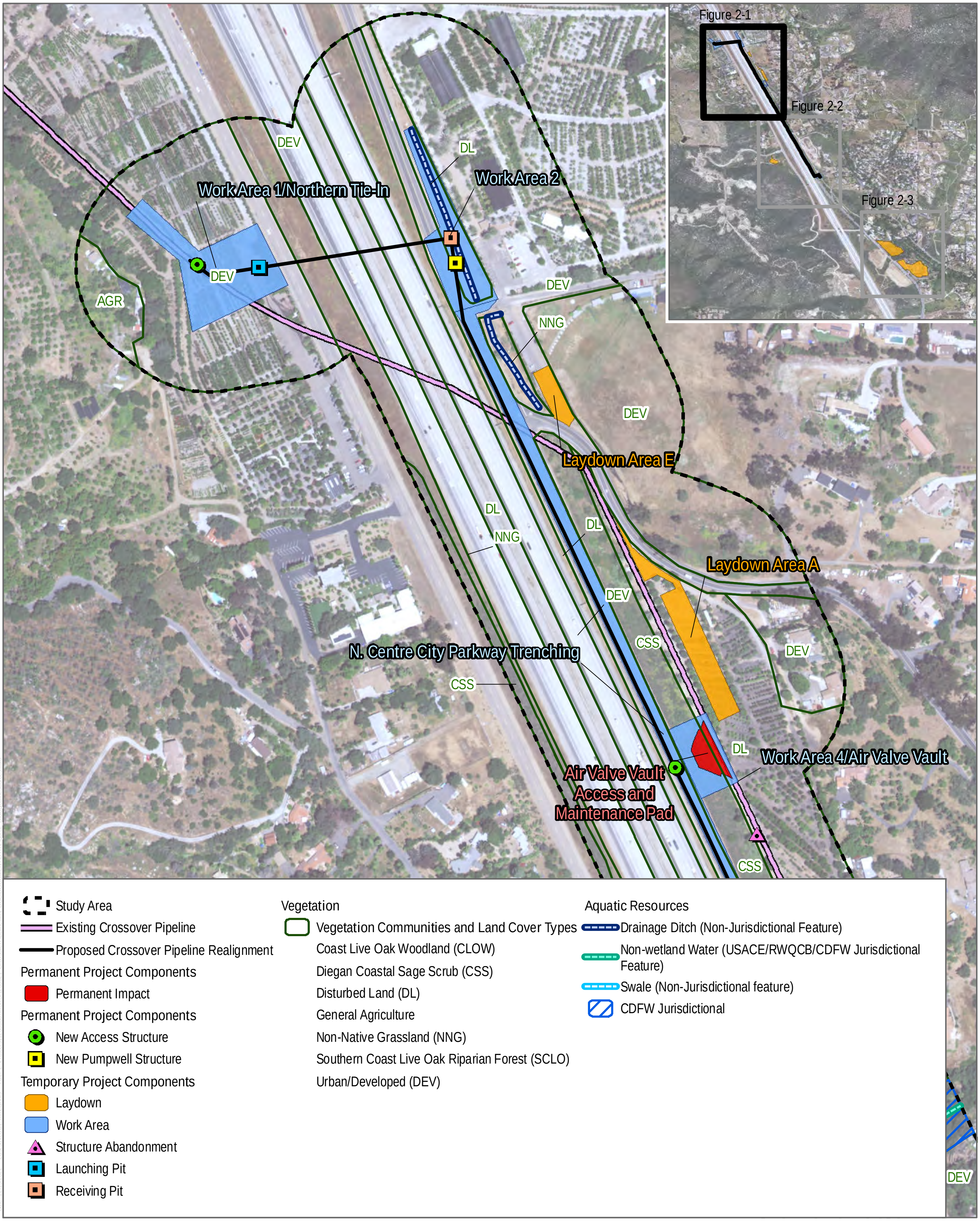

SOURCE: NAIP 2022; SanGIS 2022; SDCWA 2011, 2022

DUDEK

0 200 400 Feet

FIGURE 2-1

Biological Resources

Crossover Pipeline I-15 Bypass Project Biological Resources Technical Report

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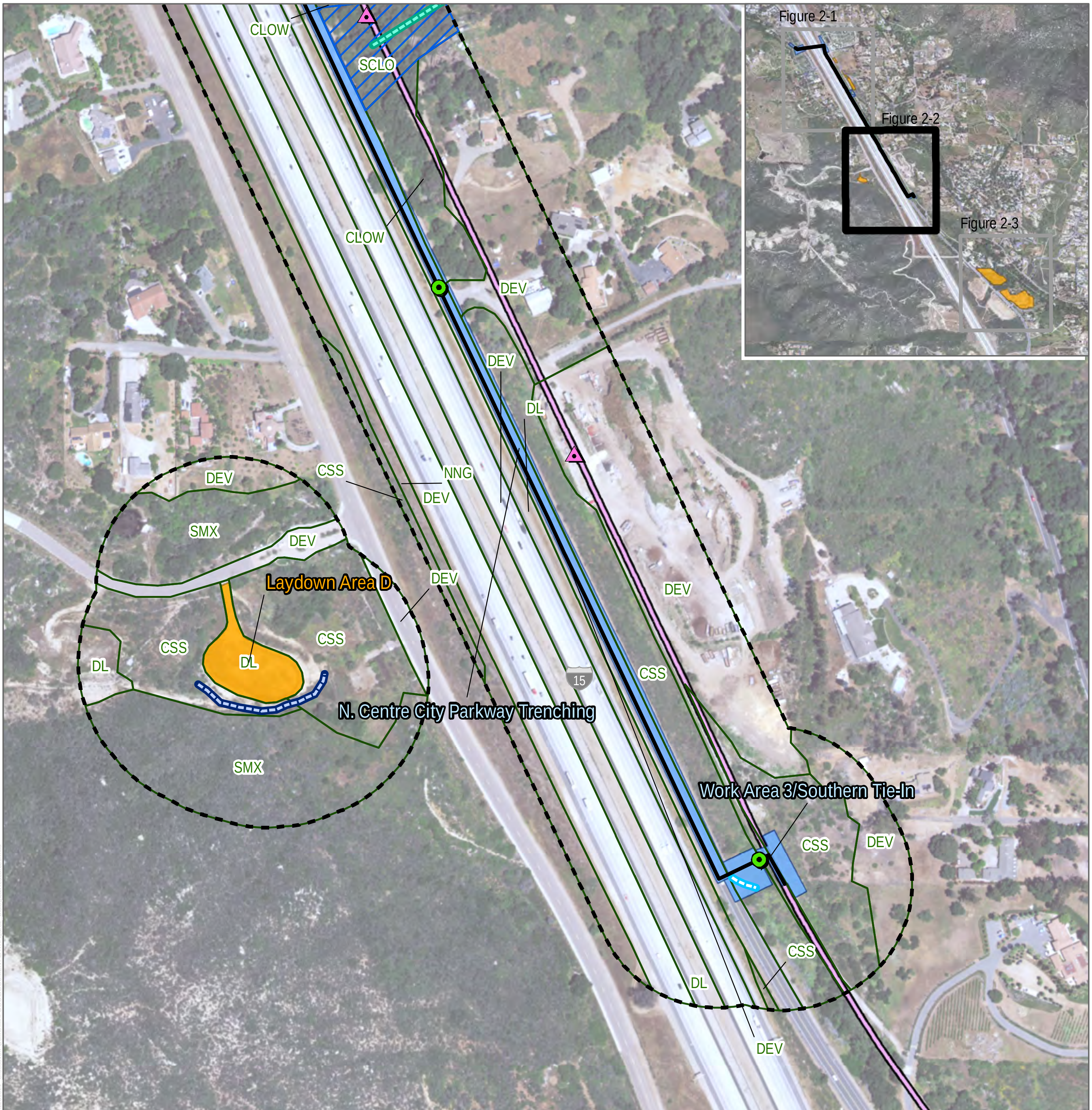

Study Area
Existing Crossover Pipeline
Proposed Crossover Pipeline Realignment

Permanent Project Components
- New Access Structure

Temporary Project Components
- Laydown
- Work
- Structure Abandonment

Vegetation
- Vegetation Communities and Land Cover Types
  - Coast Live Oak Woodland (CLOW)
  - Diegan Coastal Sage Scrub (CSS)
  - Disturbed Land (DL)
  - Non-Native Grassland (NNG)
  - Southern Coast Live Oak Riparian Forest (SCLO)
  - Southern Mixed Chaparral (SMX)
  - Urban/Developed (DEV)

Aquatic Resources
- Drainage Ditch (Non-Jurisdictional Feature)
- Non-wetland Water (USACE/RWQCB/CDFW Jurisdictional Feature)
- Swale (Non-Jurisdictional feature)
- CDFW Jurisdictional

SOURCE: NAIP 2022; SanGIS 2022; SDCWA 2011, 2022

DUDEK

0 200 400 Feet

FIGURE 2-2
Biological Resources

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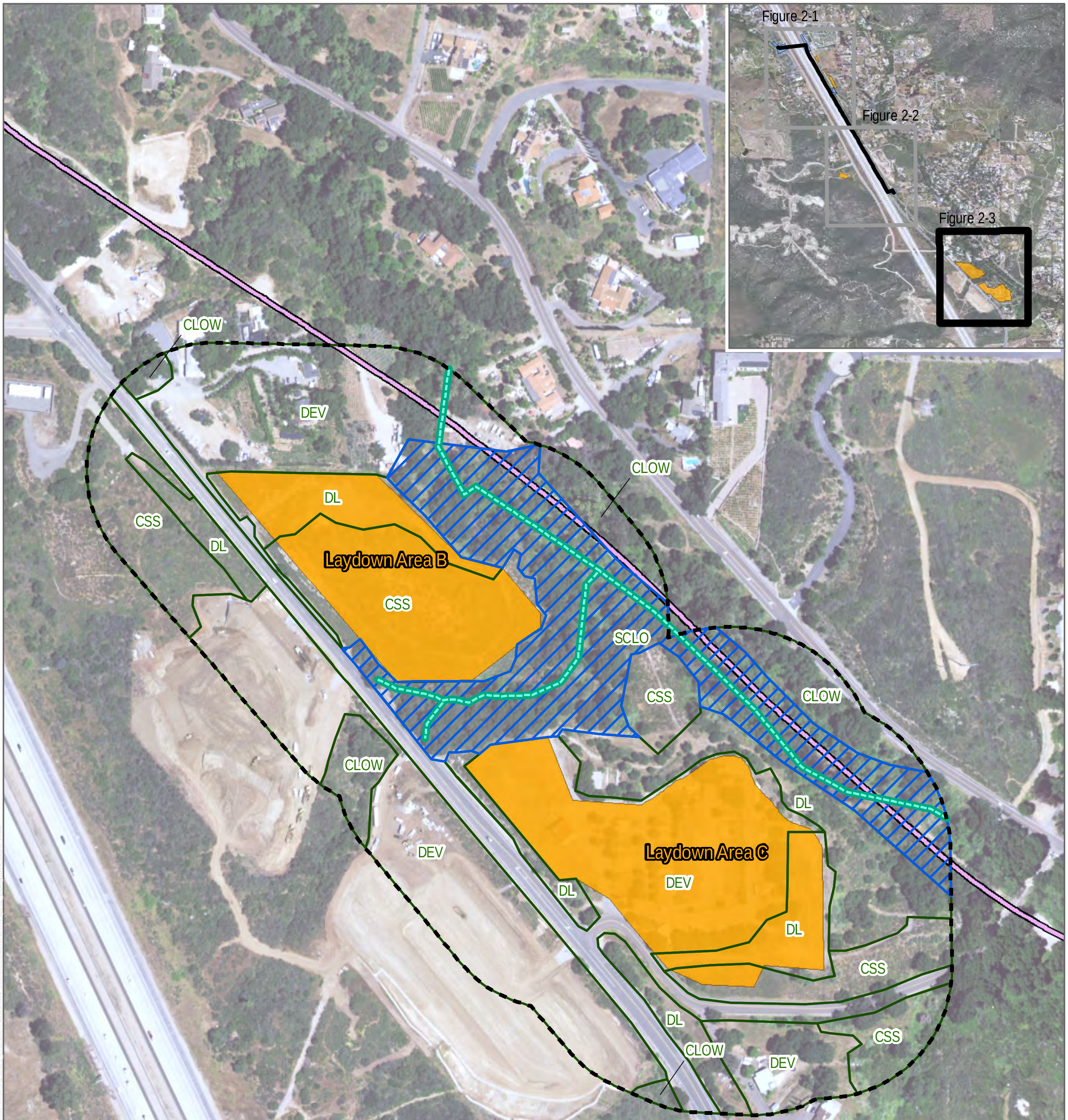

Study Area
Existing Crossover Pipeline
Temporary Project Components
Laydown

Vegetation
Vegetation Communities and Land Cover Types
Coast Live Oak Woodland (CLOW)
Diegan Coastal Sage Scrub (CSS)
Disturbed Land (DL)
Southern Coast Live Oak Riparian Forest
Urban/Developed (DEV)

Aquatic Resources
Drainage Ditch (Non-Jurisdictional Feature)
Non-wetland Water (USACE/RWQCB/CDFW Jurisdictional Feature)
Swale (Non-Jurisdictional feature)
CDFW Jurisdictional

SOURCE: NAIP 2022; SanGIS 2022; SDCWA 2011, 2022

DUDEK

0 200 400 Feet

FIGURE 2-3
Biological Resources

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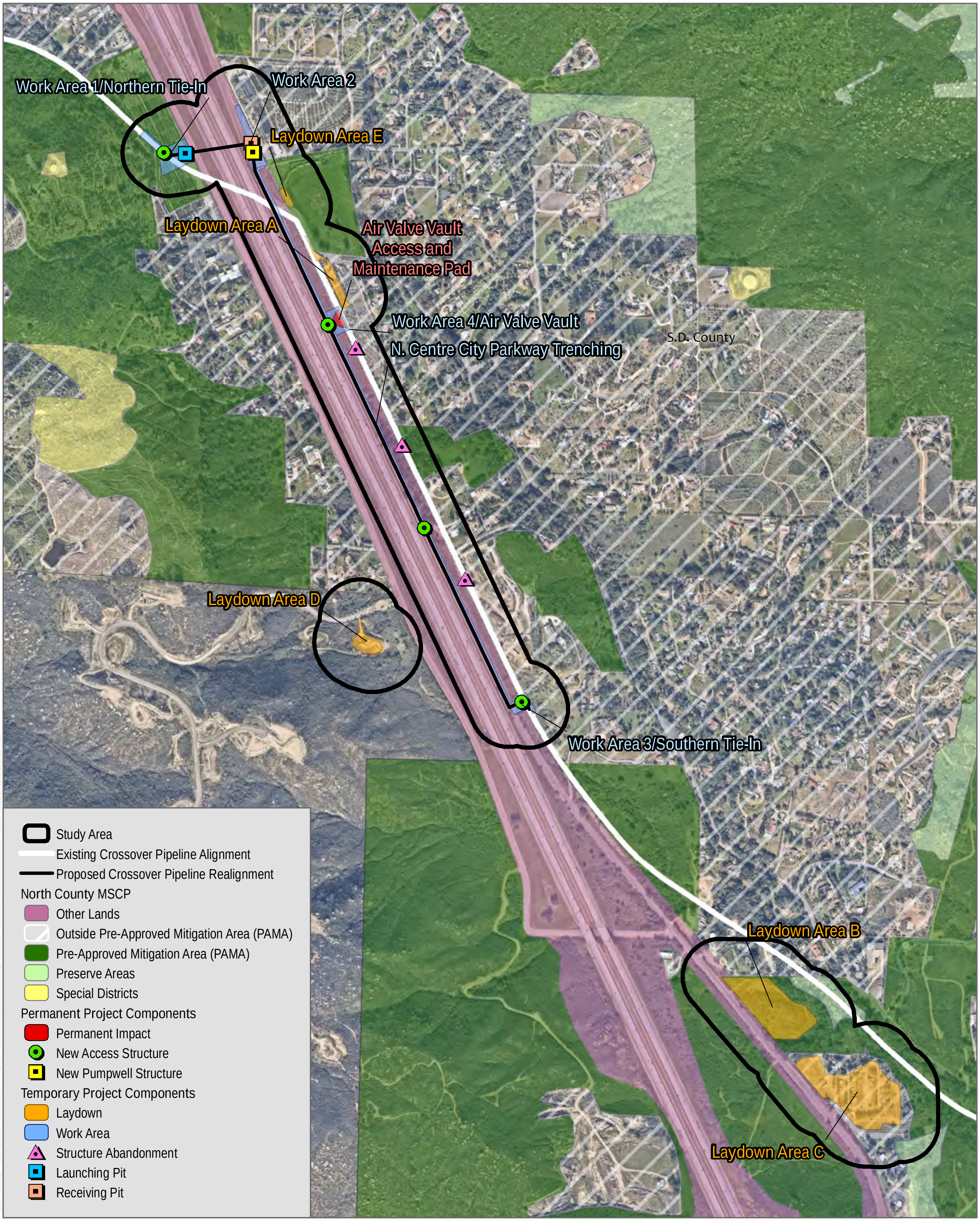

SOURCE: ESRI 2022, SanGIS 2022; SDCWA 2022

FIGURE 3

Regional Planning Context

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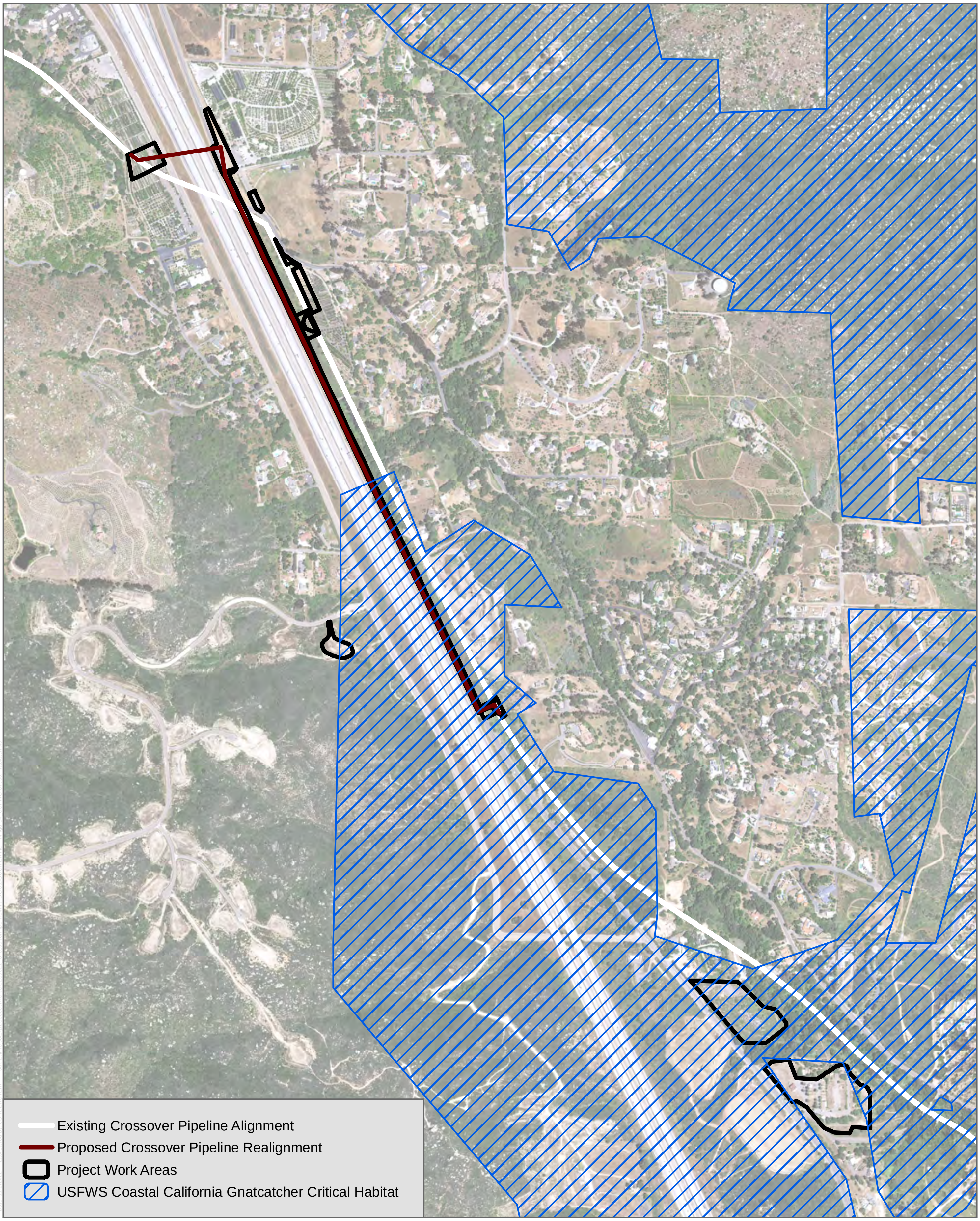

SOURCE: NAIP 2022; USFW 2022; SanGIS 2022; SDCWA 2011, 2022

DUDEK

0 500 1,000 Feet

FIGURE 4

USFWS Critical Habitat

Crossover Pipeline I-15 Bypass Project Biological Resources Technical Report

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Appendix A
Plant Compendium

Conifers

PINACEAE – PINE FAMILY

* *Pinus halepensis* – aleppo pine

Angiosperms: Eudicots

ADOXACEAE – ADOXA FAMILY

Sambucus nigra ssp. *caerulea* – blue elderberry

AMARANTHACEAE – AMARANTH FAMILY

Malosma laurina – laurel sumac

Toxicodendron diversilobum – western poison-oak

APIACEAE – CARROT FAMILY

* *Foeniculum vulgare* – sweet fennel

ASTERACEAE – SUNFLOWER FAMILY

Artemisia californica – coastal sagebrush

Artemisia douglasiana – Douglas mugwort

Baccharis sarothroides – broom baccharis

Heterotheca grandiflora – telegraph weed

Pseudognaphalium californicum – California everlasting

* *Centaurea melitensis* – tocalote

* *Dittrichia graveolens* – stinkwort

* *Erigeron bonariensis* – flax-leaf fleabane

* *Helminthotheca echioides* – bristly ox-tongue

Baccharis pilularis – chaparral broom, coyote brush

Centromadia pungens – tarplant

Hazardia squarrosa – sawtooth goldenbush

Isocoma menziesii – coastal goldenbush

BRASSICACEAE – MUSTARD FAMILY

* *Hirschfeldia incana* – short-pod mustard

CHENOPODIACEAE – GOOSEFOOT FAMILY

* *Salsola tragus* – prickly russian-thistle, tumbleweed

CUCURBITACEAE – GOURD FAMILY

Marah macrocarpa – manroot, wild-cucumber

EUPHORBIACEAE – SPURGE FAMILY

∗ *Euphorbia maculata* – spotted spurge

FABACEAE – LEGUME FAMILY

Acmispon glaber – deerweed

FAGACEAE – OAK FAMILY

Quercus agrifolia – coast live oak, encina

LAMIACEAE – MINT FAMILY

Salvia apiana – white sage

Salvia mellifera – black sage

MYRTACEAE – MYRTLE FAMILY

∗ *Eucalyptus camaldulensis* – river red gum

OLEACEAE – OLIVE FAMILY

∗ *Ligustrum lucidum* – Chinese privet

∗ *Olea europaea* – olive

POLYGONACEAE – BUCKWHEAT FAMILY

Eriogonum fasciculatum – California buckwheat

SOLANACEAE – NIGHTSHADE FAMILY

Datura wrightii – western jimson weed

∗ *Nicotiana glauca* – tree tobacco

ZYGOPHYLLACEAE – CALTROP FAMILY

∗ *Tribulus terrestris* – puncture vine

Angiosperms: Monocots

ARECACEAE – PALM FAMILY

∗ *Phoenix canariensis* – Canary Island date palm

POACEAE – GRASS FAMILY

∗ *Bromus diandrus* – ripgut grass

∗ *Bromus tectorum* – cheat grass, downy brome

∗ *Chloris virgata* – showy chloris

∗ *Cortaderia jubata* – purple pampas grass

∗ *Bromus rubens* – foxtail chess, red brome

∗ signifies introduced (non-native) species

Appendix B
Wildlife Compendium

Birds

Finches

FRINGILLIDAE – FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Haemorhous mexicanus – house finch

Spinus psaltria – lesser goldfinch

Flycatchers

TYRANNIDAE – TYRANT FLYCATCHERS

Sayornis nigricans – black phoebe

Hawks

ACCIPITRIDAE – HAWKS, KITES, EAGLES, AND ALLIES

Buteo lineatus – red-shouldered hawk

Hummingbirds

TROCHILIDAE – HUMMINGBIRDS

Calypte anna – Anna's hummingbird

Jays, Magpies and Crows

CORVIDAE – CROWS AND JAYS

Corvus corax – common raven

New World Vultures

CATHARTIDAE – NEW WORLD VULTURES

Cathartes aura – turkey vulture

Reptiles

Lizards

PHRYNOSOMATIDAE – IGUANID LIZARDS

Sceloporus occidentalis – western fence lizard

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Appendix C
Special-Status Plant Species Potentially Occurring within the Biological Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ HCCP-NCP)	Potential to Occur in the Project Study Area		
			Low	Moderate	High/ Present
Acanthomintha ilicifolia	San Diego thorn-mint	FT/SE/1B.1/Covered	—	X	—
Adolphia californica	California adolphia	None/None/2B.1/Covered	—	X	—
Ambrosia pumila	San Diego ambrosia	FE/None/1B.1/Covered	—	X	—
Arctostaphylos rainbowensis	Rainbow manzanita	None/None/1B.1/None	—	X	—
Astragalus oocarpus	San Diego milk-vetch	None/None/1B.2/None	X	—	—
Atriplex pacifica	south coast saltscale	None/None/1B.2/None	X	—	—
Baccharis vanessae	Encinitas baccharis	FT/SE/1B.1/Covered	—	X	—
Bloomeria clevelandii	San Diego goldenstar	None/None/1B.1/None	X	—	—
Brodiaea filifolia	thread-leaved brodiaea	FT/SE/1B.1/Covered	—	X	—
Brodiaea orcuttii	Orcutt's brodiaea	None/None/1B.1/Covered	—	X	—
Ceanothus verrucosus	wart-stemmed ceanothus	None/None/2B.2/None	X	—	—
Centromadia pungens ssp. *laevis*	smooth tarplant	None/None/1B.1/Covered	X	—	—
Chorizanthe orcuttiana	Orcutt's spineflower	FE/SE/1B.1/None	X	—	—
Clarkia delicata	delicate clarkia	None/None/1B.2/None	—	X	—
Comarostaphylis diversifolia ssp. *diversifolia*	summer holly	None/None/1B.2/None	—	X	—
Corethrogyne filaginifolia var. *linifolia*	Del Mar Mesa sand aster	None/None/1B.1/None	X	—	—
Dudleya variegata	variegated dudleya	None/None/1B.2/None	X	—	—
Dudleya viscida	sticky dudleya	None/None/1B.2/None	X	—	—
Ericameria palmeri var. *palmeri*	Palmer's goldenbush	None/None/1B.1/Covered	X	—	—
Ferocactus viridescens	San Diego barrel cactus	None/None/2B.1/Covered	X	—	—
Isocoma menziesii var. *decumbens*	decumbent goldenbush	None/None/1B.2/None	X	—	—
Leptosyne maritima	sea dahlia	None/None/2B.2/None	X	—	—
Monardella hypoleuca ssp. *lanata*	felt-leaved monardella	None/None/1B.2/Covered	X	—	—
Nolina cismontana	chaparral nolina	None/None/1B.2/Covered	X	—	—
Quercus dumosa	Nuttall's scrub oak	None/None/1B.1/Covered	X	—	—
Salvia munzii	Munz's sage	None/None/2B.2/Covered	X	—	—

Scientific Name	Common Name	Status (Federal/State/CRPR/ HCCP-NCP)	Potential to Occur in the Project Study Area		
			Low	Moderate	High/ Present
Sphaerocarpos drewiae	bottle liverwort	None/None/1B.1/None	X	—	—
Tetracoccus dioicus	Parry's tetracoccus	None/None/1B.2/Covered	—	X	—

Notes:
If a special-status species is not included in this table, it can be assumed that it was not deemed to have any potential to occur within the vicinity of the overall project study area or was not required to be analyzed under the NCCP/HCP.
Statuses:
FE: Federally listed as endangered
FT: Federally listed as threatened
SE: State listed as endangered
ST: State listed as threatened
CRPR 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere
CRPR 2A: Plants presumed extirpated in California but common elsewhere
CRPR 2B: Plants rare, threatened, or endangered in California but more common elsewhere
.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Appendix D

Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

Row Labels	Common Name	Status (Federal/State/ NCCP—HCP)	Potential to Occur in the Project Study Area		
			Low	Moderate	High/ Present
Amphibians					
Ensatina eschscholtzii klauberi	large—blotched salamander	None/WL/None	X	—	—
Spea hammondii	western spadefoot	None/SSC/Covered	X	—	—
Birds					
Accipiter cooperii (nesting)	Cooper's hawk	None/WL/None	—	X	—
Aimophila ruficeps canescens	Southern California rufous—crowned sparrow	None/WL/Covered	X	—	—
Artemisiospiza belli belli	Bell's sage sparrow	None/WL/Covered	X	—	—
Athene cunicularia (burrow sites and some wintering sites)	burrowing owl	BCC/SSC/Covered	X	—	—
Coccyzus americanus occidentalis (nesting)	western yellow—billed cuckoo	FT/SE/None	X	—	—
Empidonax traillii extimus (nesting)	southwestern willow flycatcher	FE/SE/Covered	X	—	—
Icteria virens (nesting)	yellow—breasted chat	None/SSC/Covered	X	—	—
Polioptila californica californica	coastal California gnatcatcher	FT/SSC/Covered		—	X
Pyrocephalus rubinus (nesting)	vermilion flycatcher	None/SSC/None	X	—	—
Setophaga petechia (nesting)	yellow warbler	None/SSC/Covered	—	X	—
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE/Covered	X	—	—
Mammals					
Antrozous pallidus	pallid bat	None/SSC/None	—	X	—
Chaetodipus californicus femoralis	Dulzura pocket mouse	None/SSC/Covered	X	—	—
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None/SSC/Covered	X	—	—
Corynorhinus townsendii	Townsend's big—eared bat	None/SSC/None	X	—	—
Dipodomys stephensi	Stephens' kangaroo rat	FT/ST/Covered	X	—	—
Eumops perotis californicus	western mastiff bat	None/SSC/None	X	—	—
Lasiurus blossevillii	western red bat	None/SSC/None	X	—	—
Lepus californicus bennettii	San Diego black—tailed jackrabbit	None/None/Covered	X	—	—

Row Labels	Common Name	Status (Federal/State/ NCCP—HCP)	Potential to Occur in the Project Study Area		
			Low	Moderate	High/ Present
Neotoma lepida intermedia	San Diego desert woodrat	None/SSC/Covered	X	—	—
Nyctinomops macrotis	big free—tailed bat	None/SSC/None	X	—	—
Taxidea taxus	American badger	None/SSC/None	X	—	—
Reptiles					
Anniella stebbinsi	southern California legless lizard	None/SSC/None	X	—	—
Arizona elegans occidentalis	California glossy snake	None/SSC/None	X	—	—
Aspidoscelis hyperythra	orange—throated whiptail	None/WL/Covered	—	X	—
Aspidoscelis tigris stejnegeri	San Diegan tiger whiptail	None/SSC/Covered	—	X	—
Crotalus ruber	red diamondback rattlesnake	None/SSC/Covered	—	X	—
Phrynosoma blainvillii	Blainville's horned lizard	None/SSC/Covered	X	—	—
Plestiodon skiltonianus interparietalis	Coronado skink	None/WL/Covered	X	—	—

Notes: If a special—status is not included in this table, it can be assumed that it was not deemed to have any potential to occur within the vicinity of the overall project study area or was not required to be analyzed under the NCCP/HCP.

Statuses:
FE: Federally Endangered
FT: Federally Threatened
BCC: U.S. Fish and Wildlife Service Bird of Conservation Concern
SSC: California Species of Special Concern
FP: California Fully Protected Species
WL: California Watch List Species
SE: State Endangered
ST: State Threatened

Appendix E

Study Area Photos

Photo 1. View of Moon Valley Nursery property near northwestern corner of study area. Work Area 1/Northern Tie-In is partially shown. This work area is surrounded by urban/developed land.

Photo 2. Additional view of Moon Valley Nursery property in northwestern corner of study area. Empty urban/developed shown where Work Area 1/Northern Tie-In is proposed to occur.

Photo 3. View showing portion of Work Area 2 near northeastern corner of study area. Habitat in this area consists of disturbed land. Non-jurisdictional drainage ditch pictured.

Photo 4. Additional view of Work Area 2 near northeastern corner of study area. Photo taken standing in non-jurisdictional drainage ditch feature near Laydown Area E.

Photo 5. View of Laydown Area E is parking lot associated with nearby golf driving range in study area. Urban/ developed land and disturbed land shown in this area.

Photo 6. View of Moon Valley Nursery property and Laydown Area A in the study area, just north of the Air Valve Vault Access and Maintenance Pad work area. This area is characterized by disturbed habitat.

Photo 7. View of N. Centre City Parkway Work Area in study area. Urban/developed land shown adjacent to oak habitats on nearby slope.

Photo 8. View of disturbed habitat that dominates Laydown Area D in study area. The disturbed areas are partially surrounded by southern mixed chapparal and coastal sage scrub habitats; a non-jurisdictional concrete-lined drainage ditch is also shown.

Photo 9. View of Work Area 3/Southern Tie-In work area and non-jurisdictional swale feature in study area. Coastal sage scrub habitat shown on left, N. Centre City Parkway pictured on right.

Photo 10. Additional view of the Work Area 3/Southern Tie-In work area and non-jurisdictional swale feature in the study area. Coastal sage scrub habitat shown on right, N. Centre City Parkway pictured on left.

Photo 11. View of Laydown Area B in the project study area. Gated access shown leading towards disturbed habitat.

Photo 12. Additional view of Laydown Area B. Coastal sage scrub habitat shown in southern half of potential laydown area.

Photo 13. View of privately owned property in Laydown Area C, near the southeastern corner of the study area. Developed portion pictured.

Photo 14. Additional view of privately owned property in Laydown Area C, near the southeastern corner of the study area. Disturbed portion pictured.

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Appendix F
NCCP/HCP Conditions for Coverage

F-1 General Conditions for Coverage

The following general measures apply to all Covered Species, as listed in Section 2.1 of Appendix B of the NCCP/HCP, and will be implemented on the project:

1. Conduct pre-activity surveys within suitable habitat to ensure that Covered Species are adequately addressed by impact avoidance, minimization, and mitigation. Surveys must be conducted by an Environmental Surveyor during the appropriate field conditions for detection prior to any proposed impacts in the Plan Area.
2. Avoid and minimize impacts to occupied Covered Species habitat or potential migration and/or dispersal corridors for all new facilities and O&M Activities of existing facilities through project design considerations.
3. Establish a habitat buffer when appropriate and feasible around covered plant species populations to support the natural suite of pollinators unless a biologically appropriate mitigation approach is agreed to with the Wildlife Agencies at the time of project-specific environmental review.
4. Fence and/or flag Covered Species populations and sensitive habitat in or adjacent to work areas. Where necessary, install signage to prohibit access and/or flag areas being restored or protected for their biological value.
5. Avoid driving or parking on sensitive and/or occupied habitat by keeping vehicles on roads and in designated staging areas.
6. Deter unauthorized activities (such as trampling and off-road vehicle use) and perform litter abatement, including proper disposal of illegally dumped materials, as part of routine patrol of access roads.
7. Monitor encroachment of non-native and invasive species into Covered Species populations and perform weed abatement as needed to improve the habitat.
8. Stabilize work areas to control erosion or sedimentation problems when working near Covered Species populations within the Plan Area. Populations within or adjacent to work areas would be protected from vehicular traffic, excessive foot traffic, or other activities that result in soil surface disturbance.
9. Control dust when working near Covered Species populations and/or habitat in accordance with applicable regulations.
10. All identified populations of Covered Species within rights-of-ways must be managed to control edge effects to the maximum extent possible.
11. Any restoration and monitoring program prepared as a component of the mitigation plan for impacts to a Covered Species shall include, but not be limited to, species propagation ratios, restoration site selection and assessment, site preparation, implementation strategies, weed control procedures, required management and monitoring in perpetuity, funding commitment, and reporting procedures. The program would be prepared in advance of project impacts and approved by the Wildlife Agencies.
12. Any planting stock used shall be inspected by an Environmental Surveyor to ensure that it is free of pest species that may invade natural areas, including, but not limited to, Argentine ants (*Iridomyrmex humii*), fire ants (*Solenopsis invicta*), and other pests. Any planting stock that is infested would not be allowed within restoration areas or within 300 feet of native areas unless documentation is provided to the Wildlife Agencies that these pests already occur in the native areas around the project site. The stock would be quarantined, treated, or disposed of according to best management principles by qualified experts in a manner that precludes invasions into native habitat. Runoff from mitigation sites into native habitat would be minimized and managed.

13. To the maximum extent possible, conduct Covered Activities occurring within wetland habitats during the dry season when flows are at their lowest or nonexistent to minimize impacts to aquatic species and/or habitats.
14. Reseed temporary impact areas with an appropriate native seed mix and allow for natural recolonization of the area by adjacent populations.
15. For new facilities adjacent to native habitat, minimize ornamental landscaping or irrigation not associated with native habitat restoration.
16. Collection of covered plant and wildlife species by Water Authority personnel and contractors is prohibited.
17. Maintain and manage dispersal/movement corridors within the Plan Area that contribute to long-term population viability.
18. The use of outdoor lighting within or adjacent to potential Covered Species habitat will be discouraged. If lighting must be used for reasons of safety and security, light sources would be shielded away from habitat and only low-pressure sodium lighting would be used.

F-2 NCCP/HCP Minimization Measures

The following minimization measures listed in Section 6.4 of the NCCP/HCP will be incorporated as design features on the project:

Environmental Surveyor (Section 6.4.1.1)

1. The Water Authority will identify an Environmental Surveyor for the project to oversee pre-project evaluations/needs of Covered Activities and work with the project engineer and contractors to ensure implementation compliance of Covered Activities with Plan commitments.
2. If the Environmental Surveyor discovers that the Water Authority is out of compliance with the permits associated with this Plan, he/she will report the noncompliance to the Water Authority within one working day and to the Wildlife Agencies within five working days so that the Water Authority and Wildlife Agencies can determine how to put the Plan back into compliance.
3. Before any clearing and/or construction activities are performed in habitat areas that may support Covered Species, the Environmental Surveyor will review the site, identify any sensitive plant and animal species, and identify requirements pursuant to the Plan for impact avoidance and minimization. A standard PSF will be prepared for each project and submitted to the Water Authority for review and tracking purposes.
4. The Environmental Surveyor will determine the extent of potential Covered Species habitat and will flag the sensitive resources to be avoided. If a Covered Species is present, the Environmental Surveyor will refer to Appendix B of the NCCP/HCP for species-specific conservation measures. In the case of unavoidable impacts to a Covered Species, the Environmental Surveyor will determine the extent of impact, the appropriate mitigation measures, and recommend to the project engineer additional measures to minimize impacts in accordance with Appendix B of the NCCP/HCP.

5. The Environmental Surveyor will work with the project engineer to identify and mark areas appropriate for staging and temporary equipment storage, placement of heavy machinery, as well as vehicle turn around and access, that will result in the least amount of impact to sensitive vegetation and/or Covered Species. The Environmental Surveyor will verify that all areas specified on the plans to be avoided are marked with flagging in the field prior to construction start.
6. The Environmental Surveyor will attend pre-construction meetings for projects in sensitive areas. The Environmental Surveyor will provide brief presentations to field staff, as needed, to familiarize field personnel with the natural resources to be protected and avoid on project sites and outline environmental expectations. The Environmental Surveyor will also be available to answer questions and address any last-minute construction changes.
7. The Environmental Surveyor will be present during clearing, topsoil salvage, and construction activities located within sensitive habitat. The frequency and duration of required monitoring will be specified in the PSF that is completed by the Environmental Surveyor and submitted to the Water Authority on a project-by-project basis prior to the start of construction.
8. The Environmental Surveyor will advise the construction manager during construction to ensure compliance with all avoidance, minimization, and mitigation measures.
9. The Environmental Surveyor will conduct (and document) monitoring as required by the PSF. At the completion of the Covered Activity, the Environmental Surveyor will prepare a brief report to verify compliance with the avoidance and minimization recommendations in the PSF. This report will include documentation that the flagged areas were avoided and that minimization measures were properly implemented. The Environmental Surveyor will be responsible for the identification and monitoring of any Covered Species that are found on the project site prior to and during construction activities. Monitoring activities will be in accordance with the species-specific measures (see Appendix B of the NCCP/HCP).
10. If any previously unidentified Covered Species or otherwise sensitive species, nests, dens, or burrows are located on a project site during construction activities, the Environmental Surveyor will provide guidance, through the construction manager, as to how best to minimize or avoid impacting the resource(s).
11. The Environmental Surveyor will be on-call (via phone) to respond within 24 hours for potential emergency deployment to assess and monitor potentially critical biological issues.
12. If the Environmental Surveyor determines that the Covered Activity is out of compliance with the requirements of the Plan, the Environmental Surveyor will report it to the Water Authority. The Water Authority will be responsible for bringing the project back into compliance and determine the appropriate remedial action, if necessary, through coordination with the Wildlife Agencies.
13. The Environmental Surveyor or construction manager will be responsible for ensuring the removal of all habitat flagging from the construction site at completion of work.
14. If included in the PSF, the Environmental Surveyor will direct the relocation of Covered Species that can be moved from harm's way in coordination with the species-specific Conditions of Coverage in Appendix B of the NCCP/HCP (in non-emergency situations) with notification to the Wildlife Agencies.

Pre-Activity Survey Form (Section 6.4.1.2)

1. The PSF will include avoidance, minimization, and mitigation requirements based on the general measures outlined in this section and the species-specific conditions in Appendix B of the NCCP/HCP. USFWS biological survey protocols performed by qualified and appropriately authorized personnel will be conducted where appropriate and required.

2. The pre-activity survey will be valid for 30 days unless the project is scheduled to begin during the avian breeding season, in which case the nesting bird clearance must be conducted within five days of project implementation. If ground disturbance activities have not commenced within 30 days after the survey is completed, the Environmental Surveyor will conduct a verification survey to confirm that biological conditions have not significantly changed that would alter the specified avoidance, minimization and mitigation commitments prior to construction.

Field Personnel Education Training (Section 6.4.1.3)

1. Field personnel working within sensitive habitat areas, including both Water Authority employees and contractors, will participate in an education training program at the start of each project. The program will be conducted on-site by an Environmental Surveyor under the direction of the Water Authority. The training will include: an overview of Covered Species identification and the legal protections afforded to each species; a brief discussion of their biology; habitat requirements; status under ESA and CESA; conservation measures being taken by the project for the protection of the Covered Species and their habitats under this Plan; and penalties for non-compliance. The training program will also educate field personnel in the identification of invasive species that may be removed, as well as desirable seeded and planted species, to ensure that native species are not affected by invasive species control. A fact sheet conveying this information will also be available to all personnel working in the project area. The Water Authority, either directly or through the services of the Environmental Surveyor, will be responsible for the education and training for new field personnel coming on-site after the start of a project.

Field Personnel (and Contractor) Responsibilities (Section 6.4.1.4)

1. Contractors or other project personnel will not collect plants or wildlife, unless specifically authorized and directed by the Environmental Surveyor. Only qualified and appropriately authorized personnel will handle or collect plants or wildlife as required by species-specific measures.
2. Field personnel will not intentionally harm or harass wildlife or damage nests, burrows, rock outcrops, or other habitat components.
3. Drivers on unpaved roads in native habitats will not exceed a speed of 20 miles per hour in order to avoid injury to animals and minimize dust generation.
4. Impacts to adjacent native vegetation that would be significantly affected by excessive fugitive dust will be avoided and minimized through watering of access roads (except in areas with vernal pools) or other appropriate measures, such as reducing the number or speed of vehicles or adding inert materials that reduce dust. Projects with the potential for excessive dust generation include those that involve more than occasional use of roads in dust-prone soils (i.e., more than three to five vehicle roundtrips per day) or require multiple vehicles to transport heavy equipment and supplies.
5. Vehicles will not park in areas where catalytic converters may ignite vegetation. Construction vehicles will be equipped with shovels and fire extinguishers in order to reduce the risk of wildfires.
6. Littering will be strictly prohibited. All trash will be deposited in secured, closed containers or hauled out daily by field personnel.
7. No pets will be allowed on any construction site.
8. No firearms or other weapons will be allowed on any construction site except as carried by governmental law enforcement, or as authorized in writing by Water Authority staff.
9. Field personnel will be prohibited from pushing or dumping soil and brush into sensitive habitats.

10. All vehicles, tools, and machinery will be restricted to access roads, approved staging areas, or within designated construction zones.
11. If any field personnel identify a previously unnoticed Covered Species on a construction site, work activities will cease in order to immediately notify the Water Authority's construction manager, project engineer, and the Environmental Surveyor. In conjunction with Water Authority environmental staff, the Environmental Surveyor will determine what actions would be taken to avoid or minimize impacts to the species according to the species-specific conditions outlined in Appendix B of the NCCP/HCP.
12. Field personnel will notify the project engineer/environmental staff of any sick, injured, or dead wildlife found on site.
13. Parking or driving underneath oak trees, except in established traffic areas, will not be allowed in order to protect root structures.

Design and Construction Controls (Section 6.4.2.5)

1. Projects will be designed to avoid and minimize impacts to biological resources, to the extent feasible.
2. Construction and operation activities will be designed and implemented to avoid and minimize new disturbance, erosion on manufactured and other slopes, and off-site degradation from sedimentation.
3. Storage and staging areas will be located in disturbed areas or within the least biologically sensitive areas established by the Environmental Surveyor. No filling, excavating, trenching, or stockpiling of materials will be permitted outside of the approved construction footprint, unless the area to be used is already disturbed and does not support habitat for Covered Species.
4. Construction footprints will be delineated in the construction documents. In addition, if the construction footprint is located within or near sensitive habitat, the project footprint will be fenced or continuously flagged with streamers or a boundary rope barrier to ensure that habitat is not removed beyond the limits of work. These barriers will be established prior to any grading, grubbing, or clearing, and will be monitored by the Environmental Surveyor.
5. Projects will be refined, where possible, during the engineering and construction phases to further avoid and minimize impacts to Covered Species or their habitat through seasonal timing of work, minor realignments, and narrowing of construction limits.
6. Clearing and grubbing will be performed within the construction areas only as necessary for safe vehicle movement and construction activities.

Stormwater Best Management Practices (Section 6.4.2.6)

1. Prior to the start of ground disturbing activities, the Water Authority or their consultants will prepare a Storm Water Pollution Prevention Plan (SWPPP) to reduce or eliminate pollutants during and after construction. The most current and applicable Best Management Practices (BMPs) will be implemented at all construction sites in or adjacent to native habitat in accordance with the project specifications. In addition to the approved manual, BMPs listed in the most recent National Pollutant Discharge Elimination System (NPDES) General Permit and the BMP Fact Sheet located in State Water Resources Control Board (SWRCB) General Permit for Small Linear Underground/Overhead Projects will apply. The fact sheet is attached as an Appendix G and the SWRCB or RWQCB will be contacted for the latest requirements.

Cleanup (Section 6.4.2.8)

1. Refuse and trash will be regularly removed from activity sites and disposed of in a lawful manner. Timing of refuse and trash removal will be determined by the Environmental Surveyor and comply with the project specifications that require debris to be removed as work is completed. Petroleum products, including gasoline, diesel, and hydraulic fluid, will be used during construction in accordance with all federal, state, and local laws, regulations, and permitting requirements. In the event that hazardous materials are encountered or generated during construction, contractors certified by the responsible regulatory agency will conduct all recovery operations and dispose of hazardous waste in accordance with existing regulations and required permits. As required, petroleum products, trash, and other materials will be taken to a disposal facility authorized to accept such materials.

F-3 Wildlife Species Conditions for Coverage

The following conditions for coverage for wildlife species, as listed in Sections 5, 6, 7, and 8 of NCCP/HCP Appendix B, will be incorporated into the project:

Orange-throated Whiptail (Section 6.3.3)

1. Implement general Conditions for Coverage (see Section F-1).
2. Avoid or minimize impacts to Belding's orange-throated whiptail habitat at the study area through project design and placement.
3. Minimize and manage effects from introduced ant species that may exclude the termite prey base during restoration efforts. All nursery stock plants will be checked for nonnative ants before installation at restoration sites. Non-native ants that penetrate native habitats appear to be partially supported by artificial irrigation associated with landscaping (Suarez et al. 1998). Therefore, runoff from mitigation sites in native habitat would be minimized and managed.

Coastal (Western) Whiptail (Section 6.4.3)

1. Implement general Conditions for Coverage (see Section F-1).
2. Avoid or minimize impacts to coastal whiptail habitat at the study area through project design and placement.

Northern Red Diamond Rattlesnake (Section 6.9.3)

1. Implement general Conditions for Coverage (see Section F-1).
2. If a northern red diamond rattlesnake is observed in the construction area, the snake should be moved by an Environmental Surveyor to the closest safe, suitable habitat in the area. Exclusionary fences may be used to keep snakes out of construction areas. These fences would be placed and monitored daily.
3. Avoid or minimize impacts to red diamond rattlesnake habitat at the study area through project design and placement.

Coastal California Gnatcatcher (Section 7.7.3)

1. Implement general Conditions for Coverage (see Section F-1).
2. Conduct USFWS protocol surveys for the California gnatcatcher at the study area under favorable conditions in areas of potential foraging or breeding habitat for all new facilities and O&M Activities, or assume occupancy of potential habitat, to ensure that this species is adequately addressed by impact avoidance, minimization, and mitigation. A permitted Environmental Surveyor would conduct surveys.
3. Minimize impacts through timing of work in suitable California gnatcatcher habitat at the study area to avoid the nesting season for upland avian species (February 15 to August 15) whenever possible, or ensure that habitat is removed prior to the initiation of the breeding season. If construction activities must commence during the upland avian breeding season, minimize impacts through conducting nest surveys within 300 feet of all proposed activities (see Section 2.3 of the NCCP/HCP for the Avian Breeding Season Policy). If active nests are encountered, no Covered Activities shall be implemented within a minimum distance of 100 feet of the nest. A greater setback (up to 300 feet) may be required, as determined by the Environmental Surveyor, based on the site specific considerations, phase of the nesting cycle, and species or other biological considerations (see Section 2.4 of the NCCP/HCP).
4. Direct take of individuals and destruction of nests within an active territory are not allowed.
5. For temporary impacts to occupied California gnatcatcher habitat, the work site would be returned to preexisting contours, where feasible, and revegetation with appropriate locally native species. All revegetation plans would require written concurrence of the Wildlife Agencies. Also, see Section 6.4, Plan Minimization Measures, of the NCCP/HCP.

Yellow Warbler (Section 7.8.3)

1. Implement general Conditions for Coverage (see Section F-1).
2. Minimize impacts through timing of work in riparian habitat at the study area to avoid the nesting season for riparian avian species (March 15 to September 15) whenever possible, or ensure that habitat is removed prior to the initiation of the breeding season. If construction activities must commence during the riparian avian breeding season, minimize impact through conducting nest surveys within 300 feet of all proposed activities (see Section 2.3 of the NCCP/HCP). If active nests are encountered, no Covered Activities shall be implemented within a minimum distance of 100 feet of the nest. A greater setback (up to 300 feet) may be required, as determined by the Environmental Surveyor, based on the site specific considerations, phase of the nesting cycle, and species or other biological considerations (see Section 2.4 of the NCCP/HCP). Direct take of individuals and destruction of nests within an active territory is not allowed.

F-4 Lake Stream and River Work Conditions

The following conditions to avoid or minimize substantial adverse effects on jurisdictional waters features, as listed in Appendix I of the NCCP/HCP, will be incorporated into project activities subject to permitting with the California Department of Fish and Wildlife:

1. CDFG employees are authorized to conduct on-site inspections relevant to San Diego County Water Authority NCCP/HCP Section 6.6.1.1, upon reasonable notice.

2. Silty/turbid water shall not be discharged into the stream. Such water shall be settled, filtered, or otherwise treated prior to discharge. The Crew's/Contractor's ability to minimize turbidity/siltation shall be the subject of pre-construction planning and design feature implementation.
3. Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.
4. Water containing mud, silt, or other pollutants from equipment washing or other activities shall not be allowed to enter a lake or flowing stream or placed in locations that may be subjected to high storm flows.
5. If off-stream siltation pond(s) is/are used to control sediment, pond(s) shall be constructed in a location, or shall be designed, such that potential spills into the stream/lake during periods of high water levels/flow are precluded.
6. If silt catchment basin(s) is/are used, the basin(s) shall be constructed across the stream immediately downstream of the project site. Catchment basins shall be constructed of materials that are free from mud and silt. Upon completion of the project, all basin materials along with the trapped sediments shall be removed from the stream in such a manner that said removal shall not introduced sediment to the stream.
7. Silt settling basins shall be located away from the stream or lake to prevent discolored, silt-bearing water from reaching the stream or lake during any flow regime.
8. Notwithstanding the use of silt catchment basins, upon Department determination that turbidity/siltation levels resulting from project related activities constitute a significant threat to aquatic life, activities associated with the turbidity/siltation, shall be halted until effective Department approved control devices are installed or abatement procedures are initiated.
9. Precautions to minimize turbidity/siltation shall be taken into account during project planning and shall be installed prior to construction. This may require that the work site be isolated and that water be diverted around the work area by means of a barrier, temporary culvert, new channel, or other means approved by CDFG. Precautions may also include placement of silt fencing, straw bales, sand bags, and/or the construction of silt catchment basins so that silt or other deleterious materials are not allowed to pass to downstream reaches. The method used to prevent siltation shall be monitored and cleaned/repaired weekly, or more frequently if warranted by local conditions. CDFG shall provide any determinations or approvals in writing within 14 days of receiving from the Water Authority or its agents a written request which includes a plan sheet or diagram indicating how the work site will be isolated.
10. No equipment shall be operated in ponded or flowing areas except as otherwise addressed in Water Authority project's Notification of Lake or Streambed Alteration application, contract specifications, and any applicable regulatory permits.
11. Rock, gravel, and/or other materials shall not be imported to, taken from, or moved within the bed or banks of the stream except as otherwise specifically identified in the project's Notification of Lake or Streambed Alteration application.
12. Temporary fills shall be constructed of nonerodible materials and shall be removed immediately upon work completion.
13. If operations require moving equipment across a flowing stream, such operations shall be conducted without substantially increasing stream turbidity. Where repeated crossings could result in a substantial increase in stream turbidly, the Water Authority shall install a permanent or temporary bridge, culvert, or rock-fill crossing as approved by the Water Authority Project Engineer.

14. If a stream channel and/or gradient have been temporarily altered during construction, it shall be returned as nearly as possible to pre-project conditions without creating a possible future bank erosion problem. If a lake margin has been altered, it shall be returned as nearly as possible to pre-project conditions without creating a future bank erosion problem.
15. Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.
16. Spoil sites shall not be located within a stream/lake, or where spoil shall be washed back into a stream/lake, or where it will cover aquatic or riparian vegetation, unless the site is specifically identified in the project's Notification of Lake or Streambed Alteration application.
17. Staging/storage areas for equipment and materials shall be located outside of the stream, unless the area is specifically identified in the project's Notification of Lake or Streambed Alteration application.
18. Access to the work site shall be via existing roads and access ramps when legally available to the Water Authority and its contractors for such use.
19. No equipment maintenance shall be done within or near any stream channel where petroleum products or other pollutants from the equipment may enter these areas under any flow.
20. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into or placed where it may be washed by rainfall or runoff into waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.
21. The Water Authority and its contractors, subcontractors, and employees shall comply with all litter and pollution laws. It is the responsibility of the Water Authority to ensure compliance.
22. Any equipment or vehicles driven and/or operated within or adjacent to the stream/lake shall be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.
23. Stationary equipment such as motors, pumps, generators, and welders located within or adjacent to the stream/lake shall be positioned over drip pans or confined within berms capable of containing any spills.
24. The clean-up of all spills shall begin immediately. CDFG shall be notified immediately by the Water Authority of any spills that affect aquatic habitat, and shall be consulted regarding clean-up procedures.
25. Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.
26. Installation of bridges, culverts, or other structures shall be such that water flow is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade, and bottoms of permanent culverts shall be placed below stream channel grade. Excavation of the streambed and banks shall be limited to the extent necessary, as determined by the Water Authority Project Engineer, to install bottoms of culverts below stream grade. Temporary culverts placed on existing streambed grade shall be done so with minimal disturbance.
27. The inlet and outlet of all permanent culverts shall be protected by the placement of head walls that shall be constructed of rock riprap, gabions, concrete, or other suitable nonerodible material as determined by the Water Authority project engineer. To prevent undercutting, the head walls shall be keyed in place. To prevent erosion, energy dissipaters will be installed.
28. Culverts shall be long enough to extend completely beyond the toe of the fill (unless both the up and downstream sides of the fill are adequately protected to the maximum high-water mark).

29. All in-stream structures shall be designed so that no sudden change in stream velocity shall occur above, below, or in the structure. If a sudden change in stream velocities occurs upon installation of the structure, the structure shall be removed immediately.
30. If any wildlife is encountered in the stream or lake zone during the course of construction, said wildlife shall be allowed to leave the construction area unharmed.
31. All diversion channels shall be designed to maintain velocities at levels acceptable to all native and recreational fish species determined to be in the project impact area and adjacent upstream and downstream reaches.

Appendix D

Cultural Resources Report

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October 20, 2022 12390.21

Sean Paver
Senior Water Resources Specialist
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Subject: Cultural Resources Inventory Report for the Crossover Pipeline Realignment Project, Escondido, California

Mr. Paver:

The following letter report summarizes the results of the cultural resources inventory conducted for the Crossover Pipeline Realignment Project (Project), located north of Escondido in unincorporated San Diego County, California (Figure 1). This cultural resources assessment was conducted in accordance with the California Environmental Quality Act (CEQA) for cultural resources. The San Diego County Water Authority (Water Authority) is the CEQA Lead Agency for the Project. In accordance with CEQA, Dudek performed a cultural resources inventory for the Project's area of potential effect (APE). The Project APE consists of a 50-foot buffer around all Project components including the proposed pipeline realignment, the existing Water Authority pipeline alignment, laydown yards, and work areas provided by the Water Authority design team (Figure 2). The APE is approximately 56.4 acres of land adjacent to Interstate 15 (I-15) north of Escondido, CA.

A South Coastal Information Center (SCIC) records search identified one previously recorded cultural resource that intersects the Project's APE, P-37-033557, a historic-era road known as Old Highway 395. A Sacred Lands File review was requested from the Native American Heritage Commission (NAHC) and the results were positive and included a list of tribal representatives who should be contacted. Dudek mailed outreach letters to the listed representatives and received four replies, three of which recommended monitoring due to heightened cultural sensitivity. An intensive pedestrian survey of the Project confirmed the presence of P-37-033557 but did not identify any other cultural resources within the Project APE. Although the pedestrian survey was negative (excluding P-37-033557), due to the heightened sensitivity of the surrounding area and the pre-CEQA construction of Old Highway 395, there is a moderate potential that buried cultural resources deposits may be encountered during excavation beneath the road. Dudek recommends full-time archaeological and Native American monitoring of initial ground disturbance within sediments that have the potential for containing cultural resources. Monitoring is required during trenching, clearing of the ground surface, or excavation of the tunnelling pits. Monitoring is not required during the tunnelling operation under Interstate 15 as these activities have a low potential of identifying cultural resources. Once excavations reach maximum depth or geological formation or bedrock where cultural deposits are not possible, the monitoring program will be concluded.

Potential impacts to the historical resource P-37-033557, Old Highway 395, are beyond the scope of this assessment and are being evaluated by Dudek's built environment cultural resources team and will be addressed in a subsequent report.

1 Project Description and Location

The Project consists of the realignment and replacement of an approximately 5,400-foot segment of aqueduct pipe. The existing 66-inch pre-stressed concrete aqueduct pipe will be replaced by a 78-inch diameter welded steel pipe that will run beneath and parallel to I-15. The project spans primarily developed or disturbed land in a rural area, crosses beneath I-15, and travels south through North Centre City Parkway (Figure 2). The project alignment is surrounded by semi-rural residential development, commercial uses (nurseries and a golf driving range), undeveloped land, and local roadways. The Project APE is within Sections 29, 30, and 32 of Township 11 South, Range 2 West of the Valley Center, California 7.5-minute U.S. Geological Survey Topographic Quadrangle Map (Figure 1).

2 Regulatory Framework

The Water Authority is the Lead Agency for compliance with the CEQA. This study is compliant with cultural resource regulations that apply to the Project APE including provisions for the California Register of Historic Resources (CRHR), Native American Historic Cultural Sites (California Public Resources Code section 5097 et seq.), the California Native American Graves Protection and Repatriation Act, CEQA, California Health and Safety Code section 7050.5, and Assembly Bill Number 52 (AB 52).

2.1 The California Register of Historic Resources (Public Resources Code section 5020 et seq.)

Under CEQA, the term "historical resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (California Public Resources Code section 5020.1(j)). In 1992, the California legislature established CRHR "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code section 5024.1(a)). A resource is eligible for listing in the CRHR if the State Historical Resources Commission determines that it is a significant resource and that it meets any of the following National Register of Historic Places (NRHP) criteria:

- Associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Associated with the lives of persons important in our past.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- Has yielded, or may be likely to yield, information important in prehistory or history.

(California Public Resources Code section 5024.1(c).) Resources less than 50 years old are not considered for listing in the CRHR, but may be considered if it can be demonstrated that sufficient time has passed to understand the historical importance of the resource (see 14 CCR, section 4852(d)(2)).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing on the NRHP are automatically listed on the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys. The State Historic Preservation Officer maintains the CRHR.

2.2 Native American Historic Cultural Sites (California Public Resources Code section 5097 et seq.)

State law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and establishes the NRHC to resolve disputes regarding the disposition of such remains. In addition, the Native American Historic Resource Protection Act makes it a misdemeanor punishable by up to 1 year in jail to deface or destroy an Indian historic or cultural site that is listed or may be eligible for listing in the CRHR.

2.3 California Native American Graves Protection and Repatriation Act

The California Native American Graves Protection and Repatriation Act (California Repatriation Act), enacted in 2001, required all state agencies and museums that receive state funding and that have possession or control over collections of human remains or cultural items, as defined, to complete an inventory and summary of these remains and items on or before January 1, 2003, with certain exceptions. The California Repatriation Act also provides a process for the identification and repatriation of these items to the appropriate tribes.

2.4 California Environmental Quality Act

As described further below, the following CEQA statutes and CEQA Guidelines are of relevance to the analysis of archaeological and historic resources:

1. California Public Resources Code section 21083.2(g): Defines “unique archaeological resource.”
2. California Public Resources Code section 21084.1 and CEQA Guidelines section 15064.5(a): Define historical resources. In addition, CEQA Guidelines section 15064.5(b) defines the phrase “substantial adverse change in the significance of an historical resource;” it also defines the circumstances when a project would materially impair the significance of a historical resource.
3. California Public Resources Code section 5097.98 and CEQA Guidelines section 15064.5(e): Set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.

4. California Public Resources Code sections 21083.2(b)-(c) and CEQA Guidelines section 15126.4: Provide information regarding the mitigation framework for archaeological and historic resources, including options of preservation-in-place mitigation measures; preservation-in-place is the preferred manner of mitigating impacts to significant archaeological sites because it maintains the relationship between artifacts and the archaeological context, and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

Under CEQA, a project may have a significant effect on the environment if it may cause “a substantial adverse change in the significance of an historical resource” (California Public Resources Code section 21084.1; CEQA Guidelines section 15064.5(b)). If a site is either listed or eligible for listing in the CRHR, or if it is included in a local register of historic resources, or identified as significant in a historical resources survey (meeting the requirements of California Public Resources Code section 5024.1(q)), it is a “historical resource” and is presumed to be historically or culturally significant for purposes of CEQA (California Public Resources Code section 21084.1; CEQA Guidelines section 15064.5(a)). The lead agency is not precluded from determining that a resource is a historical resource even if it does not fall within this presumption (California Public Resources Code section 21084.1; CEQA Guidelines section 15064.5(a)).

A “substantial adverse change in the significance of an historical resource” reflecting a significant effect under CEQA means “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired” (CEQA Guidelines section 15064.5(b)(1); California Public Resources Code section 5020.1(q)). In turn, the significance of a historical resource is materially impaired when a project:

1. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or
2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
3. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA.

See Section 1.2.2, below for a discussion of the CEQA guidelines for determining significance and mitigating impacts to unique archaeological resources.

2.5 California Health and Safety Code section 7050.5 and Public Resources Code Section 5097.98

CEQA Guidelines Section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described below, these procedures are detailed in California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98.

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the County coroner has examined the remains (California Health and Safety Code Section 7050.5[b]). If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the NAHC within 24 hours (California Health and Safety Code Section 7050.5[c]). In accordance with California Public Resources Code Section 5097.98(a), the NAHC will notify the Most Likely Descendant (MLD). With the permission of the landowner, the MLD may inspect the site of discovery. Within 48 hours of being granted access to the site, the MLD may recommend means of treatment or disposition, with appropriate dignity, of the human remains and associated grave goods.

2.6 Assembly Bill 52

California AB 52, which took effect July 1, 2015, establishes a consultation process between California Native American Tribes and lead agencies in order to address tribal concerns regarding project impacts and mitigation to "tribal cultural resources" (TCR). Public Resources Code section 21074(a) defines TCRs and states that a project that has the potential to cause a substantial adverse change to a TCR is a project that may have an adverse effect on the environment. A TCR is defined as a site, feature, place, cultural landscape, sacred place, and object with cultural value to a California Native American tribe that is either:

1. listed or eligible for listing in the CRHR or a local register of historical resources, or
2. determined by a lead agency to be a TCR.

3 Cultural Setting

Evidence for continuous human occupation in the San Diego County region spans the last 12,000 years. Various attempts to parse out variability in archaeological assemblages over this broad time frame have led to the development of several cultural chronologies; some of these are based on geologic time, most are based on temporal trends in archaeological assemblages, and others are interpretive reconstructions. Each of these reconstructions describes essentially similar trends in assemblage composition in more or less detail. This research employs a common set of generalized terms used to describe chronological trends in assemblage composition from an archaeological perspective: Paleoindian (pre-5500 BC), Archaic (8000 BC.–AD 500), Late Prehistoric (AD 500–1750), and Ethnohistoric (post-AD 1750). Native American aboriginal lifeways did not cease at European contact. "Protohistoric" refers to the chronological trend of continued Native American aboriginal lifeways at the cusp of the recorded historic period in the Americas. The tribal cultural context spans all of the archaeologically based chronologies further described below.

3.1 Paleoindian (Pre-5500 BC)

Evidence for Paleoindian occupation in coastal Southern California is tenuous, especially considering the fact that the oldest dated archaeological assemblages look nothing like the Paleoindian artifacts from the Great Basin. One of the earliest dated archaeological assemblages in coastal Southern California (excluding the Channel Islands) derives from P-37-004669 (CA-SDI-4669), in La Jolla. A human burial from P-37-004669 was radiocarbon dated to

9,590–9,920 years before present (approximately 95% probability) (Hector 2007). The burial is part of a larger site complex that contained more than 29 human burials associated with an assemblage that fits the Archaic profile (i.e., large amounts of groundstone, battered cobbles, and expedient flake tools). In contrast, typical Paleoindian assemblages include large stemmed projectile points, high proportions of formal lithic tools, bifacial lithic reduction strategies, and relatively small proportions of groundstone tools. Prime examples of this pattern are sites that were studied by Emma Lou Davis (1978) on China Lake Naval Air Weapons Station near Ridgecrest, California. These sites contained fluted and unfluted stemmed points and large numbers of formal flake tools (e.g., shaped scrapers, blades). Other typical Paleoindian sites include the Komodo site (MNO-679)—a multicomponent fluted point site, and MNO-680—a single component Great Basin stemmed point site (Basgall et al. 2002). At MNO-679 and MNO-680, groundstone tools were rare while finely made projectile points were common.

Turning back to coastal Southern California, the fact that some of the earliest dated assemblages are dominated by processing tools runs counter to traditional notions of mobile hunter–gatherers traversing the landscape for highly valued prey. Evidence for the latter—that is, typical Paleoindian assemblages—may have been located along the coastal margin at one time, prior to glacial desiccation and a rapid rise in sea level during the early Holocene (pre-7500 BP) that submerged as much as 1.8 km of the San Diego coastline. If this were true, however, it would also be expected that such sites would be located on older landforms near the current coastline. Some sites, such as P-37-000210 (CA-SDI-210) along Agua Hedionda Lagoon, contained stemmed points similar in form to Silver Lake and Lake Mojave projectile points (pre-8000 BP) that are commonly found at sites in California's high desert (Basgall and Hall 1990). P-37-000210 yielded one corrected radiocarbon date of 8520–9520 BP (Warren et al. 2004). However, sites of this nature are extremely rare and cannot be separated from large numbers of milling tools that intermingle with old projectile point forms.

Warren et al. (2004) claimed that a biface manufacturing tradition present at the Harris site complex P-37-000149 (CA-SDI-149) is representative of typical Paleoindian occupation in the San Diego County region that possibly dates between 10,365 and 8200 BC (Warren et al. 2004, p. 26). Termed San Dieguito (Rogers 1945), assemblages at the Harris site are qualitatively distinct from most others in the San Diego County region because the site has large numbers of finely made bifaces (including projectile points), formal flake tools, a biface reduction trajectory, and relatively small amounts of processing tools (Warren 1964, 1968). Despite the unique assemblage composition, the definition of San Dieguito as a separate cultural tradition is hotly debated. Gallegos (1987) suggested that the San Dieguito pattern is simply an inland manifestation of a broader economic pattern. Gallegos' interpretation of San Dieguito has been widely accepted in recent years, in part because of the difficulty in distinguishing San Dieguito components from other assemblage constituents. In other words, it is easier to ignore San Dieguito as a distinct socioeconomic pattern than it is to draw it out of mixed assemblages.

The large number of finished bifaces (i.e., projectile points and non-projectile blades), along with large numbers of formal flake tools at the Harris site complex, is very different than nearly all other assemblages throughout the San Diego County region, regardless of age. Warren et al. (2004) made this point, tabulating basic assemblage constituents for key early Holocene sites. Producing finely made bifaces and formal flake tools implies that relatively large amounts of time were spent for tool manufacture. Such a strategy contrasts with the expedient flake-based tools and cobble-core reduction strategy that typifies non-San Dieguito Archaic sites. It can be inferred from the uniquely high degree of San Dieguito assemblage formality that the Harris site complex represents a distinct economic strategy from non-San Dieguito assemblages.

If San Dieguito truly represents a distinct socioeconomic strategy from the non-San Dieguito Archaic processing regime, its rarity implies that it was not only short-lived, but that it was not as economically successful as the Archaic strategy. Such a conclusion would fit with other trends in southern California deserts, wherein hunting-related tools are replaced by processing tools during the early Holocene (Basgall and Hall 1993).

3.2 Archaic (8000 BC – AB 500)

The more than 2500-year overlap between the presumed age of Paleoindian occupations and the Archaic period highlights the difficulty in defining a cultural chronology in the San Diego County region. If San Dieguito is the only recognized Paleoindian component in the San Diego County region, then the dominance of hunting tools implies that it derives from Great Basin adaptive strategies and is not necessarily a local adaptation. Warren et al. (2004) admitted as much, citing strong desert connections with San Dieguito. Thus, the Archaic pattern is the earliest local socioeconomic adaptation in the San Diego County region (Hale 2001, 2009).

The Archaic pattern is relatively easy to define with assemblages that consist primarily of processing tools: millingstones, handstones, battered cobbles, heavy crude scrapers, incipient flake-based tools, and cobble-core reduction. These assemblages occur in all environments across the San Diego County region, with little variability in tool composition. Low assemblage variability over time and space among Archaic sites has been equated with cultural conservatism (Byrd and Reddy 2002; Warren 1968; Warren et al. 2004). Despite enormous amounts of archaeological work at Archaic sites, little change in assemblage composition occurs until the bow and arrow is adopted at around AD 500, as well as ceramics at approximately the same time (Griset 1996; Hale 2009). Even then, assemblage formality remains low. After the bow is adopted, small arrow points appear in large quantities and already low amounts of formal flake tools are replaced by increasing amounts of expedient flake tools. Similarly, shaped millingstones and handstones decrease in proportion relative to expedient, unshaped groundstone tools (Hale 2009). Thus, the terminus of the Archaic period is equally as hard to define as its beginning because basic assemblage constituents and patterns of manufacturing investment remain stable, complimented only by the addition of the bow and ceramics.

3.3 Late Prehistoric (AD 500 – 1769)

The period of time following the Archaic and prior to Ethnohistoric times (AD 1750) is commonly referred to as the Late Prehistoric (M. Rogers 1945; Wallace 1955; Warren et al. 2004). However, several other subdivisions continue to be used to describe various shifts in assemblage composition, including the addition of ceramics and cremation practices. In northern San Diego County, the post-AD 1450 period is called the San Luis Rey Complex (True 1978). Rogers (1929) also subdivided the last 1,000 years into the Yuman II and III cultures, based on the distribution of ceramics. Despite these regional complexes, each is defined by the addition of arrow points and ceramics, and the widespread use of bedrock mortars. Vagaries in the appearance of the bow and arrow and ceramics make the temporal resolution of the San Luis Rey complex difficult. For this reason, the term Late Prehistoric is well-suited to describe the last 1,500 years of prehistory in the San Diego region.

Temporal trends in socioeconomic adaptations during the Late Prehistoric period are poorly understood. This is partly due to the fact that the fundamental Late Prehistoric assemblage is very similar to the Archaic pattern, but includes arrow points and large quantities of fine debitage from producing arrow points, ceramics, and cremations. The appearance of mortars and pestles is difficult to place in time because most mortars are on bedrock surfaces;

bowl mortars are actually rare in the San Diego County region. Some argue that the Ethnohistoric intensive acorn economy extends as far back as AD 500 (Bean and Shipek 1978). However, there is no substantial evidence that reliance on acorns, and the accompanying use of mortars and pestles, occurred prior to AD 1400. True (1980) argued that acorn processing and ceramic use in the northern San Diego region did not occur until the San Luis Rey pattern emerged after approximately AD 1450.

3.4 Ethnohistoric (post-AD 1769)

The history of the Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the San Diego County region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief, and generally peripheral, accounts were prepared with the intent of furthering respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the San Diego County region brought more extensive documentation of Native American communities, though these groups did not become the focus of formal and in-depth ethnographic study until the early twentieth century (Boscana 1846; Fages 1937; Geiger and Meighan 1976; Harrington 1934; Laylander 2000). The principal intent of these researchers was to record the pre-contact, culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as “salvage ethnography,” was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his “memory culture” approach (Lightfoot 2005, p. 32) by recording languages and oral histories within the San Diego County region. These accounts supported, and were supported by, previous governmental decisions which made San Diego County the location of more federally recognized tribes than anywhere else in the United States: 18 tribes on 18 reservations that cover more than 116,000 acres (CSP 2009).

Based on the General Plan location, the traditional cultural inhabitance of the area were the Luiseño Native American tribal groups. The traditional cultural boundary between the Luiseño and southern neighboring tribe, the Kumeyaay, was well defined by anthropologist Florence C. Shipek (Shipek 1993, as summarized in County of San Diego 2007, p. 6):

In 1769, the Kumeyaay national territory started at the coast about 100 miles south of the Mexican border (below Santo Tomas), thence north to the coast at the drainage divide south of the San Luis Rey River including its tributaries. Using the U.S. Geological Survey topographic maps, the boundary with the Luiseño then follows that divide inland. The boundary continues on the divide separating Valley Center from Escondido and then up along Bear Ridge to the 2240 contour line and then north across the divide between Valley Center and Woods Valley up to the 1880-foot peak, then curving around east along the divide above Woods Valley.

Based on ethnographic information, it is believed that at least 88 different languages were spoken from Baja California Sur to the southern Oregon state border at the time of Spanish contact (Johnson and Lorenz 2006, p. 34). The distribution of recorded Native American languages has been dispersed as a geographic mosaic across California through six primary language families (Golla 2007, p. 71). Based on the General Plan location, Golla suggests that the Native American inhabitants of the region would have likely spoken Takic languages that may be assigned to the larger Uto-Aztecan family (Golla 2007, p. 74). These groups include the Luiseño, Cupeño, and Cahuilla. Golla has interpreted the amount of internal diversity within these language-speaking communities to reflect a time depth of approximately 2,000 years. Other researchers have contended that Takic may have diverged from Uto–Aztecan ca. 2600 BC–AD 1, which was later followed by the diversification within the Takic speaking San Diego tribes, occurring approximately 1500 BC–AD 1000 (Laylander 2010).

The Luiseño language belongs to the Cupan group of the Takic language branch of the Uto-Aztecan language family. Luiseño is a term given to Native Americans under the administration of Mission San Luis Rey, and later applied specifically to the Payomkawichum ethnic nation who were present in the region where the mission was founded. Meaning the “western people,” the name Payomkawichum can also be applied to the closely related coastal Luiseño who lived north of the mission.

Luiseño territory was situated in the north half of San Diego County and the western edge of Riverside County. Their lands encompassed the southern Santa Margarita Mountains and the Palomar Mountains, and their foothills to the Pacific Ocean. The territory extended eastward into the San Jacinto Valley and the western foothills of the San Jacinto Mountains. Their neighbors to the were the Juaneño (Acjachemen) who spoke a Luiseño dialect; the Cahuilla and Cupeño to the east who spoke other Takic Cupan languages; and the Ipai (Kumeyaay) to the south who spoke a California-Delta Yuman language.

The Luiseño resided in permanent villages and associated seasonal camps. Village population ranged from 50–400 with social structure based on lineages and clans. A single lineage was generally represented in smaller villages, while multiple lineages and a dominant clan presided in larger villages. Each clan/village owned a resource territory and was politically independent, yet maintained ties to others through economic, religious, and social networks in the immediate region. There were contact period villages in the vicinity of this segment, near the towns of Vista, San Marcos, and Escondido, but researchers have been unable to place rancheria names from the mission registers with these locations.

Like other Indigenous California groups, the primary food staple was the acorn (Bean and Shipek 1978), supplemented by other plant resources, fish, shellfish, waterfowl, and marine and terrestrial mammals. Villages were situated near reliable sources of water, needed for the daily leaching of milled acorn flour. Other plant foods included pine nuts and grass seeds, manzanita, sunflower, sage, chia, lemonade berry, wild rose, holly-leaf cherry, prickly pear, and lamb’s quarter. Large and small prey included deer, antelope, rabbit, jackrabbit, wood rat, mice, and ground squirrel, as well as quail, ducks, and other birds. Fish, such as trout, were caught in rivers and creeks.

The first direct European contact with the Luiseño occurred in July 1769 with the Spanish expedition led by Gaspar de Portolá. During the next six years, eight missions and forts were founded north and south of Luiseño territory. In 1776, Mission San Juan Capistrano was founded less than 10 miles north, and the populations of five northern Luiseño villages had been halved within 15 years. In 1798, Mission San Luis Rey was established within Luiseño territory, and the proselytizing among the Payomkawichum began in earnest.

Several Luiseño leaders signed the statewide 1852 treaty, locally known as the Treaty of Temecula (an interior Luiseño village), but the U.S. Congress never ratified it. By 1875, however, reservations for the Luiseño were established in the Palomar Mountains and nearby valleys, including Pala, Pauma, Rincon, Pechanga, and La Jolla.

Rio San Luis Rey de Francia was the name given by the Franciscan Friars to what is now known as the San Luis Rey River, and the mission of San Luis Rey de Francia was established in 1798, four miles up the San Luis Rey River (Sparkman 1908). Approximately 20 miles up the San Luis Rey River was the mission of Pala, established in 1816 as an outpost of San Luis Rey de Francia (Sparkman 1908). The Mission San Luis Rey is located approximately 3.5 miles northwest of the proposed Project APE.

Luiseño geographical names are very numerous; small tracts with distinguishing features may be named, or there may be a name for a small portion of a tract, or names for a large tract of country (Sparkman 1908). Each band had its tract in the San Luis Rey valley (Sparkman 1908). Some geographical names may be descriptive and some names are of old village sites noted to be located near modern localities and settlements; for example Keish is associated with San Luis Rey (Sparkman 1908). Kroeber has also noted several villages along the San Luis Rey River; Ikaimai was also noted to be located near Mission San Luis Rey near Keish (Kroeber 1925). Located to the east from the Mission San Luis Rey were Wiasamai and Wahaumai, continuing east from the Mission San Luis Rey is Kwalam (Opila), Tomkav, and Pala, and Wiawio was noted to be located at the west coast of the San Luis Rey River (Kroeber 1925).

3.5 Historic Period (post-AD 1542)

Francisco Ulloa, exploring the Pacific coast under orders from Hernán Cortes, is reported to have stopped at the San Luis Rey River in 1540, marking the first contact between Europeans and the Luiseño, although the accuracy of his exploration is disputed (Garrahy and Weber 1971). Juan Rodriguez Cabrillo, who is widely considered the first European to explore Alta California, sailed the coast through Luiseno territory in 1542, but is not reported to have landed. Epidemic diseases may also have been introduced into the region at an early date, either by direct contacts with the infrequent European visitors or through waves of diffusion emanating from native peoples farther to the east or south (Preston 2002). It is possible, but as yet unproven, that the precipitous demographic decline of native peoples had already begun prior to the arrival of Gaspar de Portolá and Junípero Serra in 1769.

In 1798, Mission San Luis Rey, named for the King of France, was established four miles up along the San Luis Rey River. At its height San Luis Rey became one of the most populous and successful of the missions. In 1824, it had an Indian neophyte population of 3,000 and the extensive mission lands supported 1,500 horses, 2,800 sheep and 22,000 cattle (Pourade 1961:139). Under Spanish control, the missions set out to convert local populations to Christianity and to expand the influence of the Spanish empire. To support intensified missionization, asistencias (sub-missions) and ranchos were established throughout the territory in the vicinity of Native American villages. Eighteen years after the establishment of Mission San Luis Rey, the mission asistancia of Pala was established 20 miles upriver.

Throughout this period the Spanish established multiple missions and allowed only baptized Native Americans to legally own property. These disturbances to Native American communities only increased through Mexican Independence in 1821 and the succeeding secularization of the missions. Following the establishment of the Mexican republic, the government seized many of the lands belonging to Native Americans, providing them as parts of larger Land Grants to affluent Mexican citizens and rancheros. In 1835 the missions took on the role of parish churches (Carrico 2008:41). While some rancherias and pueblos such as Las Flores (Uchme), San Pasqual, and San Dieguito remained under the control of their native inhabitants following secularization, over the succeeding four and a half decades these were eventually lost to Mexican and Anglo-American owners as well (41).

Mexico’s separation from the Spanish empire in 1821 and the secularization of the California missions in the 1830s caused further disruptions to native populations. The 1833 Secularization Act passed by the Mexican Congress ordered half of all mission lands to be transferred to the Indians, and the other half to remain in trust and managed by an appointed administrator. These orders were never implemented due to several factors that conspired to prevent the Indians from regaining their patrimony. By 1835, the missions, including Mission San Luis Rey, were secularized. Mission San Luis Rey lands were parceled into six ranchos: Santa Margarita, Las Flores, Buena Vista, Agua Hedionda, Monserrate, and Guajome. The remaining lands of San Luis Rey were sold in 1846 to José Cota and José A. Pico by Pío Pico, Governor of California, and the Luiseño converts who had lived around the mission were removed to nearby Pala (Hawthorne 2000). Some former mission neophytes were absorbed into the work forces on the ranchos, while others drifted toward the urban centers at San Diego and Los Angeles or moved to the eastern portions of the county where they were able to join still largely autonomous native communities. United States conquest and annexation, together with the gold rush in Northern California, brought many additional outsiders into the region. Development during the following decades was fitful, undergoing cycles of boom and bust. With rising populations in the nineteenth century throughout the Southern California region, there were increased demands for important commodities including agricultural goods. Land grants issued within the Valley Center area (1841-48) included the ranchos of Pauma, Rincon del Dablo, Cuca or El Potrero, and Guejito. Other land grants in the surrounding area included Bernardo, San Marcos, Buena Vista, and Monserrate. Of these, rancho Guijito is the last of these to remain in-tact (McHenry 1997).

In 1851, a group of Cahuilla and Cupeño Indians attacked American settlers in Warner's Hot Spring, hoping to unite Indian tribes and drive out the Americans (Bibb 1991). Led by Pablo Apis, the Luiseño of Temecula went to Mission San Louis Rey and remained out of the conflict (Bibb 1991). In 1852, the Treaty of Temecula (Treaty of Peace and Friendship) was signed, providing certain lands, horses, cattle, and other supplies to the Luiseño, Cahuilla, and Serrano in exchange for government control of the rest of their lands (Bibb 1991, Van Horn 1974). This treaty, and 17 others in California, was rejected by the U.S. Senate later that year.

California was officially ceded to the United States in 1848, which led to the continued appropriation of Native American Lands by ranchers, prospectors, and an increasing number of settlers (County of San Diego 2003:5). The United States Government did little to dissuade these trespasses. From 1850, with the passage of California's Indian Act, until legislative reforms in the late 1880s, state laws promoted conditions that amounted to indentured servitude for much of the Native American population in San Diego (Carrico 2008:56). These laws supported overt racism and inequitable treatment.

4 Methods

4.1 Records Search

Dudek requested a records search of records stored at the SCIC at San Diego State University for the Project APE and a one-mile radius buffer around the Project APE. Dudek received the results of the search on August 20, 2021. The record search identified fifty-nine (59) previous cultural resources studies that have been performed within one mile of the Project APE. Twelve (12) of these previous studies intersect the Project APE and are listed in Table 1 below. These studies include several survey reports for I-15 and one report, SD-1962, included evaluations of three archaeological sites that are adjacent to the Project. SD-1962 is discussed in more detail below. None of these studies, however, identified archaeological resources within the Project APE. The studies not listed in Table 1 are included in Confidential Appendix A.

Table 1. Reports Intersecting Project APE

Report Number	Date	Author	Title
SD-00542	1977	CUPPLES, SUE ANN	AN ARCHAEOLOGICAL SURVEY REPORT FOR PROPOSED CONSTRUCTION OF INTERSTATE 15 (11-SD-15 P.M. R36.01 37.6) 11203-095041 AND 11-SD-15 P.M. R37.6/40.4 11203-095051
SD-00554	1977	CUPPLES, SUE ANN	ARCHAEOLOGICAL SURVEY REPORT FOR A PORTION OF PROPOSED INTERSTATE 15 (11-SD-15 P> R 40.4/42.9 MOOSA CANYON VINCINITY) 11203-095061
SD-01962	1977	COOK, ROGER A., PAT WELCH, ROY PETTUS, JIM MCMANUS, LESLEY MCCOY, TIM VASQUEZ, AND FRED WARN	PRELIMINARY REPORT: ARCHAEOLOGICAL TEST EXCAVATIONS AT 4-SDI-4558, 4562, AND 4562 A (11-SD-15 POST MILE 36.0/37.6)
SD-04113	1978	RECON	DRAFT ENVIRONMENTAL IMPACT REPORT FOR PALOS VISTA
SD-08588	1980	CITY OF ESCONDIDO	DRAFT ENVIRONMENTAL IMPACT REPORT FOR EXPANSION OF WASTEWATER TREATMENT FACILITY
SD-10580	2006	BEDDOW, DONNA	NEGATIVE CULTURAL RESOURCES SURVEY REPORT FOR RANCHO VERONA MUP04-050 / LOG NO. 04-08-041 NEGATIVE FINDINGS
SD-13375	2011	BONNER, WAYNE	CULTURAL RESOURCE RECORDS SEARCH AND SITE VISIT RESULTS FOR T-MOBILE USA CANDIDATE SD06110-A (JESMOND DENE), 35880 JESMOND DENE ROAD, ESCONDIDO, SAN DIEGO COUNTY, CALIFORNIA
SD-14140	2003	ROBBINS-WADE, MARY	ARCHAEOLOGICAL RECORDS SEARCH AND LITERATURE REVIEW, VALLECITOS WATER DISTRICT MASTER PLAN UPDATE SAN DIEGO COUNTY, CALIFORNIA
SD-17574	2017	MANCHEN, KENT AND BRIAN WILLIAMS	SUPPLEMENTAL ARCHAEOLOGICAL SURVEY FOR THE MINOR PROJECT REFINEMENTS: CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE RAINBOW-SAN DIEGO (LINE 3602) 36-INCH NATURAL GAS PIPELINE PROJECT, SAN DIEGO COUNTY, CALIFORNIA
SD-17576	2016	CASTELLS, SHELBY GUNDERMAN, MATTHEW DECARLO, AND BRIAN WILLIAMS	CULTURAL RESOURCE SURVEY REPORT FOR THE SAN DIEGO GAS & ELECTRIC COMPANY AND SOUTHERN CALIFORNIA GAS COMPANY PIPELINE SAFETY & RELIABILITY PROJECT, SAN DIEGO COUNTY, CALIFORNIA
SD-17577	2016	DAVIS, SHANNON	INDIRECT VISUAL IMPACT ASSESSMENT SURVEY FOR THE PROPOSED PIPELINE SAFETY AND RELIABILITY PROJECT, SAN DIEGO COUNTY, CALIFORNIA
SD-17875	2019	RAMOS-PONCIANO, MARCOS	CULTURAL RESOURCES SURVEY REPORT FOR SITE PLAT FOR WHOLESALE NURSERY

SD-1962

This study included an archaeological survey and significance testing of three archaeological sites prior to the development of the I-15. In 1971, San Diego State University surveyed the I-15 alignment and identified three sites near the current Project APE, CA-SDI-4558, CA-SDI-4562, and CA-SDI-4562A. Segments were resurveyed in 1976 and Caltrans conducted archaeological testing in 1977. The study determined that CA-SDI-4562 consists of a surface scatter with no temporally sensitive artifacts and no subsurface component. CA-SDI-4562A was completely destroyed by a soil borrowing operation in the 1960’s with no subsurface component. CA-SDI-4558, conversely, was a well-preserved prehistoric habitation site with a high potential for buried deposits.

The SCIC records search also revealed that one cultural resource has been recorded within the Project APE, P-37-033557, the Old Highway 395. The records search also identified 32 archaeological resources within 1-mile of the Project APE. The historic resources include Old Highway 395, four rock features, two structures, a water reservoir, a water flume, a refuse scatter, and two isolates. Prehistoric sites include eight artifact scatters, six milling stations, five habitation/camp sites, and two isolates. P-37-004558 is the nearest prehistoric resource and consists of a rich habitation site located approximately 0.3 miles outside of the Project APE. The results of the records search and all DPR forms are located in Confidential Appendix A.

Table 2. Previously Recorded Cultural Resources in the One-Mile Record Search Radius

Primary Number	Trinomial	Age	Description	Intersects APE
P-37-004558	CA-SDI-004558	Prehistoric	Habitation site	Within 1-Mile
P-37-004561	CA-SDI-004561	Prehistoric	Artifact scatter; bedrock milling	Within 1-Mile
P-37-004562	CA-SDI-004562	Prehistoric	Artifact scatter	Within 1-Mile
P-37-004563	CA-SDI-004563	Prehistoric	Artifact scatter	Within 1-Mile
P-37-004959	CA-SDI-004959	Prehistoric	Isolate - projectile point	Within 1-Mile
P-37-005187	CA-SDI-005187	Prehistoric	Bedrock milling	Within 1-Mile
P-37-005356	CA-SDI-005356	Prehistoric	Bedrock milling	Within 1-Mile
P-37-005357	CA-SDI-005357	Prehistoric	Milling station; artifact scatter	Within 1-Mile
P-37-005358	CA-SDI-005358	Prehistoric	Shell scatter	Within 1-Mile
P-37-005359	CA-SDI-005359	Historic	Rock wall and hearth	Within 1-Mile
P-37-005360	CA-SDI-005360	Historic	Cairn	Within 1-Mile
P-37-005361	CA-SDI-005361	Historic	Cairn	Within 1-Mile
P-37-005365	CA-SDI-005365	Historic	Rock feature	Within 1-Mile
P-37-005950	CA-SDI-005950	Prehistoric	Milling stations	Within 1-Mile
P-37-005951	CA-SDI-005951	Prehistoric	Habitation site	Within 1-Mile
P-37-009822	CA-SDI-009822	Prehistoric	Habitation site	Within 1-Mile
P-37-011898	CA-SDI-011898	Prehistoric	Temporary campsite	Within 1-Mile
P-37-011899	CA-SDI-011899	Prehistoric	Sparse lithic scatter	Within 1-Mile
P-37-014965		Prehistoric	Isolate - ceramic sherd	Within 1-Mile
P-37-015948	CA-SDI-014534	Prehistoric	Artifact scatter	Within 1-Mile
P-37-015949	CA-SDI-014535	Prehistoric	Temporary campsite	Within 1-Mile
P-37-015950	CA-SDI-014536	Prehistoric	Artifact scatter	Within 1-Mile
P-37-018824	CA-SDI-015689	Prehistoric	Bedrock milling	Within 1-Mile
P-37-019199		Historic	Historic schoolhouse	Within 1-Mile
P-37-026552	CA-SDI-017417	Prehistoric	Artifact scatter	Within 1-Mile
P-37-030889		Historic	Bench flumes	Within 1-Mile
P-37-033557		Historic	Old Highway 395	Intersect APE
P-37-035269		Prehistoric	Bedrock milling and rock shelter	Within 1-Mile
P-37-038472		Historic	Concrete water reservoir	Within 1-Mile
P-37-038473		Historic	Foundation and awning	Within 1-Mile
P-37-038939		Historic	Isolate - cooking pot	Within 1-Mile
P-37-038940		Historic	Isolate - glass insulator	Within 1-Mile
P-37-038941	CA-SDI-022905	Historic	Household refuse deposit	Within 1-Mile

P-37-033557/Old Highway 395

Highway 395 was the main north/south thoroughfare for eastern San Diego County. Prior to the I-15, Highway 395 was the primary inland transport route connecting downtown San Diego to Escondido, Temecula, and the Inland Empire. Highway 395 was signed in San Diego County in 1935 and a major realignment was constructed between 1947 and 1950. In 2018, California legislators designated the Historic State Highway Route 395, but only the 1935 route. In 2018, ASM Affiliates recommended Old Highway 395 eligible for the NRHP under Criterion A and the CRHR under Criterion 1.

The current Project proposes the installation of water pipe beneath an approximately 1-mile segment of P-37-033557, which is currently called North Centre City Parkway. This segment of P-37-033557 was part of the 1947-1950 realignment and has maintained that same alignment since. Installation of the Project pipeline will require open-cut trenching into P-37-033557.

4.2 Archival Research

Historic aerial images were reviewed to understand the development of the Project APE and surrounding properties at historicaerials.com (NETR 2022). Historic aerial photographs of the Project APE were available for 1938, 1946, 1947, 1953, 1964, 1967, 1978, 1980, 1981-1986, 1988-1991, 1993-2000, 2002, 2003, 2005, 2009, 2010, 2012, 2014, 2016, 2018, and 2020. The historic aerial from 1938 shows the Project APE consists of undeveloped land, agricultural fields, and dirt roads without a prominent north/south throughfare. By 1953, Highway 395 was established but the surrounding land still consisted of undeveloped land and agricultural fields. Between 1978 and 1980, the I-15 was constructed and the terrain of the Project APE completely changed. Massive earthmoving operations had transformed the area and the ground surface had been completely graded. Despite the massive earthmoving operation, Highway 395, some of which is now North Centre City Parkway, appears to have maintained its alignment and remained in use during the construction of I-15.

4.3 NAHC and Tribal Correspondence

A search of the NAHC Sacred Lands File was requested on August 13, 2021, for the Project APE and a one-mile buffer. The SLF consists of a database of known Native American resources. These resources may not be included in SCIC database. Dudek received a response on September 10, 2021. The NAHC results were positive but did not specify whether any resources were identified within the Project APE. The NAHC recommended contacting San Pasqual Band of Diegueno Mission Indians. The NAHC response also included a list of tribal representatives who should be contacted. Dudek mailed outreach letters to the listed representatives, including San Pasqual Band of Diegueno Mission Indians, on September 29, 2021. To date, four tribal representatives have responded (Appendix B).

Pechanga Band of Luiseño responded on October 25, 2021, and stated that the Project APE is adjacent to two Traditional Cultural Properties. They state that, regardless of previous disturbance, there is a high potential to find surface and subsurface cultural resources. They requested to consult on the Project under AB 52, notification of the entitlement process, copies of the cultural report, and archaeological and Pechanga Tribe monitoring during construction. Rincon Band of Luiseño Indians responded to the outreach letter on November 1, 2021. They stated that the Project APE is within Rincon's specific Area of Historic Interest. They have concerns that Tribal Cultural

Resources (TCR), Traditional Cultural Landscapes, and Traditional Cultural Properties (TCP) could be impacted by the Project, but no specific resources were mentioned. Rincon Band recommends a cultural resources study for the area and the presence of a Rincon Tribal monitor be present during the survey. Rincon Band also requested consultation with the lead agency. San Luis Rey Band of Mission Indians responded to the outreach letter on October 5, 2021, and stated that they are aware of cultural resources sites within close proximity to the proposed Project. They urge caution when conducting ground disturbance and recommend the presence of a Luiseño Native American monitor during ground disturbing activities or cultural resource assessment surveys. They also request a copy of any cultural reports for the Project. San Pasqual Band of Mission Indians responded to the outreach letter on November 3, 2021, and stated that the Project APE is within their band's Traditional Use Area. They did not provide any information about specific resources within the Project APE but did request consultation.

In compliance with Assembly Bill (AB) 52, the Water Authority, as lead agency, is responsible for conducting government to government consultation with pertinent tribal entities. The Water Authority mailed AB 52 notification letters on June 15, 2022. Rincon Band, Pechanga Band, San Luis Rey Band, and San Pasqual Band have all responded requesting consultation. Consultation is ongoing.

4.4 Intensive Pedestrian Survey

The current intensive pedestrian field survey was conducted by Dudek archaeologists Jason Collins, B.A. on July 14, 2022, and Matthew DeCarlo, M.A. conducted survey of Project APE additions on August 2, 2022. All survey work was conducted employing standard archaeological procedures and techniques consistent with Secretary of the Interior Standards. Along the I-15, the Project APE consists of a narrow corridor, portions of which are completely developed and paved and were not subject to survey. Likewise, the APE buffer surrounding the laydown yards and work areas extended into private property in some areas. These areas will not be impacted and were not surveyed. All other accessible portions of the Project APE were subject to pedestrian survey. Exposed ground surface areas, such as slopes along roadways, hillsides, and rodent burrows/spoils were inspected for potential subsurface deposits and sediment conditions.

The Project APE shows signs of having been almost completely previously disturbed. Only small sections of one laydown yard were not previously leveled. The majority of the APE has undergone extensive ground alteration and has been leveled, developed, and covered by buildings, pavement, and landscaping. This is especially true of the I-15 corridor. There is sparce vegetation within some of the laydown yards, having grown after initial ground disturbance.

Dudek archaeologists confirmed the presence of P-37-033557, Old Highway 395, in the Project APE. The Project proposes the installation of a water pipeline beneath Old Highway 395, now called North Centre City Parkway within the APE. This will require trenching into the resource. Field survey confirmed that this segment of Old Highway 395 has been maintained and is currently in use. No other artifacts or features were identified during this survey.

5 Summary and Management Considerations

5.1 Archaeological Recommendations

Dudek's cultural resources inventory of the Project indicates that there is one cultural resource within the Project APE, P-37-033557, Old Highway 395. The Project proposes the installation of a water pipeline beneath Old Highway 395, now call North Centre City Parkway within the APE. This will require open-cut trenching into P-37-033557 to bury the Project 78-inch diameter pipeline. Potential impacts to resource P-37-033557, Old Highway 395, need to be assessed prior to Project implementation. Dudek's built environment team is evaluating the significance of this segment of P-37-033557 and the possible impacts to this resource in a subsequent report.

Dudek's cultural resources inventory of the Project indicates that there is a moderate sensitivity for identifying intact subsurface archaeological deposits during Project implementation. The SCIC records search did not identify any resources within the Project APE (except P-37-033557), the review of historic aerial photographs showed extensive earth moving and terrain reconfiguration, and the pedestrian survey did not identify any resources within the Project APE. However, the records search did identify cultural resources in the surrounding area and Dudek has firsthand knowledge of rich archaeological deposit near the Project APE. Further, the NAHC reviewed the SLF and stated that the results were positive. Contacted Native American representatives recommended monitoring due to heightened cultural sensitivity due to the presence of TCPs and TCRs near the Project. Additionally, this segment of Old Highway 395 was constructed in the late 1940's, so it was likely not subject to archaeological or Native American review. Due to the surrounding culturally sensitive area, there is a moderate potential that intact, buried archaeological deposits may be present beneath North Centre City Parkway. No resources were identified in the already cleared and levelled laydown yards.

Due to the moderate potential to impact buried archaeological deposits, Dudek recommends full-time archaeological and Luiseno Native American monitoring of the initial ground disturbance within sediments that have the potential for containing cultural resources. Monitoring is required during trenching, clearing of the ground surface, or excavation of the tunnelling pits. Monitoring is not required during the tunnelling operation under Interstate 15 as these activities have a low potential of identifying cultural resources. Once excavations reach maximum depth or geological formation or bedrock where cultural deposits are not possible, the monitoring program will be concluded.

Should you have any questions relating to this report and its findings, please do not hesitate to contact me at 760.815.7067 or mdecarlo@dudek.com.

Sincerely,

Matthew M. DeCarlo

Matthew DeCarlo, M.A.
Archaeologist

Att.: *Figure 1, Project Location*
Figure 2, Area of Potential Effect
National Archaeological Database Information Sheet
Confidential Appendix A, SCIC Records Search Results
Appendix B, Tribal Correspondence

6 References

Basgall, M.E., and M. Hall. 1990. “Adaptive Variation in the North-Central Mojave Desert.” Paper presented at the 55th Annual Meeting of the Society for American Archaeology, Las Vegas, Nevada.

Basgall, M.E., and M. Hall. 1993. *Adaptive Variation in the North-Central Mojave Desert*. Paper Presented at the 55th Annual Meeting of the Society for American Archaeology, Las Vegas.

Basgall, M.E., L. Johnson, and M.J. Hale. 2002. “An Evaluation of Four Archaeological Sites in the Lead Mountain Training Area, Marine Corps Air Ground Combat Center, Twentynine Palms, California.” Submitted to U.S. Army Corps of Engineers, Fort Worth, Texas.

Bean, L.J., and F.C. Shipek. 1978. “Luiseño.” In *Handbook of North American Indians*, Vol. 8, *California*, edited by R.F. Heizer, 550–563. Washington, D.C.: Smithsonian Institution.

Boscana, G. 1846. “Chinigchinich: A Historical Account of the Origin, Customs, and Traditions of the Indians at the Missionary Establishment of St. Juan Capistrano, Alta California.” In *Life in California*, edited by A. Robinson, 227–341. New York, New York: Wiley & Putnam.

Byrd, B.F., and S.N. Reddy. 2002. “Late Holocene Adaptations along the Northern San Diego Coastline: New Perspectives on Old Paradigms.” In *Cultural Complexity on the California Coast: Late Holocene Archaeological and Environmental Records*, edited by J.M. Erlandson and T.L. Jones, 41–62. Los Angeles, California: University of California–Los Angeles Press.

County of San Diego. 2007. Ordinance No. 9890 (N/S). County of San Diego Board of Supervisors. San Diego, California.

CSP (California State Parks). 2009. “Preservation Matters.” *The Newsletter of the California Office of Historic Preservation* 2(3): 3–21.

Davis, E.L. 1978. *The Ancient Californians: Rancholabrean Hunters of the Mojave Lakes Country*. Los Angeles, California: Natural History Museum of Los Angeles County.

Fages, P. 1937. *A Historical, Political, and Natural Description of California* (1775). Translated by Herbert Ingram Priestly. Berkeley, California: University of California Press.

Gallegos, D.R. 1987. “San Dieguito River-La Jolla: Chronology and Controversy.” San Diego County Archaeological Society, Research Paper No. 1.

Geiger, M., and C.W. Meighan. 1976. *As The Padres Saw Them: California Indian Life and Customs as Reported by the Franciscan Missionaries, 1813–1815.* Santa Barbara, California: Santa Barbara Mission Archive Library.

Golla, V. 2007. “Linguistic Prehistory.” In *California Prehistory: Colonization, Culture, and Complexity*, edited by T.L. Jones and K.A. Klar, 71–82. New York, New York: Altamira Press.

Griset, S. 1996. “Southern California Brown Ware.” Unpublished PhD dissertation; University of California, Riverside.

Hale, M.J. 2001. “Technological Organization of the Millingstone Pattern in Southern California.” Master’s thesis; California State University, Sacramento.

Hale, M.J. 2009. “San Diego and Santa Barbara: Socioeconomic Divergence in Southern California.” PhD dissertation; University of California, Davis.

Harrington, J.P. 1934. “A New Original Version of Boscana’s Historical Account of the San Juan Capistrano Indians of Southern California.” *Smithsonian Miscellaneous Collections* 92(4).

Hector, S.M. 2007. “Archaeological Investigations at University House Meeting Center and Chancellor Residence, CA-SDI-4669 (SDM-W-12), University of California at San Diego, La Jolla, California.” ASM Affiliates.

Johnson, J.R., and J.G. Lorenz. 2006. “Genetics, Linguistics, and Prehistoric Migrations: An Analysis of California Indian Mitochondrial DNA Lineages.” *Journal of California and Great Basin Anthropology* 26:33–64.

Kroeber, A. 1925. *Handbook of the Indians of California.* Washington D.C.: Smithsonian Institution.

Laylander, D. 2000. *Early Ethnography of the Californias, 1533-1825*. Salinas, California: Coyote Press Archives of California Prehistory.

Laylander, D. 2010. “Linguistic Prehistory.” Research Issues in San Diego Prehistory. Accessed August 31, 2012. http://www.sandiegoarchaeology.org/Laylander/Issues /index.htm

Lightfoot, K.J. 2005. “Indians, Missionaries, and Merchants.” Berkeley, California: University of.

NETR (National Environmental Title Research, LLC) 2022. Area search for: Oceanside, CA. Accessed June, 2022. http://www.historicaerials.com/.

Preston, W.L. 2002. “Portents of Plague from California’s Protohistoric Period.” *Ethnohistory* 49:69–121.

Rogers, M.J. 1929. “The Stone Art of the San Dieguito Plateau.” *American Anthropologist* 31:454–467.

Rogers, M.J. 1945. “An Outline of Yuman Prehistory.” *Southwestern Journal of Anthropology* 1:167–198.

Sparkman, Philip S. 1908. The Cultural of the Luiseño Indians. *University of California Publications in American Archaeology and Ethnology* 8(4):187-234.

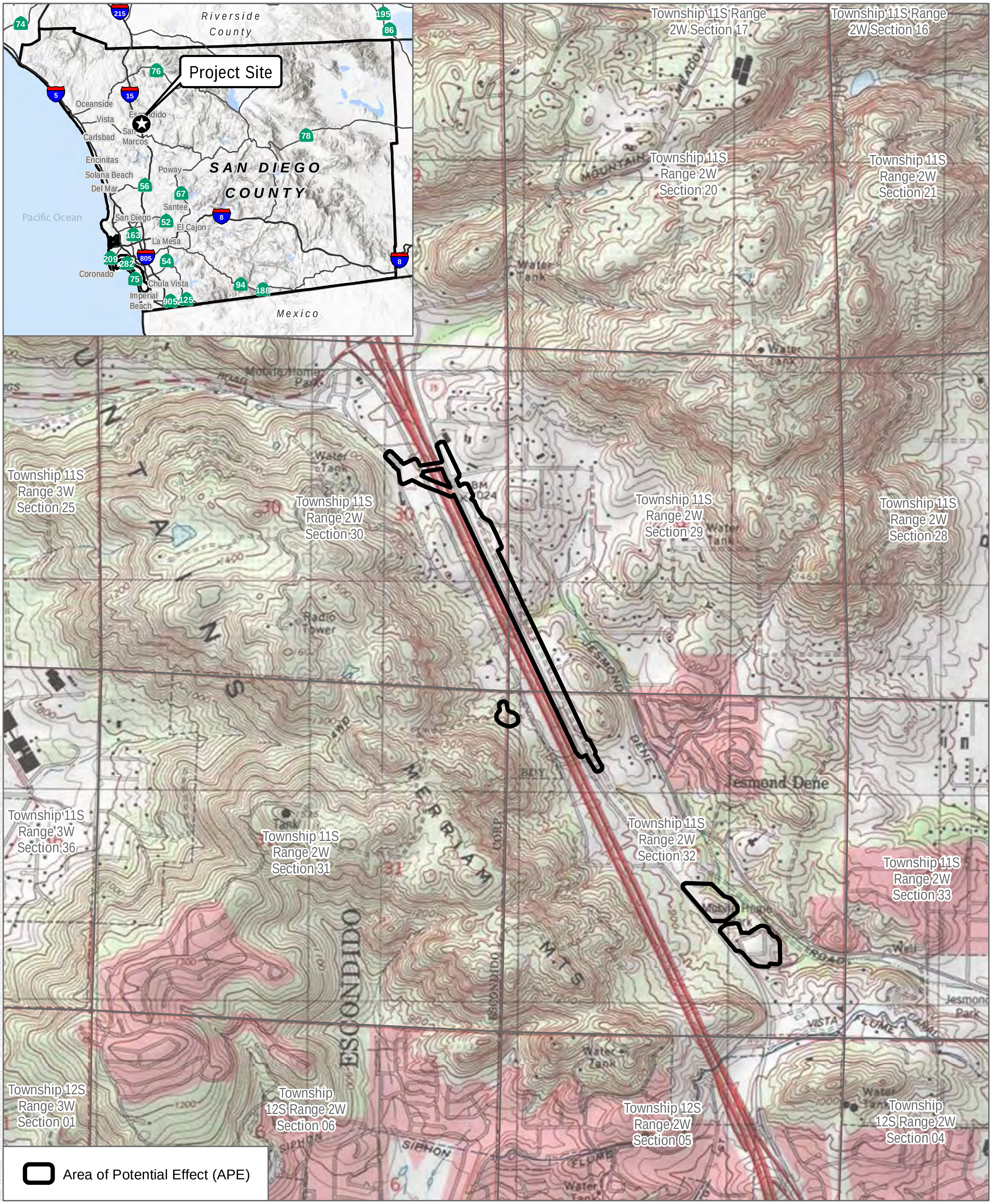
True, D.L. 1980. “The Pauma Complex in Northern San Diego County: 1978.” *Journal of New World Archaeology* 3(4): 1–39.

Wallace, W.J. 1955. “A Suggested Chronology for Southern California Coastal Archaeology.” *Southwestern Journal of Anthropology* 11:214–230.

Warren, C.N. 1964. “Cultural Change and Continuity on the San Diego Coast.” PhD dissertation; University of California, Los Angeles.

Warren, C.N. 1968. “Cultural Tradition and Ecological Adaptation on the Southern California Coast.” In *Archaic Prehistory in the Western United States*, edited by C. Irwin-Williams, 1–14. Portales, New Mexico: Eastern New Mexico University Contributions in Anthropology.

Warren, C.N., G. Siegler, and F. Dittmer. 2004. “Paleoindian and Early Archaic Periods.” In Prehistoric and Historic Archaeology of Metropolitan San Diego: A Historic Properties Background Study. Prepared for the Metropolitan Wastewater Department, City of San Diego. Encinitas, California: ASM Affiliates.

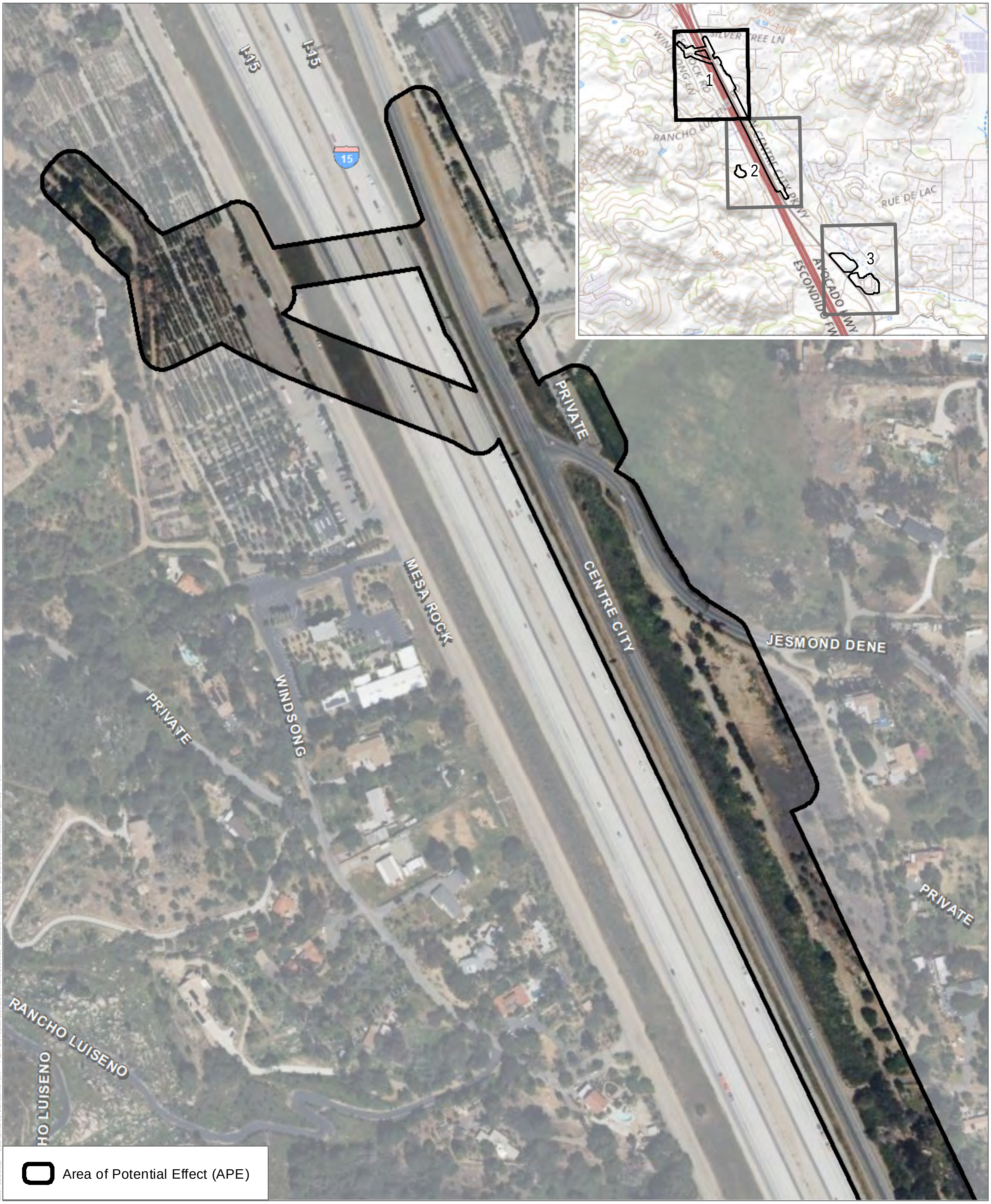


SOURCE: USGS 7.5-Minute San Marcos and Valley Center Quadrangles

DUDEK

0 1,000 2,000 Feet
0 300 600 Meters
1:24,000

FIGURE 1
Project Location
Crossover Pipeline Realignment



SOURCE: Bing Maps 2022

DUDEK

0 150 300 Feet
0 50 100 Meters
1:3,600

FIGURE 2-1
APE Map
Crossover Pipeline Realignment

SOURCE: Bing Maps 2022

DUDEK

0 150 300 Feet
0 50 100 Meters
1:3,600

FIGURE 2-2
APE Map
Crossover Pipeline Realignment

SOURCE: Bing Maps 2022

DUDEK

0 150 300 Feet
0 50 100 Meters
1:3,600

FIGURE 2-3
APE Map
Crossover Pipeline Realignment

National Archaeological Database (NADB) Information

Authors:	Matthew DeCarlo M.A.
Firm:	Dudek
Project Proponent:	San Diego County Water Authority
Report Date:	October 2022
Report Title:	Cultural Resources Inventory Report for the Crossover Pipeline Realignment Project, Escondido, California
Type of Study:	Cultural Resources Inventory
Resources:	P-37-033557
USGS Quads:	Valley Center, California, Township 11 South, Range 2 West, Sections 29, 30, and 32
Acreage:	56.4
Permit Numbers:	N/A
Keywords:	Pedestrian Survey, Inventory, Escondido, Old Highway 395

Confidential Appendix A
SCIC Records Search Results

Appendix B
Tribal Correspondence

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95501
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Crossover Pipeline Project - Dudek No. 12390-03-21

County: San Diego

USGS Quadrangle
Name: Valley Center

Township: 11 South Range: 2 West Section(s): 29, 30, 32

Company/Firm/Agency:
Dudek

Contact Person: Matthew DeCarlo

Street Address: 605 Third Street

City: Encinitas, CA Zip: 92024

Phone: (760) 815-7067 Extension:

Fax: (760) 632-0164

Email: mdecarlo@dudek.com

Project Description:
The proposed project consists of realigning an existing pipeline along the I-15 north of Escondido, CA.

☑ Project Location Map is attached

STATE OF CALIFORNIA Gavin Newsom, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

September 10, 2021

Matthew DeCarlo
Dudek

Via Email to: mdecarlo@dudek.com

Re: Crossover Pipeline Project, San Diego County

Dear Mr. DeCarlo:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information submitted for the above referenced project. The results were positive. Please contact the San Pasqual Band of Diegueno Mission Indians on the attached list for information. Please note that tribes do not always record their sacred sites in the SLF, nor are they required to do so. A SLF search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with a project's geographic area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites, such as the appropriate regional California Historical Research Information System (CHRIS) archaeological Information Center for the presence of recorded archaeological sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. Please contact all of those listed; if they cannot supply information, they may recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
San Diego County
9/10/2021

Barona Group of the Capitan Grande
Edwin Romero, Chairperson
1095 Barona Road — Diegueno
Lakeside, CA, 92040
Phone: (619) 443 - 6612
Fax: (619) 443-0681
cloyd@barona-nsn.gov

Campo Band of Diegueno Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1 — Diegueno
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov

Ewiiaapaayp Band of Kumeyaay Indians
Michael Garcia, Vice Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 933 - 2200
Fax: (619) 445-9126
michaelg@leaningrock.net

Ewiiaapaayp Band of Kumeyaay Indians
Robert Pinto, Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 368 - 4382
Fax: (619) 445-9126
ceo@ebki-nsn.gov

Iipay Nation of Santa Ysabel
Virgil Perez, Chairperson
P.O. Box 130 — Diegueno
Santa Ysabel, CA, 92070
Phone: (760) 765 - 0845
Fax: (760) 765-0320

Iipay Nation of Santa Ysabel
Clint Linton, Director of Cultural Resources
P.O. Box 507 — Diegueno
Santa Ysabel, CA, 92070
Phone: (760) 803 - 5694
cjlinton73@aol.com

Inaja-Cosmit Band of Indians
Rebecca Osuna, Chairperson
2005 S. Escondido Blvd. — Diegueno
Escondido, CA, 92025
Phone: (760) 737 - 7628
Fax: (760) 747-8568

Jamul Indian Village
Lisa Cumper, Tribal Historic Preservation Officer
P.O. Box 612 — Diegueno
Jamul, CA, 91935
Phone: (619) 669 - 4855
lcumper@jiv-nsn.gov

Jamul Indian Village
Erica Pinto, Chairperson
P.O. Box 612 — Diegueno
Jamul, CA, 91935
Phone: (619) 669 - 4785
Fax: (619) 669-4817
epinto@jiv-nsn.gov

Kwaaymii Laguna Band of Mission Indians
Carmen Lucas,
P.O. Box 775 — Kwaaymii Diegueno
Pine Valley, CA, 91962
Phone: (619) 709 - 4207

La Jolla Band of Luiseno Indians
Norma Contreras, Chairperson
22000 Highway 76 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 3771

La Posta Band of Diegueno Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Crossover Pipeline Project, San Diego County.

Native American Heritage Commission
Native American Contact List
San Diego County
9/10/2021

La Posta Band of Diegueno Mission Indians
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Fax: (619) 478-2125
jmiller@LPtribe.net

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Angela Elliott Santos, Chairperson
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Fax: (619) 766-4957

Mesa Grande Band of Diegueno Mission Indians
Michael Linton, Chairperson
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Fax: (760) 782-9092
mesagrandeband@msn.com

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd. — Cupeno, Luiseno
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Fax: (760) 742-3189
sgaughen@palatribe.com

Pauma Band of Luiseno Indians
Temet Aguilar, Chairperson
P.O. Box 369 — Luiseno
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Phone: (760) 742 - 1289
Fax: (760) 742-3422
bennaecalac@aol.com

Pechanga Band of Luiseno Indians
Mark Macarro, Chairperson
P.O. Box 1477 — Luiseno
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Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov

Pechanga Band of Luiseno Indians
Paul Macarro, Cultural Resources Coordinator
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Phone: (951) 770 - 6306
Fax: (951) 506-9491
pmacarro@pechanga-nsn.gov

Rincon Band of Luiseno Indians
Cheryl Madrigal, Tribal Historic Preservation Officer
One Government Center Lane — Luiseno
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crd@rincon-nsn.gov

Rincon Band of Luiseno Indians
Bo Mazzetti, Chairperson
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bomazzetti@aol.com

San Luis Rey Band of Mission Indians
1889 Sunset Drive — Luiseno
Vista, CA, 92081
Phone: (760) 724 - 8505
Fax: (760) 724-2172
cjmojado@slrmissionindians.org

San Luis Rey Band of Mission Indians
San Luis Rey, Tribal Council
1889 Sunset Drive — Luiseno
Vista, CA, 92081
Phone: (760) 724 - 8505
Fax: (760) 724-2172
cjmojado@slrmissionindians.org

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Crossover Pipeline Project, San Diego County.

Native American Heritage Commission
Native American Contact List
San Diego County
9/10/2021

San Pasqual Band of Diegueno Mission Indians
John Flores, Environmental Coordinator
P. O. Box 365 — Diegueno
Valley Center, CA, 92082
Phone: (760) 749 - 3200
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San Pasqual Band of Diegueno Mission Indians
Allen Lawson, Chairperson
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allenl@sanpasqualtribe.org

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 663 - 5279
Fax: (951) 654-4198
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Soboba Band of Luiseno Indians
Isaiah Vivanco, Chairperson
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
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ivivanco@soboba-nsn.gov

Sycuan Band of the Kumeyaay Nation
Kristie Orosco, Kumeyaay Resource Specialist
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 6917

Sycuan Band of the Kumeyaay Nation
Cody Martinez, Chairperson
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 2613
Fax: (619) 445-1927
ssilva@sycuan-nsn.gov

Viejas Band of Kumeyaay Indians
John Christman, Chairperson
1 Viejas Grade Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 3810
Fax: (619) 445-5337

Viejas Band of Kumeyaay Indians
Ernest Pingleton, Tribal Historic Officer, Resource Management
1 Viejas Grade Road — Diegueno
Alpine, CA, 91901
Phone: (619) 659 - 2314
epingleton@viejas-nsn.gov

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This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Crossover Pipeline Project, San Diego County.

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MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 800.450.1818 F 760.632.0164

September 29, 2021 12390-21

Tribal Council,
San Luis Rey Band of Mission Indians
1889 Sunset Dr.
Vista, CA 92081

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear ,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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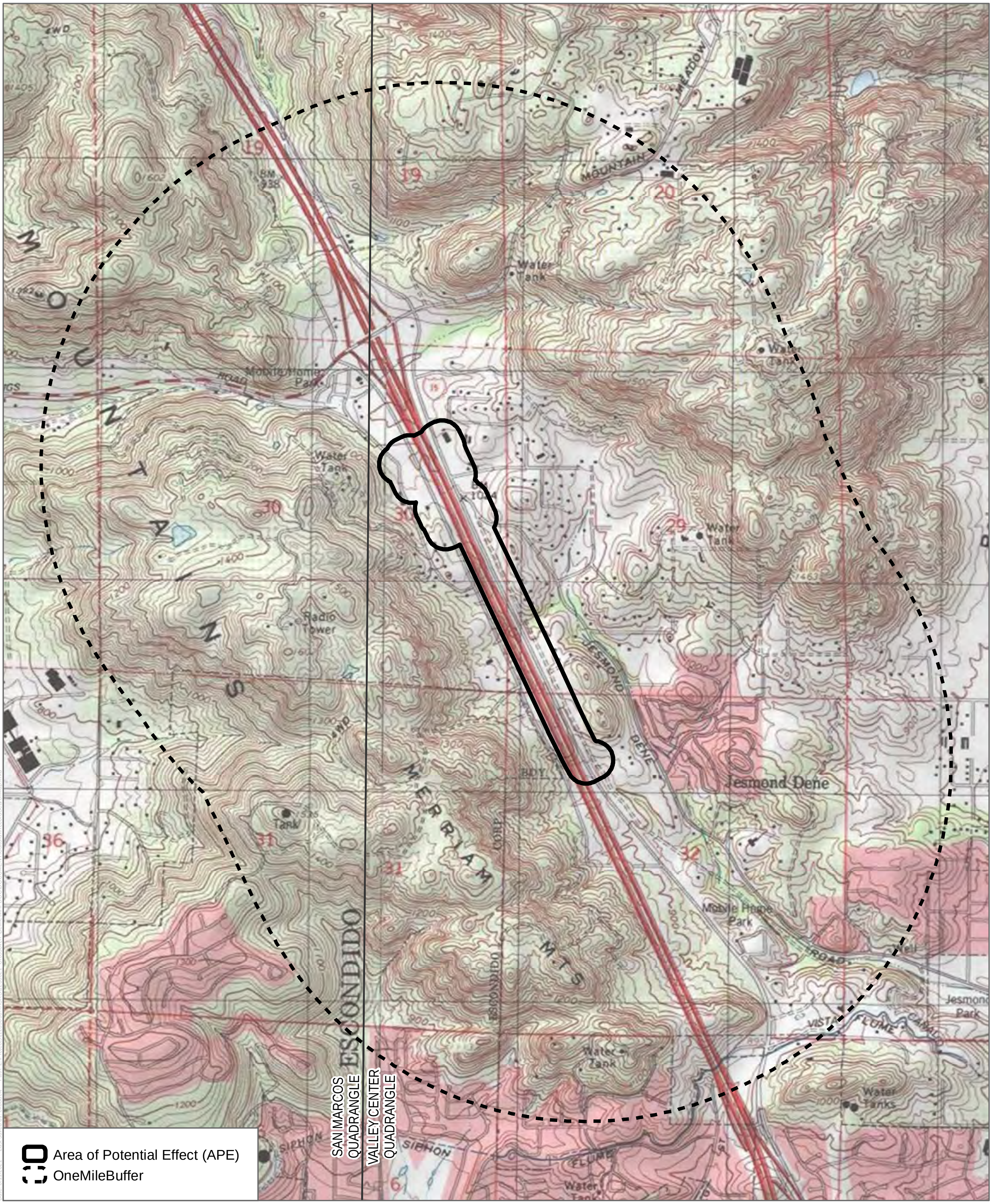
If you have any information or concerns pertaining to such information, please contact me.

Respectfully,

Matthew M DeCarlo

Matthew DeCarlo, M.A.
Archaeologist
DUDEK
Phone: (760) 479-4831
Email: mdecarlo@dudek.com



SOURCE: USGS 7.5-Minute Valley Center and San Marcos Quadrangles
Township 11S / Range 2W / Sections 29, 30, 32

DUDEK

0 1,000 2,000 Feet
0 300 600 Meters
1:24,000

Records Search Map

Crossover Pipeline

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September 29, 2021 12390-21

Mr. Temet Aguilar, Chairperson
Pauma & Yuima Reservation
P.O. Box 369
Pauma Valley, CA 92061

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Aguilar,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. John Christman, Chairperson
Viejas Band of Kumeyaay Indians
1 Viejas Grade Rd.
Alpine, CA 91901

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Christman,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Ms. Norma Contreras, Chairperson
La Jolla Band of Mission Indians
22000 Highway 76
Pauma Valley, CA 92061

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Contreras,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Ms. Lisa Cumper, THPO
Jamul Indian Village
P.O. Box 612
Jamul, CA 91935

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Cumper,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. John Flores, Environmental Coordinator
San Pasqual Band of Diegueno Mission Indians
P.O. Box 365
Valley Center, CA 92082

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Flores,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Michael Garcia, Vice Chairperson
Ewiiaapaayp Tribe
4054 Willows Road
Alpine, CA 91901

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Garcia,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Ms. Shasta Gaughen, Tribal Historic Preservation Officer
Pala Band of Mission Indians
35008 Pala Temecula Rd.
Pala, CA 92059

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Gaughen,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Ralph Goff, Chairperson
Campo Band of Diegueno Mission Indians
36190 Church Road, Suite 1
Campo, CA 91906

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Goff,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Allen E. Lawson, Chairperson
San Pasqual Band of Diegueno Mission Indians
P.O. Box 365
Valley Center, CA 92082

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Lawson,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Clint Linton, Director of Cultural Resources
Ipay Nation of Santa Ysabel
P.O. Box 507
Santa Ysabel, CA 92070

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Linton,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Michael Linton, Chairperson
Mesa Grande Band of Dieguneo Mission Indians
P.O. Box 270
Santa Ysabel, CA 92070

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Linton,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Ms. Carmen Lucas,
Kwaaymii Laguna Band of Mission Indians
P.O. Box 775
Pine Valley, CA 91962

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Lucas,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Mark Macarro, Chairperson
Pechanga Band of Mission Indians
P.O. Box 1477
Temecula, CA 92593

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Macarro,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Paul Macarro, Cultural Resources Manager
Pechanga Band of Mission Indians
P.O. Box 1477
Temecula, CA 92593

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Macarro,

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September 29, 2021 12390-21

Ms. Cheryl Madrigal, Tribal Historic Preservation Officer
Rincon Band of Mission Indians
One Governement Center Lane
Valley Center, CA 92082

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Madrigal,

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September 29, 2021 12390-21

Mr. Cody Martinez, Chairperson
Sycuan Band of the Kumeyaay Nation
1 Kwaaypaay Court
El Cajon, CA 92019

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Martinez,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

The Native American Heritage Commission conducted a Sacred Lands file search. The results were positive but did not indicate whether Native American cultural resources were identified within or adjacent to the project area. I am writing as part of the cultural inventory process in order find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project. This letter does not constitute formal government to government consultation pursuant to Assembly Bill 52.

If you have any information or concerns pertaining to such information, please contact me.

Respectfully,

Matthew M. DeCarlo

Matthew DeCarlo, M.A.
Archaeologist
DUDEK
Phone: (760) 479-4831
Email: mdecarlo@dudek.com

DUDEK
MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
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September 29, 2021 12390-21

Mr. Bo Mazzetti, Chairperson
Rincon Band of Luiseño Indians
1 Government Center Lane
Valley Center, CA 92082

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Mazzetti,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Ms. Javaughn Miller, Tribal Administrator
La Posta Band of Diegueno Mission Indians
8 Crestwood Rd.
Boulevard, CA 91905

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Miller,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Joseph Ontiveros, Cultural Resource Department
Soboba Band of Luiseno Indians
P.O. Box 487
San Jacinto, CA 92581

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Ontiveros,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Ms. Kristie Orosco, Resource Specialist
Sycuan Band of the Kumeyaay Nation
1 Kwaaypaay Court
El Cajon, CA 92019

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Orosco,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Ms. Rebecca Osuna, Chairperson
Inaja-Cosmit Band of Indians
2005 S. Escondido Blvd.
Escondido, CA 92025

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Osuna,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Ms. Gwendolyn Parada, Chairperson
La Posta Band of Dieguено Mission Indians
8 Crestwood Rd.
Boulevard, CA 91905

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Parada,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Virgil Perez, Chairperson
Iipay Nation of Santa Ysabel
P.O. Box 130
Santa Ysabel, CA 92070

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Perez,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Ernest Pingleton, Tribal Historic Officer
Viejas Band of Kumeyaay Indians
1 Viejas Grade Rd.
Alpine, CA 91901

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Pingleton,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Ms. Erica Pinto, Chairperson
Jamul Indian Village
P.O. Box 612
Jamul, CA 91935

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Pinto,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Robert Pinto, Chairperson
Ewiaapaayp Tribe
4054 Willow Rd.
Alpine, CA 91901

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Pinto,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Edwin (Thorpe) Romero, Chairperson
Barona Group of the Capitan Grande
1095 Barona Road
Lakeside, CA 92040

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Romero,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Ms. Angela Elliott Santos, Chairperson
Manzanita Band of Kumeyaay Nation
P.O. Box 1302
Boulevard, CA 91905

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Ms. Santos,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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September 29, 2021 12390-21

Mr. Isaiah Vivanco, Chairperson
Soboba Band of Luiseno Indians
P.O. Box 487
San Jacinto, CA 92581

Subject: Information Request for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. Vivanco,

The San Diego County Water Authority has proposed the realignment of an approximately 1-mile segment of the Crossover Pipeline in unincorporated San Diego County. The project area is highly developed and parallel to Interstate 15 (I-15) south of Deer Springs Road. The area falls within Sections 29, 30, and 32 of Township 11S/ Range 2W of the Valley Center, CA 1:24,000 USGS map (Figure 1).

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PECHANGA CULTURAL RESOURCES

Temecula Band of Luiseño Mission Indians

Post Office. Box 2183 • Temecula, CA 92593
Telephone (951) 770-6300 • Fax (951) 506-9491

October 25, 2021

VIA E-Mail and USPS
Matthew DeCarlo M.A.
Archaeologist
DUDEK.
(760) 479-4831
Email: mdecarlo@dudek.com

RE: Request for Information for the Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear Mr. DeCarlo,

The Pechanga Band of Luiseño Indians ("the Tribe") appreciates your request for information regarding the above referenced Project. After reviewing the provided maps and our internal documents, we have determined that the Project area is not within Reservation land's, although it is located in Our Ancestral Territory. At this time, we are interested in contributing to this Project based upon our 'Ayélkwish/Traditional Knowledge of the area, its location to two adjacent Traditional Cultural Properties, to multiple nearby Ancestral-remains, because of extensive previously recorded sites, and our specific project experience within this Project's vicinity. Pávxin (PAHV-hin) is the name of the Luiseño Traditional Cultural Property located and adjacent to the APE of this project, which was a major regional-hub for Luiseño ceremonies and a central meeting point on traveling routes between various villages, including those at Carlsbad and the islands. It is the largest, most extensive, and unique inland ceremonial area connected to the coast. The Tribe understands that some portion of the APE might have been previously disturbed; however, there is still a high potential to find surface and subsurface cultural resources, including human remains and associated grave goods, as well as ceremonial resources during earth moving activities associated with this project. Therefore, the Tribe is interested in participating in this Project.

The Tribe is dedicated to providing comprehensive cultural information to you and your firm for inclusion in the archaeological study as well as to the Lead Agency for CEQA review. At this time, the Tribe requests the following so we may continue the consultation process and to provide adequate and appropriate recommendations for the Project:

1) Because of this Project's positive Sacred Lands Filings Pechanga requests that a face-to-face AB52 Consultation between San Diego County Water Authority, The County of San Diego, DUDEK, and the Tribe occur as soon as possible.
2) Notification once the Project begins the entitlement process, if it has not already;

3) Copies of all applicable archaeological reports, site records, proposed grading plans and environmental documents (EA/IS/MND/EIR, etc);
4) The Tribe believes that monitoring by a San Diego County qualified archaeologist and a professional Pechanga Tribe monitor will be required during earthmoving activities.
5) Therefore, the Tribe reserves its right to make additional comments and recommendations once the environmental documents have been received and fully reviewed. Further, in the event that subsurface cultural resources are identified, the Tribe requests consultation with the Project proponent and Lead Agency regarding the treatment and disposition of all artifacts.

As a Sovereign governmental entity, the Tribe is entitled to appropriate and adequate government-to-government consultation regarding the proposed Project. We would like you and your client to know that the Tribe does not consider initial inquiry letters from project consultants to constitute appropriate government-to-government consultation, but rather tools to obtain further information about the Project area. Therefore, the Tribe reserves its rights to participate in the formal environmental review process, including government-to-government consultation with the Lead Agency, and requests to be included in all correspondence regarding this Project.

Please note that we are interested in participating in surveys within Luiseño Ancestral territory. Prior to conducting any surveys, please contact the Cultural Department to schedule specifics. If you have any additional questions or comments, please contact me at pmacarro@pechanga-nsn.gov or 951-770-6306.

Sincerely,

Paul E. Macarro

Paul E. Macarro
Cultural Coordinator
Pechanga Reservation

Rincon Band of Luiseño Indians
CULTURAL RESOURCES DEPARTMENT

One Government Center Lane | Valley Center | CA 92082
(760) 749-1092 | Fax: (760) 749-8901 | rincon-nsn.gov

November 1, 2021

Sent via email to: mdecarlo@dudek.com
DUDEK
Matthew DeCarlo
605 Third Street
Encinitas, California 92024

Re: Crossover Pipeline Realignment Project in Unincorporated San Diego County, California

Dear DeCarlo,

This letter is written on behalf of the Rincon Band of Luiseño Indians ("Rincon Band" or "Tribe"), a federally recognized Indian Tribe and sovereign government. We have received your notification regarding the above referenced project and we thank you for the opportunity to provide information pertaining to cultural resources. The identified location is within the Territory of the Luiseño people, and is also within Rincon's specific Area of Historic Interest (AHI).

After review of the provided documents and our internal information, the Band has specific concerns that that the project may impact tangible Tribal Cultural Resources (TCRs), Traditional Cultural Landscapes (TCLs), and potential Traditional Cultural Properties (TCPs). Embedded in these resources and within the AHI are Rincon's history, culture, and continuing traditional identity. Based on the information provided above, the Rincon Band recommends conducting an archaeological/cultural resources study, to include an archeological record search and complete intensive survey of the property. Additionally, we ask that a professional Tribal monitor from the Rincon Band to accompany the archaeologist during the survey.

The Rincon Band further requests to consult directly with the lead agency regarding project impacts to cultural resources. While it is not the responsibility of DUDEK to facilitate State-mandated consultation, the request is included in this letter so the lead agency is aware of the Band's concerns about the project. If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 749 1092 ext. 323 or via electronic mail at cmadrigal@rincon-nsn.gov. We look forward to working together to protect and preserve our cultural assets.

Sincerely,

Cheryl Madrigal
Tribal Historic Preservation Officer
Cultural Resources Manager

SAN LUIS REY BAND OF MISSION INDIANS

1889 Sunset Drive • Vista, California 92081
760-724-8505 • FAX 760-724-2172
www.slrmissionindians.org

October 5, 2021

Mathew DeCarlo M.A.
Archaeologist
Dudek

VIA ELECTRONIC MAIL
mdecarlo@dudek.com

RE: SLR RESPONSE REGARDING THE PROPOSED CROSSOVER PIPELINE REALIGNMENT PROJECT IN SAN COUNTY, CA AND ITS POTENTIAL IMPACTS TO NATIVE AMERICAN TRIBAL CULTURAL RESOURCES

Dear Mr .DeCarlo:

We, the San Luis Rey Band of Mission Indians ("Tribe") have received and reviewed your letter dated September 29, 2021(and inclusive maps) regarding the proposed crossover pipeline realignment Project in San Diego County, CA ("Project" and "Project Area"). We further understand from your letter that you are inquiring whether the Tribe possesses any information and/or concerns regarding tribal cultural resources and/or Sacred Lands in the Project Area.

We are a northern San Diego County Tribe traditionally and culturally affiliated with Camp Pendleton, the current cities of Oceanside, Carlsbad, Encinitas, Vista, San Marcos and Escondido, as well as many unincorporated areas within northern San Diego County, such as the communities of Fallbrook, Bonsall and Valley Center. We are resolute in the preservation and protection of tribal cultural resources within all these jurisdictions.

Our Tribe has intimate knowledge about the many discoveries made throughout the Project Area and is aware of cultural resource sites within close proximity to the proposed Project. We strongly urge caution in assessing the land encompassing the Project for any ground disturbing purposes, as well as incorporating the presence of a Luiseño Native American monitor during all ground disturbing activities (including but not limited to any and all boring activities) and cultural resource assessment surveys.

In regards to information our Tribe can provide Dudek regarding these tribal cultural resources and sacred sites within the Project Area, we respectfully request that any further discussion be done in person. Please contact our Cultural Resource Manager Cami Mojado at (760) 917-1736 or via email at cjmojado@slrmissionindians.org to arrange a mutually acceptable meeting date and time.

Furthermore, the Tribe requests that any and all cultural resource surveys completed in the Project Area and/or for the benefit of this Project be provided to the Tribe's Cultural Department at 1889 Sunset Drive, Vista, CA 92081 as your earliest convenience. If digital copies are available, please send them directly to cjmojado@slrmissionindians.org. If a cultural resource survey has not been completed as of today's date, then the Tribe respectfully requests that a Luiseño Native American monitor be present during any proposed survey of the Project property.

We appreciate this opportunity to provide information and/or share our concerns regarding this Project. We thank you for your assistance in protecting our invaluable Luiseño tribal cultural resources.

Sincerely,

Cami Mojado

Cami Mojado
Cultural Resources
Manager
San Luis Rey Band of Mission Indians

SAN PASQUAL BAND OF MISSION INDIANS

SAN PASQUAL RESRVATION

TRIBAL COUNCIL

Stephen W. Cope
Tribal Chairman

Justin Quis Quis
Vice Chairman

Jenny Alto
Secretary-Treasurer

Roberta Cameron
Councilmember

Melody S. Arviso
Councilmember

November 3, 2021

DUDEK
Matthew DeCarlo
Archaeologist
605 Third Street
Encinitas Ca,92024

RE: Crossover pipeline realignment project in San Diego

Dear Mr. Decarlo,

The San Pasqual Band of Mission Indians Tribal Historic Preservation Office has received your notification of the project referenced above. This letter constitutes our response on behalf of Desiree Morales Whitman THPO Officer.

We have consulted our maps and determined that the project as described is not within the boundaries of the recognized San Pasqual Indian Reservation. It is, however, within the boundaries of the territory that the tribe considers its Traditional Use Area (TUA). Furthermore, we would like to engage in consultation so that San Pasqual can have a voice in the developing the measures that will be taken to protect these sites and mitigate any adverse impacts. We would appreciate being given access to any cultural resource reports that have been or will be generated during the environmental review process so we can contribute most effectively to the consultation process.

We appreciate involvement with your initiative and look forward to working with you on future efforts. If you have questions or need additional information, please do not hesitate to contact me by telephone 760-803-5648 or by e-mail at Angelinag@sanpasqualtribe.org and please CC: THPO@sanpasqualtribe.org

Respectfully,

Angelina Gutierrez

Angelina Gutierrez
Tribal Historic Preservation Office, Monitor Supervisor
San Pasqual Band of Mission Indians

Appendix E
Geotechnical Study

Appendix D: Final Geotechnical Report

GEOTECHNICAL INVESTIGATION

DESIGN OF CROSSOVER PIPELINE INTERSTATE 15 BYPASS PROJECT

SAN DIEGO COUNTY WATER AUTHORITY

San Diego County, California

PREPARED FOR:

Mr. J.P. Semper
Brown and Caldwell
450 B Street, 15th Floor
San Diego, California 92101

PREPARED BY:

Atlas Technical Consultants LLC
6280 Riverdale Street
San Diego, California 92120

February 17, 2022

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Atlas No. 210112P6
Report No. 2

MR. J.P. SEMPER
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SAN DIEGO, CALIFORNIA 92101

Subject: **Geotechnical Investigation**
Design of Crossover Pipeline Interstate 15 Bypass Project
San Diego County Water Authority
San Diego County, California

Dear Mr. Semper,

In accordance with your request and our proposal No. 20-23313R2, Atlas Technical Consultants performed a geotechnical investigation to assess the geologic conditions for the project, including potential geologic hazards, and to provide recommendations based on our findings. Our investigation consisted of a review of readily available geologic literature, site reconnaissance, exploratory borings, limited hydrogeologic testing and analysis, geotechnical laboratory testing, and the preparation of this report.

If you have any questions, please call us at (619) 280-4321.

Respectfully submitted,
Atlas Technical Consultants LLC

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1. INTRODUCTION

This report presents the results of the geotechnical investigation Atlas performed for the subject project. We understand that the Crossover Pipeline Interstate 15 Bypass project consists of replacing a portion of the existing Crossover Pipeline with a 78-inch welded steel pipeline using open trench construction along Centre City Parkway and tunneling under Interstate 15. It is our understanding the project will consist of approximately 500-foot-long tunneling under Interstate 15 from Mesa Rock Road to Centre City Parkway and an approximately 5,000 feet of cut and cover section along Centre City Parkway. The pipeline invert is expected to be at depths of up to about 15 feet below ground for cut and cover section and up to about 25 feet below ground for the tunnel section. Figure 1 presents a Site Vicinity Map.

2. SCOPE OF WORK

2.1 Investigations

Atlas performed a geologic investigation to address potential geologic hazards and geotechnical conditions that could impact the proposed construction. Pertinent documents reviewed included published reports and mapping, aerial photographs, in-house geotechnical reports, and available reports by others. Additionally, Atlas explored subsurface conditions by drilling fourteen borings to depths between about 20 feet and 50 feet below the existing ground surface using a limited access drill rig and truck-mounted drill rig equipped with a hollow stem auger, mud rotary auger and rock coring system. Figure 2 shows the approximate locations and depths of the borings. An Atlas engineer and geologist logged the borings and collected samples of the material encountered for geotechnical laboratory testing. Soils and rock recovered during the field investigation were inspected in the field for soil and/or groundwater contamination with visual and olfactory methods. Logs of the borings are presented in Appendix I. Soils were classified according to the Unified Soil Classification System illustrated in the Subsurface Exploration Legend (Appendix I). The rock encountered were classified in accordance with the California Department of Transportation (Caltrans) rock classification system.

In addition, Atlas installed temporary groundwater monitoring wells in two of the borings (B-1 and B-3). These wells were installed to monitor the water levels over time during the project life. The well design is documented in Appendix I.

During our field investigation, no distress was observed at any existing improvements, this includes distress associated with expansive soils, settlement and/or subsidence, mass movement or slope creep.

2.2 Laboratory Testing

Selected samples from the exploratory borings were tested to evaluate pertinent soil classification and engineering properties. The laboratory testing consisted of in situ moisture and density, Atterberg limits, particle-size distribution, corrosivity, direct shear, Cerchar abrasivity index, point load strength index, splitting tensile strength, and unconfined compressive strengths. The laboratory testing standards and results are presented in Appendix II.

3. SITE AND PROJECT DESCRIPTION

The project alignment is located adjacent to Interstate 15 in a suburban to rural area in the unincorporated communities of the city of Escondido, California. The alignment is along Mesa Rock Road, North Centre City Parkway, and crosses Interstate 15.

The existing Crossover Pipeline consists of approximately 7.5 miles of 66-inch-diameter prestressed concrete cylinder pipe that was constructed in 1964. This pipeline delivers untreated water from the rejection tower on the Second Aqueduct to the First Aqueduct south of Hubbard Hill. Based on our review of the provided San Diego County Water Authority RFP, we understand the design of Crossover Pipeline Interstate 15 Bypass project consists of replacing of a section of the Crossover Pipeline parallel to and under Interstate 15 due to increase pipeline decay in this area. The Water Authority completed the Crossover Pipeline Rehabilitation and Routing Study to evaluate options to rehabilitate or replace this section of the Crossover Pipeline. The study focused on the segment of the Crossover Pipeline from Station 144+40 to Station 244+00 near Interstate 15. The selected project included relining a portion of the existing pipeline and installing a bypass pipeline for the remaining section. Following the study, it was determined relining the existing pipeline is currently not feasible due to shutdown constraints. Therefore, the bypass section will be built first.

4. GEOTECHNICAL DOCUMENTATION

The reviewed reports are summarized below:

- Caltrans documented test borings during the design of the Deer Spring Road overpass bridge over Interstate 15, north of the project alignment. The Log of Test Borings (LOTB) logged sandy silt to silty sand, noted to have an approximate maximum thickness of about 5 feet below grade, dense to very dense decomposed to fractured granitic rock was encountered under the upper soils (Caltrans, 1973).

- Multiple environmental investigations have been conducted at the Arco/Tesoro fueling station located north of Deer Springs Road, north of the project alignment. Based on the results of these investigations, the groundwater in the vicinity of the Arco/Tesoro fueling station is contaminated; however, the site has met the requirements of the Low Threat Closure Policy set by the San Diego Regional Water Quality Control Board. Groundwater was encountered at depths ranging from about 24 to 41 feet below ground surface in the vicinity of the Arco/Tesoro fueling station (Stantec, 2013).

5. GEOLOGY AND SUBSURFACE CONDITIONS

Based on published geologic maps (Kennedy and Tan, 2007), and depending on location, the alignment is underlain by old alluvial flood-plain deposits, and Granodiorite of Jesmond Dean. The materials encountered in the borings of this project consisted of the same geologic units identified by Kennedy and Tan, but fill was found to overlay the mapped units. General descriptions of the materials encountered in the field investigation and previous reports are presented below. Figure 3 presents a Regional Geology Map. Detailed rock descriptions are presented on the boring logs in Appendix I.

Fill (Qf): Fill was encountered in all of the borings. Fill ranged in depths from between about 1 to 7 feet below the existing ground surface and consisted of loose to very dense silty and clayey sand with gravel and cobble, poorly graded sand, and medium stiff sandy clay and sandy silt. Varying amounts of gravel and cobble and potentially boulders should be anticipated in the fill.

Old alluvial flood-plain deposits (Qoa): Old alluvial flood-plain deposits were encountered below the fill in Borings B-1, B-3, B-4, and B-10 at depths up to about 8½ feet below the ground surface. The deposits generally consisted of medium dense clayey sand with gravel, clayey sand, and medium stiff to stiff sandy clay and sandy silt with varying amounts of gravel.

Granodiorite of Jesmond Dean (Kjd): The Granodiorite of Jesmond Dean was encountered in all borings at depths ranging from 1 foot below the ground surface to the total depths explored. The Granodiorite of Jesmond Dean consisted of very soft to very hard, intensely fractured to unfractured and fresh to decomposed granodiorite to monzonite.

Groundwater: Groundwater was encountered at Borings B-1 and B-2, at depths of about 39 feet and 38½ feet below the existing ground surface, respectively. It should be recognized that groundwater conditions can develop at a site where none were previously present. These are often the result of alteration of the permeability characteristics of the soil, an alteration in drainage patterns, and/or increased precipitation or irrigation water. These types of conditions can be most effectively corrected on an individual basis if and when they develop.

As previously discussed, Borings B-1 and B-2 were converted to temporary groundwater monitoring wells to assess hydrogeologic conditions at their locations. The monitoring wells will be periodically monitored during the project duration.

Contamination of Subsurface: During the time of drilling, no suspected soil or groundwater contamination was encountered. Further monitoring, sampling and testing of the groundwater will be performed at a later timeframe in the life of project.

5.1 Geologic Structure

Based on published geologic maps (Kennedy and Tan, 2007), the project alignment is underlain by the Cretaceous age Granodiorite of Jesmond Dean, which is a smaller unit of the Peninsular Batholith and Quaternary age old alluvial flood-plain deposits, which lies in a drainage basin. The project alignment is adjacent to the contact of the Granodiorite of Jesmond Dean and the Monzogranite of Merriam Mountain, which lies to the west of the project alignment. No bedding, folding or structural features were observed. Due to the nature of the plutonic rock, no bedding or structural features were observed. Although most fractures and joints observed in rock cores were dipping steeply. There were no faults or features of discontinuity observed during our investigation, and none are noted on published geologic maps (Kennedy and Tan, 2007).

5.2 Geomorphology

The geomorphology of the area is generally characterized by the granitic foothills and minor drainages that flow to the south towards the Escondido Valley and eventually to the west into the Pacific Ocean. The project alignment is generally underlying the graded and paved areas associated with Mesa Rock Road, North Centre City Parkway, and Interstate 15. The alignment generally descends gently towards the south. Adjacent to the existing roadways are ascending granitic hills and mountains that support residences and other improvements.

5.3 Geologic Hazards

5.3.1 Fault-Rupture Hazard

Faulting in the San Diego County area is dominantly characterized by a series of Quaternary-age and older fault zones that typically consist of several individual en echelon faults, generally striking in a northerly to northwesterly direction. Active fault zones are those that have shown conclusive evidence of faulting during the Holocene Epoch (the most recent 11,000 years) while potentially active fault zones have demonstrated movement during the Pleistocene Epoch (11,000 to 2.6 million years before the present) but no evidence of movement during Holocene time. Faults that can be shown to have experienced no movement within the Holocene or Pleistocene Epochs are generally considered to be inactive.

The closest active fault to this site is the Elsinore Fault Zone located approximately 12.35 miles northeast of the project alignment. The project alignment is not located in an Alquist-Priolo Earthquake Fault Zone. No signs of faulting and no active faults are known to underlie or project toward the site. The probability of fault rupture is considered low.

5.3.2 Seismic Ground Shaking

Based on the condition of soils and rocks encountered at the site, a Site Class C is recommended for soil/rock profile with an average shear wave velocity in the upper 30 meters (V_{S30}) ranging from about 366 meters/second (1,200 feet/second) to about 760 meters/second (2,500 feet/second). Due to variation in measured shear wave velocities, the project alignment was divided into three separate areas. Acceleration Response Spectrum (ARS) information for each area was obtained from Caltrans ARS Online V3.0.2 (Caltrans, 2021) with representative site coordinates and V_{S30} Values. Table 1 presents a summary of seismic ground motion parameters. The presented seismic parameters are for a 975-year return period (i.e., 5% probability of exceedance in 50 years) that is applicable to water pipelines with critical seismic importance (ALA, 2005).

Table 1: Seismic Information

Station 0+00 and Stations 30+00 to 55+00 Latitude: 33.19153 Longitude: -117.12314 Site Class C (V_{S30}=537 m/s)											
Period (s)	PGA	0.10	0.20	0.30	0.50	0.75	1.00	2.00	3.0	4.0	5.0
Sa_{2014} (g)	0.34	0.71	0.83	0.74	0.55	0.40	0.30	0.14	0.09	0.06	0.05
Mean Magnitude (for PGA) = 6.57											
Station 4+00 Latitude: 33.19186 Longitude: -117.12209 Site Class C (V_{S30}=366 m/s)											
Period (s)	PGA	0.10	0.20	0.30	0.50	0.75	1.00	2.00	3.0	4.0	5.0
Sa_{2014} (g)	0.38	0.73	0.93	0.92	0.75	0.56	0.43	0.20	0.13	0.09	0.07
Mean Magnitude (for PGA) = 6.57											
Stations 11+00 to 29+00 Latitude: 33.18799 Longitude: -117.11991 Site Class C (V_{S30}=760 m/s)											
Period (s)	PGA	0.10	0.20	0.30	0.50	0.75	1.00	2.00	3.0	4.0	5.0
Sa_{2014} (g)	0.30	0.67	0.70	0.57	0.40	0.28	0.21	0.10	0.06	0.05	0.04
Mean Magnitude (for PGA) = 6.57											

5.3.3 Liquefaction and Dynamic Settlement

Liquefaction occurs when loose, saturated, generally fine sands and silts are subjected to strong ground shaking. The soils lose shear strength and become liquid, potentially resulting in large total and differential ground surface settlements as well as possible lateral spreading during an earthquake. Liquefiable material is not mapped along the project alignment. Considering the lack of shallow groundwater and the density of on-site materials below fill, it is our opinion that the liquefaction and dynamic settlement should not be concerns for this project.

5.3.4 Scouring / Erosion Potential

The scouring and erosion potential for the project alignment is considered to be low. The project is generally underlying existing paved roadways and no major natural drainage pathways cross the alignment. A storm drain outlet and associated ephemerally dry drainage pathway does exist on the eastern edge of North Centre City Parkway, between Borings B-7 and B-9.

5.3.5 Landslides and Slope Stability

Evidence of landslides or slope instabilities were not observed. The project alignment is generally located along areas of relatively low topographic relief and the materials observed in adjacent road cuts and encountered in the subsurface are generally not susceptible to slope instabilities or landslides. The potential for landslides or slope instabilities to occur along the alignment is considered low.

5.3.6 Subsidence

The project is not located in an area of known subsidence associated with fluid withdrawal (groundwater or petroleum); therefore, the potential for subsidence due to the extraction of fluids is negligible.

5.3.7 Hydro-Consolidation

Hydro-consolidation can occur in recently deposited (less than 10,000 years old) sediments that were deposited in a semi-arid environment. Examples of such sediments are eolian sands, alluvial fan deposits, and mudflow sediments deposited during flash floods. The pore space between particle grains can re-adjust when inundated by groundwater causing the material to consolidate. The dense materials and rock underlying the project are not considered susceptible to hydro-consolidation.

6. GEOPHYSICAL SURVEY SUMMARY

Twelve one-dimensional (1-D) ReMi and twelve 1-D MASW shear-wave velocity profiles using active and passive sources at the site were performed to assess the depth to bedrock and evaluate rippability characteristics of the material underlying portions of the proposed pipeline alignment. The 1-D ReMi evaluation method is a surface wave method. The surface wave method is roughly an 85% to 95% accuracy estimate of shear wave (S-wave) velocity values based on published studies we have reviewed concerning the ReMi method. 1-D ReMi surface wave model results may be slightly conservative regarding estimating shear wave velocities. Based on the results, it appears the study areas are underlain by minimal low-velocity materials (e.g. topsoil, fill and old alluvial deposits-low failure PSI) in the near surface and high-velocity igneous bedrock at depth (high failure PSI). Distinct vertical and lateral velocity variations are evident in the results (see Appendix III). Moreover, the degree of bedrock weathering and the depth to bedrock appears to be highly variable across the site. In addition, remnant boulder core stones may be present in the subsurface in some areas.

Based on the geophysical results, variability in the excavatability (including depth of rippability) of the subsurface materials should be expected across the project alignment. Furthermore, blasting may be required depending on the excavation depth, location, equipment used, and desired rate of production. In addition, oversized materials should be expected in excavated materials.

In general, the seismic P-wave velocity of a material can be correlated to rippability (see Table 2 below), or to some degree "hardness." In general, S-wave velocities are about 0.4 to 0.6 of that of the P-wave velocities for unconsolidated soils and bedrock. The P-wave velocity can be approximated for purposes of estimating approximate rippability and depth to bedrock is to multiply the shear wave velocity by a value between 1.5 and 2.5. The exact value used is based on factor of safety estimates or calculations and should also use a reasonable estimate value based on other information collected for the project alignment. We estimate the rock will be generally moderately to difficultly rippable, with possible blasting. This estimate is based off the conservative shear wave (S-wave) velocity to compressional (P-wave) velocity conversion factor of 2.5. Table 2 is based on published information from the Caterpillar Performance Handbook (Caterpillar, 2011), as well as our experience with similar materials, and assumes that a Caterpillar D-9 dozer ripping with a single shank is used. We emphasize that the cutoffs in this classification scheme are approximate and that rock characteristics, such as fracture spacing and orientation, play a significant role in determining rock quality or rippability. The rippability of a mass is also dependent on the excavation equipment used and the skill and experience of the equipment operator. A contractor with excavation experience in similarly difficult conditions should be consulted for expert advice on excavation methodology, equipment, and production rate.

For trenching operations, the rippability values should be scaled downward. For example, velocities as low as 3,500 feet/second may indicate difficult ripping during trenching operations. In addition, the presence of boulders, which can be troublesome in a narrow trench, should be anticipated.

It should be noted that the rippability cutoffs presented in Table 2 are slightly more conservative than those published in the Caterpillar Performance Handbook. Accordingly, the above classification scheme should be used with discretion, and contractors should not be relieved of making their own independent evaluation of the rippability of the on-site materials prior to submitting their bids.

Table 2: Rippability Classification

Seismic P-wave Velocity (Feet/Second)	Rippability
0 to 2,000	Easy
2,000 to 4,000	Moderate
4,000 to 5,500	Difficult, Possible Blasting
5,500 to 7,000	Very Difficult, Probable Blasting
Greater than 7,000	Blasting Generally Required

7. CONCLUSIONS

For portions of the alignment that will undergo new construction, we consider that both cut-and-cover, and tunnelling pipeline construction are feasible from a geotechnical standpoint. There are no known geologic hazards of sufficient magnitude that preclude the intended improvements. The main geotechnical considerations affecting the project is the presence variable ground conditions consisting of highly fractured, variably weathered, very soft to very hard and running and swelling rock along the project alignment that may require special handling, varied abrasiveness of rock along the project alignment and the seasonal variability of groundwater that may require dewatering or other mitigation methods. The materials anticipated below the pipeline depths are generally expected to provide good pipeline support.

8. DESIGN AND CONSTRUCTION CONSIDERATIONS

8.1 Compacted Fill

Where applicable, compacted fill should be placed in horizontal lifts at a thickness appropriate for the equipment spreading, mixing, and compacting the material, but generally should not exceed 8 inches in loose thickness. Fill should be moisture conditioned to near optimum moisture content and compacted to at least 90% relative compaction. The maximum dry density and optimum moisture content for evaluating relative compaction should be obtained using ASTM D1557. Utility trench backfill beneath structures, pavements and hardscape should be compacted to at least 90% relative compaction. The top 12 inches of subgrade beneath pavements should be compacted to at least 95%.

8.2 Excavation Characteristics

It is anticipated that excavation can be achieved with conventional earthwork equipment in good working order. Excavations in fill and old alluvial flood-plain deposits may be locally unstable and may contain construction debris, cobbles, or boulders. Difficult drilling and excavation should be anticipated where the alignment passes through areas of variable fracturing, weathering, rock abrasiveness and strength/hardness in the granodiorite. Special handling may be required to excavate zones of variable rock as difficult rock coring conditions were encountered and variable conditions within the rock can be a significant impediment to tunnelling. Contract documents should specify that the contractor mobilize equipment capable of excavating and compacting materials within the variable fracturing, weathering, rock abrasiveness and strength/hardness rock conditions. Rock breakers, carbide tipped augers, or carbide/diamond tipped coring equipment may be required to excavate/drill hard rock materials.

8.3 Temporary Excavations

Temporary excavations 4 feet deep or less can be made vertically. Temporary excavations deeper than 4 feet in the fill and old alluvial flood-plain deposits should not be steeper than 1½:1 (horizontal: vertical), per Cal/OSHA type C soil classification; and in the weathered/fractured granodiorite, should not be steeper than 1:1 (horizontal: vertical) per Cal/OSHA type B soil classification. Excavations in competent granodiorite can be made vertically. Unweathered, unfractured rock is considered competent. The faces of temporary slopes should be inspected daily by the contractor's Competent Person before personnel are allowed to enter the excavation. Zones of potential instability, sloughing or raveling should be brought to the attention of the Engineer and corrective action implemented before personnel begin working in the trench.

Slopes steeper than those described above will require shoring. Soldier piles and lagging, corrugated metal pipe, internally braced shoring, trench boxes, or anchor tie-back walls could be used. If trench boxes or metal pipe are used, the soil immediately adjacent to the shoring is not directly supported. Ground surface deformations adjacent to the excavation could be greater when these methods are used compared to other methods of shoring.

If temporary slopes are to be maintained during the rainy season, berms are recommended along the tops of the slopes to prevent runoff water from entering the excavation and eroding the slope faces.

8.4 Lateral Earth Pressures

Above groundwater table, active earth pressure from fill and old alluvial deposits can be considered equivalent to the pressure of a fluid weighing 45 pounds per cubic foot (pcf) for level ground or 84 pcf for up to 2:1 (horizontal:vertical) sloping ground. Active earth pressure from weathered, decomposed granodiorite above groundwater table can be modeled with equivalent fluid pressure (EFP) of 35 pcf and 52 pcf for level ground and sloping ground (up to 2:1, horizontal:vertical), respectively. At-rest earth pressures can be considered 20 pcf and 50% higher than the active earth pressure values provided for level ground and sloping ground conditions, respectively. Above groundwater table, passive pressure from fill and alluvial deposits can be modeled with EFP of 320 pcf for level ground condition. This value for weathered decomposed granodiorite is 440 pcf. Below groundwater table, half of these earth pressure values can be used when the water pressure is considered separately. These values do not include a factor of safety.

Lateral pressure from traffic (H20 loading) can be modeled with assuming a uniform 100 pounds per square foot (psf) horizontal pressure acting on the entire depth of the walls/structures that are in the vicinity of traffic lanes.

8.5 Temporary Shoring

For design of cantilevered shoring, active soil pressures provided in the previous section can be used. The surcharge loads on shoring from light traffic and construction equipment adjacent to the excavation can be modeled by assuming an additional 2 feet of soil behind the shoring. For design of soldier piles, passive pressure is assumed to be acting over twice the pile diameter up to a maximum of 10 times the unit value. If encountered, in competent granodiorite, the assumption of passive pressure should be based on the compressive strength of concrete. Soldier piles should be spaced at least three pile diameters, center to center. Continuous lagging will be required throughout. The soldier piles should be designed for the full anticipated lateral pressure; however, the pressure on the lagging will be less due to arching in the soils. For design of lagging, the earth pressure but can be limited to a maximum value of 400 psf.

8.6 Temporary Dewatering

Groundwater seepage may occur locally and should be anticipated in excavations. A qualified dewatering contractor should design the dewatering system. The project geotechnical engineer should review the design.

8.7 Pipelines

The materials anticipated below the pipeline depths are expected to generally provide good pipeline support. The weight of the pipe and contents will be less than the materials excavated, and pipe settlements are expected to be negligible.

8.7.1 Modulus of Soil Reaction

The modulus of soil reaction (E') is used to characterize the stiffness of soil backfill placed along the side of buried flexible pipelines for evaluating deflection due to the load of associated with trench backfill over the pipe. A value of 1,500 pounds per square inch (psi) is recommended for the modulus of soil reaction assuming that granular bedding material is placed adjacent to the pipe and is compacted to a minimum of 90% relative compaction

8.7.2 Pipe Bedding

Pipe bedding as specified in the San Diego County Water Authority General Conditions and Standard Specifications can be used.

Pipe bedding materials must be compacted to 90% relative compaction per the Water Authority requirements. Bedding material should consist of crushed rock or imported sand material. Imported sand shall be free of clay balls, organic matter, and other deleterious substances that shall have a coefficient of permeability greater than 0.014 cm/s measured in accordance with ASTM D2434 or a sand equivalent of greater than 30 per ASTM D2419. Resistivity for imported sand shall not be less than 2,000-ohm cm when measured in accordance with California Test Method 643. Imported sand shall not exceed a maximum chloride concentration of 200 mg/l when measured in accordance with California Test Method 422 and maximum sulfate concentration of 500 mg/l when measured in accordance with California Test Method 417. If the contractor elects to use imported sand in the pipe and pipe bedding zones, the entire pipe zone and pipe bedding zone shall be backfilled with the same material placed at the same relative compaction. Imported sand shall conform to the following gradation:

Sieve Size	Percent Passing by Weight
½ inch	100
No. 4	75-100
No. 16	35-75
No. 50	10-40
No. 200	0-10

Crushed rock shall contain less than 1% asbestos by weight or volume and shall conform to the Greenbook: Standard Specifications for Public Works Construction (SSPWC), Section 200-1.2, for ¾ inch crushed rock gradation, as follows:

Sieve Size	Percent Passing by Weight
1 inch	100
¾ inch	90-100
½ inch	30-60
3/8 inch	0-20
No. 4	0-5

If the contractor elects to use crushed rock in the pipe and pipe bedding zones, the entire pipe zone and pipe bedding zone shall be backfilled with the same material placed at the same relative density. Samples of materials proposed for use as bedding should be provided to Atlas for inspection and testing before the material is imported for use on the project.

The pipe bedding material should be placed over the full width of the trench. After placement of the pipe, the bedding should be brought up uniformly on both sides of the pipe to reduce the potential for unbalanced loads. No voids or uncompacted areas should be left beneath the pipe haunches. Ponding or jetting the pipe bedding should not be allowed.

8.7.3 Backfill

Utility trench sections should conform to the minimum requirements of the Water Authority. Backfill should be placed in 6-inch to 8-inch thick loose lifts, moisture conditioned to near optimum moisture content, and compacted to at least 90% relative compaction. A unit weight of 125 pcf can be assumed for compacted backfill.

Backfill shall be free of organic matter, roots, debris, and rocks larger than 6 inches in the greatest dimension. Backfill used in the trench zone shall be native granular materials with less than 50% passing the No. 200 sieve and with no more than 60% gravel (not less than 40% passing the No. 4 sieve) and rock particles with a maximum dimension no greater than 6 inches. The top 12 inches of fill beneath paved areas should be moisture conditioned to near optimum moisture content and compacted to at least 95% relative compaction. Aggregate base material should be compacted to at least 95% relative compaction. Materials and methods of construction should conform to good engineering practices and the minimum standards of the San Diego County Water Authority General Conditions and Standard Specifications.

On-site materials, except for soil containing roots, debris, and rock greater than 6 inches, can be used as compacted fill or trench backfill. The maximum dry density and optimum moisture content for the evaluation of relative compaction should be determined in accordance with ASTM D1557.

8.7.4 Resisting Thrust Forces

For level ground conditions, a passive earth pressure of 320 psf per foot of depth below the lowest adjacent final grade can be used to compute allowable thrust block resistance. A value of 150 psf per foot should be used below groundwater level, if encountered.

A coefficient of friction of 0.3 between the pipeline and the soil can be considered for preliminary design purposes. This value may need to be updated depending on final selected pipeline material type and/or lining.

8.8 Tunnel Boring Machine

Tunneling by a tunnel boring machine (TBM) is a construction technique that utilizes a specialized machine to excavate a circular cross section through the subsurface. Due to the highly variable Rock Quality Designation (RQD) of rock encountered in the expected tunnel alignment zone and entry and exit shafts, used of a shielded tunnel boring machine is recommended. The pipeline alignment generally will not need to be dewatered except at the entry and exit shaft portals.

Ground conditions along the proposed tunneling alignments and shaft portals are anticipated to consist of fill, old alluvial flood-plain deposits, and Granodiorite of Jesmond Dean. The fill and old alluvial flood-plain deposits in the upper approximately 1 to 8½ feet consist of loose to very dense silty sand, poorly graded sand, clayey sand and medium stiff to stiff sandy clay and sandy silt with varying amounts of gravel and cobble and potentially boulders. The underlying Granodiorite of Jesmond Dean is anticipated to be soft to very hard, fractured, fresh to fully decomposed and feasible for tunneling. However, the rock encountered in our borings indicates highly variable RQD which can present difficulties during excavation. We expect to encounter areas of running rock along the tunnel alignment and shaft portals due to the highly variable RQD values encountered and the decomposed to intensely weathered and very intensely fractured to disintegrated zones observed in our recovered rock cores. Although not tested, we expect to encounter areas of swelling rock where the encountered materials have expansive clay minerals that have natural moisture contents near or less than their liquid limit. Appendix I presents the detailed logs of the borings (B-1 through B-3) in the planned tunnel alignment and shaft portals.

Contract documents should specify that the contractor mobilize equipment capable of penetrating cobbles, boulders, and variably fractured, weathered rock with variable rock strength and hardness to reduce the potential that claims for delays or extra work will arise. The contractor selected to perform the tunneling should review the data contained in the boring logs to evaluate if tunnel boring machines will be a feasible option.

8.8.1 Tunnel Support

Tunnel support systems should be designed to support adverse rock conditions, overburden soil and rock pressure and surcharge loads due to traffic and construction activities. Ribs and lagging, pattern bolts and straps, and spot bolting support systems may be necessary. Areas requiring various support systems will need to be evaluated based on conditions encountered during tunneling. Tunnel support systems selected by the specialty contractor should consider the variable soil and rock conditions encountered and the presence of groundwater.

8.8.2 Underground Obstructions

Potential buried utilities and tanks should be surveyed by others. Based on our experience with similar materials in the vicinity of the project alignments, gravel and cobbles will likely be encountered in the fill and old alluvial flood-plain deposits along with difficult excavation in the highly variable rock of Granodiorite of Jesmond Dean at various depths. In addition, boulders could be encountered along the pipeline alignment. Such obstructions may require accessing the tunnel face for manual removal. The specialty contractor should assess the method for removing such obstructions.

8.8.3 Tunneling Induced Ground Movement

Some tunneling-induced ground movement should be anticipated. The amount of movement can be reduced by tunneling techniques employed by an experienced specialty contractor. Ground surface settlement monuments should be installed and monitored during construction. A settlement monument monitoring program plan can be developed prior to the installation of the pipeline. By monitoring ground movements before tunneling beneath existing facilities, ground losses can be detected in time to fill voids quickly and alert the contractor to alter their procedures to reduce further settlement. The geotechnical engineer should review the monument monitoring program plan to check that the intent of the recommendations in this report has been incorporated.

8.9 Foundations

We understand that the design team is considering structures to provide side access to the pipeline. The foundation recommendations provided herein are considered preliminary. Once plans are developed, these recommendations need to be re-evaluated. These recommendations are generally consistent with methods typically used in southern California. Other alternatives may be available. It should be noted that our recommendations are only minimum criteria based on geotechnical factors and should not be considered a structural design, or to preclude more restrictive criteria of governing agencies or by the structural engineer. The design of the foundation system should be performed by the project’s structural engineer, incorporating the recommended geotechnical parameters and the requirements of applicable codes.

8.9.1 Foundation Recommendations

Wherever applicable, fill should be removed beneath the planned footings and replaced with compacted fill. The planned structures can be supported on shallow foundations bearing on compacted fill, old alluvial deposits, or weathered granodiorite. Footings should extend at least 24 inches below the lowest adjacent finished grade that exists within 5 feet of the perimeter of the footing edge. Continuous footings should be at least 18 inches wide, and isolated or retaining wall footings should be at least 24 inches wide.

For footings bearing on compacted fill or old alluvial deposits, an ultimate bearing capacity of 6,000 psf can be used. The bearing capacity can be increased by 600 psf for each foot of depth and 300 psf for each foot of width more than the minimum up to a maximum of 12,000 psf. For footings bearing on weathered granodiorite, an ultimate bearing capacity of 15,000 psf can be used. The bearing capacity of these footings can be increased by 2,000 psf for each foot of depth and 1,000 psf for each foot of width more than the minimum up to a maximum of 30,000 psf. The bearing values can be increased by ⅓ when considering the total of all loads, including wind or seismic forces. The presented bearing capacities are ultimate and do not include a factor of safety. We recommend a minimum factor of safety of 3 to be applied to these values.

Lateral loads will be resisted by friction between the bottoms of footings and passive pressure on the faces of footings and other structural elements below grade. A coefficient of friction of 0.4 can be used. Passive pressures are presented in Lateral Earth Pressures Section of this report. Passive pressure should be reduced by half when used in conjunction with the friction coefficient. The passive pressure can be increased by ⅓ when considering the total of all loads, including wind or seismic forces. The presented values are ultimate and do not include a factor safety. The upper 1 foot of soil should not be relied on for passive support unless the ground is covered with pavement or slab.

8.9.2 Foundation Settlement Characteristics

Static foundation settlements are anticipated to be about 1 inch. Differential settlements are estimated to be about ¾ inch over a distance of 40 feet.

8.9.3 Foundation Plan Review

The geotechnical engineer should review the foundation plans to ascertain that the intent of the recommendations in this report has been implemented and that revised recommendations are not necessary as a result of changes after this report was completed.

8.9.4 Foundation Excavation Observations

The geotechnical engineer should observe the foundation excavations prior to forming or placing reinforcing steel.

8.10 Conventional Retaining Walls

8.10.1 Foundations

The recommendations provided in the foundation section of this report are also applicable to conventional retaining walls.

8.10.2 Lateral Earth Pressures

Static lateral earth pressures and resulting pressure from traffic are presented in a previous section of this report. If any other surcharge loads are anticipated, Atlas should be contacted for the necessary increase in soil pressure.

Walls with heights greater than 6 feet should be designed for seismic earth pressures. Unrestrained and restrained retaining walls should be designed for an additional 12 pcf and 27 pcf, respectively. These values should be added to the static active earth pressure. The total seismic earth pressure (including the static and seismic components) need not to be greater than the at-rest earth pressure.

Retaining walls should be designed to resist hydrostatic pressures or be provided with a backdrain to reduce the accumulation of hydrostatic pressures. Backdrains may consist of a 2-foot-wide zone of ¾-inch crushed rock. The backdrain should be separated from the adjacent soils using a non-woven filter fabric, such as Mirafi 140N or equivalent. Weep holes should be provided, or a perforated pipe should be installed at the base of the backdrain and sloped to discharge to a suitable storm drain facility. As an alternative, a geocomposite drainage system such as Miradrain 6000 or equivalent placed behind the wall and connected to a suitable storm drain facility can be used. The project architect should provide waterproofing specifications and details. Figure 6 presents typical conventional retaining wall backdrain details.

8.10.3 Wall Backfill

Wall backfill should consist of granular, free-draining material. Expansive or clayey soil should not be used. Additionally, backfill within 3 feet from the back of the wall should not contain rocks greater than 3 inches in dimension. We anticipate that a portion of the on-site soils will be suitable for wall backfill. Selected material for backfill should be tested and results be reviewed by the geotechnical engineer to assess suitability of materials. Wall backfill should be compacted to at least 90% relative compaction. A unit weight of 125 pcf can be assumed for compacted backfill. Backfill should not be placed until walls have achieved adequate structural strength. Compaction of wall backfill will be necessary to minimize settlement of the backfill and overlying settlement sensitive improvements. However, some settlement should still be anticipated. Provisions should be made for some settlement of concrete slabs and pavements supported on backfill. Additionally, any utilities supported on backfill should be designed to tolerate differential settlement.

8.11 Slabs-On-Grade

Slabs-on-grade should be designed by project's structural engineer. Slabs should be provided with weakened plane joints. Joints should be placed in accordance with the American Concrete Institute (ACI) guidelines. The project architect should select the final joint patterns. A 1-inch maximum size aggregate mix is recommended for concrete for exterior slabs. The corrosion potential of on-site soils with respect to reinforced concrete will need to be taken into account in concrete mix design. Coarse and fine aggregate in concrete should conform to the "Greenbook" Standard Specifications for Public Works Construction.

Thickness and reinforcement of the slabs should be in accordance with the recommendations of the project's structural engineer. Where needed, a modulus of subgrade reaction, K, of 150 and 250 pounds per cubic inch (pci) may be considered for fill/alluvial deposits and weathered granodiorite, respectively. This value is based on an area of one square foot and should be adjusted for larger slabs. Adjusted values of the modulus of subgrade reaction, Kv, can be obtained from the following equation for various widths:

$$K_V = K\left[\frac{\mathrm{B}+1}{2\mathrm{B}}\right]^2 (pci)$$

Where, B is the width in feet.

8.12 Preliminary Pavement Section Recommendations

Atlas utilized the California Department of Transportation Highway Design Manual (Caltrans, 2020) to prepare preliminary recommendations for flexible and rigid pavements, respectively. An R-value of 25 and Type I subgrade soil were used for design of preliminary pavement sections. The actual subgrade support characteristics should be evaluated after grading and final pavement sections are provided. Table 3 provides recommended flexible and rigid pavement structural sections for the assumed Traffic Indexes and subgrade R-value.

Table 3: Preliminary Pavement Structural Sections

Traffic Index	AC[1] over AB[2] (inches)	JPCP[3] over AB (inches)
9.0	7 over 12	9 over 6
10.0	9 over 12	10 over 8
11.0	10 over 14	10½ over 9

[1] **AC: Asphalt Concrete**
[2] **AB: Aggregate Base**
[3] **JPCP: Jointed Plain Concrete (Portland Cement) Pavement, without lateral support**

The top 12 inches of subgrade should be scarified, moisture conditioned to near optimum moisture content, and compacted to at least 95% relative compaction (ASTM D1557). All soft or yielding areas should be removed and replaced with compacted fill or aggregate base. Aggregate base and asphalt concrete should conform to the Caltrans Standard Specifications and should be compacted to at least 95% relative compaction. Aggregate base should have an R-value of not less than 78. Concrete should have a minimum 28-day modulus of rupture of 625 psi. All materials and methods of construction should conform to good engineering practices and Caltrans standard specifications.

8.13 Soil Corrosivity

Representative samples of the on-site soils from the project alignment were tested to evaluate corrosion potential. The test results are presented in Appendix II. The project design engineer can use the sulfate results in conjunction with ACI 318 to specify the water/cement ratio, compressive strength and cementitious material types for concrete exposed to soil. A corrosion engineer should be contacted to provide specific corrosion control recommendations.

8.14 Geotechnical Engineering During Construction

The geotechnical engineer should review project plans and specifications prior to bidding and construction to check that the intent of the recommendations in this report has been incorporated. Observations and tests should be performed during construction. Atlas recommends a geotechnical engineer or engineering geologist be on site to observe tunneling operations. If the conditions encountered during construction differ from those anticipated based on the subsurface exploration program, the presence of the geotechnical engineer during construction will enable an evaluation of the exposed conditions and modifications of the recommendations in this report or development of additional recommendations in a timely manner.

9. CLOSURE

Atlas should be advised of any changes in the project scope so that the recommendations contained in this report can be evaluated with respect to the revised plans. Changes in recommendations will be verified in writing. The findings in this report are valid as of the date of this report. Changes in the condition of the site can occur with the passage of time, whether they are due to natural processes or work on this or adjacent areas. In addition, changes in the standards of practice and government regulations can occur. Thus, the findings in this report may be invalidated wholly or in part by changes beyond our control. This report should not be relied upon after a period of two years without a review by us verifying the suitability of the conclusions and recommendations to site conditions at that time.

In the performance of our professional services, we comply with that level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions and in the same locality. The client recognizes that subsurface conditions may vary from those encountered at the boring locations and that our data, interpretations, and recommendations are based solely on the information obtained by us. We will be responsible for those data, interpretations, and recommendations, but shall not be responsible for interpretations by others of the information developed. Our services consist of professional consultation and observation only, and no warranty of any kind whatsoever, express or implied, is made or intended in connection with the work performed or to be performed by us, or by our proposal for consulting or other services, or by our furnishing of oral or written reports or findings.

10. REFERENCES

American Lifelines Alliance, ALA (2005), Seismic Guidelines for Water Pipelines, March.

California Emergency Management Agency, California Geological Survey, University of Southern California (2009), Tsunami Inundation Map for Emergency Planning, June 1.

California Department of Transportation (Caltrans) (1977), Log of Test Borings, Deer Springs Road Overcrossing, Bridge No. 57-891, Post Mile 36.6, Sheet 10.

Caltrans (2021), ARS Online V3.0.2: https://arsonline.dot.ca.gov/, accessed November 16.

Caterpillar, Inc. (2000), Handbook of Ripping, Twelfth Edition, February.

County of San Diego (2009), Draft- Liquefaction County of San Diego Hazard Mitigation Planning, Department of Planning and Land Use, accessed May.

Hart, E.W., and Bryant, W.A. (2007), Fault-Rupture Hazard Zones in California, California Department of Conservation, Division of Mines and Geology, Special Publication 42.

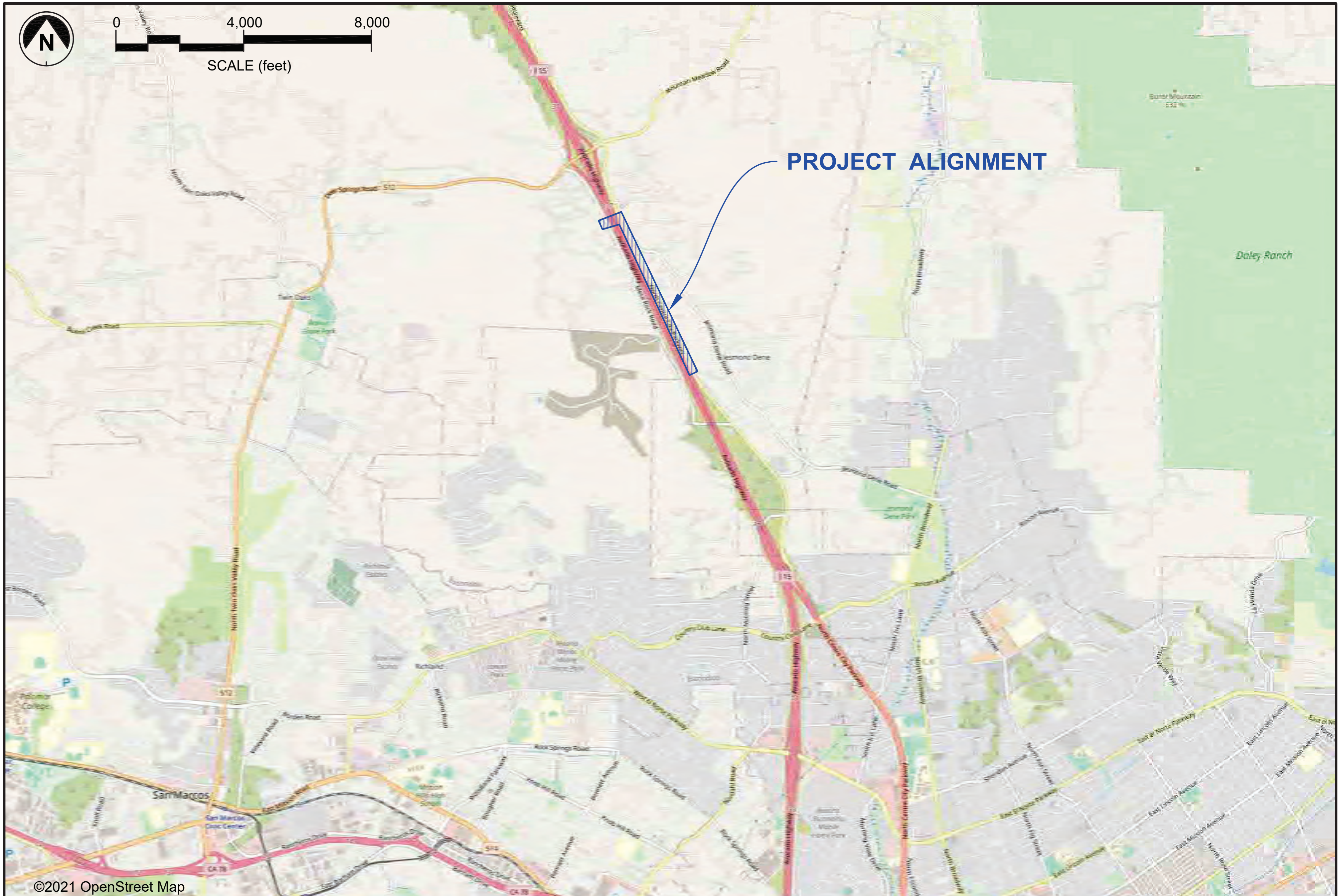
International Code Council (2018), 2019 California Building Code, California Code of Regulations, Title 24, Part 2, Volume 2 of 2, Based on the 2018 International Existing Building Code, Effective January 1, 2020.

Kennedy, M.P. and Tan, S.S. (2007), Geologic Map of the Oceanside 30' x 60' Quadrangle, California, California Geological Survey, Scale 1:100,000.

San Diego County Water Authority (2005), General Conditions and Standard and Specifications.

Stantec (2013) Site Assessment Report, ARCO Facility No. 5625, 26915 Mesa Rock Road< Escondido, California, SAM Case No. H32212-001, Stantec Project No. 211811045, February 15.

United States of America, Federal Emergency Management Agency (2020), FEMA Flood Map Service Center, https://msc.fema.gov/portal/home, accessed March.

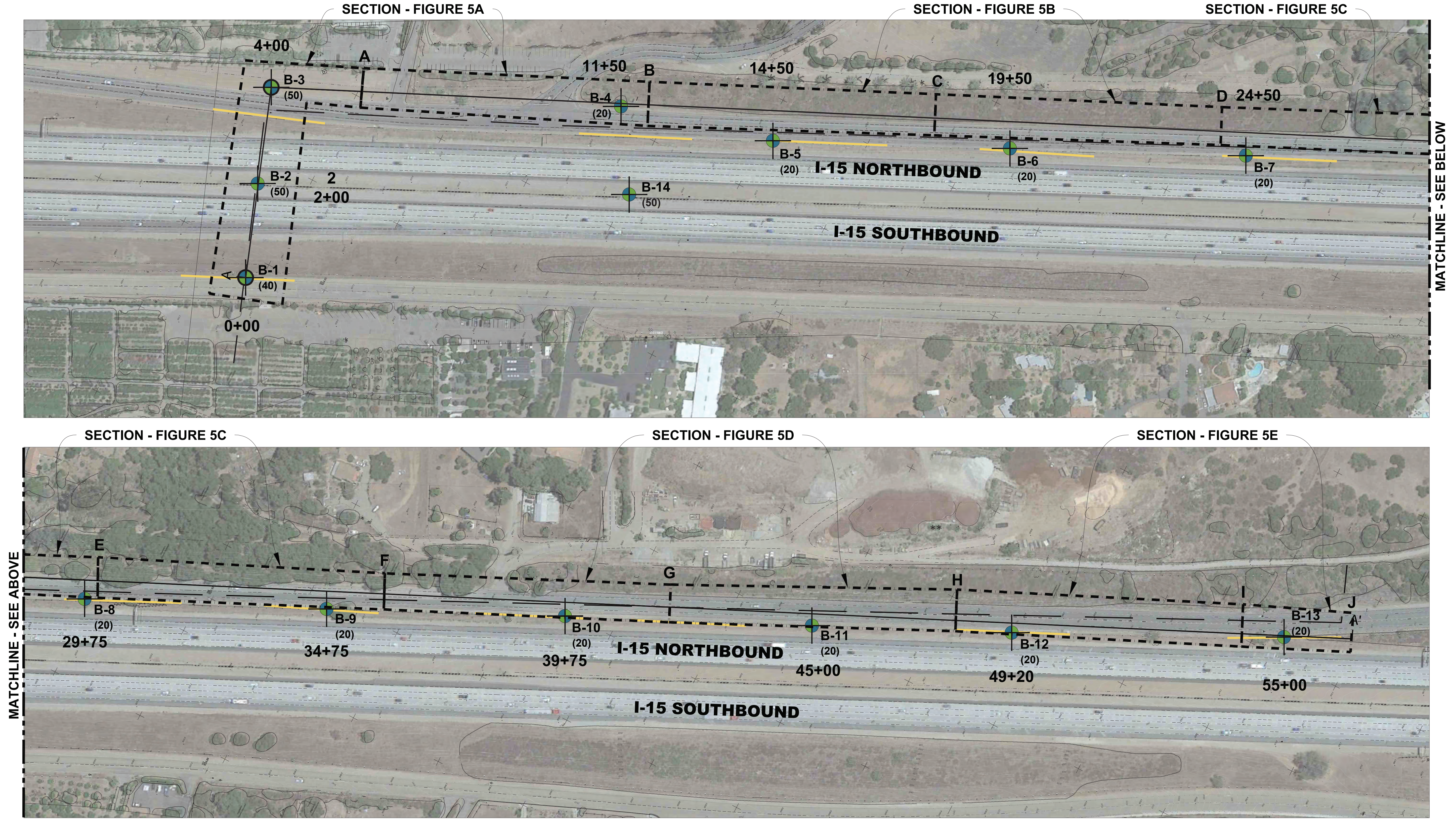


SITE VICINITY MAP
Design of Crossover Pipeline
Interstate 15 Bypass Project
San Diego, California

ATLAS

Date: February, 2022
By: AL/AF/CGI/JWJ/SYS
Job No.: 210112P6.1-1

Figure: 1



LEGEND:

B-14 (50)	Location of Boring (Depth in feet)
A A'	Geologic Cross-section
Qf / Qoal kjd	Fill underlain by Quaternary old alluvial deposits and Granodiorite of Jesmond Dean
- - -	Approximate Location of Proposed Alignment
(yellow line)	Approximate Location of Seismic Lines
○	Groundwater Monitoring Wells

0 200 400
SCALE (feet)

NOTE: All Locations are approximate.

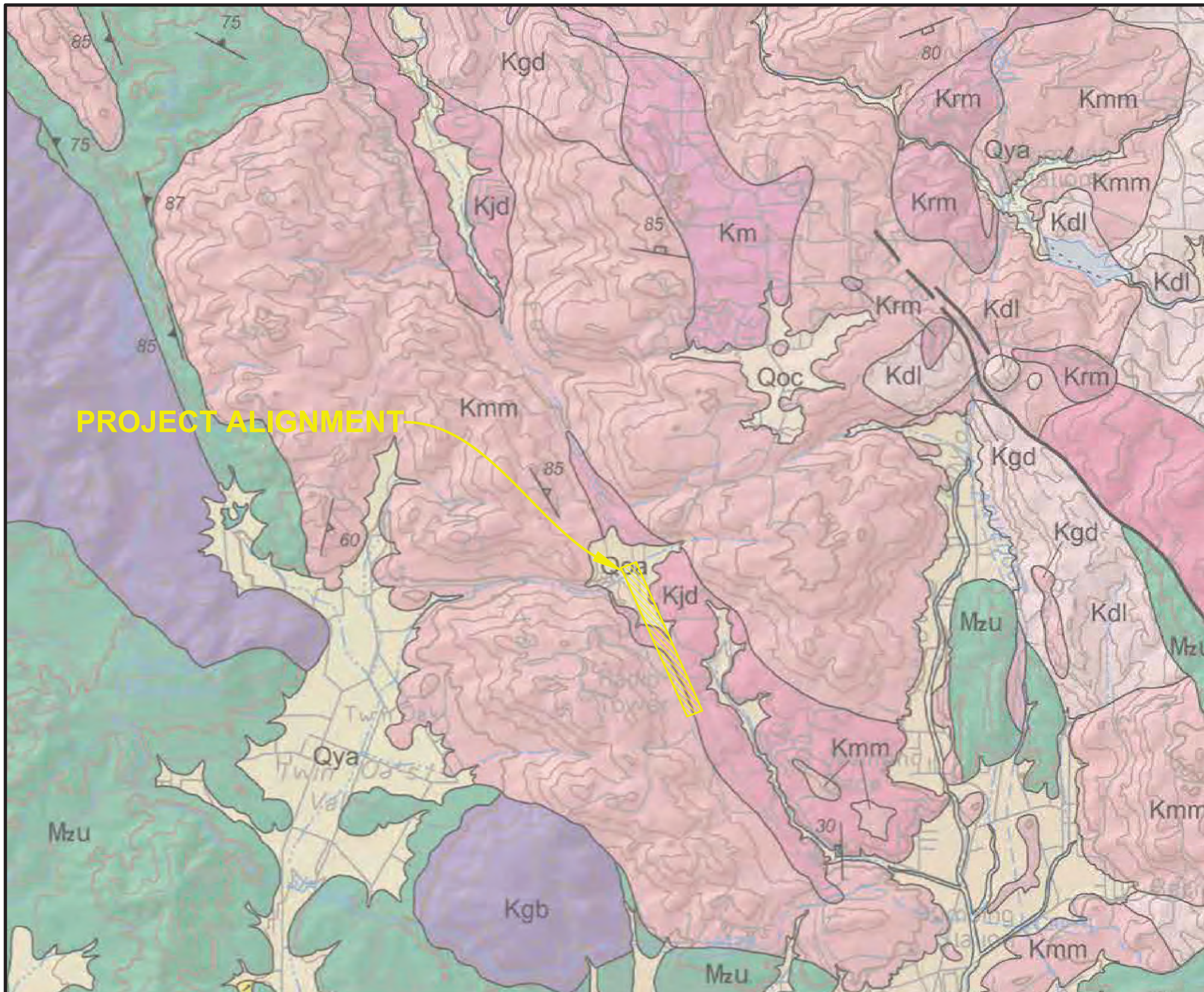
Date: February, 2022
By: ACF
Job No.: 210112P6.1-1

SUBSURFACE EXPLORATION MAP

Design of Crossover Pipeline
Interstate 15 Bypass Project

ATLAS

Figure:
2



EXPLANATION:

Qya	Young alluvial flood-plain deposits (Holocene and late Pleistocene)
Qoa	Old alluvial flood-plain deposits, undivided
Qyc	Young Colluvial Deposits
Kd	Diorite, undivided
Kt	Tonalite, undivided
Kg	Granite, undivided
Kwmt	Gabbro of Weaver Mountain
Kqbd	Quartz-bearing Diorite, undivided
Kmm	Monzogranite of Merriam Mountain
Km	Granodiorite of Mountain Meadows
Kwm	Granodiorite of Woodson Mountain
Kbm	Granodiorite of Burnt Mountain
Tsa	Santiago Formation
Mzu	Metasedimentary and Metavolcanic rocks, undivided
Kdl	Granite of Dixon Lake
Kis	Granite of Indian Springs
Kvc	Monzogranite of Valley Center
Krm	Quartz-bearing Diorite of Red Mountain
Kjd	Granodiorite of Jesmond Dean
Kdl	Granite of Indian Springs
Kgb	Granodiorite, undivided

Anticline Fold - Solid where well defined; short dash where inferred

Landslide - Arrows indicate principal direction of movement. Queried where existence is questionable.

N

0 1 2

SCALE (miles)

NOTE: All locations are approximate.

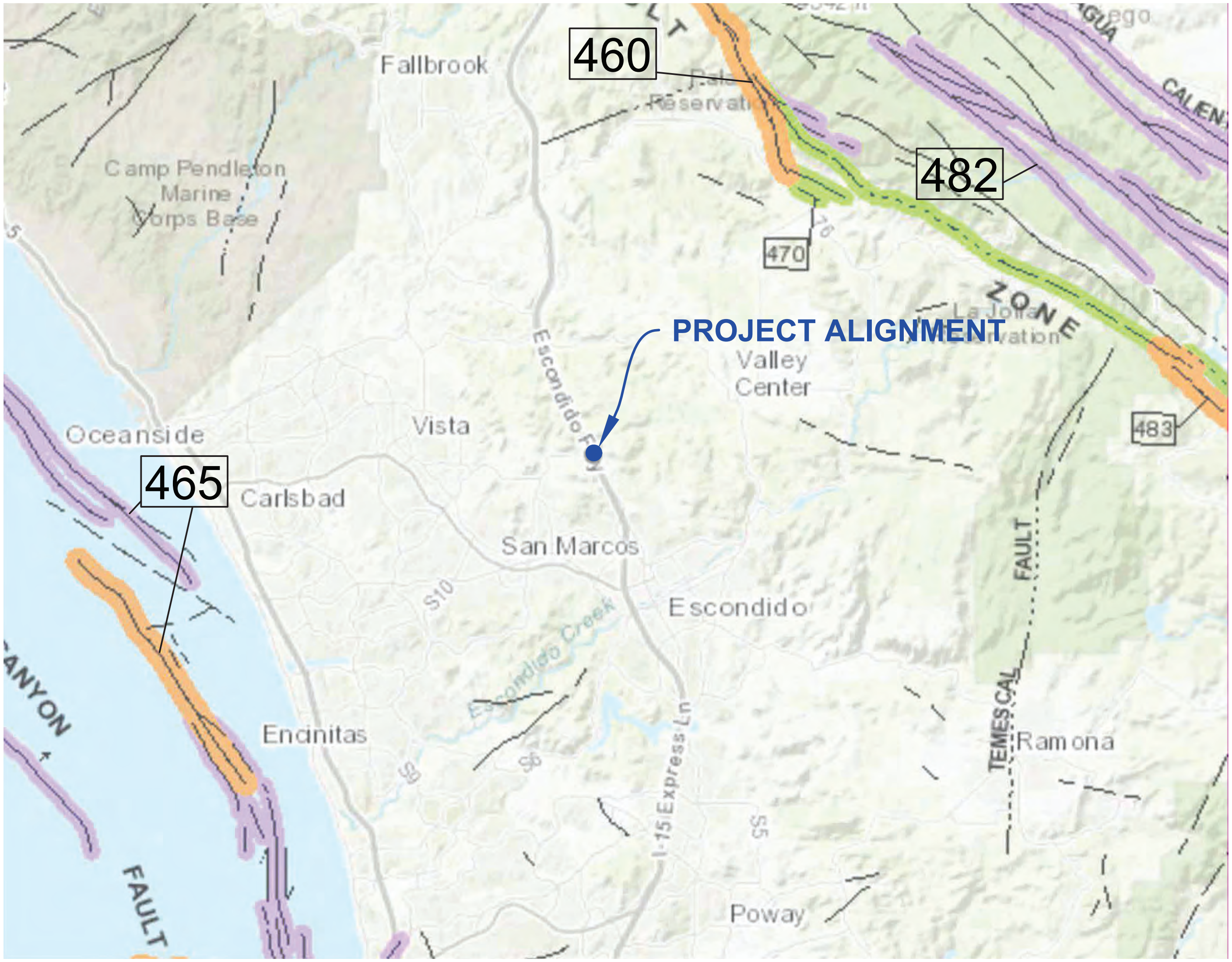
Reference:
Kennedy, M.P. and Tan, S.S. (2007), Geologic Map of the Oceanside 30' x 60' Quadrangle, California, California Geological Survey, Scale 1:100,000

ATLAS

REGIONAL GEOLOGY MAP
Design of Crossover Pipeline
Interstate 15 Bypass Project
San Diego, California

Date: February, 2022
By: AL/AF/CGI/JWJ/SYS
Job No.: 210112P6.1-1

Figure: 3



EXPLANATION:

Holocene fault displacement (during past 11,700 years) without historic record.

Late Quaternary fault displacement (during past 700,000 years).

Quaternary fault (age undifferentiated).

Pre-Quaternary fault (older than 1.6 million years) or fault without recognized Quaternary displacement.

Low angle fault (barbs on upper plate).

460	Wildomar Fault - Elsinore fault zone (certain)
465	Unnamed Fault - Newport - Inglewood - Rose Canyon fault zone (certain)
470	Unnamed fault - unnamed faults flanking Agua Tibia Mtn fault zone (certain)
482	Earthquake Valley Fault - Elsinore fault zone (certain)
483	Elsinore Fault - Elsinore fault zone (certain)

N

0 6 12

SCALE (miles)

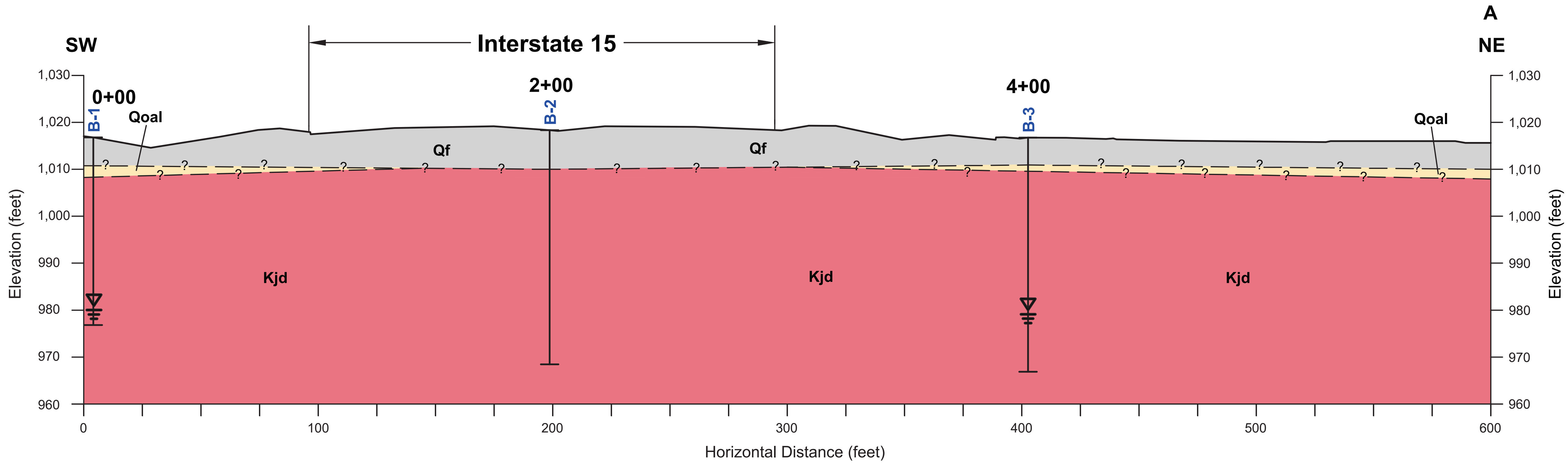
Reference:
Jennings, C.W., Bryant W.A., Fault Activity Map of California (2010), maps.conservation.ca.gov/cgs/fam; Accessed September, 2021

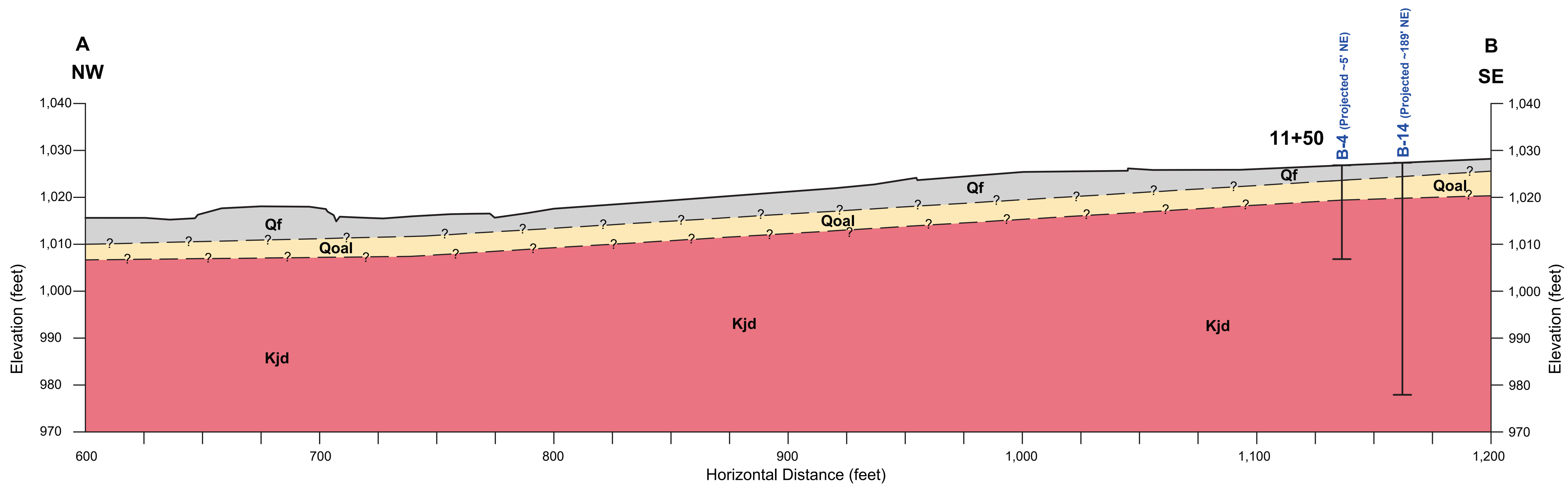
ATLAS

CALIFORNIA FAULT ACTIVITY MAP
Design of Crossover Pipeline
Interstate 15 Bypass Project
San Diego, California

Date: February, 2022
By: AL/AF/CGI/JWJ/SYS
Job No.: 210112P6.1-1

Figure:
4





LEGEND:

B-14 Location of Boring

—?— Geologic Contact, Queried Where Uncertain

Qf Fill

Qoal Old Alluvial Deposits

Kjd Granodiorite of Jesmond Dean

Groundwater

0 50 100
HORIZONTAL SCALE (feet)

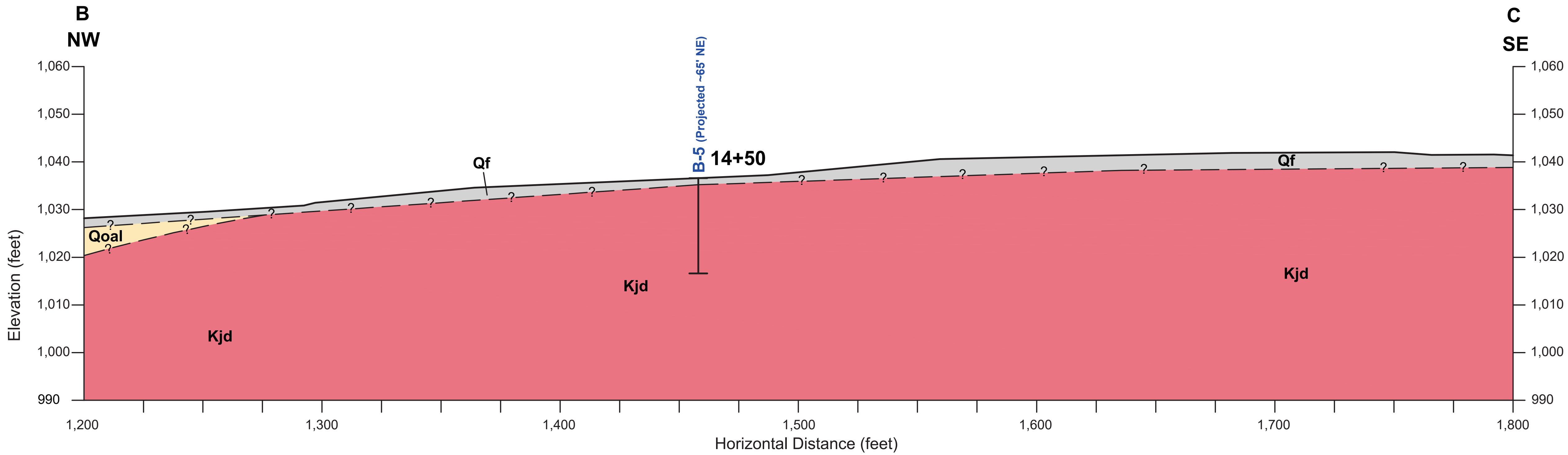
0 25 50
VERTICAL SCALE (feet)

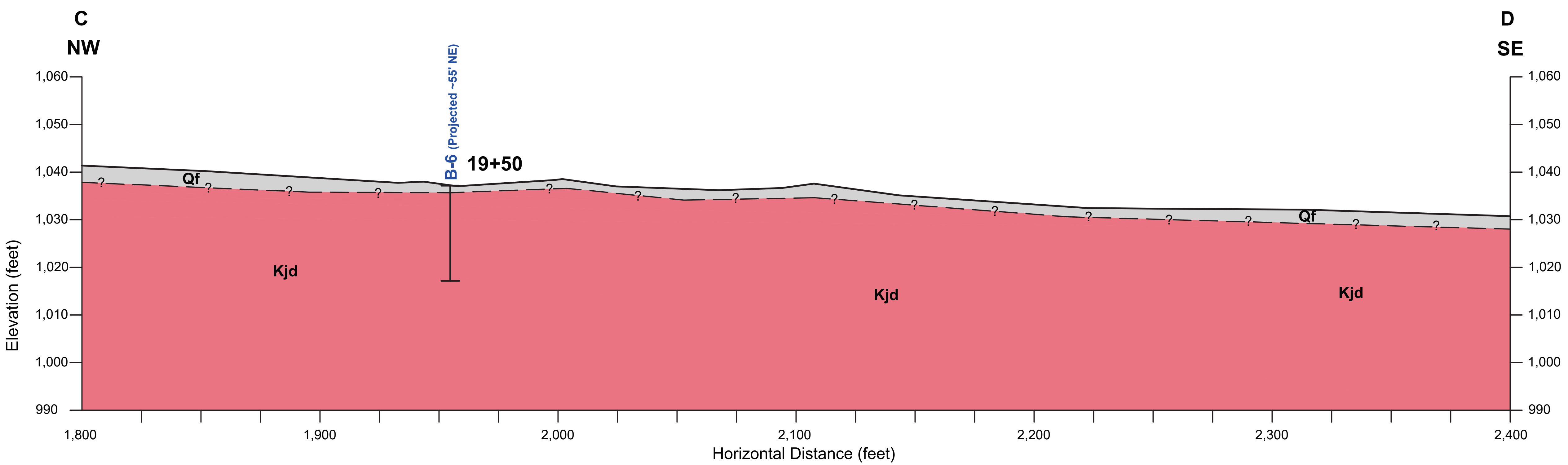
NOTE: All Locations and Depths are approximate.

Date: February, 2022
By: ACF
Job No.: 210112P6.1-1

GEOLOGIC CROSS-SECTION
Design of Crossover Pipeline
Interstate 15 Bypass Project

Figure:
5A





LEGEND:

B-6	Location of Boring
—?—	Geologic Contact, Queried Where Uncertain
Qf	Fill
Qoal	Old Alluvial Deposits
Kjd	Granodiorite of Jesmond Dean

0 50 100
HORIZONTAL SCALE (feet)

0 25 50
VERTICAL SCALE (feet)

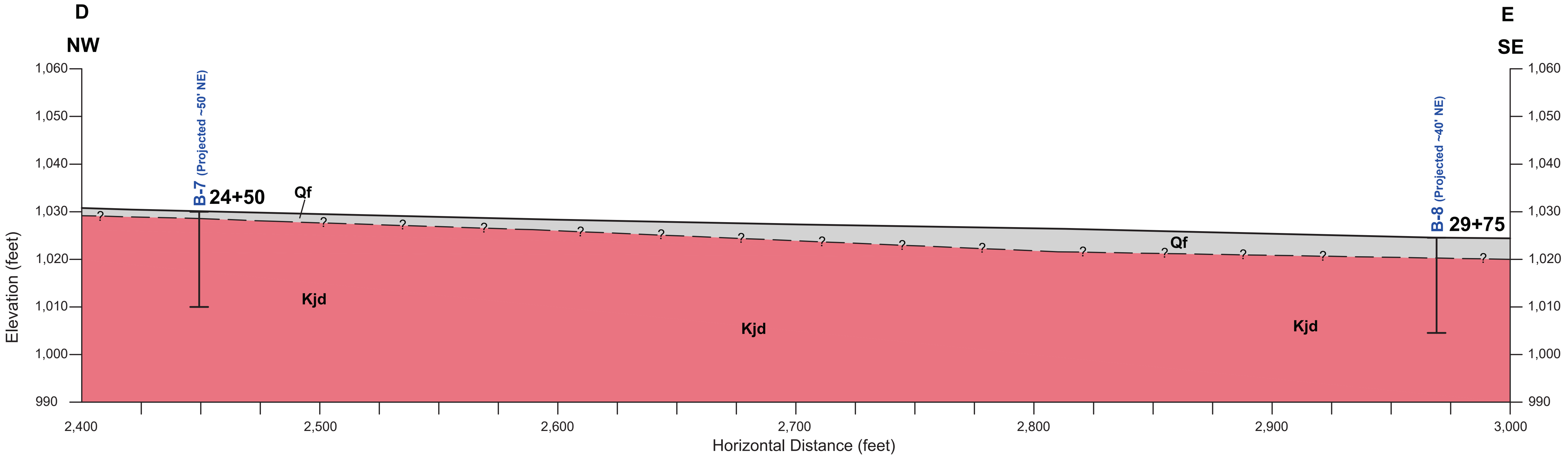
NOTE: All Locations and Depths are approximate.

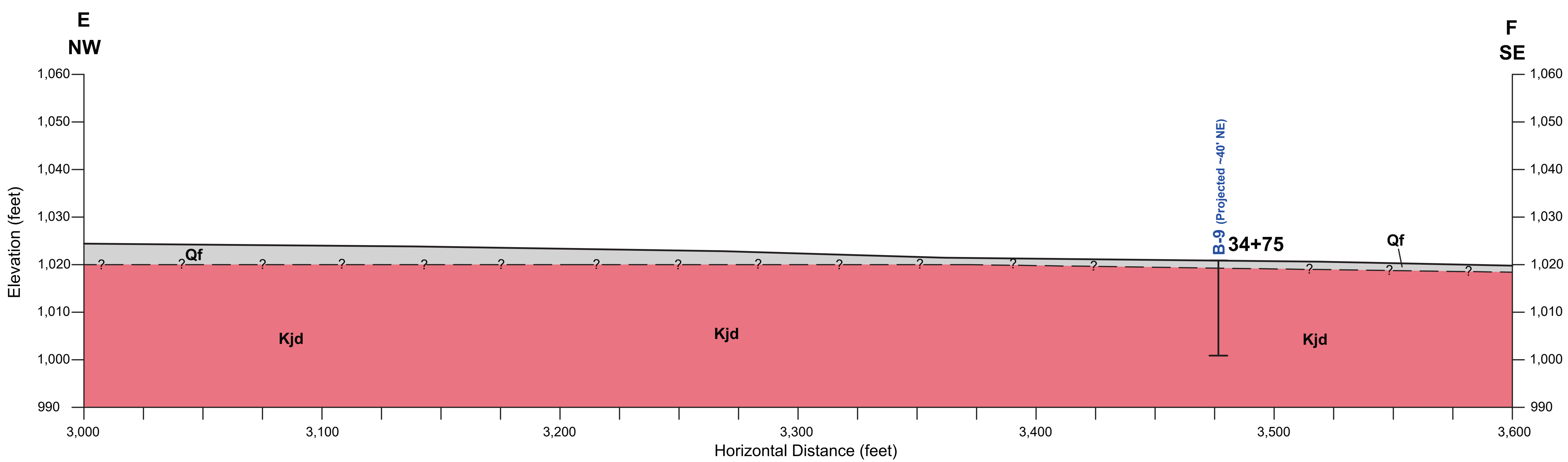
Date: February, 2022
By: ACF
Job No.: 210112P6.1-1

GEOLOGIC CROSS-SECTION
Design of Crossover Pipeline
Interstate 15 Bypass Project

ATLAS

Figure:
5B





LEGEND:

B-9 Location of Boring

—?— Geologic Contact, Queried Where Uncertain

Qf Fill

Kjd Granodiorite of Jesmond Dean

J Matchline

55+00 Station Number

0 50 100
HORIZONTAL SCALE (feet)

0 25 50
VERTICAL SCALE (feet)

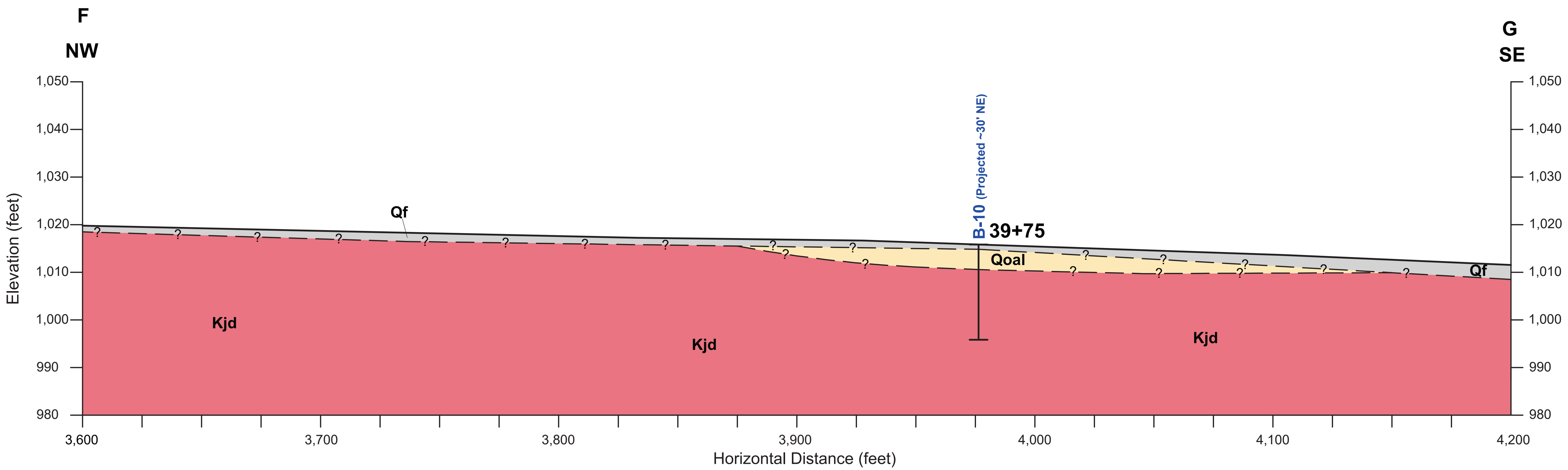
NOTE: All Locations and Depths are approximate.

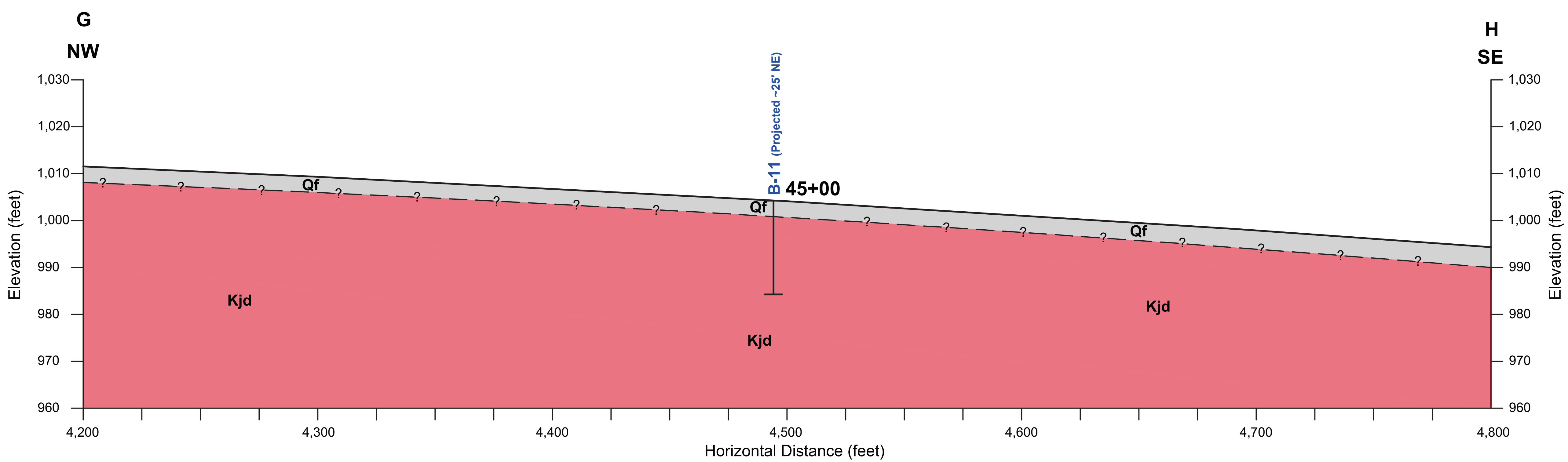
Date: February, 2022
By: ACF
Job No.: 210112P6.1-1

GEOLOGIC CROSS-SECTION
Design of Crossover Pipeline
Interstate 15 Bypass Project

ATLAS

Figure:
5C





LEGEND:

B-11 Location of Boring

—?— Geologic Contact, Queried Where Uncertain

Qf Fill

Qoal Old Alluvial Deposits

Kjd Granodiorite of Jesmond Dean

0 50 100
HORIZONTAL SCALE (feet)

0 25 50
VERTICAL SCALE (feet)

NOTE: All Locations and Depths are approximate.

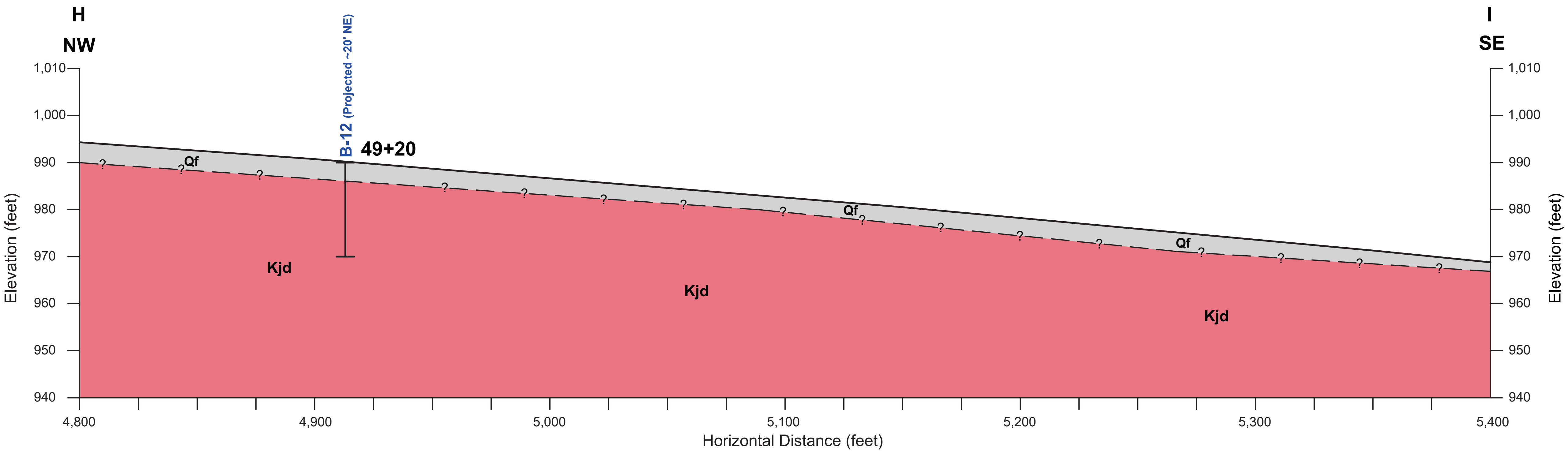
Date: February, 2022
By: ACF
Job No.: 210112P6.1-1

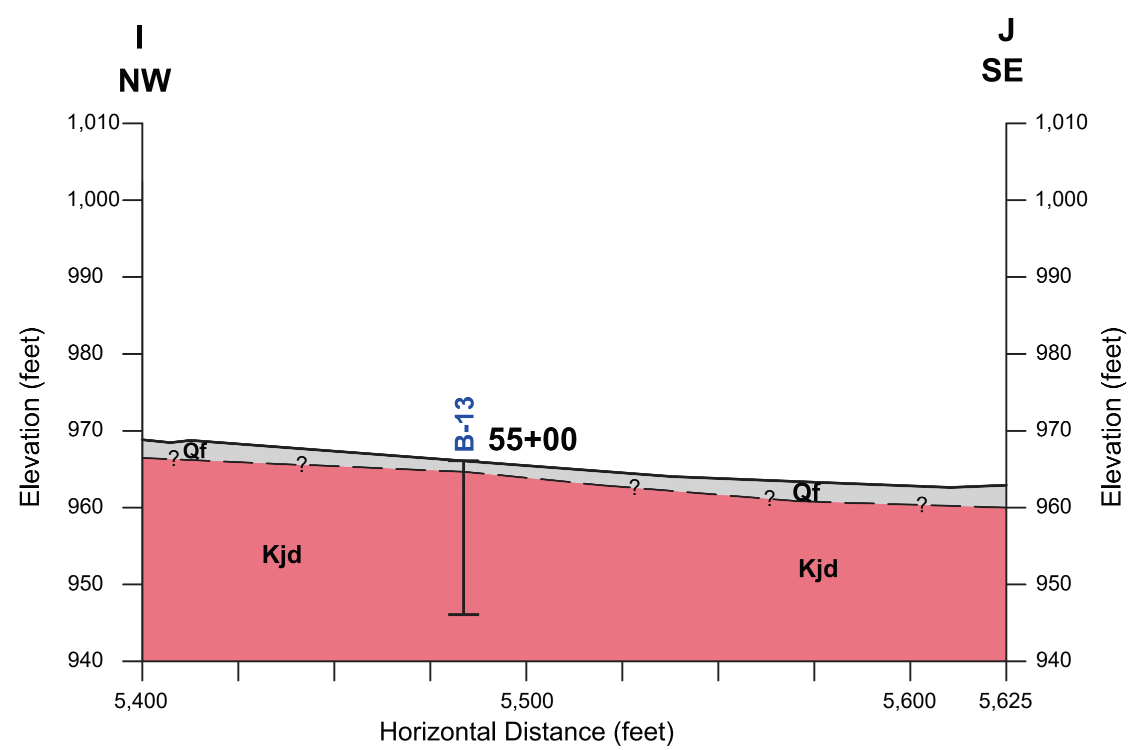
GEOLOGIC CROSS-SECTION

Design of Crossover Pipeline
Interstate 15 Bypass Project

ATLAS

Figure:
5D





LEGEND:

B-13 Location of Boring

—?— Geologic Contact, Queried Where Uncertain

Qf Fill

Kjd Granodiorite of Jesmond Dean

0 50 100
HORIZONTAL SCALE (feet)

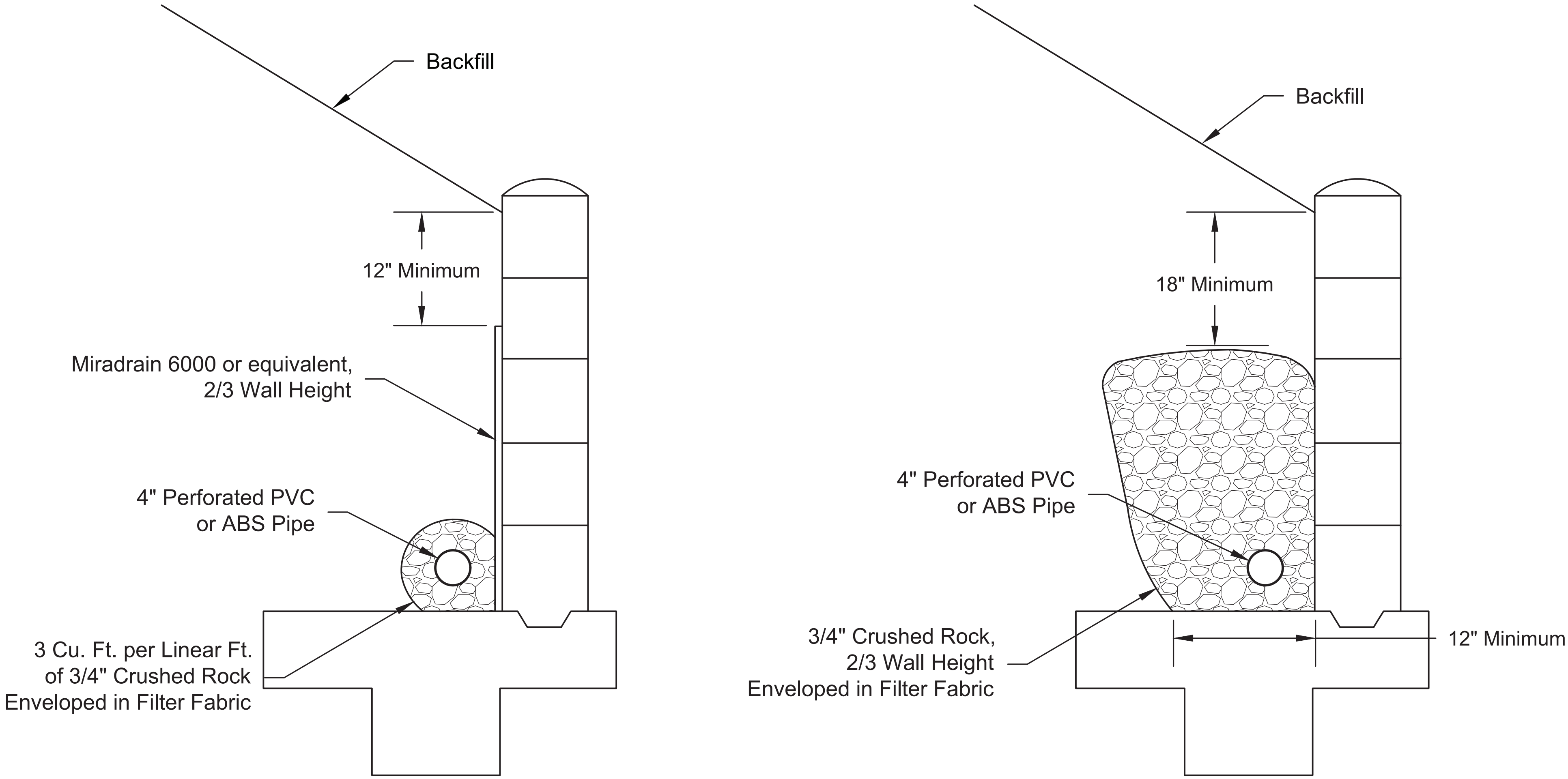
0 25 50
VERTICAL SCALE (feet)

NOTE: All Locations and Depths are approximate.

Date: February, 2022
By: ACF
Job No.: 210112P6.1-1

GEOLOGIC CROSS-SECTION
Design of Crossover Pipeline
Interstate 15 Bypass Project

Figure:
5E



NOT TO SCALE

NOTES:

1) Dampproof or waterproof back of wall following architect's specifications.
2) 4" minimum perforated pipe, SDR35 or equivalent, holes down, 1% fall to outlet. Provide solid outlet pipe at suitable locations.
3) Drain installation and outlet connection should be observed by the geotechnical consultant.

ATLAS	**TYPICAL RETAINING WALL BACKDRAIN DETAILS** Design of Crossover Pipeline Interstate 15 Bypass Project San Diego, California	Date: February, 2022 By: AL/AF/CGI/JWJ/SYS Job No.: 210112P6.1-1	Figure: 6

APPENDIX I
SUBSURFACE EXPLORATION

Relatively undisturbed samples were obtained using a modified California (CAL) sampler, which is a ring-lined split tube sampler with a 3-inch outer diameter and 2½-inch inner diameter. Standard Penetration Tests (SPT) were performed using a 2-inch outer diameter and 1⅜-inch inner diameter split tube sampler. The CAL and SPT samplers were driven with a 140-pound weight dropping 30 inches. The number of blows needed to drive the samplers the final 12 inches of an 18-inch drive is noted on the boring logs as “Driving Resistance (blows/ft. of drive).” SPT and CAL sampler refusal was encountered when 50 blows were applied during any one of the three 6-inch intervals, a total of 100 blows was applied, or there was no discernible sampler advancement during the application of 10 successive blows. The SPT penetration resistance was normalized to a safety hammer (cathead and rope) with a 60% energy transfer ratio in accordance with ASTM D6066. The normalized SPT penetration resistance is noted on the boring logs as “N60.” When auger refusal was encountered the drill rig used a diamond HQ core bit for rock coring to advance through the rock and recover rock core for identification and testing. Disturbed bulk samples were obtained from the SPT sampler and the drill cuttings. The soils are classified in accordance with the Unified Soil Classification System. The rock encountered were classified in accordance with the Caltrans rock classification system.

In addition, Atlas installed temporary ground water monitoring wells in two of the borings. These wells were installed to monitor the water levels over time during the project life. The well design is presented on the logs in Appendix I.

MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL-GRADED GRAVELS WITH OR WITHOUT SAND
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL
		SANDS WITH 15% OR MORE FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OL		ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CH		INORGANIC CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OH		ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

SAMPLE SYMBOLS

SAMPLE TYPES

- Bulk Sample
- CAL Modified California Sampler
- SPT Standard Penetration Test

CAI - CERCHAR ABRASIVITY
PLSI - POINT LOAD STRENGTH INDEX
STS - SPLITTING TENSILE STRENGTH

WHERE AN ASTERISK * EXISTS NEXT TO RQD VALUE- MEASURED INTACT PIECES DID NOT PASS FIELD SOUNDNESS TEST

LABORATORY SYMBOLS

AL - ATTERBERG LIMITS
CON - CONSOLIDATION
COR - CORROSIVITY TESTING
DS - DIRECT SHEAR
EI - EXPANSION INDEX
MAX - MAXIMUM DENSITY
RV - R-VALUE
PD - PARTICLE-SIZE DISTRIBUTION
UC - UNCONFINED COMPRESSIVE STRENGTH
WA - No. 200 WASH (% PASSING No. 200 SIEVE)

GROUNDWATER SYMBOLS

▽ WATER LEVEL AT TIME OF EXCAVATION OR AS INDICATED

RELATIVE DENSITY OF COHESIONLESS SOILS		CONSISTENCY OF COHESIVE SOILS		
RELATIVE DENSITY	SPT N60 BLOWS/FOOT	CONSISTENCY	SPT N60 BLOWS/FOOT	POCKET PENETROMETER MEASUREMENT (TSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 2	0 - 0.25
LOOSE	4 - 10	SOFT	2 - 4	0.25 - 0.50
MEDIUM DENSE	10 - 30	MEDIUM STIFF	4 - 8	0.50 - 1.0
DENSE	30 - 50	STIFF	8 - 15	1.0 - 2.0
VERY DENSE	OVER 50	VERY STIFF	15 - 30	2.0 - 4.0
		HARD	OVER 30	OVER 4.0

NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).
IF THE SEATING INTERVAL (1st 6 INCH INTERVAL) IS NOT ACHEIVED, N IS REPORTED AS REF.

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SUBSURFACE EXPLORATION LEGEND

LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	B-1
Crossover Pipeline Interstate 15 Bypass	210112P6-1	

SITE	START	END	SHEET NO.
Escondido, California	8/20/21	8/23/21	1

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	DJM	AKN

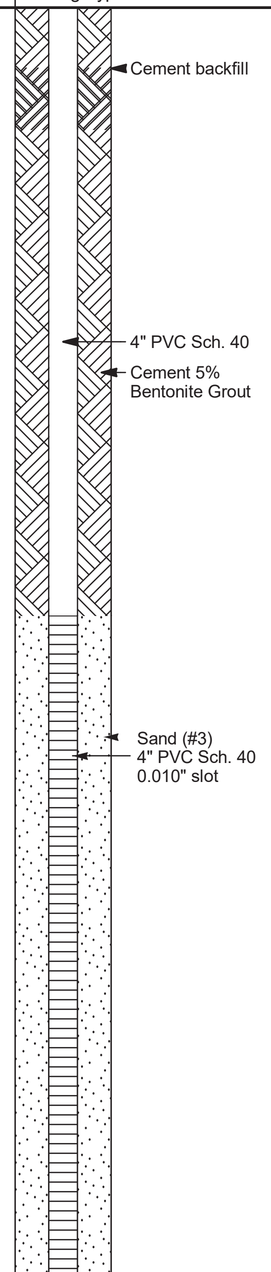
DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-85 LAR	4	40	1022	AT TIME OF DRILLING 38.80 ft / Elev 983.20 ft

SAMPLING METHOD	NOTES	
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~1.45N_{SPT}	AT END OF DRILLING ---
		AFTER DRILLING 38.80 ft / Elev 983.20 ft

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	MOISTURE (%)	DESCRIPTION AND CLASSIFICATION	LAB TESTS
	0–1.5	X					**FILL(Qf):** SILTY SAND with GRAVEL and COBBLE (SM), loose to very dense, gray to gray-brown, moist, fine to coarse grained.	
1020	1.5–5		RC	59	0			
	5–10		RC	58	0		**OLD ALLUVIAL DEPOSITS (Qoal):** SANDY CLAY (CL), medium stiff, reddish brown, moist, fine to medium grained, iron oxide staining.	COR
1015							**GRANODIORITE OF JESMOND DEAN (Kjd):** GRANODIORITE, very soft to soft rock, gray to brown, phaneritic, massive, very intensely weathered to decomposed, very intensely fractured.	
	10–15		RC	30	0	9.0	Very soft to hard rock, light gray to varied dark gray, moderately weathered to very intensely weathered.	
1010	15–20		RC	30	0		MONZONITE to GRANODIORITE, very soft to soft rock, gray to gray-brown, phaneritic, massive, disintegrated, decomposed.	PD, PI
1005	20						MONZONITE, very soft to moderately soft rock, gray to reddish brown, phaneritic, massive, very intensely	

WELL DIAGRAM

Casing Type: PVC



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LOG OF TEST BORING

ATLAS PROJECT NAME Crossover Pipeline Interstate 15 Bypass			**ATLAS PROJECT NUMBER** 210112P6-1		**B-1**
SITE Escondido, California			**START** 8/20/21	**END** 8/23/21	**SHEET NO.** 2
DRILLING COMPANY Cascade Drilling	**DRILL METHOD** HQ (2½") Rock Coring System and Mud Rotary		**LOGGED BY** DJM		**REVIEWED BY** AKN
DRILLING EQUIPMENT CME-85 LAR	**BORING DIA. (in.)** 4	**TOTAL DEPTH (ft)** 40	**GROUND ELEV. (ft)** 1022	**DEPTH/ELEV. GROUND WATER (ft)**	
SAMPLING METHOD 140-lb Hammer, 30-in Drop	**NOTES** Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$			∇ **AT TIME OF DRILLING** 38.80 ft / Elev 983.20 ft ▼ **AT END OF DRILLING** --- ▼ **AFTER DRILLING** 38.80 ft / Elev 983.20 ft	

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	MOISTURE (%)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS	WELL DIAGRAM
1000			RC	53	25*			**GRANODIORITE OF JESMOND DEAN (Kjd):** fractured to moderately fractured, very intensely to intensely weathered, iron oxide staining and clay infilling of fractures.(continued)	PLSI CAI	
	25		RC	90	39			Moderately hard rock, gray to gray-brown, intensely fractured, moderately weathered.	STS, UC UC= 580 psi	Sand (#3) 4" PVC Sch. 40 0.010" slot
995										
			RC	80	20			Moderately soft to hard rock, gray to light brown, phaneritic to aphanitic, intensely to moderately weathered, Very soft to soft rock, gray to reddish brown, very intensely to intensely weathered.		
	30		RC	65	0					
990			RC	65	0			Very soft to hard rock, intensely weathered to moderately weathered.		
			RC	80	0			Hard, moderately to slightly weathered, intensely fractured. Very intensely to moderately fractured.		
	35		RC	60	0					
985			RC	70	40					
			RC	60	0		▼	Very soft to moderately hard rock, decomposed to moderately weathered, intensely fractured.		
	40							Boring terminated at 40 feet		

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THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

LOG OF TEST BORING

ATLAS PROJECT NAME: Crossover Pipeline Interstate 15 Bypass			ATLAS PROJECT NUMBER: 210112P6-1			B-2
SITE: Escondido, California			START: 8/16/21	END: 8/18/21		SHEET NO.: 3
DRILLING COMPANY: Cascade Drilling	DRILL METHOD: HQ (2½") Rock Coring System and Mud Rotary		LOGGED BY: DJM		REVIEWED BY: AKN	
DRILLING EQUIPMENT: CME-85 LAR	BORING DIA. (in.): 4	TOTAL DEPTH (ft): 50	GROUND ELEV. (ft): 1018	DEPTH/ELEV. GROUND WATER (ft): AT TIME OF DRILLING --- ; AT END OF DRILLING --- ; AFTER DRILLING ---		
SAMPLING METHOD: 140-lb Hammer, 30-in Drop	NOTES: Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$					

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	DESCRIPTION AND CLASSIFICATION	LAB TESTS
	0	X				**FILL(Qf):** SILTY SAND with GRAVEL and COBBLE (SM), medium dense to dense, brown, moist, fine to medium grained.	
						Hand Auger Refusal on gravel and cobbles.	
1015							
	5		SPT 125/10"				
						Start Rock Coring at 7 feet	
			RC	100	30	**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, soft to hard rock, gray to dark gray, phaneritic, massive, fresh to moderately weathered, intensely to very intensely fractured, fractures dipping 40 degrees. Very soft to very hard rock, brown to gray, phaneritic to aphanitic, foliated, fresh to intensely weathered, steeply dipping foliation, iron oxidation.	
1010			RC	100	0		
	10					Hard to very hard rock, gray to dark gray, slightly weathered, xenoliths of mafics, fractures dipping steeply and aligned with foliation.	
			RC	33	1		
1005							
	15					Very soft to soft rock, brown to dark brown-gray, phaneritic, intensely weathered to decomposed, steeply dipping fractures infilled with clay, breaks down to CLAYEY SAND (SC). Upper 1.5 feet of core decomposed to CLAY (CL).	
			RC	100	66*		COR
1000						Moderately hard to hard rock, dark gray to gray, massive, very intensely fractured, slightly weathered, fractures dipping 45 degrees to horizontal.	
			RC	58	17		

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Figure I-3

LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	**B-2**

SITE	START	END	SHEET NO.
Escondido, California	8/16/21	8/18/21	4

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	DJM	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-85 LAR	4	50	1018	▽ AT TIME OF DRILLING ---

SAMPLING METHOD	NOTES	
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$	▼ AT END OF DRILLING --- ▼ AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
							GRANODIORITE OF JESMOND DEAN (Kjd): GRANODIORITE, soft to hard rock, gray to dark gray, phaneritic, massive, fresh to moderately weathered, intensely to very intensely fractured, fractures dipping 40 degrees. *(continued)*	
			RC	100	39		Moderately hard to very hard rock, massive to foliated, intensely to very intensely fractured, fresh to moderately weathered, steeply to horizontally dipping fractures, fractures infilled with clay and iron oxide.	PLSI, CAI, STS
995								
			RC	75	0		Very soft to hard rock, light gray to dark gray, massive, very intensely fractured to disintegrated, fresh to decomposed, steeply dipping fractures, decomposed to CLAY (CL).	
	25		RC	87.5	0		Soft to hard rock, gray to dark gray, fresh to moderately weathered, fractures infilled with iron oxide.	
			RC	83	58		Very soft to very hard rock, gray-brown to gray, moderately fractured to disintegrated, fresh to intensely weathered, subhorizontally dipping fractures, fractures infilled with clay.	UC
990								UC=1730 psi
			RC	100	83		Hard to very hard rock, gray to dark gray, massive to slightly foliated, moderately fractured, fresh, fractures dipping 30-45 degrees, fractures infilled with iron oxide staining, foliation defined by variation of felsic and mafic minerals.	
	30						Massive to foliated, intensely fractured, fresh to slightly weathered, fractures dipping steeply to 45 degrees, foliation defined by variation of mica and mafic minerals, crystal size gets finer with depth.	
			RC	100	32			
985								
	35						Moderately hard to very hard rock, dark gray, massive, moderately to intensely fractured, fractures dipping subvertical to 30 degrees, pervasive iron oxidation and disintegration along fracture planes.	
			RC	100	55			
980								

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LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	**B-2**

SITE	START	END	SHEET NO.
Escondido, California	8/16/21	8/18/21	5

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	DJM	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-85 LAR	4	50	1018	AT TIME OF DRILLING ---
				AT END OF DRILLING ---
				AFTER DRILLING ---

SAMPLING METHOD	NOTES
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
			RC	100	38		**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, soft to hard rock, gray to dark gray, phaneritic, massive, fresh to moderately weathered, intensely to very intensely fractured, fractures dipping 40 degrees. *(continued)* Hard to very hard rock, dark gray, intensely fractured, fresh, fractures dipping subhorizontal to 45 degrees, foliation defined by variation of felsic and mafic minerals.	
975								
			RC	100	22		MONZOGRANITE, Soft to very hard rock, gray, phaneritic, massive to foliated, very intensely fractured to disintegrated, fresh to moderately weathered, fractures dipping 30-45 degrees, iron oxidation.	
	45						MONZOGRANITE, Moderately hard to very hard rock, intensely fractured to disintegrated, fractures dipping subhorizontal to 30 degrees, fractures infilled with iron oxide and silica.	
			RC	95	32.5			
970								
	50						Boring terminated at 50 feet	
965								
	55							
960								

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LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	**B-3**

SITE	START	END	SHEET NO.
Escondido, California	8/27/21	8/27/21	6

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	THC	AKN

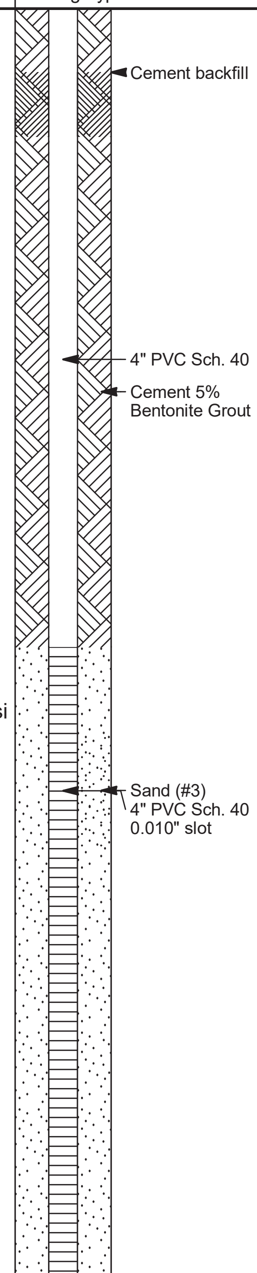
DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-95	4	50	1017	AT TIME OF DRILLING 38.60 ft / Elev 978.40 ft

SAMPLING METHOD	NOTES	
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$	AT END OF DRILLING --- AFTER DRILLING 39.60 ft / Elev 977.40 ft

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
1015	0–5	X					**FILL(Qf):** SANDY CLAY (CL), medium stiff, brown to reddish brown, moist, fine to coarse grained, trace gravel, fragments of decomposed granite.	
							OLD ALLUVIAL DEPOSITS (Qoal): CLAYEY SAND (SC), medium dense, brown to reddish brown to gray, moist, fine to coarse grained.	
1010	5		RC	88	0		SANDY SILT, medium dense, brown to reddish brown to gray, moist, fine to coarse grained, iron oxide staining.	PD, PI
							GRANODIORITE OF JESMOND DEAN (Kjd): GRANODIORITE, very soft to soft rock, gray to brown, phaneritic, massive, disintegrated, decomposed, breaks down to CLAYEY SAND (SC). Intensely weathered to decomposed.	
1005	10		RC	80	0			UC UC= 130 psi CAI
1000	15		RC	6	0		Intensely fractured.	

WELL DIAGRAM

Casing Type: PVC



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LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	B-3
Crossover Pipeline Interstate 15 Bypass	210112P6-1	

SITE	START	END	SHEET NO.
Escondido, California	8/27/21	8/27/21	7

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	THC	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-95	4	50	1017	▽ AT TIME OF DRILLING 38.60 ft / Elev 978.40 ft
				▼ AT END OF DRILLING ---
				▼ AFTER DRILLING 39.60 ft / Elev 977.40 ft

SAMPLING METHOD	NOTES
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS	WELL DIAGRAM
995			RC	40	0		**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, very soft to soft rock, gray to brown, phaneritic, massive, disintegrated, decomposed, breaks down to CLAYEY SAND (SC). *(continued)* Intensely fractured to disintegrated, intensely weathered to decomposed.		
990	25		RC	45	0		Gray to orange.		
985	30		RC	62.5	0		Disintegrated to intensely fractured.		Sand (#3) 4" PVC Sch. 40 0.010" slot
980	35		RC	77.5	0	▽ ▼	Soft, intensely fractured.		

LOG OF TEST BORING

ATLAS PROJECT NAME: Crossover Pipeline Interstate 15 Bypass	ATLAS PROJECT NUMBER: 210112P6-1	B-3	
SITE: Escondido, California	START: 8/27/21	END: 8/27/21	SHEET NO.: 8
DRILLING COMPANY: Cascade Drilling	DRILL METHOD: HQ (2½") Rock Coring System and Mud Rotary	LOGGED BY: THC	REVIEWED BY: AKN
DRILLING EQUIPMENT: CME-95	BORING DIA. (in.): 4	TOTAL DEPTH (ft): 50	GROUND ELEV. (ft): 1017
SAMPLING METHOD: 140-lb Hammer, 30-in Drop	NOTES: Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$		

DEPTH/ELEV. GROUND WATER (ft)
- AT TIME OF DRILLING: 38.60 ft / Elev 978.40 ft
- AT END OF DRILLING: ---
- AFTER DRILLING: 39.60 ft / Elev 977.40 ft

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS	WELL DIAGRAM
975			RC	44	0		**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, very soft to soft rock, gray to brown, phaneritic, massive, disintegrated, decomposed, breaks down to CLAYEY SAND (SC). *(continued)* Moderately fractured.		
	45		RC	90	0		Soft to moderately soft rock, intensely fractured, moderately weathered to decomposed.		
970									
			RC	100	0		Moderately soft to very hard rock, very intensely to intensely fractured, slighty to intensely weathered.		
	50						Boring terminated at 50 feet		
965									
	55								
960									

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LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	B-4

SITE	START	END	SHEET NO.
Escondido, California	8/25/21	8/25/21	9

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	JPS	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)
CME-95	4	20	1024

SAMPLING METHOD	NOTES
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$

DEPTH/ELEV. GROUND WATER (ft)
- AT TIME OF DRILLING ---
- AT END OF DRILLING ---
- AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	0	X					**FILL(Qf):** SILTY SAND (SM), medium dense, brown, moist, fine to coarse grained.
	2	X					**OLD ALLUVIAL DEPOSITS (Qoal):** SANDY SILT (ML), stiff, brown, moist, fine to medium grained.
1020	5		RC	100	0		
	8						**GRANODIORITE OF JESMOND DEAN(Kjd):** GRANODIORITE, very soft to soft rock, brown to reddish brown, phaneritic, massive, disintegrated, decomposed, breaks down to SANDY CLAY (CL).
1015	10		RC	100	0		Breaks down to CLAYEY SAND (SC).
1010	15		RC	100	0		GRANODIORITE, very soft to soft rock, brown to reddish brown, phaneritic, massive, disintegrated, decomposed, breaks down to SANDY CLAY (CL).
1005	20						Boring terminated at 20 feet

LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	B-5

SITE	START	END	SHEET NO.
Escondido, California	8/24/21	8/24/21	10

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	JPS	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-95	4	20	1030	▽ AT TIME OF DRILLING --- ▼ AT END OF DRILLING --- ▼ AFTER DRILLING ---

SAMPLING METHOD	NOTES
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	MOISTURE (%)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
								FILL(Qf): CLAYEY SAND (SC), loose to medium dense, brown, moist, fine to coarse grained, trace gravels that break with light hand pressure.	
			RC	100	0			**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, soft to moderately hard, reddish brown, phaneritic, massive, intensely fractured, decomposed to moderately weathered, breaks down to CLAYEY SAND (SC), iron oxide and clay filling of fractures.	
1025	5							MONZONITE to GRANODIORITE, soft to mderately hard rock, reddish brown to gray, phaneritic, massive, intensely fractured, moderately weathered to decomposed, iron oxide and clay filling of fractures.	
			RC	65	0				COR
1020	10							MONZONITE, soft to moderately hard rock, gray to reddish brown, phaneritic, massive, intensely fractured to very intensely fratured, slightly to intensely weathered, iron oxide staining and clay infilling of fractures.	
			RC	100	20	2.9			UC UC=2020 psi
1015	15							MONZONITE, soft to moderately hard rock, gray to reddish brown, phaneritic, massive, very intensely to intensely fractured, intensely weathered to slightly weathered.	
			RC	70	0				
1010	20							Boring terminated at 20 feet	

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Figure

I-10

LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	B-6

SITE	START	END	SHEET NO.
Escondido, California	8/24/21	8/24/21	11

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	THC	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-95	4	20	1032	∇ AT TIME OF DRILLING --- ▼ AT END OF DRILLING --- ▼ AFTER DRILLING ---

SAMPLING METHOD	NOTES
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		X					**FILL(Qf):** SILTY SAND (SM), medium dense, brown, moist, fine to coarse grained, trace gravels that break with light hand pressure.
1030							
			RC	100	0		**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, very soft to moderately soft rock, reddish brown to gray, phaneritic, massive, disintegrated, decomposed to intensely weathered, breaks down to CLAYEY SAND (SC), iron oxide staining.
	5						Soft to moderately soft rock, intensely fractured, decomposed to moderately weathered.
1025			RC	60	0		
	10						Soft to moderately hard rock, gray to blue-gray, intensely to slightly weathered.
1020			RC	100	0		
	15						Moderately soft to hard rock, moderately fractured, moderately weathered to fresh.
1015			RC	100	30		
	20						Boring terminated at 20 feet

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LOG OF TEST BORING

ATLAS PROJECT NAME	Crossover Pipeline Interstate 15 Bypass
ATLAS PROJECT NUMBER	210112P6-1
BORING	B-7
SITE	Escondido, California
START	8/24/21
END	8/24/21
SHEET NO.	12
DRILLING COMPANY	Cascade Drilling
DRILL METHOD	HQ (2½") Rock Coring System and Mud Rotary
LOGGED BY	THC
REVIEWED BY	AKN
DRILLING EQUIPMENT	CME-95
BORING DIA. (in.)	4
TOTAL DEPTH (ft)	20
GROUND ELEV. (ft)	1030
SAMPLING METHOD	140-lb Hammer, 30-in Drop
NOTES	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$

DEPTH/ELEV. GROUND WATER (ft)
- AT TIME OF DRILLING ---
- AT END OF DRILLING ---
- AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	MOISTURE (%)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
								8 inches of Asphalt Concrete (AC)	
								FILL (Qf): SILTY SAND (SM), medium dense, brown, moist, fine to coarse grained, trace gravels that break with light hand pressure.	
								SANDY CLAY, medium stiff, brown to reddish brown, moist, fine to coarse grained, iron oxide staining.	
			RC	100	77			**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, moderately hard rock, light brown, phaneritic, massive, intensely fractured, moderately to slightly weathered, iron oxide and clay infill of fractures.	
1025	5							Slightly to moderately fractured, slightly weathered.	
			RC	92	70				UC UC=13280 psi
1020	10							Intensely to slightly fractured.	
			RC	90	68	1.4			
1015	15							Moderately fractured, intensely to slightly weathered.	
			RC	87.5	50				
1010	20							Boring terminated at 20 feet	

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LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	B-8

SITE	START	END	SHEET NO.
Escondido, California	8/25/21	8/25/21	13

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	JPS	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-95	4	20	1024	AT TIME OF DRILLING ---
				AT END OF DRILLING ---
				AFTER DRILLING ---

SAMPLING METHOD	NOTES
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
							5 inches of Asphalt Concrete (AC)	
							FILL (Qf): CLAYEY SAND (SC), loose to medium dense, brown, moist, fine to coarse grained.	
1020	5		CAL 44				**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, soft rock, brown to light brown to reddish brown, disintegrated, decomposed, breaks down to CLAYEY SAND (SC).	DS
							Switched to rock coring at 6 Feet.	
							Very soft rock, disintegrated, decomposed to slightly weathered.	
			RC	20	0			
1015	10						Interbedding of disintegrated, decomposed rock that breaks down to SILTY SAND (SM) and brown SILTY SAND (SM).	
			RC	80	0			
1010	15						Interbedding of disintegrated, decomposed rock that breaks down to SILTY SAND (SM) and brown SANDY CLAY (CL).	
			RC	80	0			COR
1005	20							

Boring terminated at 20 feet

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LOG OF TEST BORING

ATLAS PROJECT NAME	Crossover Pipeline Interstate 15 Bypass
ATLAS PROJECT NUMBER	210112P6-1
	B-9
SITE	Escondido, California
START	8/25/21
END	8/25/21
SHEET NO.	14
DRILLING COMPANY	Cascade Drilling
DRILL METHOD	HQ (2½") Rock Coring System and Mud Rotary
LOGGED BY	JPS
REVIEWED BY	AKN
DRILLING EQUIPMENT	CME-95
BORING DIA. (in.)	4
TOTAL DEPTH (ft)	20
GROUND ELEV. (ft)	1023
SAMPLING METHOD	140-lb Hammer, 30-in Drop
NOTES	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$

DEPTH/ELEV. GROUND WATER (ft)
- AT TIME OF DRILLING ---
- AT END OF DRILLING ---
- AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
							5 inches of Asphalt Concrete (AC).
							FILL(Qf): CLAYEY SAND with GRAVEL (SC), medium dense, brown, dry, fine to coarse grained.
							GRANODIORITE OF JESMOND DEAN (Kjd): GRANODIORITE, soft to moderately hard rock, brown to reddish brown, phaneritic, massive, very intensely fractured, decomposed to intensely weathered, breaks down to SILTY SAND (SM), iron oxide and clay infill of fractures.
1020			RC	100	0		
	5						Disintegrated, decomposed.
			RC	100	0		
1015							
	10						
			RC	100	0		
1010							
	15						Seam of brown SANDY CLAY (CL)
			RC	100	0		
1005							
	20						Boring terminated at 20 feet

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LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	**B-10**

SITE	START	END	SHEET NO.
Escondido, California	8/26/21	8/26/21	15

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	JPS	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-95	4	20	1013	AT TIME OF DRILLING ---

SAMPLING METHOD	NOTES	
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~1.45N_{SPT}	AT END OF DRILLING --- AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
	0						6 inches of Asphalt Concrete (AC)	
		X					**FILL(Qf):** SILTY SAND (SM), medium dense, brown, moist, fine to coarse grained, chunks of SANDY SILT, trace gravels that break down with light hand pressure.	
1010		X					**OLD ALLUVIAL DEPOSITS (Qoal):** CLAYEY SAND (SC), medium dense, brown, moist, fine to medium grained.	PD, PI
	5							
1005			RC	90	0		**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, soft rock, brown to reddish brown, phaneritic, massive, disintegrated, decomposed, breaks down to CLAYEY SAND (SC).	
	10							
1000			RC	70	0			
	15						Very soft to moderately hard rock, very intensely to moderately fractured, decomposed to slightly weathered, iron oxide staining and clay infilling of fractures.	
			RC	85	15			COR
995							Very soft to hard rock, fractures dipping 60 degrees to subhorizontal.	
	20		RC	60	0			

Boring terminated at 20 feet

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LOG OF TEST BORING

ATLAS PROJECT NAME	Crossover Pipeline Interstate 15 Bypass	**ATLAS PROJECT NUMBER**	210112P6-1		**B-11**
SITE	Escondido, California	**START** 8/26/21	**END** 8/26/21	**SHEET NO.** 16	
DRILLING COMPANY	Cascade Drilling	**DRILL METHOD**	HQ (2½") Rock Coring System and Mud Rotary	**LOGGED BY** JPS	**REVIEWED BY** AKN
DRILLING EQUIPMENT	CME-95	**BORING DIA. (in.)** 4	**TOTAL DEPTH (ft)** 20	**GROUND ELEV. (ft)** 1003	**DEPTH/ELEV. GROUND WATER (ft)**
SAMPLING METHOD	140-lb Hammer, 30-in Drop	**NOTES**	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$		AT TIME OF DRILLING --- ; AT END OF DRILLING --- ; AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	MOISTURE (%)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
	0–0.5							6 inches of Asphalt Concrete (AC)	
1000	0.5–4	X						**FILL(Qf):** SILTY SAND (SM), medium dense, brown, dry to moist, fine to coarse grained, trace gravels.	
	4–5	X						**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, soft rock, gray to reddish brown, phaneritic, massive, disintegrated, decomposed, breaks down to SILTY SAND (SM). Very soft to hard rock, very intensely fractured to moderately fractured, decomposed to slightly weathered, subhorizontal fractures.	
995	5–10		RC	60	13				COR
990	10–15		RC	95	25	1.2		Intensely to slightly weathered, fractures dipping 45 degrees to subhorizontal, iron oxide staining and infilling of fractures.	
985	15–20		RC	68	50			Soft to very hard rock, intensely to very intensely fractured, decomposed to fresh, subhorizontal fractures.	

Boring terminated at 20 feet

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THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	B-12
Crossover Pipeline Interstate 15 Bypass	210112P6-1	

SITE	START	END	SHEET NO.
Escondido, California	8/19/21	8/19/21	17

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	DJM	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-85 LAR	4	20	995	AT TIME OF DRILLING 20.00 ft / Elev 975.00 ft

SAMPLING METHOD	NOTES	
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$	AT END OF DRILLING --- AFTER DRILLING ---

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
		X					**3 inches of Asphalt Concrete (AC) with 4 inches of Aggregate Base (AB)**	
							FILL (Qf): SILTY SAND (SM), dense, brown to gray brown, moist, fine to coarse grained.	
							Hand auger refusal at 2½ Feet on gravels/cobble/hard rock.	
							Harder drilling, cuttings change from gray to yellowish brown, resembles decomposed granite (DG).	
							GRANODIORITE OF JESMOND DEAN (Kjd): MONZOGRANITE, very soft to soft, dark gray to brown, phaneritic, massive, very intensely fractured to disintegrated, decomposed to very intensely weathered, breaks down to CLAYEY SAND (SC).	
990	5		SPT 73/3"					
							Very difficult drilling at 8½ Feet, switched to rock coring.	
			RC	100	100		GRANODIORITE, very hard rock, gray to light gray, phaneritic, massive, fresh, unfractured to slightly fractured, sealed fractures.	UC UC= 24420 psi
985	10						Massive to foliated, slightly fractured, fractures stained with iron oxide, fractures dipping approximately 70 to 10 degrees.	
			RC	100	98			PLSI, STS
980	15						Massive, unfractured to slightly fractured, one fracture dipping approximately 15 degrees.	
			RC	100	100			
975	20							

Boring terminated at 20 feet

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Figure

LOG OF TEST BORING

ATLAS PROJECT NAME Crossover Pipeline Interstate 15 Bypass		**ATLAS PROJECT NUMBER** 210112P6-1		**B-13**
SITE Escondido, California		**START** 8/26/21	**END** 8/26/21	**SHEET NO.** 18
DRILLING COMPANY Cascade Drilling	**DRILL METHOD** HQ (2½") Rock Coring System and Mud Rotary	**LOGGED BY** THC		**REVIEWED BY** AKN
DRILLING EQUIPMENT CME-85 LAR	**BORING DIA. (in.)** 4	**TOTAL DEPTH (ft)** 20	**GROUND ELEV. (ft)** 995	**DEPTH/ELEV. GROUND WATER (ft)**
SAMPLING METHOD 140-lb Hammer, 30-in Drop	**NOTES** Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$			∇ **AT TIME OF DRILLING** --- ▼ **AT END OF DRILLING** --- ∇ **AFTER DRILLING** ---

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
							5 inches of Asphalt Concrete (AC)
		X					**FILL (Qf):** SILTY SAND (SM), medium dense to dense, brown to gray brown, moist, fine to coarse grained, trace gravels that break down with light hand pressure.
			RC	100	15		**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, soft to hard rock, gray to reddish brown to bluish gray, phaneritic, massive, intensely fractured to disintegrated, slightly weathered to decomposed, breaks down to CLAYEY SAND (SC).
990	5						Hard to very hard rock, slightly fractured, intensely weathered to decomposed.
			RC	95	94		
985	10						Very hard rock, moderately fractured, slightly weathered to fresh, fractures dipping 80 degrees to subhorizontal.
			RC	100			
980	15						Very hard rock, slightly fractured, iron oxide staining, fractures dipping 40 to 60 degrees.
			RC	100	94		
975	20						Boring terminated at 20 feet

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LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	**B-14**

SITE	START	END	SHEET NO.
Escondido, California	8/18/21	8/19/21	19

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	DJM	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-85 LAR	4	50	1027	∇ AT TIME OF DRILLING 15.00 ft / Elev 1012.00 ft
				▼ AT END OF DRILLING 12.00 ft / Elev 1015.00 ft
				▼ AFTER DRILLING 18.00 ft / Elev 1009.00 ft

SAMPLING METHOD	NOTES
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	MOISTURE (%)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
		X						**FILL (Qf):** Poorly graded SAND (SP), very dense, brown to gray brown, moist, fine to coarse grained.	
1025								**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, very soft to moderately soft rock, gray to brown, phaneritic, massive, intensely very intensely fractured to disintegrated, weathered to decomposed, breaks down to CLAYEY SAND (SC), fractures dipping 45 degrees to subhorizontal, iron oxide staining in fractures, clay infill of fractures.	
			RC	100	68				
	5							Fractures dipping 45 to 30 degrees, iron oxide and clay infill of fractures.	
			RC	86	16				
1020								GRANODIORITE to MONZONITE, very soft to very hard rock, gray, very intensely fractured, slightly to intensely weathered, fractures dipping steeply to 45 degrees, iron oxide and clay infill of fractures.	
			RC	83	0				
	10							Very soft to moderately hard rock, gray to gray-brown, intensely weathered to decomposed, fractures dipping steeply to 20 degrees.	
			RC	94	0				
1015							▼	MONZONITE, very soft to very hard rock, gray to dark gray, phaneritic, massive, moderately fractured, fresh to intensely weathered, fractures dipping 70 degrees to subhorizontal, iron oxide and clay infill of fractures.	
			RC	93	28	2.0			
			RC	100	42			Moderately hard to hard rock, dark gray, foliated, intensely fractured, fresh to moderately weathered, fractures dipping 45 to 30 degrees, iron oxide and clay infill of fractures, foliation dipping 60 to 70 degrees.	
	15						∇	Hard to very hard rock, gray to dark gray, massive to slightly foliated, moderately to slightly fractured, fresh, fractures dipping 45 degrees to subhorizontal.	
1010									
			RC	100	92		▼		UC, PLSI, CAI, STS UC= 804 & 2790 psi

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LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	**B-14**

SITE	START	END	SHEET NO.
Escondido, California	8/18/21	8/19/21	20

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	DJM	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-85 LAR	4	50	1027	∇ AT TIME OF DRILLING 15.00 ft / Elev 1012.00 ft

SAMPLING METHOD	NOTES	
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$	▼ AT END OF DRILLING 12.00 ft / Elev 1015.00 ft
		▼ AFTER DRILLING 18.00 ft / Elev 1009.00 ft

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	MOISTURE (%)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
								GRANODIORITE OF JESMOND DEAN (Kjd): GRANODIORITE, very soft to moderately soft rock, gray to brown, phaneritic, massive, intensely very intensely fractured to disintegrated, weathered to decomposed, breaks down to CLAYEY SAND (SC), fractures dipping 45 degrees to subhorizontal, iron oxide staining in fractures, clay infill of fractures. *(continued)*	
1005			RC	75	83			Very soft to very hard rock, gray to light brown, massive, moderately fractured, fresh to very intensely weathered.	
			RC	94	67			Hard to very hard rock, gray, moderately to intensely fractured, fresh to slightly weathered.	
	25							Very soft to very hard rock, massive to foliated, intensely to very intensely fractured, fresh to decomposed.	
1000			RC	100	30				
	30		RC	100	100			Very hard rock, unfractured, fresh.	
								Foliated, moderately fractured.	
995			RC	100	80				
	35							MONZONITE to GRANODIORITE, very hard rock, gray to light gray, phaneritic, foliated to banded, moderately to intensely fractured, fresh to moderately weathered.	
			RC	100					
990					62.5				
			RC	100	53			MONZONITE, very hard rock, gray, phaneritic, foliated to massive, intensely fractured, fresh.	

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LOG OF TEST BORING

ATLAS PROJECT NAME	ATLAS PROJECT NUMBER	
Crossover Pipeline Interstate 15 Bypass	210112P6-1	B-14

SITE	START	END	SHEET NO.
Escondido, California	8/18/21	8/19/21	21

DRILLING COMPANY	DRILL METHOD	LOGGED BY	REVIEWED BY
Cascade Drilling	HQ (2½") Rock Coring System and Mud Rotary	DJM	AKN

DRILLING EQUIPMENT	BORING DIA. (in.)	TOTAL DEPTH (ft)	GROUND ELEV. (ft)	DEPTH/ELEV. GROUND WATER (ft)
CME-85 LAR	4	50	1027	∇ AT TIME OF DRILLING 15.00 ft / Elev 1012.00 ft

SAMPLING METHOD	NOTES	
140-lb Hammer, 30-in Drop	Hammer Efficiency = 87% N_{60}~$1.45N_{SPT}$	▼ AT END OF DRILLING 12.00 ft / Elev 1015.00 ft ▼ AFTER DRILLING 18.00 ft / Elev 1009.00 ft

ELEVATION (ft)	DEPTH (ft)	BULK SAMPLE	DRILL INTERVAL	RECOVERY %	RQD %	MOISTURE (%)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	LAB TESTS
			RC	100	72			**GRANODIORITE OF JESMOND DEAN (Kjd)**: GRANODIORITE, very soft to moderately soft rock, gray to brown, phaneritic, massive, intensely very intensely fractured to disintegrated, weathered to decomposed, breaks down to CLAYEY SAND (SC), fractures dipping 45 degrees to subhorizontal, iron oxide staining in fractures, clay infill of fractures. *(continued)*	
985								MONZONITE to GRANODIORITE, very hard rock, gray to light gray, phaneritic, foliated to banded, fresh, moderately to intensely fractured.	
			RC	100	80			GRANODIORITE, very hard rock, gray to light gray, phaneritic, massive, fresh, intensely to slighty fractured.	
	45							Slightly fractured.	
980									
			RC	100	95				
	50							Boring terminated at 50 feet	
975									
	55								
970									

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APPENDIX II
LABORATORY TESTING

Laboratory tests were performed to provide geotechnical parameters for engineering analyses. The following tests were conducted:

- **CLASSIFICATION:** Field classifications were verified in the laboratory by visual examination. The final soil classifications are in accordance with the Unified Soil Classification System.

- **IN SITU MOISTURE AND DENSITY:** The in-situ moisture content and dry unit weight were evaluated on samples collected from the borings. The test results are presented on the boring logs in Appendix I.

- **PARTICLE-SIZE DISTRIBUTION:** The particle-size distribution was evaluated on soil samples in accordance with ASTM D6913.

- **ATTERBERG LIMITS:** The Atterberg limits were evaluated on soil samples in accordance with ASTM D4318.

- **CORROSIVITY:** Corrosivity tests were performed on soil samples. The pH and minimum resistivity were evaluated in general accordance with California Test 643. The soluble sulfate content was evaluated in accordance with California Test 417. The total chloride ion content was evaluated in accordance with California Test 422.

- **DIRECT SHEAR:** This test was performed on a soil sample in accordance with ASTM D3080. The shear stress was applied to inundated samples at a constant rate of strain of 0.003 inch per minute.

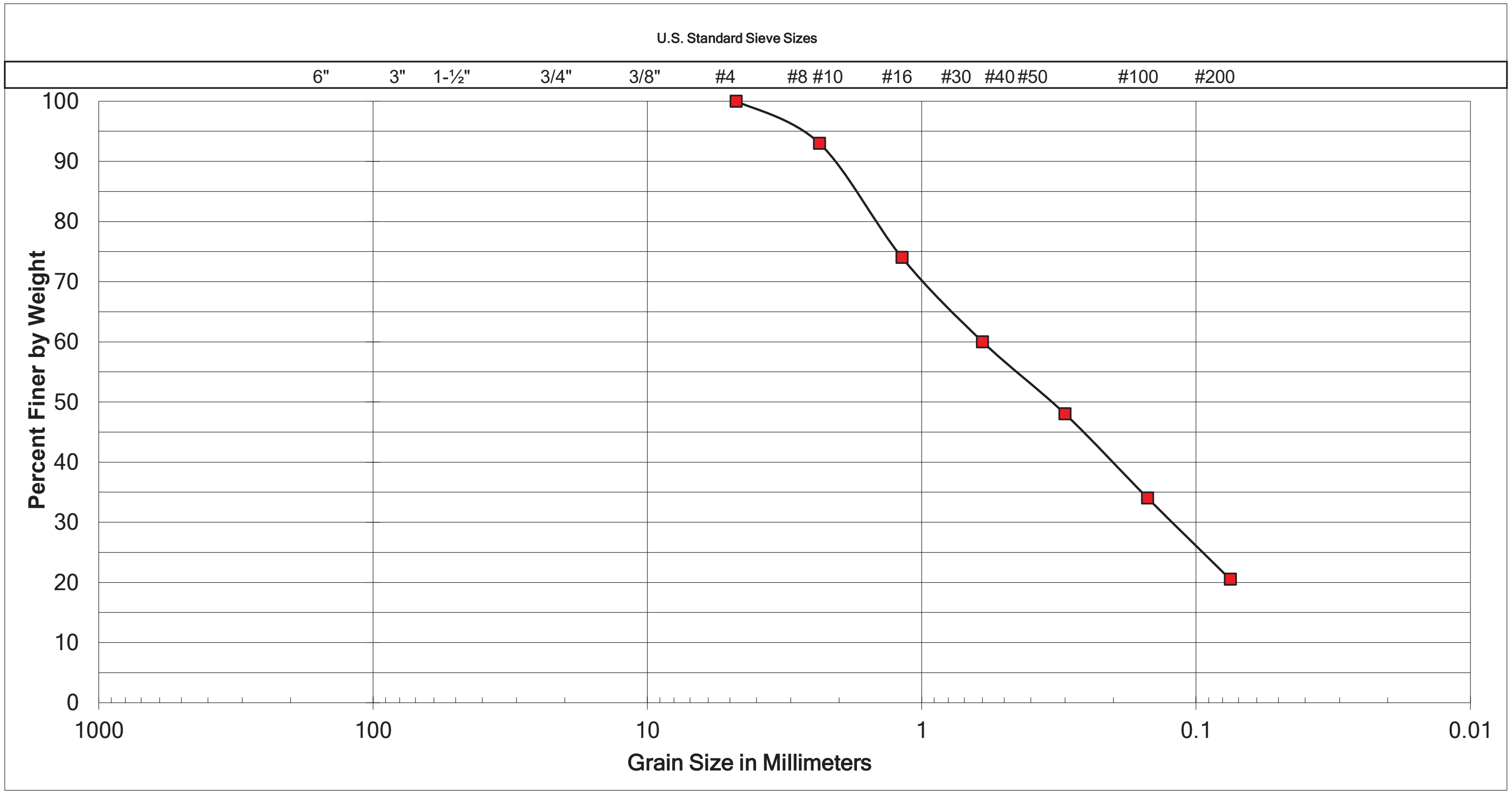
- **CERCHAR ABRASIVITY:** This test method determines the abrasiveness of rock by the CERCHAR Abrasiveness Index (CAI) method in accordance with ASTM D7625.

- **POINT LOAD STRENGTH INDEX:** This test method determines the point load strength index of rock in accordance with ASTM D5731.

- **SPLITTING TENSILE STRENGTH:** This test method is used in determining the splitting tensile strength of rock in accordance with ASTM D3967.

- **COMPRESSIVE STRENGTH:** This test method is used in determining the unconfined compression strength of a rock specimen in accordance with ASTM D7012.

Soil and rock samples not tested are now stored in our laboratory for future reference and analysis, if needed. Unless notified to the contrary, all samples will be disposed of 30 days from the date of this report.



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE LOCATION
B-1 at 15 to 20 Feet
SAMPLE NUMBER
68434

UNIFIED SOIL CLASSIFICATION:	SM
DESCRIPTION	SILTY SAND

ATTERBERG LIMITS	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP

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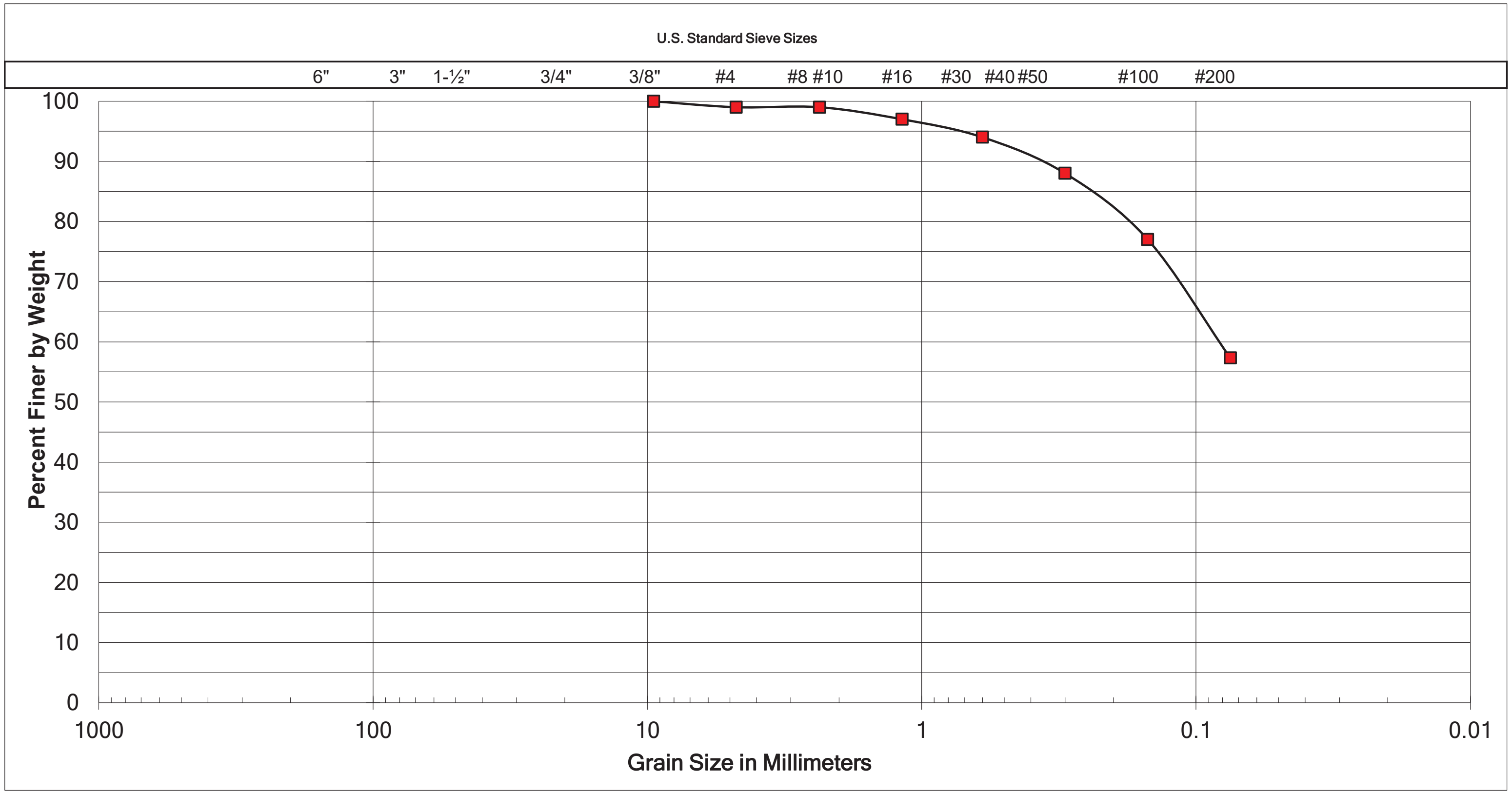
Crossover Pipeline Interstate 15 Bypass San Diego, California			
By:	JPS	Date:	February, 2022
Job Number:	210112P6-1	Figure:	II-1



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE LOCATION
B-3 at 5 to 8½ Feet
SAMPLE NUMBER
68438

UNIFIED SOIL CLASSIFICATION:	ML
DESCRIPTION	SANDY SILT

ATTERBERG LIMITS	
LIQUID LIMIT	NP
PLASTIC LIMIT	NP
PLASTICITY INDEX	NP

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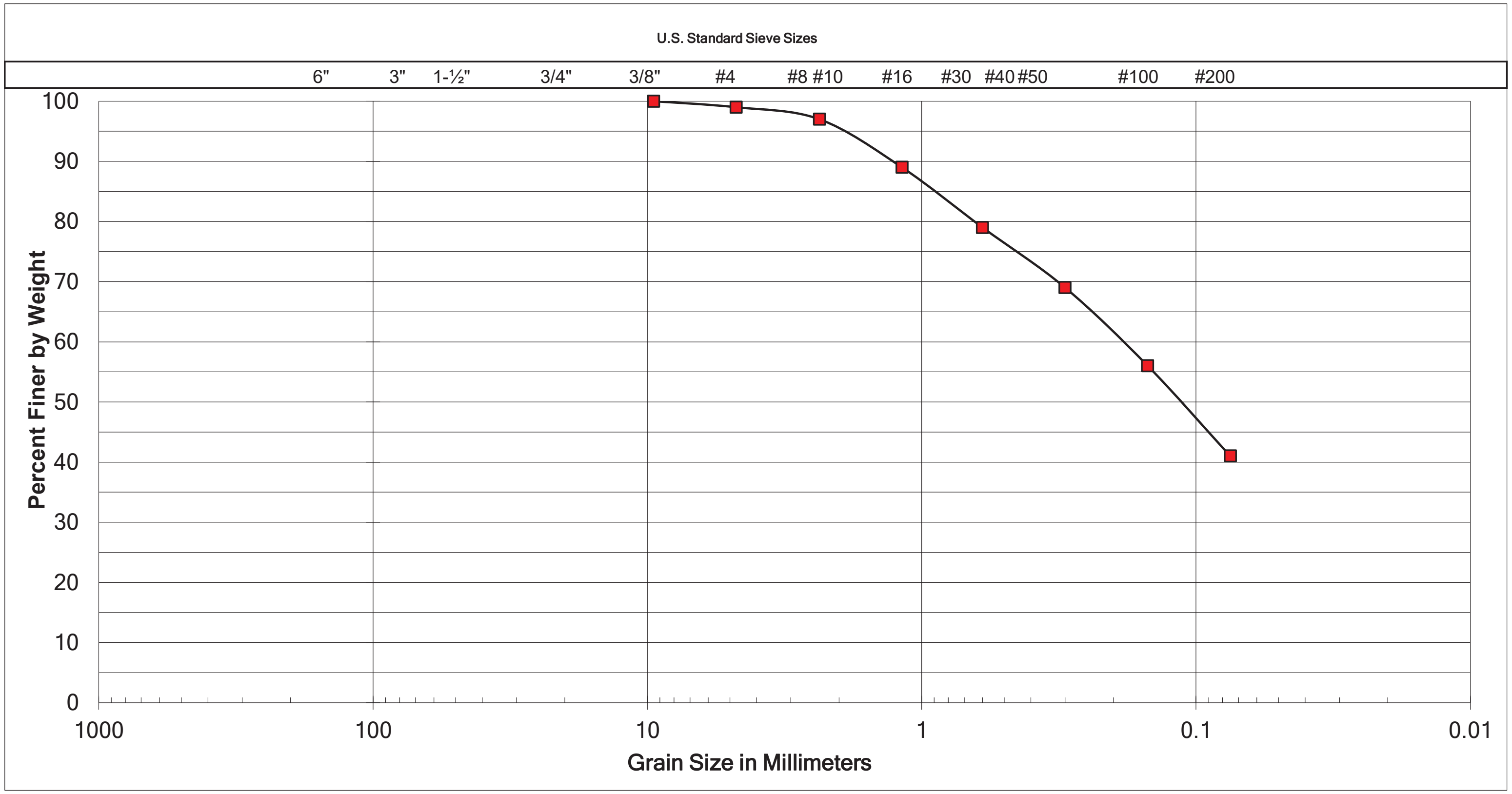
Crossover Pipeline Interstate 15 Bypass
San Diego, California

By:	JPS	Date:	February, 2022
Job Number:	210112P6-1	Figure:	II-2



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

SAMPLE LOCATION
B-10 at 2 to 5 Feet
SAMPLE NUMBER
68452

UNIFIED SOIL CLASSIFICATION:	SC
DESCRIPTION	CLAYEY SAND

ATTERBERG LIMITS	
LIQUID LIMIT	30
PLASTIC LIMIT	16
PLASTICITY INDEX	14

ATLAS

Crossover Pipeline Interstate 15 Bypass San Diego, California			
By:	JPS	Date:	February, 2022
Job Number:	210112P6-1	Figure:	II-3

RESISTIVITY, pH, SOLUBLE CHLORIDE and SOLUBLE SULFATE

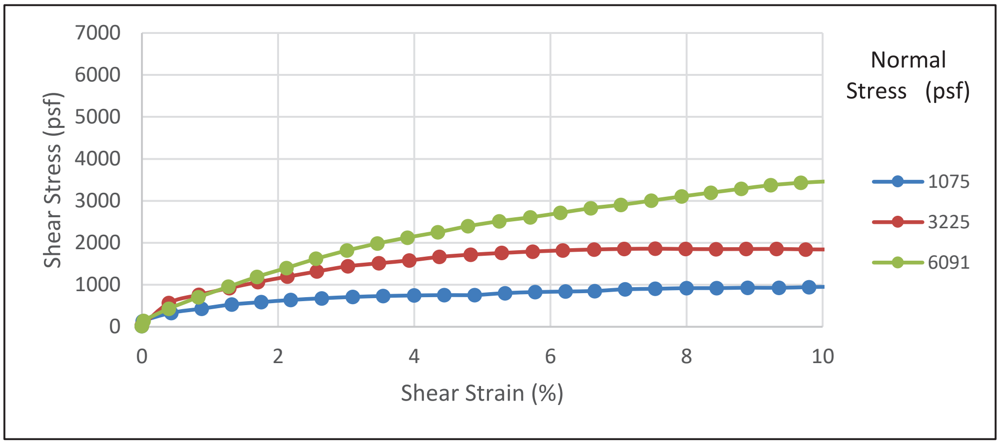
SAMPLE	RESISTIVITY (Ω-cm)	pH	CHLORIDE (%)	SULFATE (%)
B-1 at 5 to 8 Feet	2,040	7.28	0.004	0.007
B-2 at 15 to 18 Feet	2,020	7.74	0.005	0.004
B-5 at 5 to 10 Feet	6,120	8.31	0.003	0.002
B-8 at 15 to 20 Feet	2,730	7.87	0.003	0.005
B-10 at 15 to 18½ Feet	5,370	7.93	0.003	0.002
B-11 at 5 to 10 Feet	7,030	8.57	0.001	0.002

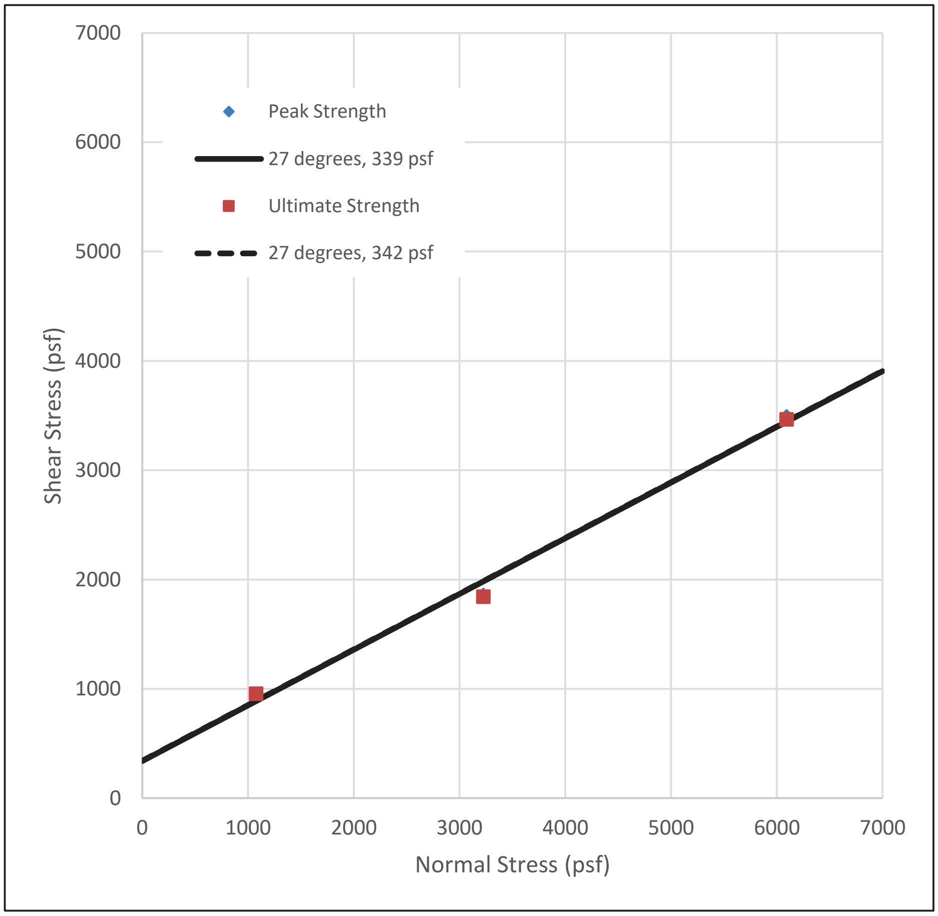
Water-Soluble Sulfate Exposure [2]

Water-Soluble Sulfate (SO_4) in soil (percent by weight)	Exposure Severity	Exposure Class	Cement Type (ASTM C150)	Max. W/C	Min. f_c' (psi)
$SO_4 < 0.10$	N/A	S0	No type restriction	N/A	2,500
$0.10 \leq SO_4 < 0.20$	Moderate	S1	II	0.50	4,000
$0.20 \leq SO_4 \leq 2.00$	Severe	S2	V	0.45	4,500
$SO_4 > 2.00$	Very Severe	S3	V plus pozzolan or slag cement	0.45	4,500

2. Modified from ACI 318-14 Table 19.3.1.1 and Table 19.3.2.1

ATLAS	Crossover Pipeline Interstate 15 Bypass San Diego, California		
	By: JPS	Date:	February, 2022
	Job Number: 210112P6-1	Figure:	II-4





		Peak	Ultimate
SAMPLE ID: B-8 at 4 to 5½ Feet	Φ	27 °	27 °
	c	339 psf	342 psf
GRANODIORITE OF JESMOND DENE (Kjd): CLAYEY SAND (SC)		Initial	Final
NOTES: Insitu	γ_d	111.4 pcf	111.4 pcf
Strain Rate: 0.003 in/min	w_c	5.5 %	17.9 %
Sample was consolidated and drained	Saturation	29 %	96 %

ATLAS

Crossover Pipeline Interstate 15 Bypass
San Diego, California

By:	DRB	Date:	February, 2022
Job Number:	210112P6-1	Figure:	II-5

Job Name: I-15 Crossover
Job Number: 210112P6
Tested By: CN
Test Date: October 11, 2021
Location: I-15 Crossover
Report Date: February 17, 2022

ASTM D7012 UNCONFINED COMPRESSIVE STRENGTH OF IN-TACT ROCK

Specimen I.D.:	B1@26.5 - 27'	B2@27.5 - 28'	B3@10.5 - 11'	B5@10 - 15'	B7@5 - 10'
Lab Number	68441	69149	68442	68447	68448
Date Tested	10/11/21	10/11/21	10/11/21	10/11/21	10/11/21
Tested Weight, g	843.5	1168.2	773.5	907.3	900.2
Tested Height, in.	5.88	5.89	5.93	5.94	5.96
Diameter, in.	2.40	2.40	2.38	2.38	2.39
Area, in^2	4.52	4.52	4.45	4.45	4.49
L/D Ratio (2.0 - 2.5)	2.45	2.45	2.49	2.50	2.49
Total Load, lbs	2,610	7,810	560	9,010	59620
Unconfined Compressive Strength, psi	577	1,726	126	2,025	13,289

Job Name: I-15 Crossover
Job Number: 210112P6
Tested By: CN
Test Date: October 11, 2021
Location: I-15 Crossover
Report Date: February 17, 2022

ASTM D7012 UNCONFINED COMPRESSIVE STRENGTH OF IN-TACT ROCK

Specimen I.D.:	B12@8.5-10'	B14@15-20'			
Lab Number	68459	68458			
Date Tested	10/11/21	10/11/21			
Tested Weight, g	1011.2	963.3			
Tested Height, in.	5.98	6.00			
Diameter, in.	2.40	2.40			
Area, in^2	4.52	4.52			
L/D Ratio (2.0 - 2.5)	2.49	2.50			
Total Load, lbs	110,380	12,600			
Unconfined Compressive Strength, psi	24,399	2,785			

GeoTesting EXPRESS

Client:	Atlas Technical Consultants LLC		
Project:	SDCWA Crossover Pipeline I-15 Bypass		
Location:	San Diego, CA	Project No:	GTX-314317

Boring ID:	B-1	Sample Type:	cylinder	Tested By:	tlm
Sample ID:	#1	Test Date:	10/06/21	Checked By:	smd
Depth :	20-25 ft	Test Id:	631653		

Test Comment: ---
Visual Description: ---
Sample Comment: ---

Abrasiveness of Rock Using the Cerchar Method by ASTM D7625

Boring ID	Sample ID	Depth	Stylus No	Reading 1	Reading 2	Average	Comments
B-1	#1	20-25 ft	1	0.2	1.1	0.65	
			2	0.7	0.6	0.65	
			3	0.5	0.7	0.60	
			4	0.6	0.3	0.45	
			5	0.2	0.3	0.25	
			Average CAIs			0.52	
			Average CAI *			0.99	
			CERCHAR Abrasiveness Index Classification			**Low abrasiveness**	

Notes

Test Surface: Saw Cut
Moisture Condition: As Received
Apparatus Type: Original CERCHAR
Stylus Hardness: Rockwell Hardess 40/42 HRC
Stylus Displacement Relative to Rock Fabric:
Styli 1-3: Normal; Styli 4-5: Parallel
* CAI = (0.99 * CAIs) + 0.48
CAIs = CERCHAR index for smooth (saw cut) surface
CAI = CERCHAR index for natural surface
Comments:

Client:	Atlas Technical Consultants LLC		
Project:	SDCWA Crossover Pipeline I-15 Bypass		
Location:	San Diego, CA	Project No:	GTX-314317

Boring ID:	B-2	Sample Type:	cylinder	Tested By:	tlm
Sample ID:	#2	Test Date:	10/06/21	Checked By:	smd
Depth :	20-24 ft	Test Id:	631654		

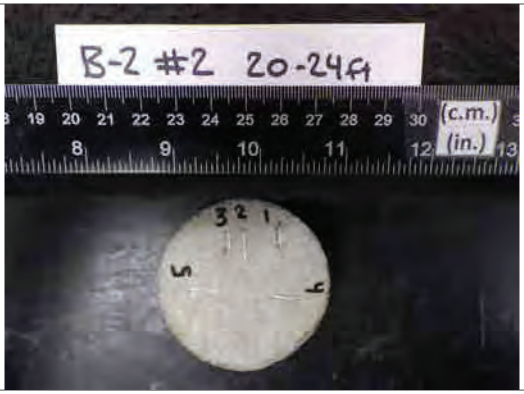
Test Comment: ---
Visual Description: ---
Sample Comment: ---

Abrasiveness of Rock Using the Cerchar Method by ASTM D7625

Boring ID	Sample ID	Depth	Stylus No	Reading 1	Reading 2	Average	Comments
B-2	#2	20-24 ft	1	0.4	0.5	0.45	
			2	0.6	0.2	0.40	
			3	0.4	0.9	0.65	
			4	1.0	1.3	1.15	
			5	0.7	0.5	0.60	
			Average CAIs			0.65	
			Average CAI *			1.12	
			CERCHAR Abrasiveness Index Classification			**Medium abrasiveness**	

Notes

Test Surface: Saw Cut
Moisture Condition: As Received
Apparatus Type: Original CERCHAR
Stylus Hardness: Rockwell Hardess 54/56 HRC
Stylus Displacement Relative to Rock Fabric:
Styli 1-3: Normal; Styli 4-5: Parallel
* CAI = (0.99 * CAIs) + 0.48
CAIs = CERCHAR index for smooth (saw cut) surface
CAI = CERCHAR index for natural surface
Comments:



GeoTesting EXPRESS

Client: Atlas Technical Consultants LLC
Project: SDCWA Crossover Pipeline I-15 Bypass
Location: San Diego, CA — Project No: GTX-314317

Boring ID: B-3 — Sample Type: cylinder — Tested By: tlm
Sample ID: #3 — Test Date: 10/06/21 — Checked By: smd
Depth : 13.5-14.5 ft — Test Id: 631655

Test Comment: ---
Visual Description: ---
Sample Comment: ---

Abrasiveness of Rock Using the Cerchar Method by ASTM D7625

Boring ID	Sample ID	Depth	Stylus No	Reading 1	Reading 2	Average	Comments
B-3	#3	13.5-14.5 ft	1	0.4	0.2	0.30	
			2	0.2	0.1	0.15	
			3	0.2	0.1	0.15	
			4	0.3	0.2	0.25	
			5	0.2	0.2	0.20	
			Average CAIs			0.21	
			Average CAI *			0.69	
CERCHAR Abrasiveness Index Classification						**o abrasiveness**	

Notes

Test Surface: Saw Cut
Moisture Condition: As Received
Apparatus Type: Original CERCHAR
Stylus Hardness: Rockwell Hardess 54/56 HRC
Stylus Displacement Relative to Rock Fabric:
Styli 1-3: Normal; Styli 4-5: Parallel
* CAI = (0.99 * CAIs) + 0.48
CAIs = CERCHAR index for smooth (saw cut) surface
CAI = CERCHAR index for natural surface
Comments:

Client:	Atlas Technical Consultants LLC
Project:	SDCWA Crossover Pipeline I-15 Bypass
Location:	San Diego, CA
Project No:	GTX-314317
Boring ID:	B-12
Sample ID:	#4
Depth :	11-15 ft
Sample Type:	cylinder
Test Date:	10/06/21
Test Id:	631656
Tested By:	tlm
Checked By:	smd
Test Comment:	---
Visual Description:	---
Sample Comment:	---

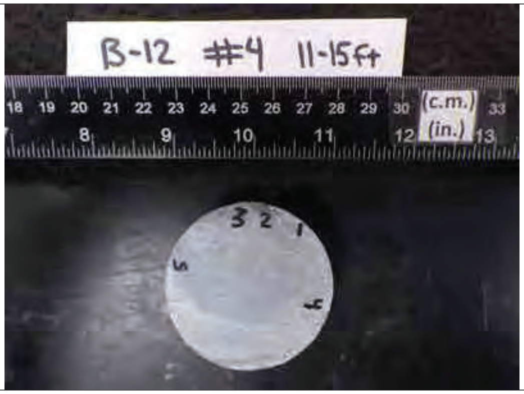
Abrasiveness of Rock Using the Cerchar Method by ASTM D7625

Boring ID	Sample ID	Depth	Stylus No	Reading 1	Reading 2	Average	Comments
B-12	#4	11-15 ft	1	3.5	3.2	3.35	
			2	2.9	3.4	3.15	
			3	4.1	4.3	4.20	
			4	2.9	3.6	3.25	
			5	3.0	3.5	3.25	
			Average CAIs			3.44	
			Average CAI *			3.89	

CERCHAR Abrasiveness Index Classification | **High abrasiveness**

Notes

Test Surface: Saw Cut
Moisture Condition: As Received
Apparatus Type: Original CERCHAR
Stylus Hardness: Rockwell Hardess 54/56 HRC
Stylus Displacement Relative to Rock Fabric:
Styli 1-3: Normal; Styli 4-5: Parallel
* CAI = (0.99 * CAIs) + 0.48
CAIs = CERCHAR index for smooth (saw cut) surface
CAI = CERCHAR index for natural surface
Comments:



GeoTesting EXPRESS

Client:	Atlas Technical Consultants LLC		
Project:	SDCWA Crossover Pipeline I-15 Bypass		
Location:	San Diego, CA	Project No:	GTX-314317
Boring ID: B-14	Sample Type: cylinder	Tested By:	tlm
Sample ID: #5	Test Date: 10/06/21	Checked By:	smd
Depth : 15-20 ft	Test Id: 631657		

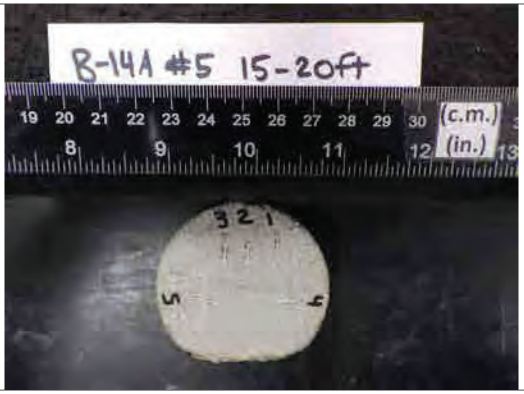
Test Comment: ---
Visual Description: ---
Sample Comment: ---

Abrasiveness of Rock Using the Cerchar Method by ASTM D7625

Boring ID	Sample ID	Depth	Stylus No	Reading 1	Reading 2	Average	Comments
B-14A	#5	15-20 ft	1	1.1	1.4	1.25	
			2	0.9	1.2	1.05	
			3	1.0	1.0	1.00	
			4	0.1	0.5	0.30	
			5	1.0	0.5	0.75	
			Average CAIs			0.87	
			Average CAI *			1.34	
			CERCHAR Abrasiveness Index Classification			**Medium abrasiveness**	

Notes

Test Surface: Saw Cut
Moisture Condition: As Received
Apparatus Type: Original CERCHAR
Stylus Hardness: Rockwell Hardess 54/56 HRC
Stylus Displacement Relative to Rock Fabric:
Styli 1-3: Normal; Styli 4-5: Parallel
* CAI = (0.99 * CAIs) + 0.48
CAIs = CERCHAR index for smooth (saw cut) surface
CAI = CERCHAR index for natural surface
Comments:



GeoTesting EXPRESS

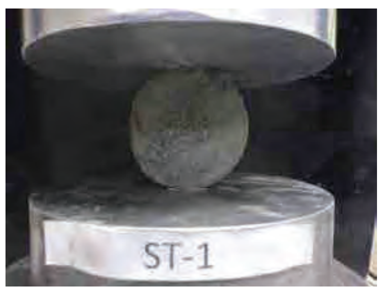
Client: Atlas Technical Consultants LLC
Project: SDCWA Crossover Pipeline I-15 Bypass
Location: San Diego, CA | Project No: GTX-314317

Boring ID:	B-1	Sample Type:	cylinder	Tested By:	tlm
Sample ID:	#1	Test Date:	09/22/21	Checked By:	smd
Depth :	20-25 ft	Test Id:	631662		

Test Comment: ---
Visual Description: ---
Sample Comment: ---

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	est No	hic ness in	Diameter D in	hic ness to Diameter Ratio D	ailure oad lbs	Splitting ensile Strength psi	ailure ype
20-25 ft	ST-1	1.09	2.42	0.45	19	5	1



Notes: Strain rate: 2.5 /min.

ASTM re uires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure
(See attached photographs)

GeoTesting EXPRESS

Client: Atlas Technical Consultants LLC
Project: SDCWA Crossover Pipeline I-15 Bypass
Location: San Diego, CA   Project No: GTX-314317

Boring ID: B-2   Sample Type: cylinder   Tested By: tlm
Sample ID: #2   Test Date: 09/22/21   Checked By: smd
Depth : 20-24 ft   Test Id: 631663

Test Comment: ---
Visual Description: ---
Sample Comment: ---

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	est No	hic ness in	Diameter D in	hic ness to Diameter Ratio D	ailure oad lbs	Splitting ensile Strength psi	ailure ype
20-24 ft	ST-2	1.12	2.4	0.47	269	064	1

Notes: Strain rate: 2.5 /min.

ASTM re uires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure
(See attached photographs)

GeoTesting EXPRESS

Client:	Atlas Technical Consultants LLC		
Project:	SDCWA Crossover Pipeline I-15 Bypass		
Location:	San Diego, CA	Project No:	GTX-314317
Boring ID: B-12	Sample Type: cylinder	Tested By:	tlm
Sample ID: #4	Test Date: 09/22/21	Checked By:	smd
Depth : 11-15 ft	Test Id: 631664		
Test Comment: ---			
Visual Description: ---			
Sample Comment: ---			

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	est No	hic ness in	Diameter D in	hic ness to Diameter Ratio D	ailure oad lbs	Splitting ensile Strength psi	ailure ype
11-15 ft	ST-3	0.97	2.41	0.40	6,328	1,720	1

Notes: Strain rate: 2.5 /min.

ASTM re uires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure
(See attached photographs)

GeoTesting EXPRESS

Client: Atlas Technical Consultants LLC
Project: SDCWA Crossover Pipeline I-15 Bypass
Location: San Diego, CA
Project No: GTX-314317

Boring ID: B-14	Sample Type: cylinder	Tested By: tlm
Sample ID: #5	Test Date: 09/22/21	Checked By: smd
Depth : 15-20 ft	Test Id: 631665	

Test Comment: ---
Visual Description: ---
Sample Comment: ---

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	est No	hic ness in	Diameter D in	hic ness to Diameter Ratio D	ailure oad lbs	Splitting ensile Strength psi	ailure ype
15-20 ft	ST-4	0.89	2.41	0.37	755	224	1

Notes: Strain rate: 2.5 /min.

ASTM re uires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

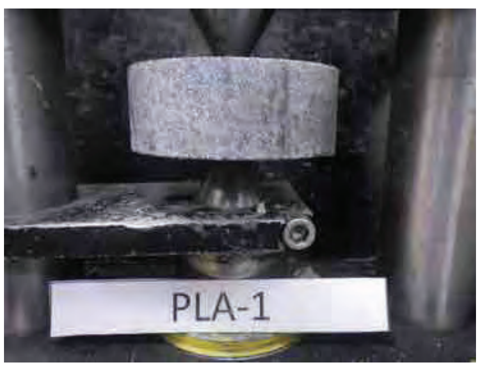
Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure
(See attached photographs)

GeoTesting
EXPRESS

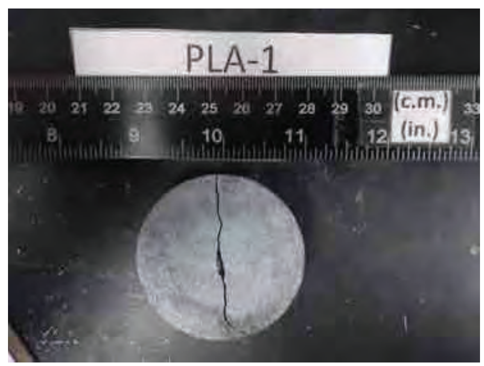
Client:	Atlas Technical Consultants LLC
Project:	SDCWA Crossover Pipeline I-15 Bypass
Location:	San Diego, CA
Project No:	GTX-314317
Boring ID:	B-12
Sample ID:	#4
Depth :	11-15 ft
Sample Type:	cylinder
Test Date:	09/21/21
Test Id:	631661
Tested By:	tlm
Checked By:	smd
Test Comment:	---
Visual Description:	---
Sample Comment:	---

Axial Point Load Strength Index of Rock by ASTM D5731

est No	Specimen Depth	Diameter in	hic ness in	ailure oad lbs	De s in	De in	Is psi		Is mm psi	enerali ed Correction actor	Estimated Compressive Strength psi
PLA-1	11-15 ft	2.41	0.92	3,534	2.82	1.68	1253	0.931	1167	18	22,600



Before



After

Intact Material Failure

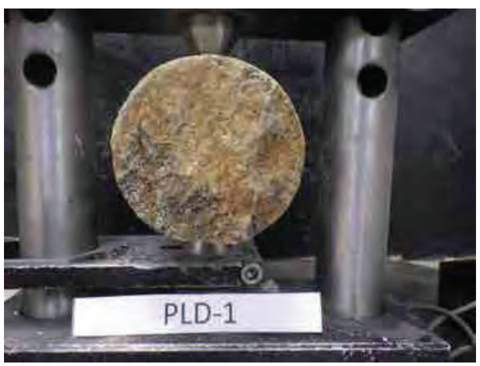
Notes: Generali ed correction factor, , used to estimate the compressive strength based on the specimen depth and ASTM D5731 Table 1.
The reported thickness (L) is the average of three measurements.
The reported diameter(D) is the average of three measurements.
De = the e uivalent core diameter
Is = the uncorrected point load strength index
F = the si e correction factor
Is(50) = the si e corrected point load strength index

GeoTesting
EXPRESS

Client: Atlas Technical Consultants LLC			
Project: SDCWA Crossover Pipeline I-15 Bypass			
Location: San Diego, CA		Project No:	GTX-314317
Boring ID: B-1	Sample Type: cylinder	Tested By:	tlm
Sample ID: #1	Test Date: 09/21/21	Checked By:	smd
Depth : 20-25 ft	Test Id: 631658		
Test Comment: ---			
Visual Description: ---			
Sample Comment: ---			

DIAMETRAL Point Load Strength Index of Rock by ASTM D5731

est No	Specimen Depth	Diameter in	hic ness in	ailure oad lbs	De s in	De in	Is psi		Is mm psi	enerali ed Correction actor	Estimated Compressive Strength psi
PLD-1	20-25 ft	2.39	4.52	099	5.69	2.39	17	1.090	19	24.5	426



Before

After

Intact Material Failure

Notes: Generali ed correction factor, , used to estimate the compressive strength based on the specimen depth and ASTM D5731 Table 1.
The reported thickness (L) is the average of three measurements.
The reported diameter(D) is the average of three measurements.
De = the e uivalent core diameter
Is = the uncorrected point load strength index
F = the si e correction factor
Is(50) = the si e corrected point load strength index

GeoTesting
EXPRESS

Client:	Atlas Technical Consultants LLC		
Project:	SDCWA Crossover Pipeline I-15 Bypass		
Location:	San Diego, CA	Project No:	GTX-314317
Boring ID: B-2	Sample Type: cylinder	Tested By:	tlm
Sample ID: #2	Test Date: 09/21/21	Checked By:	smd
Depth : 20-24 ft	Test Id: 631659		
Test Comment: ---			
Visual Description: ---			
Sample Comment: ---			

DIAMETRAL Point Load Strength Index of Rock by ASTM D5731

est No	Specimen Depth	Diameter in	hic ness in	ailure oad lbs	De s in	De in	Is psi		Is mm psi	enerali ed Correction actor	Estimated Compressive Strength psi
PLD-2	20-24 ft	2.4	4.74	1,432	5.74	2.40	249	1.093	272	24.5	6,110

Before

After

Intact Material Failure

Notes: Generali ed correction factor, , used to estimate the compressive strength based on the specimen depth and ASTM D5731 Table 1.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

De = the e uivalent core diameter

Is = the uncorrected point load strength index

F = the si e correction factor

Is(50) = the si e corrected point load strength index

GeoTesting EXPRESS

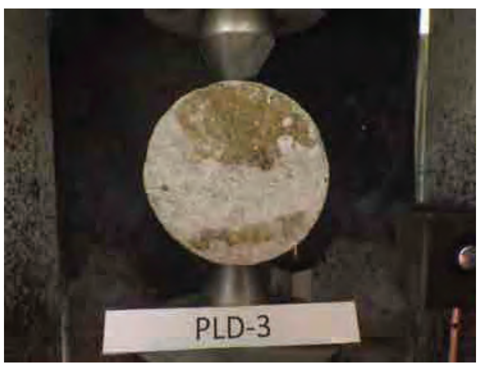
Client: Atlas Technical Consultants LLC
Project: SDCWA Crossover Pipeline I-15 Bypass
Location: San Diego, CA — Project No: GTX-314317

Boring ID: B-14 — Sample Type: cylinder — Tested By: tlm
Sample ID: #5 — Test Date: 09/23/21 — Checked By: smd
Depth : 15-20 ft — Test Id: 631660

Test Comment: ---
Visual Description: ---
Sample Comment: ---

DIAMETRAL Point Load Strength Index of Rock by ASTM D5731

est No	Specimen Depth	Diameter in	hic ness in	ailure oad lbs	De s in	De in	Is psi		Is mm psi	enerali ed Correction actor	Estimated Compressive Strength psi
PLD-3	15-20 ft	2.41	3.05	303	5.80	2.41	52	1.095	57	24.5	1,280



Before

After

Intact Material Failure

Notes: Generali ed correction factor, , used to estimate the compressive strength based on the specimen depth and ASTM D5731 Table 1.
The reported thickness (L) is the average of three measurements.
The reported diameter(D) is the average of three measurements.
De = the e uivalent core diameter
Is = the uncorrected point load strength index
F = the si e correction factor
Is(50) = the si e corrected point load strength index

GeoTesting EXPRESS

Client:	Atlas Technical Consultants LLC				
Project:	SDCWA Crossover Pipeline I-15 Bypass				
Location:	San Diego, CA			Project No:	GTX-314317
Boring ID:	B-14	Sample Type:	cylinder	Tested By:	tlm
Sample ID:	#5	Test Date:	10/06/21	Checked By:	smd
Depth :	15-20 ft	Test Id:	631667		
Test Comment:	---				
Visual Description:	See photograph(s)				
Sample Comment:	---				

Bulk Density and Compressive Strength of Rock Core Specimens by ASTM D7012 Method C

Boring ID	Sample Number	Depth	Bul Density pcf	Compressive strength psi	ailure ype	Meets AS M D	Note s
B-14A	#5	15-20 ft	169	804	2	es	---

Notes: Density determined on core samples by measuring dimensions and weight and then calculating.

All specimens tested at the approximate as-received moisture content and at standard laboratory temperature.

The axial load was applied continuously at a stress rate that produced failure in a test time between 2 and 15 minutes.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure
(See attached photographs)

Client:	Atlas Technical Consultants LLC	Test Date:	10/5/2021
Project Name:	SDCWA Crossover Pipeline I-15 Bypass	Tested By:	ak
Project Location:	San Diego, CA	Checked By:	smd
GTX #:	314317		
Boring ID:	B-14		
Sample ID:	#5		
Depth:	15-20 ft		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average		
Specimen Length, in:	5.61	5.61	5.61		
Specimen Diameter, in:	2.41	2.41	2.41		
Specimen Mass, g:	1135.62				
Bulk Density, lb/ft^3	169			**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.3			**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:

Is the maximum gap $\leq$ 0.02 in.? YES

Maximum difference must be < 0.020 in.

Straightness Tolerance Met? YES

END FLATNESS AND PARALLELISM (Procedure FP1)

END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00010	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00010	-0.00020	-0.00030
Diameter 2, in (rotated 90^o)	-0.00020	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010

Difference between max and min readings, in:

0° = 0.00040 90° = 0.00030

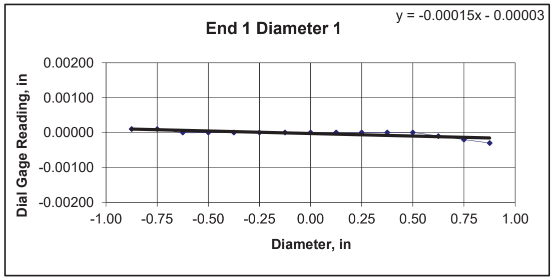
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00030	0.00020	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00010
Diameter 2, in (rotated 90^o)	0.00030	0.00030	0.00030	0.00020	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

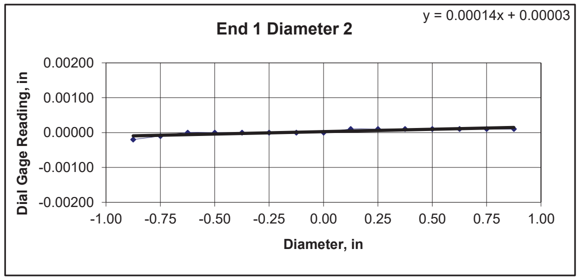
Difference between max and min readings, in:

0° = 0.0004 90° = 0.0003

Maximum difference must be < 0.0020 in. Difference = $\pm$ 0.00020

Flatness Tolerance Met? YES





DIAMETER 1

End 1:

Slope of Best Fit Line	0.00015
Angle of Best Fit Line:	0.00835

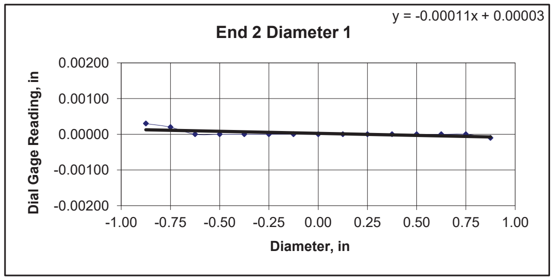
End 2:

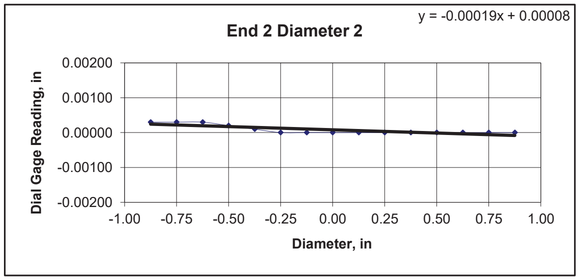
Slope of Best Fit Line	0.00011
Angle of Best Fit Line:	0.00655

Maximum Angular Difference: 0.00180

Parallelism Tolerance Met? YES

Spherically Seated





DIAMETER 2

End 1:

Slope of Best Fit Line	0.00014
Angle of Best Fit Line:	0.00786

End 2:

Slope of Best Fit Line	0.00019
Angle of Best Fit Line:	0.01064

Maximum Angular Difference: 0.00278

Parallelism Tolerance Met? YES

Spherically Seated

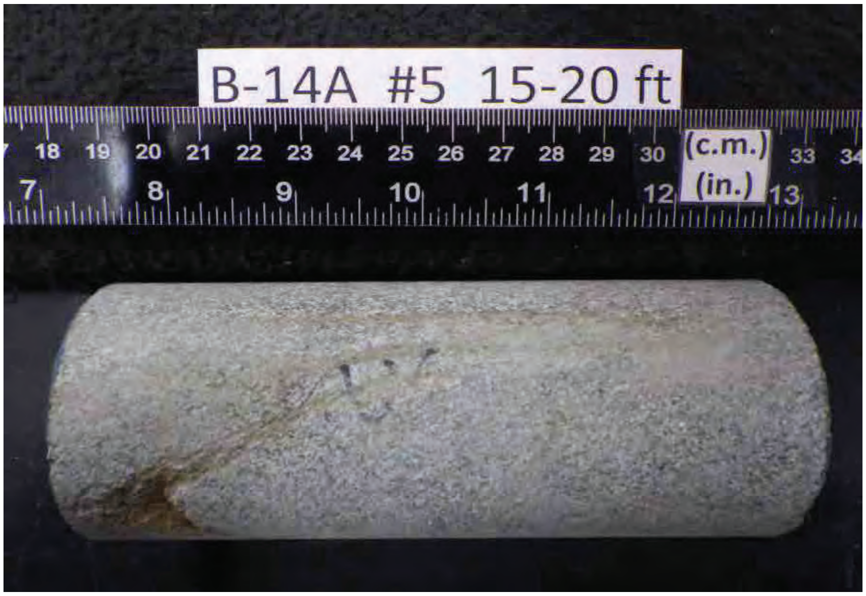
PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00040	2.410	0.00017	0.010	YES
Diameter 2, in (rotated 90^o)	0.00030	2.410	0.00012	0.007	YES
END 2					
Diameter 1, in	0.00040	2.410	0.00017	0.010	YES
Diameter 2, in (rotated 90^o)	0.00030	2.410	0.00012	0.007	YES

Maximum angle of departure must be $\leq$ 0.25°

Perpendicularity Tolerance Met? YES

Client:	Atlas Technical Consultants, LLC
Project Name:	SDCWA Crossover Pipeline I-15 Bypass
Project Location:	San Diego, CA
GTX #:	314317
Test Date:	10/6/2021
Tested By:	ak
Checked By:	smd
Boring ID:	B-14
Sample ID:	#5
Depth, ft:	15-20 ft



After cutting and grinding

After break

APPENDIX III
GEOPHYSICAL SURVEY

GEOPHYSICAL EVALUATION

DESIGN OF CROSSOVER PIPELINE INTERSTATE 15 BYPASS PROJECT

SAN DIEGO COUNTY WATER AUTHORITY

San Diego County, California

PREPARED FOR:

Mr. J.P. Semper
Brown and Caldwell
450 B Street, 15th Floor
San Diego, California 92101

PREPARED BY:

Atlas Technical Consultants LLC
6280 Riverdale Street
San Diego, California 92120

February 14, 2022

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February 14, 2022

Atlas No. 210112P6
Report No. 1R

MR. J.P. SEMPER
BROWN AND CALDWELL.
450 B STREET, 15TH FLOOR
SAN DIEGO, CALIFORNIA 92101

Subject: Geophysical Evaluation
Design of Crossover Pipeline Interstate 15 Bypass Project
San Diego County Water Authority
San Diego County, California

Dear Mr. Semper:

In accordance with your authorization, Atlas Technical Consultants (Atlas) has performed a geophysical evaluation pertaining to the Design of Crossover Pipeline Interstate 15 Bypass Project in San Diego County, California. The primary purpose of our study was to develop subsurface shear-wave velocity profiles and characterize subsurface geologic conditions beneath portions of the project site through the collection of seismic Refraction Microtremor (ReMi) and Multichannel Analysis of Surface Wave (MASW) data. Specifically, our services included the performance of twelve one-dimensional (1-D) ReMi and twelve 1-D MASW shear-wave velocity profiles using active and passive sources at the site. Our study was conducted on September 9th, 10th and 13th of 2021. This report presents the survey methodology, equipment used, analysis, and findings.

We appreciate the opportunity to be of service on this project. If you have any questions, please call us at (619) 280-4321.

Respectfully submitted,
Atlas Technical Consultants LLC

Orion Adah
Senior Staff Geophysicist

REGISTERED PROFESSIONAL GEOPHYSICIST
PATRICK F. LEHRMANN
No. 1043
Exp. 1/31/2022
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Principal Geologist/Geophysicist

OAA:ATP:PFL:ds

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CONTENTS

FIGURES

1. INTRODUCTION

In accordance with your authorization, Atlas Technical Consultants (Atlas) has performed a geophysical evaluation pertaining to the Design of Crossover Pipeline Interstate 15 Bypass Project in San Diego County, California (Figure 1). The primary purpose of our study was to develop subsurface shear-wave velocity profiles and characterize subsurface geologic conditions beneath portions of the project site through the collection of seismic Refraction Microtremor (ReMi) and Multichannel Analysis of Surface Wave (MASW) data. Specifically, our services included the performance of twelve one-dimensional (1-D) ReMi and twelve 1-D MASW shear-wave velocity profiles using active and passive sources at the site. Our study was conducted on September 9th, 10th and 13th of 2021.This report presents the survey methodology, equipment used, analysis, and findings.

2. SCOPE OF SERVICES

Our scope of services included:

- Performance of twelve 1-D ReMi profiles.
- Performance of twelve 1-D MASW profiles.
- Compilation and analysis of the collected data.
- Preparation of this report presenting our methodology and findings.

3. SITE AND PROJECT DESCRIPTION

The project is located along the frontage road of Interstate 15 north of Escondido in San Diego County, California (Figure 1). The seismic lines were located along the edge of the frontage roads on either side of the Interstate 15. Specifically, one traverse was located to the west and eleven traverses were located east of the freeway.

4. STUDY METHODOLOGY

Our evaluation included the performance of twelve 1-D ReMi and twelve 1-D MASW profiles along portions of the Interstate 15 freeway. The following sections detail the methods and instrumentations used.

4.1 Refraction Microtremor (ReMi)

The passive source 1-D ReMi technique uses recorded surface waves (specifically Rayleigh waves) that are contained in background noise to develop a Shear-wave velocity profile of the study area down to a depth, in this case, of approximately 50 feet below ground surface (bgs). The depth of exploration is dependent on the length of the line and the frequency content of the background noise. The results of the ReMi method are displayed as a one-dimensional sounding which represents the average condition across the length of the line. The ReMi method does not require an increase of material velocity with depth; therefore, low-velocity zones (velocity inversions) are detectable with ReMi.

Our ReMi survey included the use of a 24-channel Geometrics Geode seismograph and 24, 14 Hz vertical component geophones along the profile. The geophones were spaced 5 feet apart for a total line length of 125 feet. Fifteen records, each 32 seconds long, were recorded and then downloaded to a computer. The data was later processed using Surface Plus 9.1 - Advanced Surface Wave Processing Software (Geogiga Technology Corp., 2020), which uses the refraction microtremor method (Louie, 2001), and other surface wave analysis methods. The program generates phase-velocity dispersion curves for each record and provides an interactive dispersion modeling tool where the users determine the best fitting model. The result is a 1-D shear wave velocity model of the site with roughly 85 to 95 percent accuracy. Figure 2 illustrates the approximate sounding locations, while Figure 3 depicts the general site conditions in the study area.

4.2 Multichannel Analysis of Surface Wave (MASW)

The active source 1-D MASW method is based on the collection of seismic surface waves (specifically Rayleigh waves) which develop a 1-D Shear-wave (S-wave) velocity profile of the study area. The results of the 1-D MASW method are displayed as a one-dimensional sounding which represents the average condition across the length of the line. The surface waves were generated by a hammer and plate (shot) and were recorded using a 24-channel Geometrics Geode seismograph and 24, 14-Hz vertical component geophones. Geophones were spaced 5 feet apart along the profile for a total line length of 125 feet. Off-set shots were conducted at 5, 10, 15, 20 and 25 feet off the ends of lines ML-1 through ML-4, and 20, 25, 30, 35 and 40 feet off the ends of lines ML-5 through ML-12. Three records were recorded at each shot location for a period one second each. The data was evaluated at each shot location for near and far-field effects. The optimum offset-shot data was then combined with 15 records of recoded passive data and evaluated for our study. Figures 1 and 2 illustrate the approximate sounding location, while Figure 3 depicts the general site conditions in the study area.

The recorded data were processed using SurfSeis® (Kansas Geological Survey, 2012), a Multichannel Analysis of Surface Waves (MASW) software program. 1-D S-wave velocity (Vs) profiles were generated for each shot location, which corresponds to the middle of the geophone array (midpoint solution).

5. RESULTS AND CONCLUSIONS

As previously discussed, the purpose of our study was to develop subsurface shear-wave velocity profiles and to characterize the general subsurface geologic at the project site through collection of seismic ReMi and MASW data. The 1-D ReMi and MASW models present the average shear wave velocities calculated across the length of each line at their respective midpoints. Due to the active source used for the MASW profiles, the MASW results provide better near-surface resolution than the ReMi method. However, the MASW results may have been in adversely affected by noise from passing vehicle traffic along Interstate 15 during the study. The results from the 1-D ReMi and MASW evaluations are presented in Table 1, Figures 4a through 4l, and Figures 5a through 5l, respectively. In general, the results of the ReMi data have a moderate degree of correlation with the results of the MASW data. Variations are notable between specific depth and shear-wave velocities. It should be noted that data collected for ML-10 could not be interpreted due to a high level of background noise possibly caused by vehicle traffic at the time of the study.

Table 1 – ReMi and MASW Results

Line No.	Depth (feet)	Shear Wave Velocity (feet/second)	Average Shear-Wave Velocity *Vs* (Depth) Feet
RL-1	0 – 6	374	817 (50)
	6 – 13	964	
	13 – 17	920	
	17 – 23	1,039	
	23 – 30	2,124	
	30 - 50	2,281	
ML-1	0 – 2	587	957 (55)
	2 – 4	632	
	4 – 7	405	
	7 – 10	680	
	10 – 15	1,101	
	15 – 20	1,037	
	20 – 27	689	
	27 – 36	1,058	
	36 – 46	1,519	
	46 – 55	2,025	
RL-2	0 – 5	616	1376 (50)
	5 – 13	1,135	
	13 – 17	1,092	
	17 – 22	1,070	
	22 – 29	2,133	
	29 - 50	2,239	
ML-2	0 - 3	1,957	2,574 (100)
	3 – 7	2,136	
	7 – 12	2,161	
	12 – 19	1,847	
	19 – 27	1,340	
	27 – 37	1,578	
	37 – 49	2,883	
	49 – 65	3,869	
	65 – 84	3,876	
	84 - 100	4,082	

Table 1 – ReMi and MASW Results (Continued)

Line No.	Depth (feet)	Shear Wave Velocity (feet/second)	Average Shear-Wave Velocity *Vs* (Depth) Feet
RL-3	0 – 3	577	1694 (50)
	3 – 5	822	
	5 – 9	1,215	
	9 – 19	1,463	
	19 – 25	2,498	
	25 - 50	2,603	
ML-3	0 – 3	1,073	2,737 (100)
	3 – 7	2,132	
	7 – 12	2,753	
	12– 19	725	
	19 – 26	1,520	
	26 – 36	3,577	
	36 – 49	4,055	
	49 – 64	4,290	
	64 – 83	4,671	
	83 -100	6,857	
RL-4	0 – 3	738	1687 (50)
	3 – 4	929	
	4 – 10	1,367	
	10 – 20	1,401	
	20 – 27	2,267	
	27 - 50	2,350	
ML-4	0 -1	2,077	2,211 (45)
	1 – 3	2,086	
	3 – 6	2,094	
	6 – 8.6	2,089	
	8.6 - 12	2,046	
	12 – 17	1,933	
	17 – 22	1,744	
	22 – 30	1,922	
	30 – 39	2,470	
	39 -45	4,242	

Table 1 – ReMi and MASW Results (Continued)

Line No.	Depth (feet)	Shear Wave Velocity (feet/second)	Average Shear-Wave Velocity *Vs* (Depth) Feet
RL-5	0 – 5	664	1457 (50)
	5 – 9	923	
	9 – 14	1,578	
	14 – 21	939	
	21 – 30	2,259	
	30 - 50	2,603	
ML-5	0 - 4	1,084	2,231 (100)
	4 – 8	2,126	
	8 – 14	2,395	
	14 – 21	745	
	21 – 30	1,075	
	30 – 41	2,697	
	41 – 55	3,458	
	55 – 72	3,779	
	72– 94	4,064	
	94– 100	6,249	
RL-6	0 – 5	659	1248 (50)
	5 – 13	873	
	13 – 17	941	
	17 – 27	1,016	
	27 – 31	2,370	
	31 – 50	2,486	
ML-6	0 – 2	709	1,215 (60)
	2 – 4	785	
	4– 7	772	
	7 – 11	857	
	11 – 16	1,008	
	16 – 22	956	
	22 – 29	828	
	29 – 39	1,467	
	39 – 50	2,026	
	50– 60	3,039	

Table 1 – ReMi and MASW Results (Continued)

Line No.	Depth (feet)	Shear Wave Velocity (feet/second)	Average Shear-Wave Velocity *Vs* (Depth) Feet
RL-7	0 – 4	638	1389 (50)
	4 – 14	1,091	
	14 – 18	1,162	
	18– 26	1,066	
	26– 32	2,322	
	32- 50	2,532	
ML-7	0 - 2	1,025	1,438 (65)
	2 – 5	1,127	
	5 – 8	1,213	
	8 – 12	1,202	
	12 – 16	958	
	16– 23	688	
	23 – 30	1,146	
	30 – 40	1,836	
	40 – 52	2,233	
	52 - 65	3,373	
RL-8	0 – 4	671	1441 (50)
	4 – 13	952	
	13 – 18	1,280	
	18 -23	1,177	
	23 – 32	2,361	
	32 - 50	2,570	
ML-8	0 – 2	905	1,482 (65)
	2 – 5	1,216	
	5 – 8	1,519	
	8 – 12	1,440	
	12 – 17	635	
	17 – 24	705	
	24 – 32	1,699	
	32 – 42	2,279	
	42 – 55	2,583	
	55 – 65	3,716	

Table 1 – ReMi and MASW Results (Continued)

Line No.	Depth (feet)	Shear Wave Velocity (feet/second)	Average Shear-Wave Velocity *Vs* (Depth) Feet
RL-9	0 -2.	541	1375 (50)
	2 – 9	1,352	
	9 – 23	1,320	
	23 – 35	1,189	
	35 – 38	2,117	
	38 - 50	2,252	
ML-9	0 – 2	1,049	1,776 (50)
	2 – 4	1,414	
	4 – 6	1,599	
	6 – 9	1,152	
	9 – 13	672	
	13 – 18	1,310	
	18 – 24	2,073	
	24 – 32	2,491	
	32 – 41	2,809	
	41 – 50	4,322	
RL-11	0 -2	629	1443 (50)
	2 – 9	923	
	9 – 16	1,037	
	16 – 26	1,337	
	26 – 33	2,396	
	33 – 50	2,491	
ML-11	0 – 2	721	1,719 (50)
	2 – 3	1,798	
	3 – 6	1,756	
	6 – 9	520	
	9 – 13	731	
	13 - 17	1,687	
	17 – 23	2,309	
	23 – 31	2,663	
	31 – 40	2,931	
	40 – 50	4,379	

Table 1 – ReMi and MASW Results (Continued)

Line No.	Depth (feet)	Shear Wave Velocity (feet/second)	Average Shear-Wave Velocity *Vs* (Depth) Feet
RL-12	0 – 2	643	1314 (50)
	2 – 9	841	
	9 - 24	1,347	
	24 – 35	1,212	
	35 – 46	2,268	
	46 - 50	2,454	
ML-12	0 – 3	742	1,761 (100)
	3 – 8	863	
	8 – 13	1,009	
	13 – 20	1,951	
	20 – 28	1,845	
	28 – 39	870	
	39 – 52	1,807	
	52 – 69	2,867	
	69 – 89	3,316	
	89 – 100	4,771	

6. LIMITATIONS

The field evaluation and geophysical analyses presented in this report have been conducted in general accordance with current practice and the standard of care exercised by consultants performing similar tasks in the project area. No warranty, express or implied, is made regarding the conclusions and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be present. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Atlas should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

7. SELECTED REFERENCES

Golden Software, Inc., 2012, Surfer, Surface Mapping System: Version 11.00.

Iwata, T., Kawase, H., Satoh, T., Kakehi, Y., Irikura, K., Louie, J.N., Abbott, R.E., and Anderson, J.G., 1998, Array Microtremor Measurements at Reno, Nevada, USA (abstract): Eos, Trans. Amer. Geophys. Union, v. 79, suppl. to no. 45, p. F578.

Kansas Geological Survey, 2010, SurfSeis© 5 MASW (Multichannel Analysis of Surface Waves): Version 5.3.0.8.

Louie, J.N., 2001, Faster, Better, Shear wave Velocity to 100 Meters Depth from Refraction Microtremor Arrays: Bulletin of the Seismological Society of America, v. 91, p. 347-364.

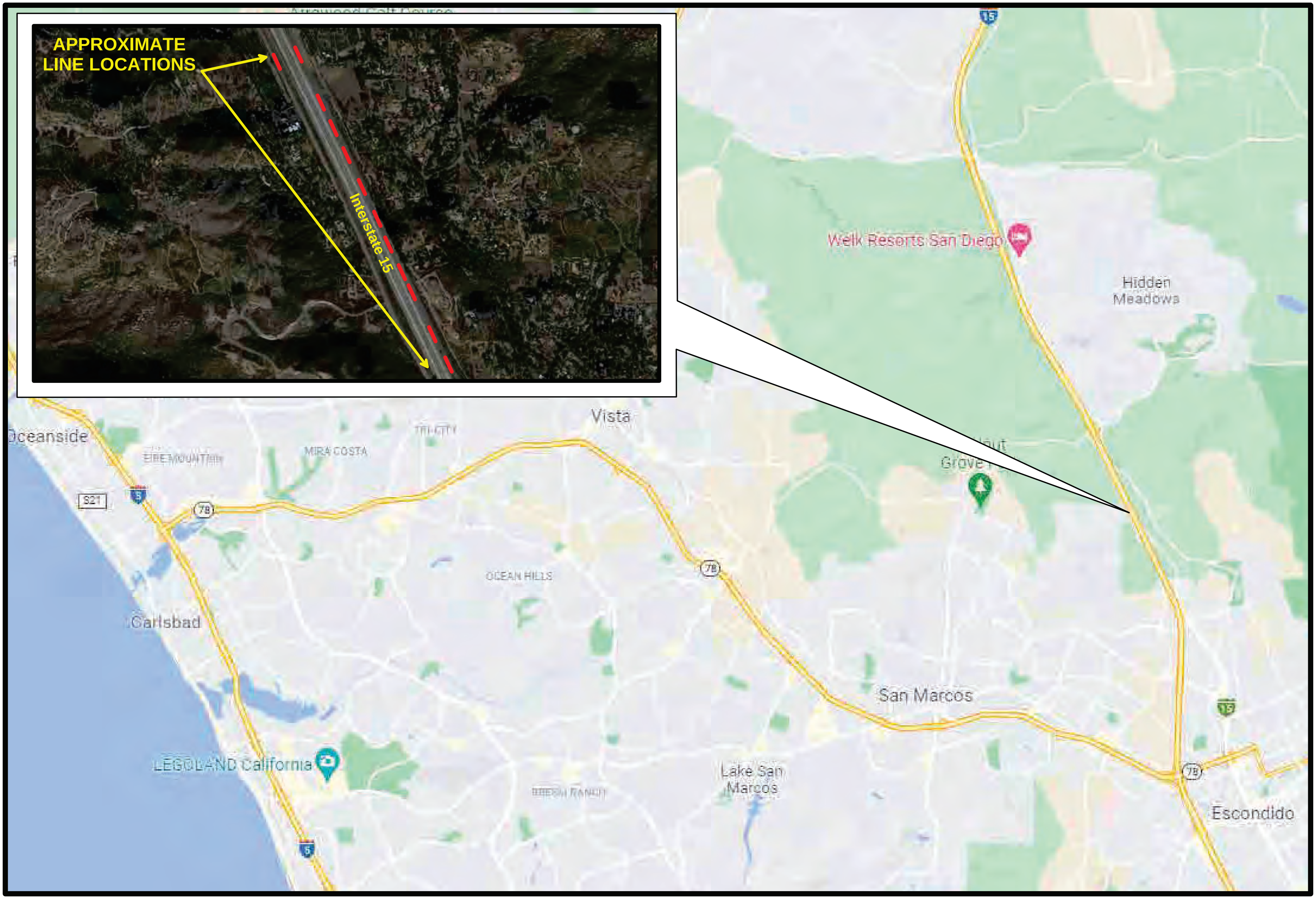
Mooney, H.M., 1976, Handbook of Engineering Geophysics, dated February.

Saito, M., 1979, Computations of Reflectivity and Surface Wave Dispersion Curves for Layered Media; I, Sound wave and SH wave: Butsuri-Tanko, v. 32, no. 5, p. 15-26.

Saito, M., 1988, Compound Matrix Method for the Calculation of Spheroidal Oscillation of the Earth: Seismol. Res. Lett., v. 59, p. 29.

Telford, W.M., Geldart, L.P., Sheriff, R.E., and Keys, D.A., 1976, Applied Geophysics, Cambridge University Press.

Xia, J., Miller, R. D., and Park, C. B., 1999, Estimation of near-surface shear-wave velocity by inversion of Rayleigh wave: Geophysics, v. 64, p. 691-7.



SITE LOCATION MAP

N

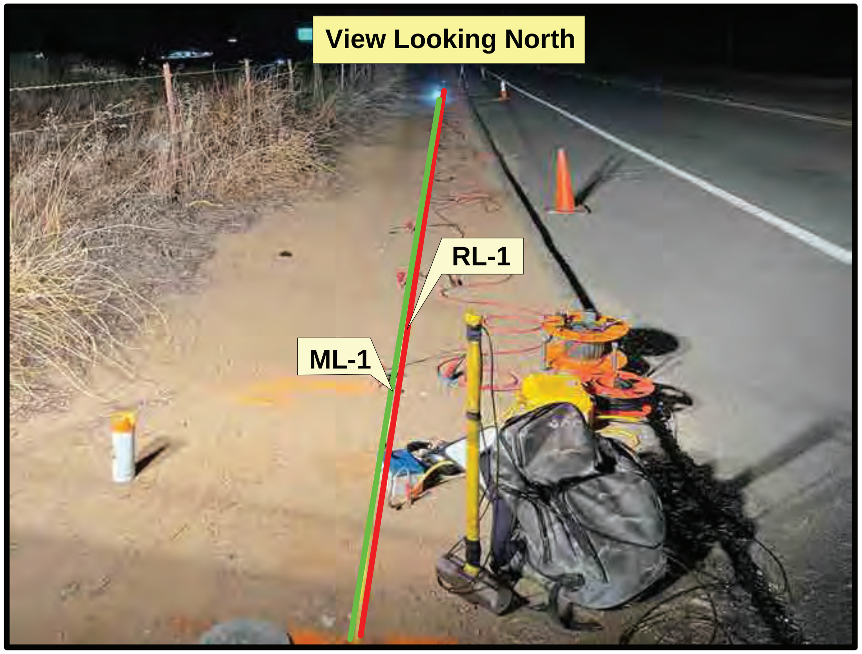
Design of Crossover Pipeline Interstate 15 Project
San Diego, California

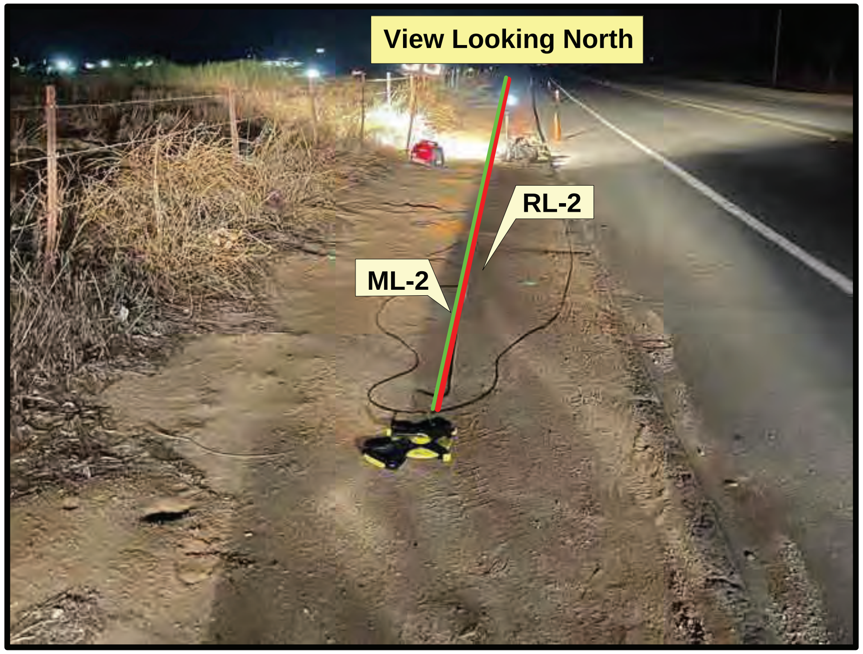
Project No.: 210012P6SWG | Date: 10/21

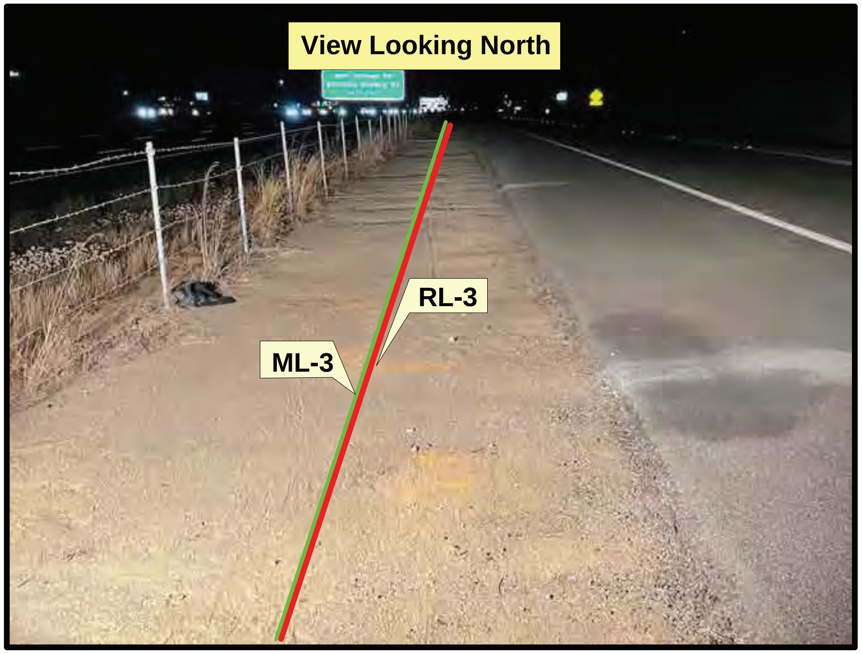
ATLAS

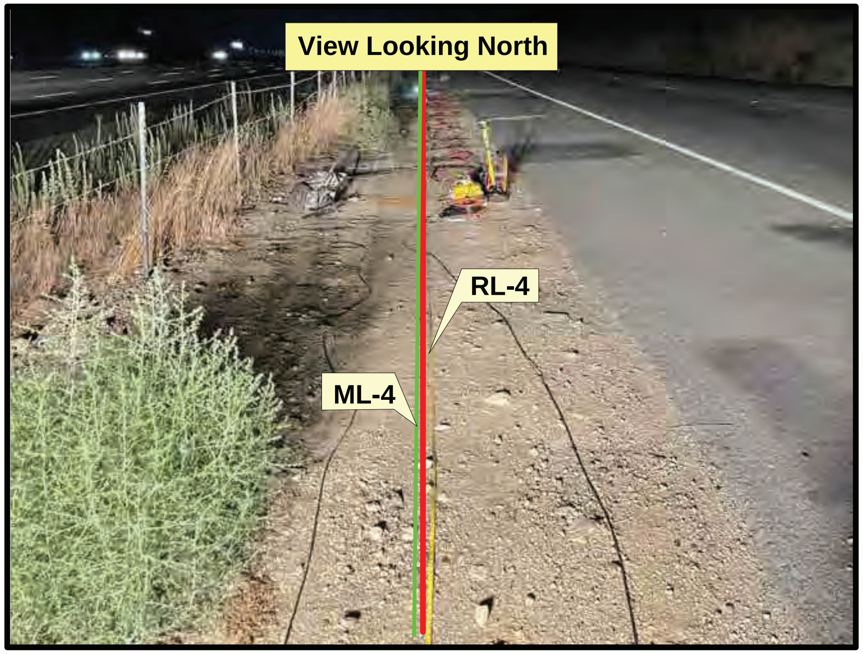
Figure 1

SEISMIC LINE LOCATION MAP	N	Design of Crossover Pipeline Interstate 15 Project San Diego, California Project No.: 210012P6SWG — Date: 10/21	ATLAS Figure 2	0 300 600 **approximate scale in feet**

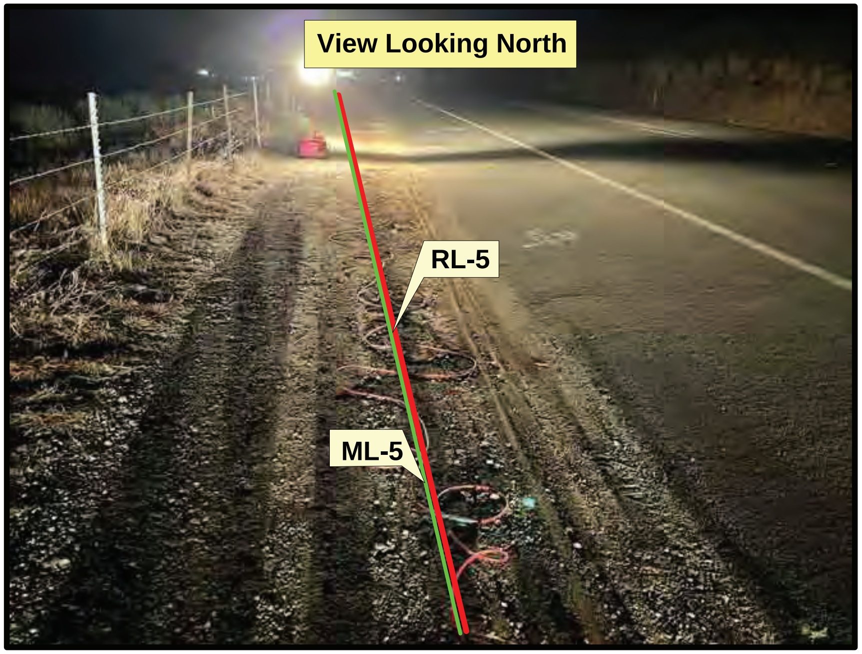


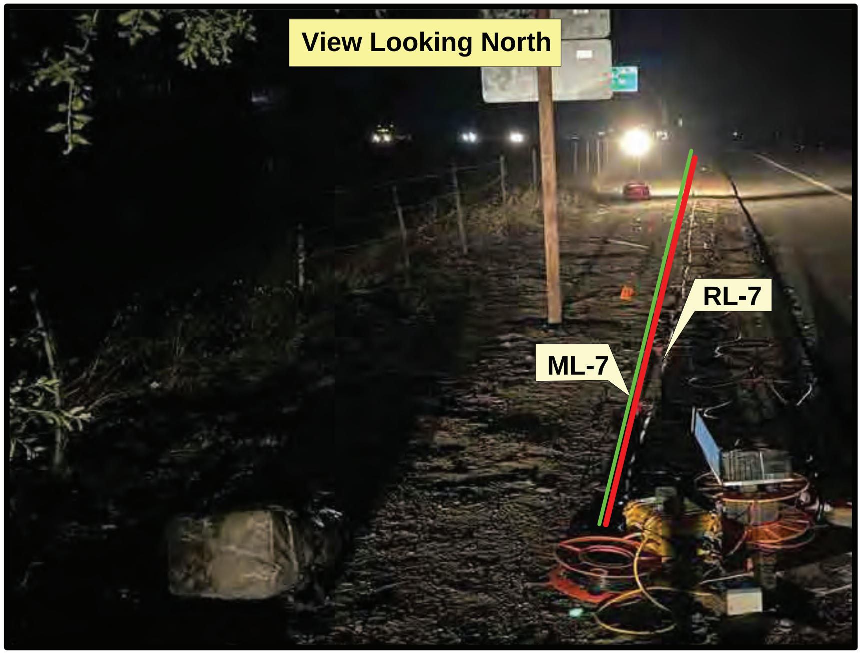


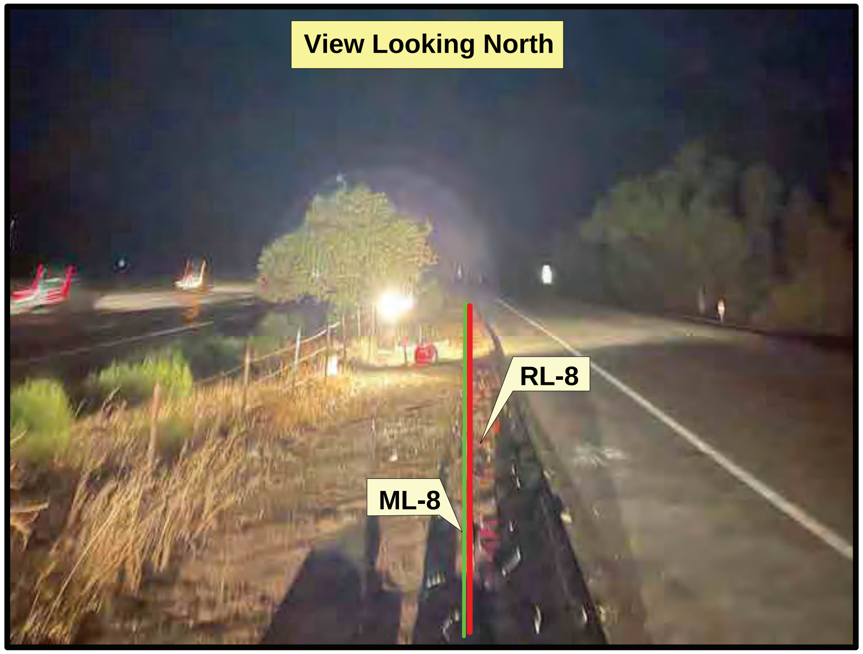




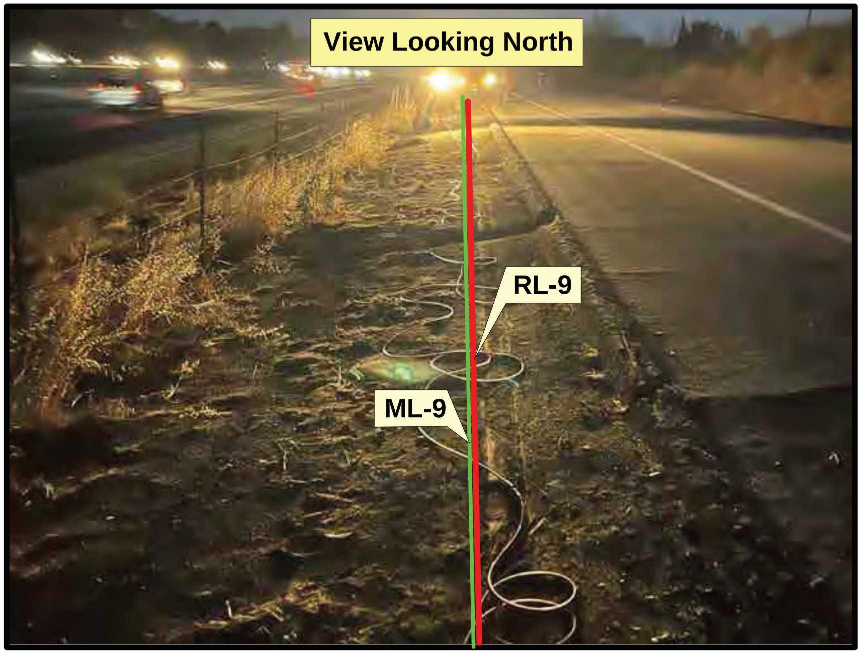
SITE PHOTOGRAPHS	Design of Crossover Pipeline Interstate 15 Project San Diego, California	ATLAS Figure 3a
	Project No.: 210112P6 — Date: 10/21	

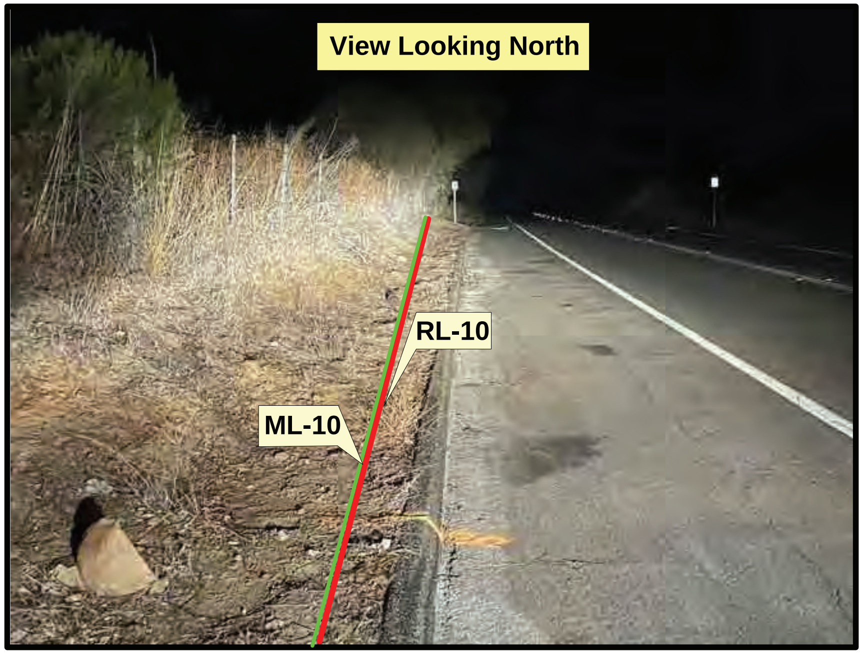


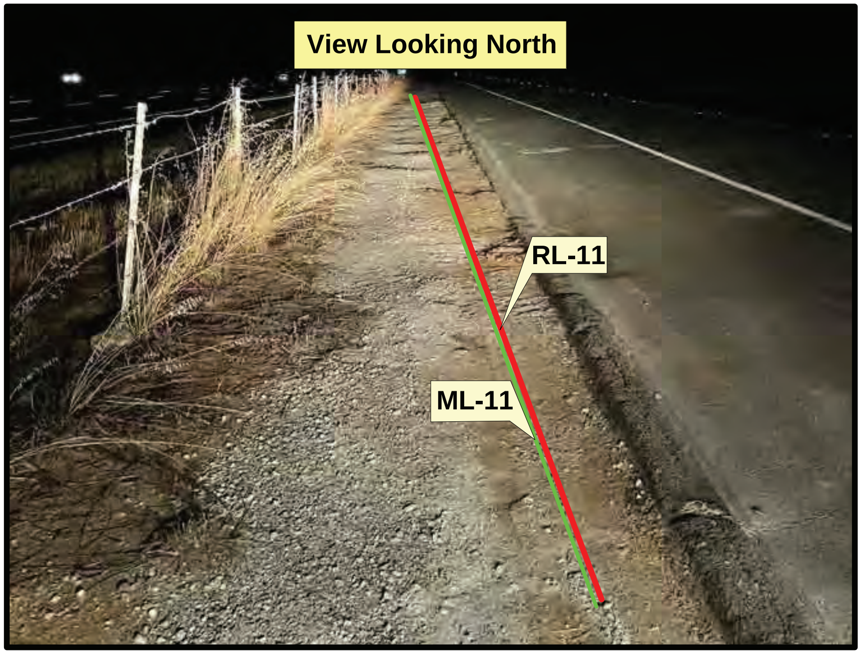


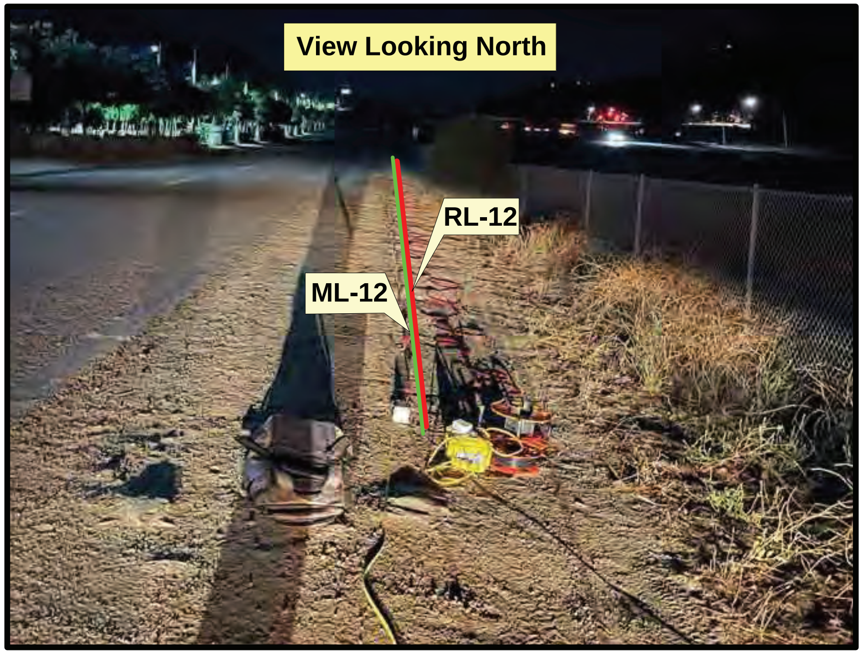


SITE PHOTOGRAPHS	Design of Crossover Pipeline Interstate 15 Project San Diego, California	ATLAS
	Project No.: 210112P6 / Date: 10/21	Figure 3b

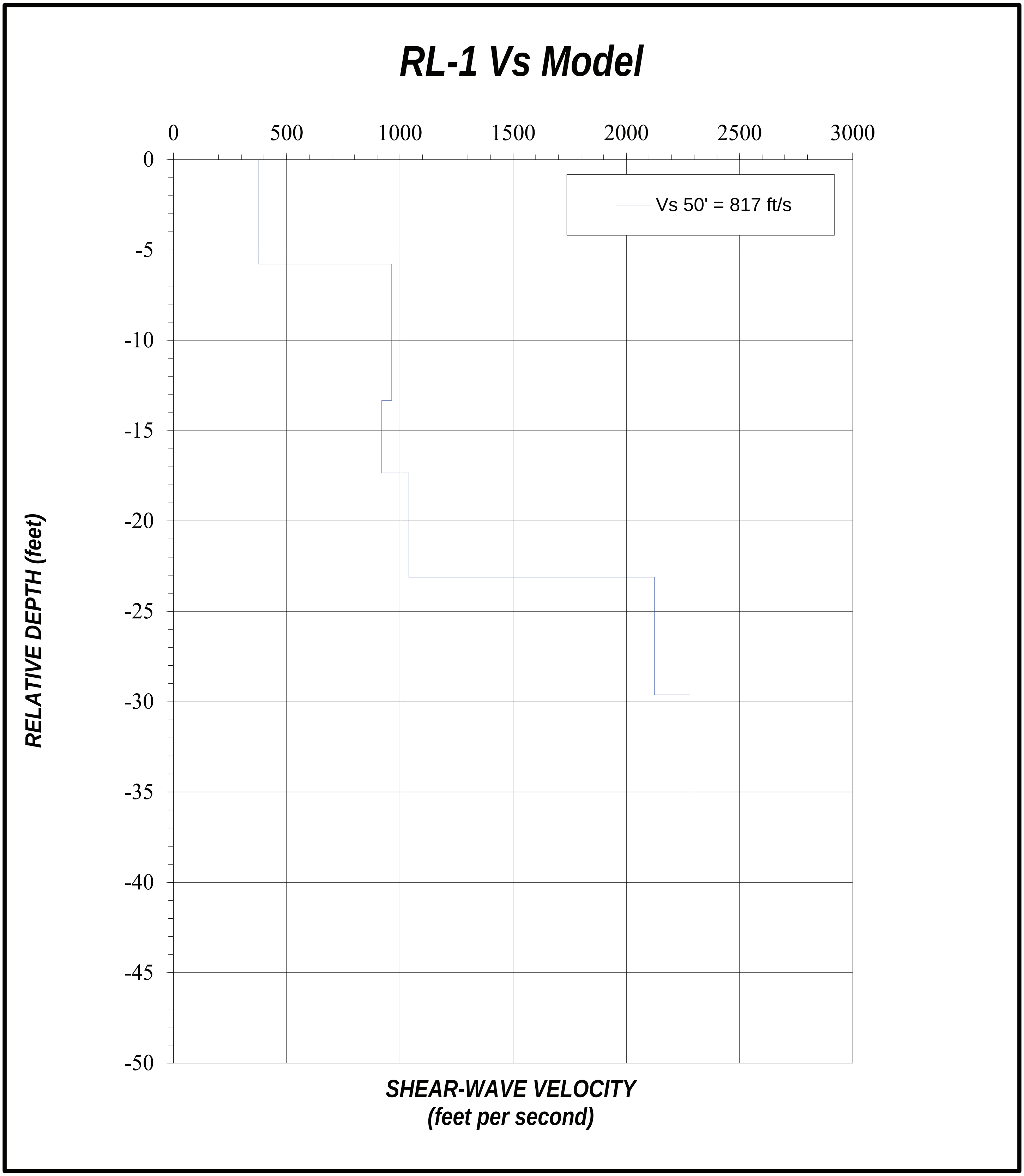








SITE PHOTOGRAPHS	Design of Crossover Pipeline Interstate 15 Project San Diego, California	ATLAS Figure 3c
	Project No.: 210112P6 / Date: 10/21	



1-D ReMi RESULTS
RL-1

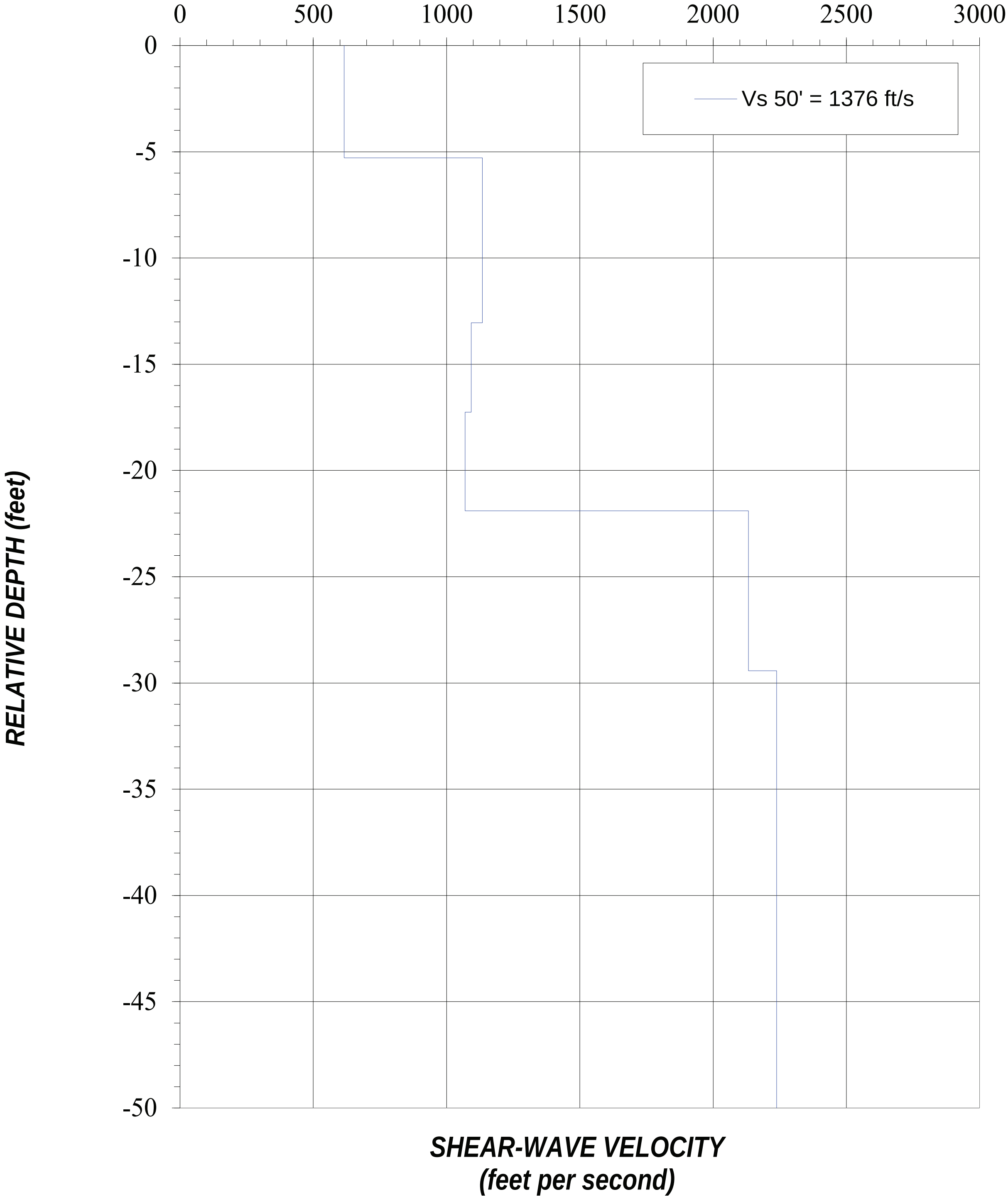
Design of Crossover Pipeline Interstate 15 Project
San Diego, California

Project No.: 210012P6SWG | Date: 10/21

ATLAS

Figure 4a

RL-2 Vs Model



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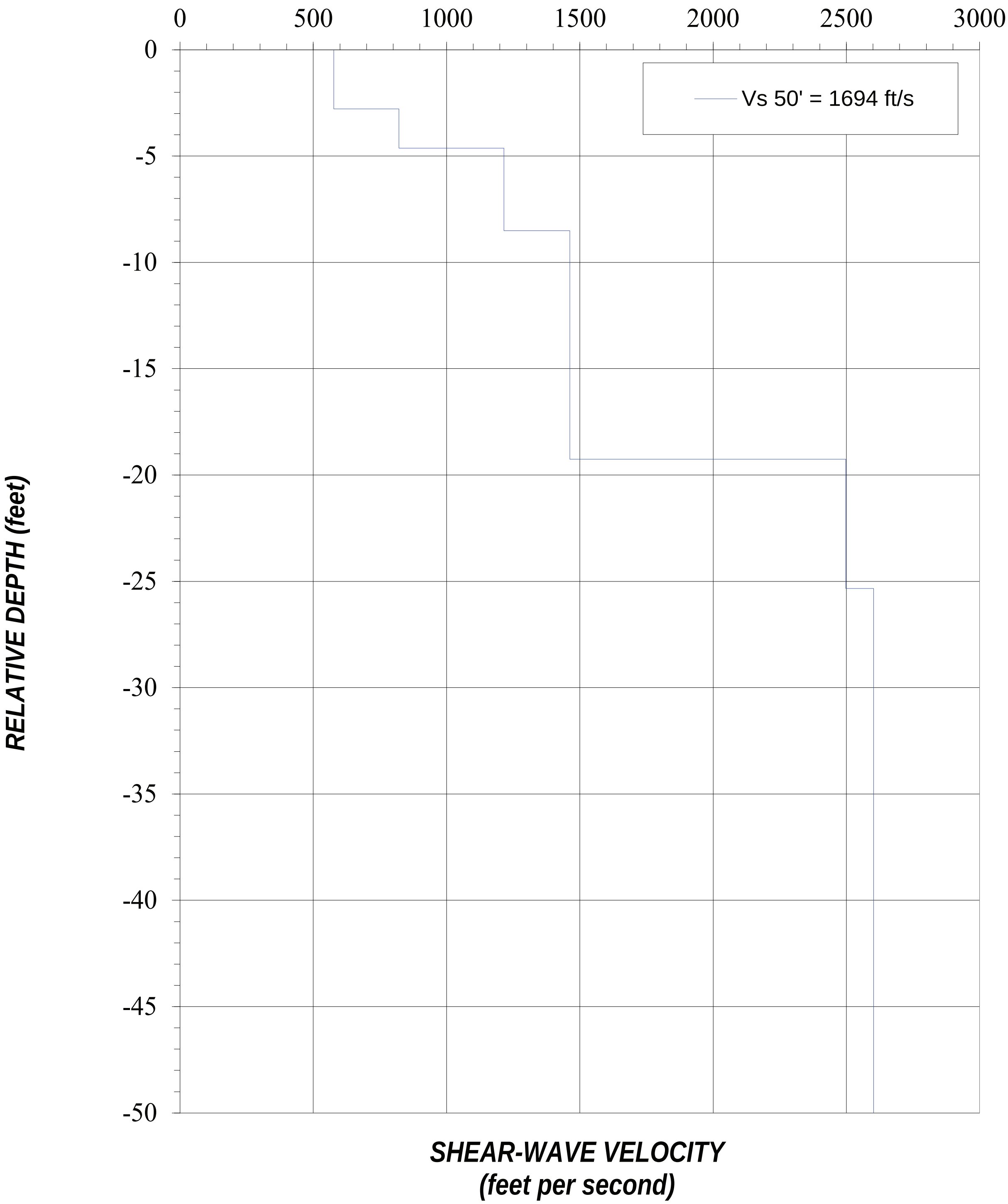
RL-3 Vs Model



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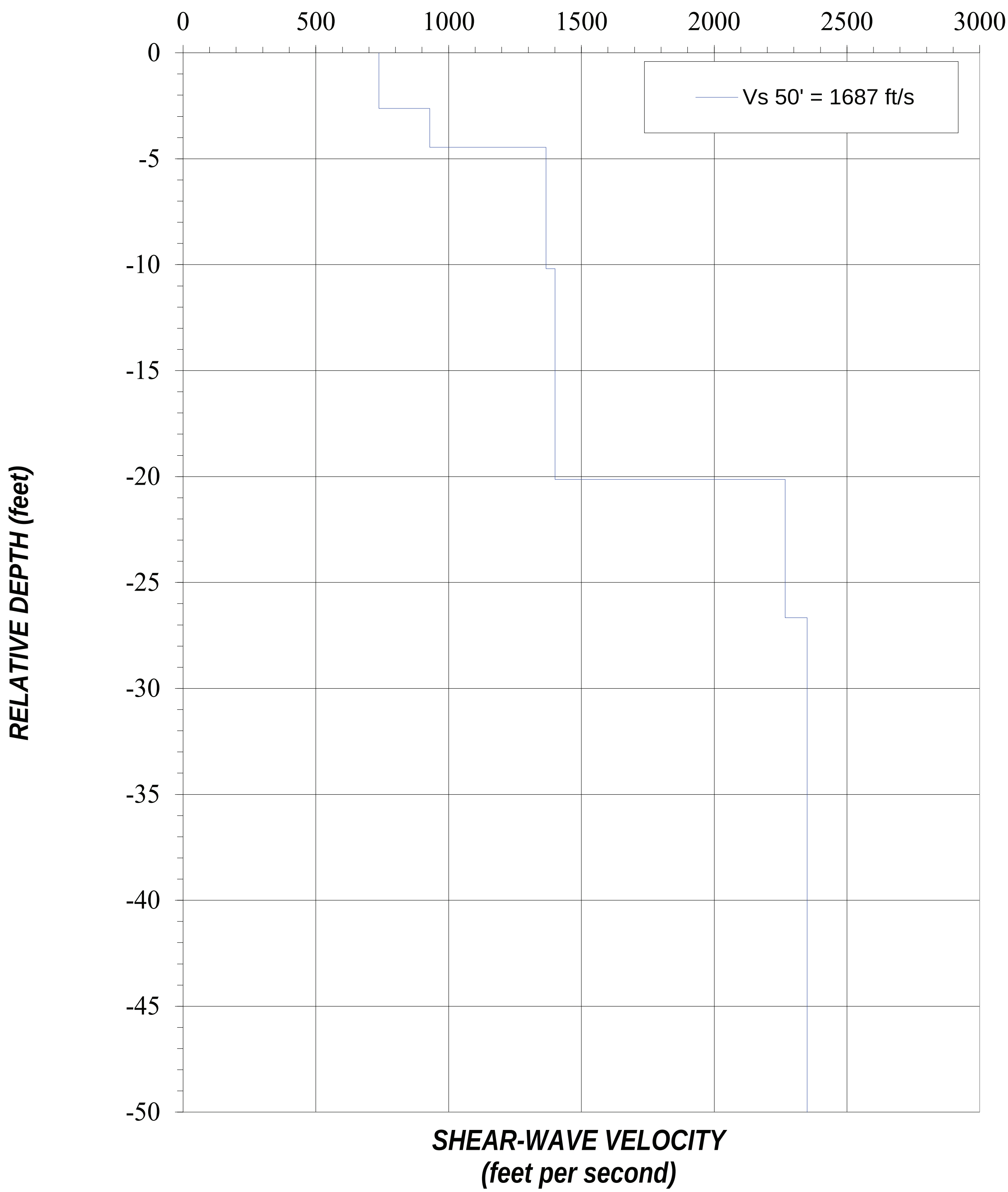
	Project No.: 210012P6SWG	Date: 10/21	

RL-4 Vs Model



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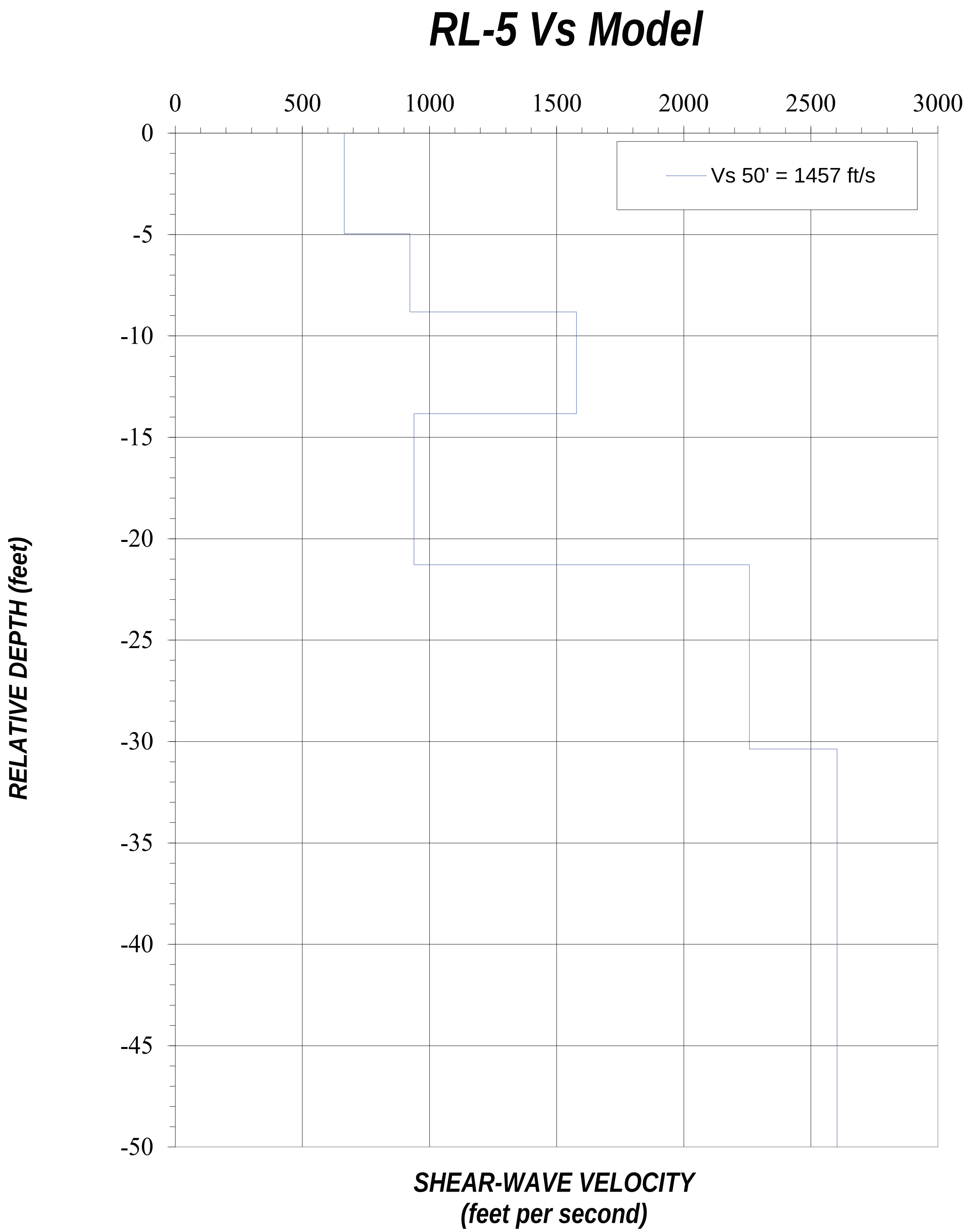
	Project No.: 210012P6SWG	Date: 10/21



1-D ReMi RESULTS
RL-5

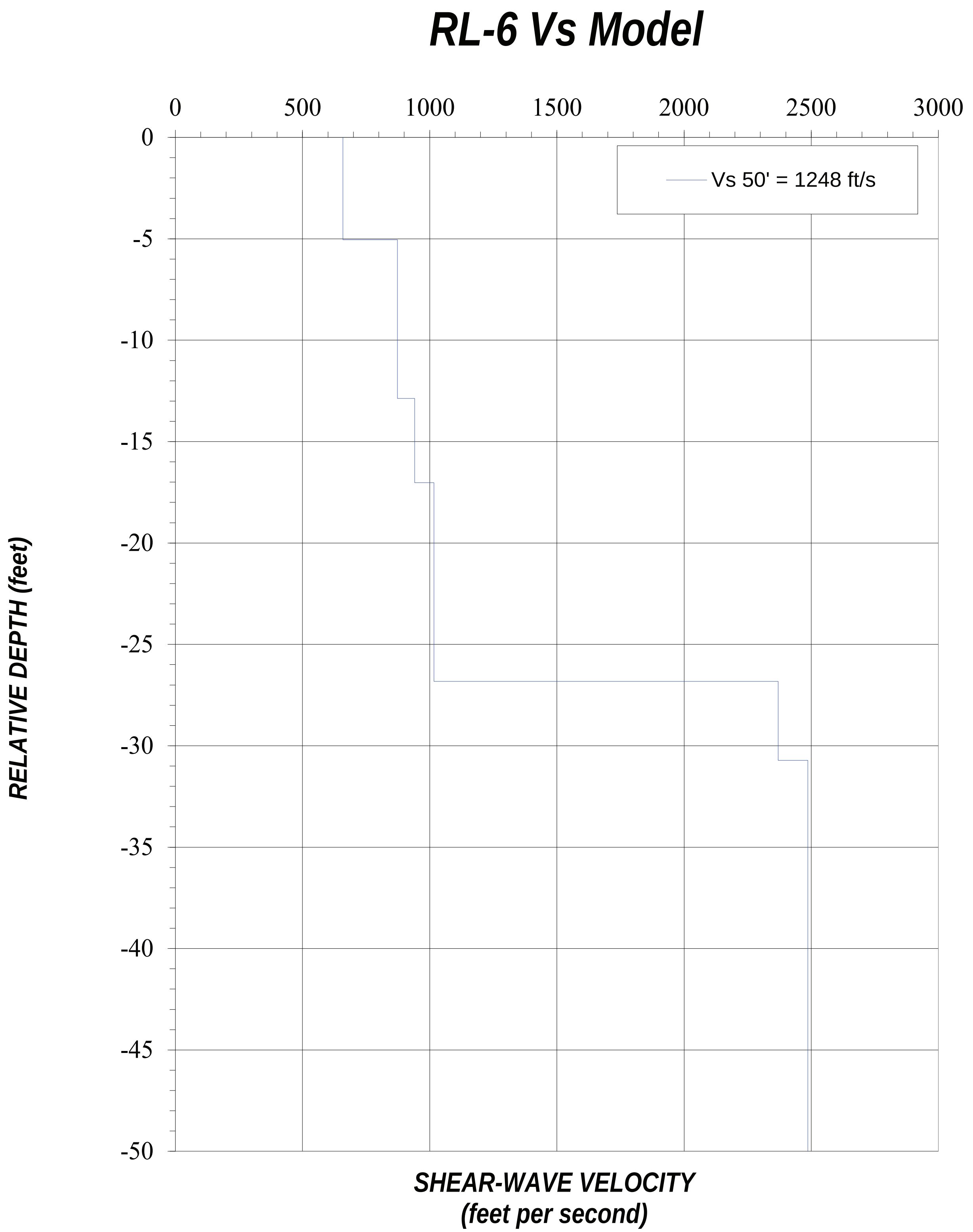
Design of Crossover Pipeline Interstate 15 Project
San Diego, California

Project No.: 210012P6SWG

Date: 10/21

ATLAS

Figure 4e



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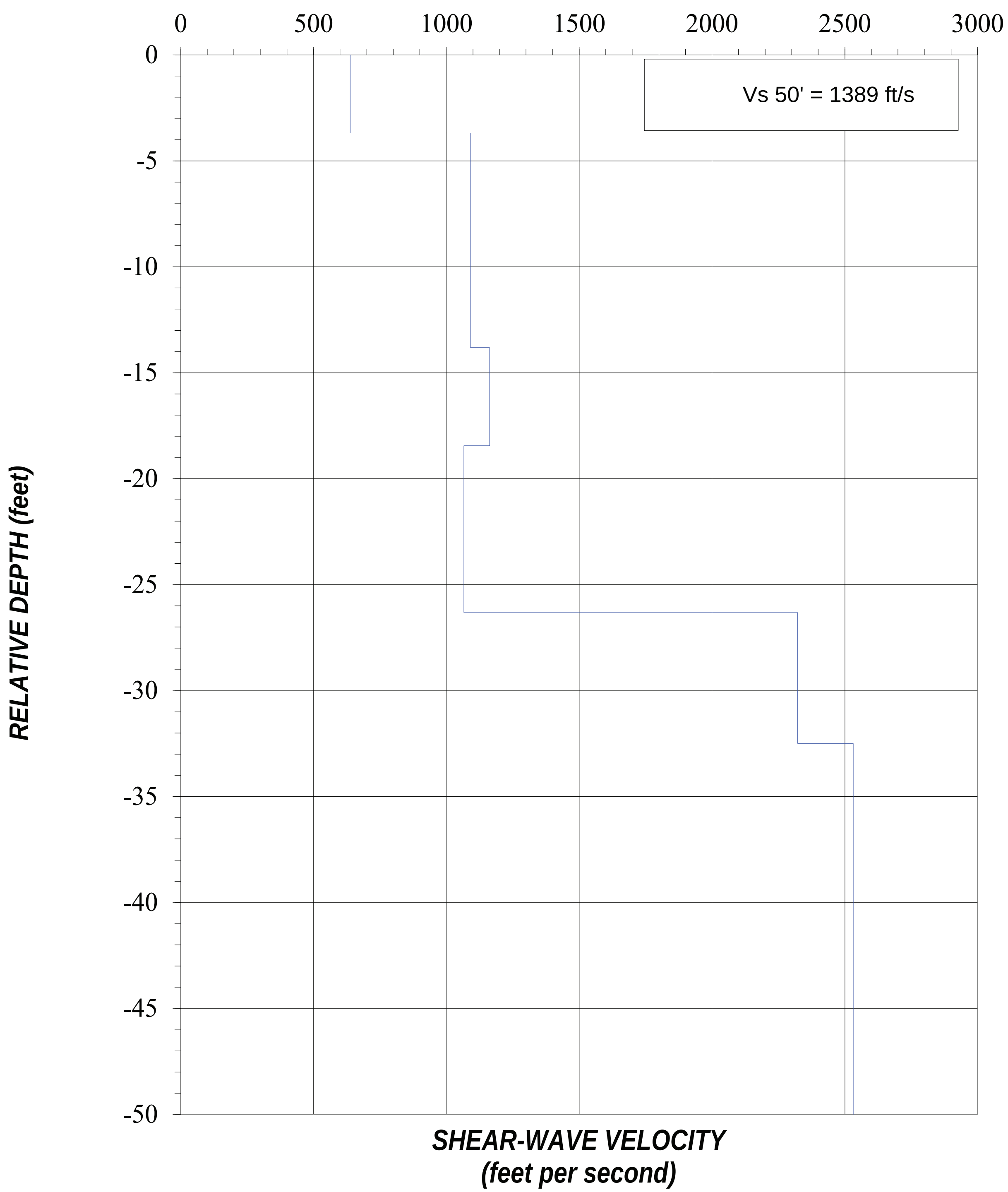
RL-7 Vs Model



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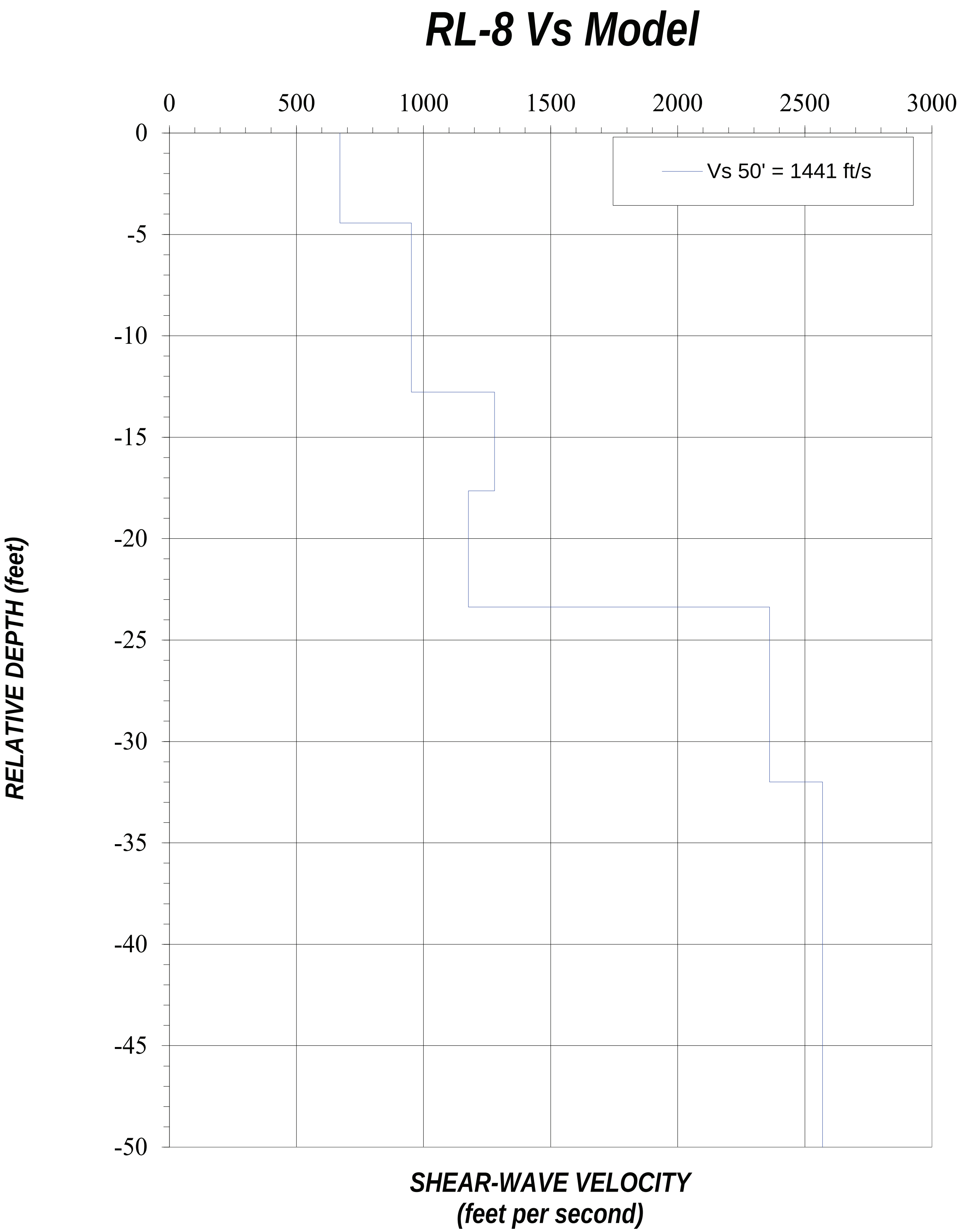
	Project No.: 210012P6SWG / Date: 10/21	



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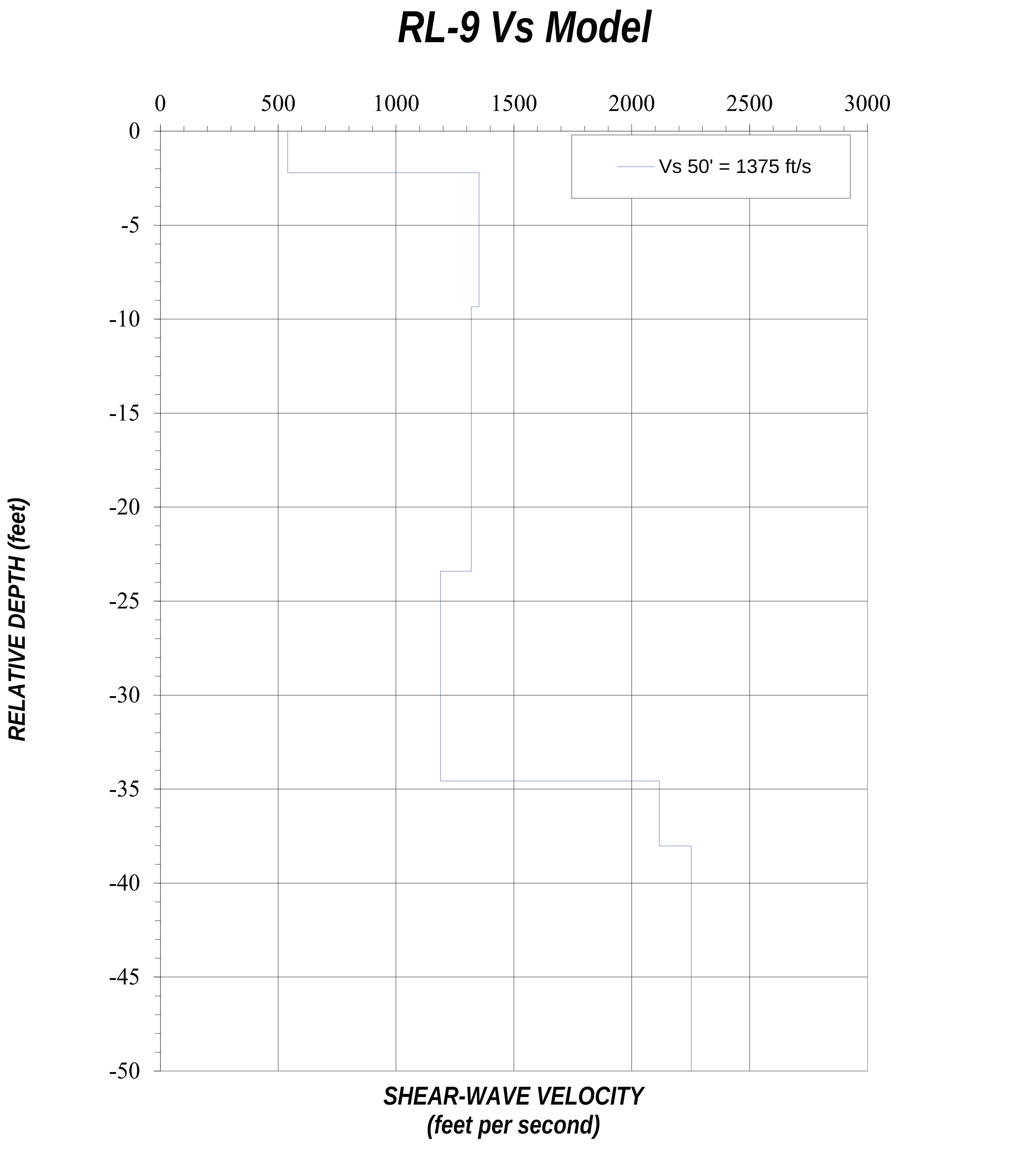

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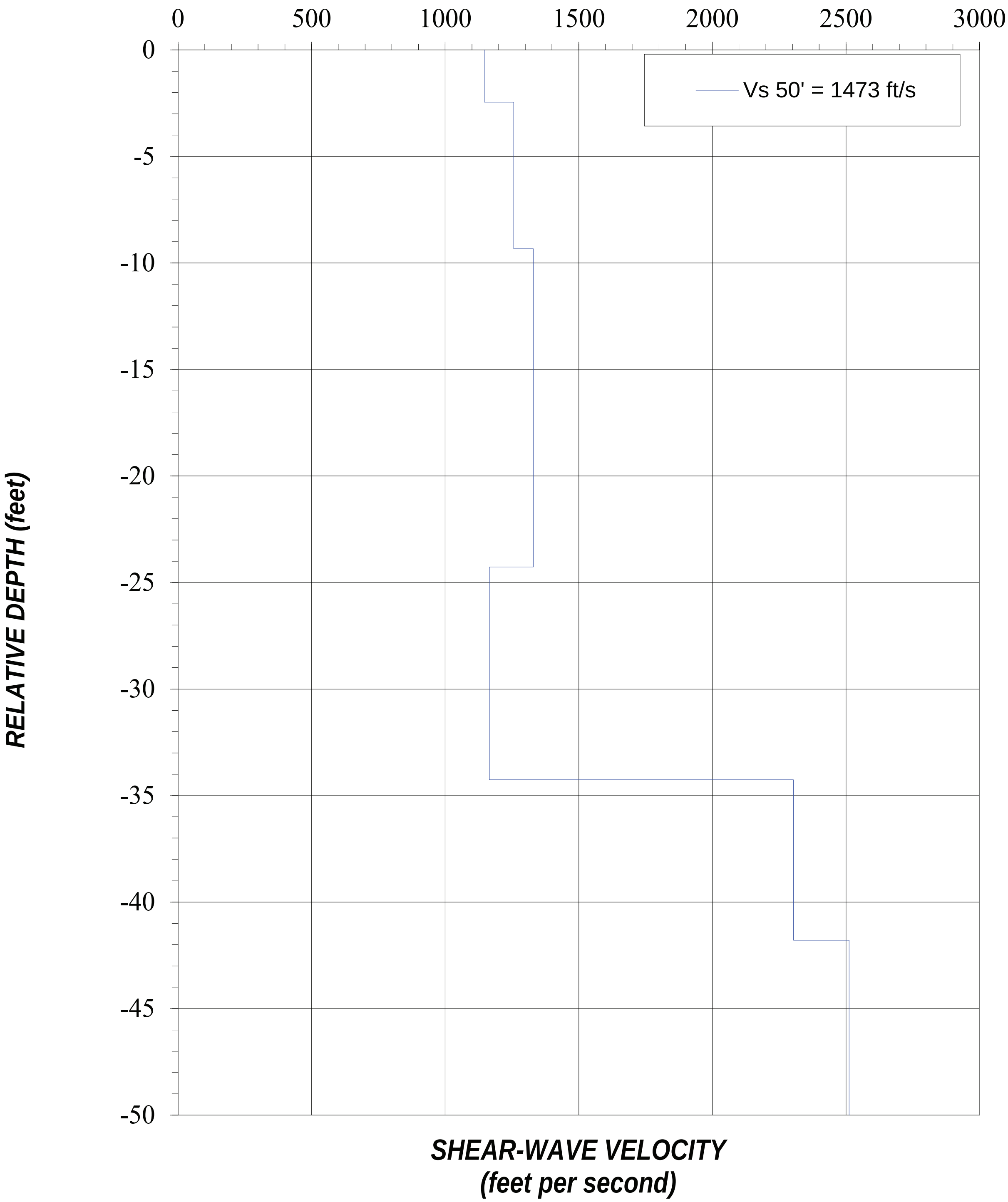
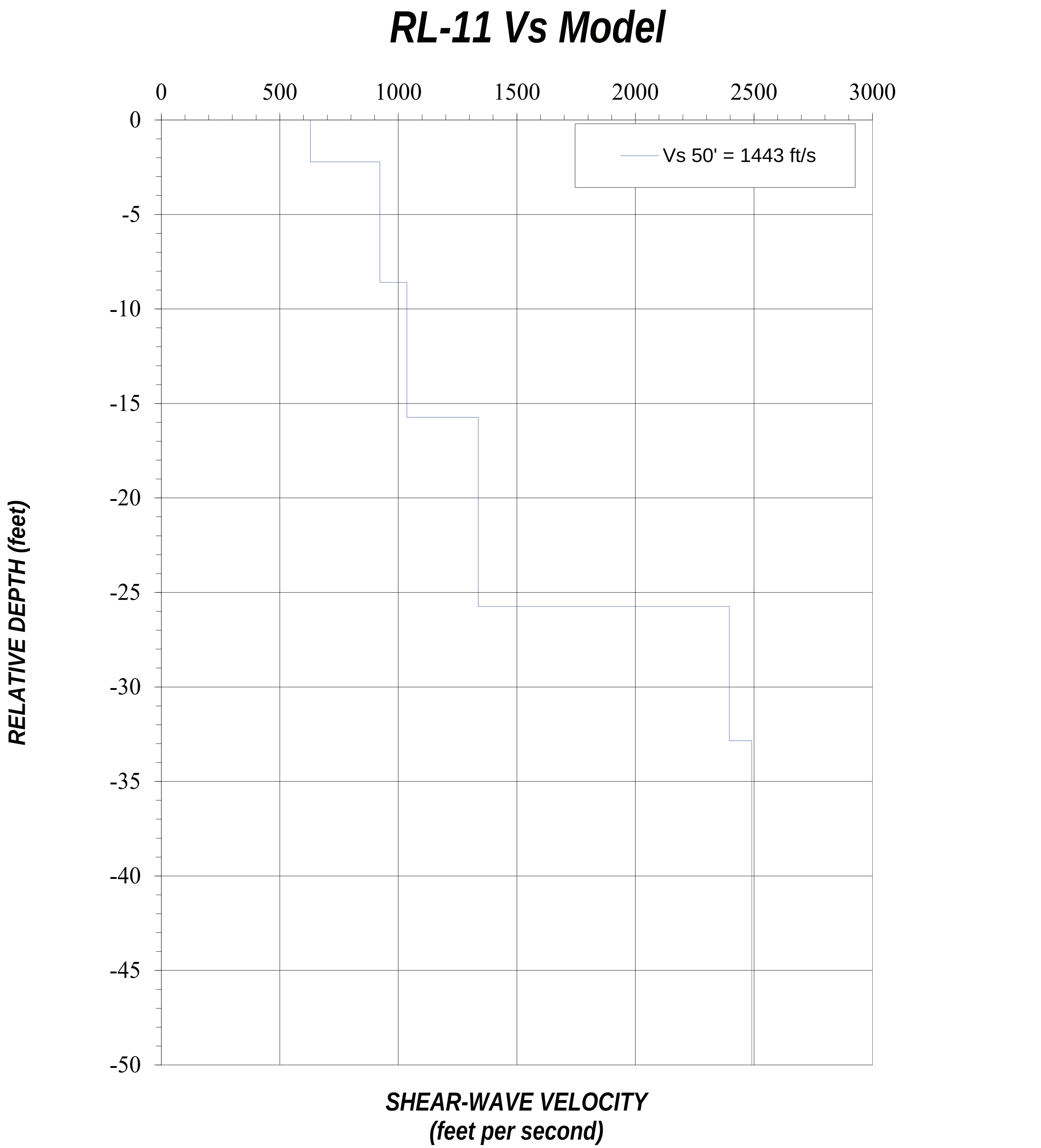
	Project No.: 210012P6SWG	Date: 10/21

RL-10 Vs Model

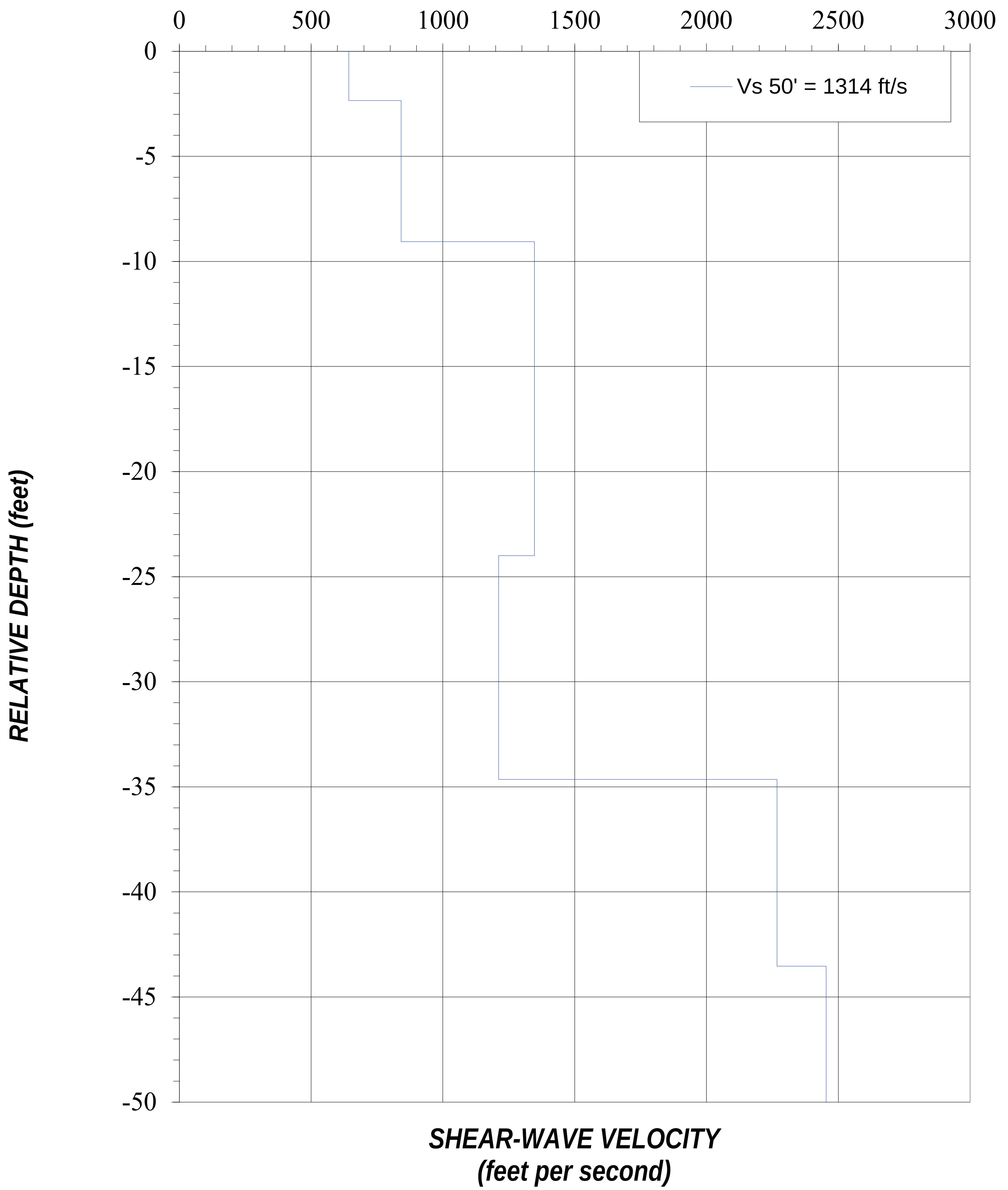


1-D ReMi RESULTS **RL-10**	Design of Crossover Pipeline Interstate 15 Project San Diego, California Project No.: 210012P6SWG — Date: 10/21	ATLAS Figure 4j



1-D ReMi RESULTS **RL-11**	Design of Crossover Pipeline Interstate 15 Project San Diego, California	ATLAS Figure 4k
	Project No.: 210012P6SWG / Date: 10/21	

RL-12 Vs Model



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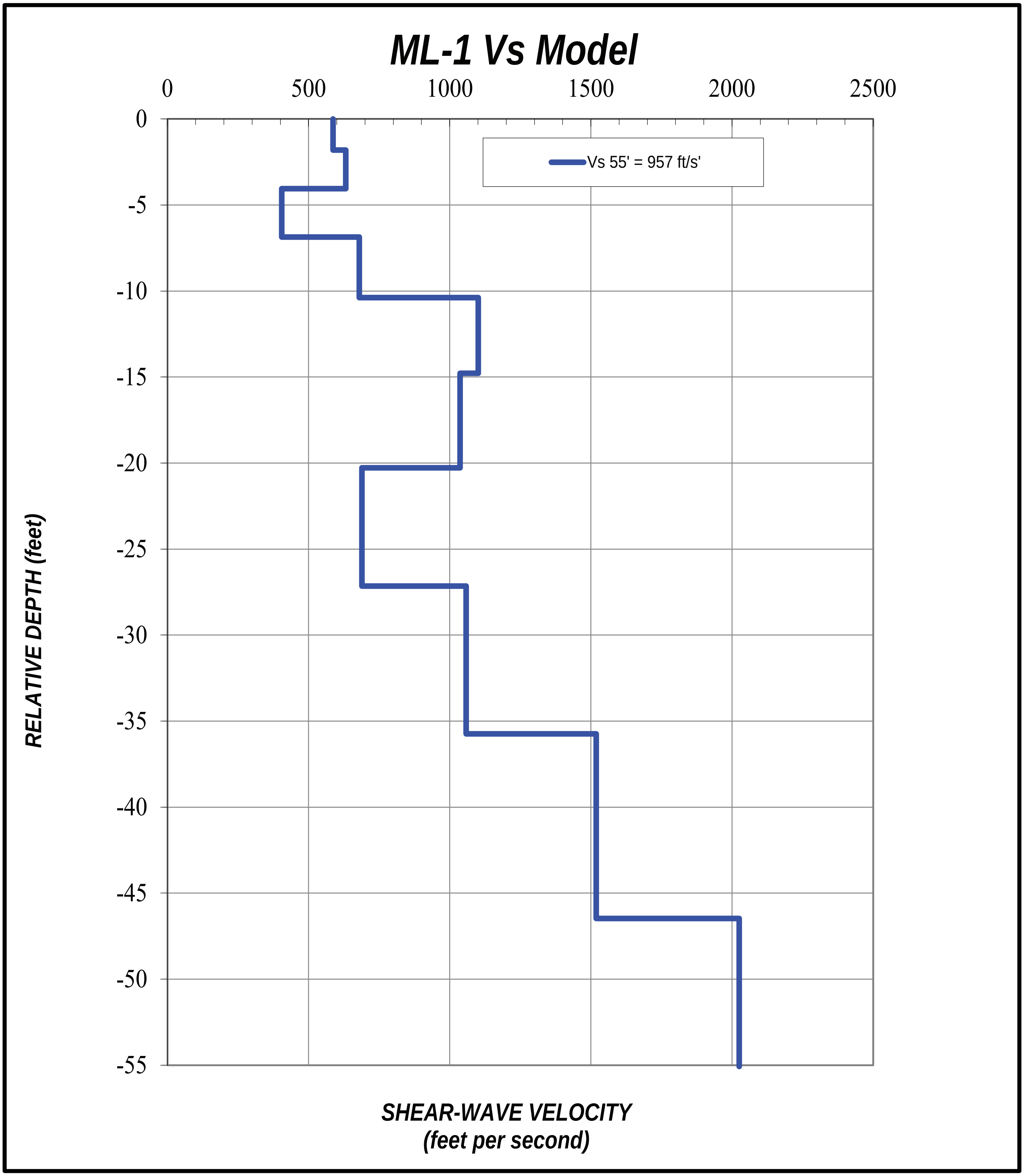
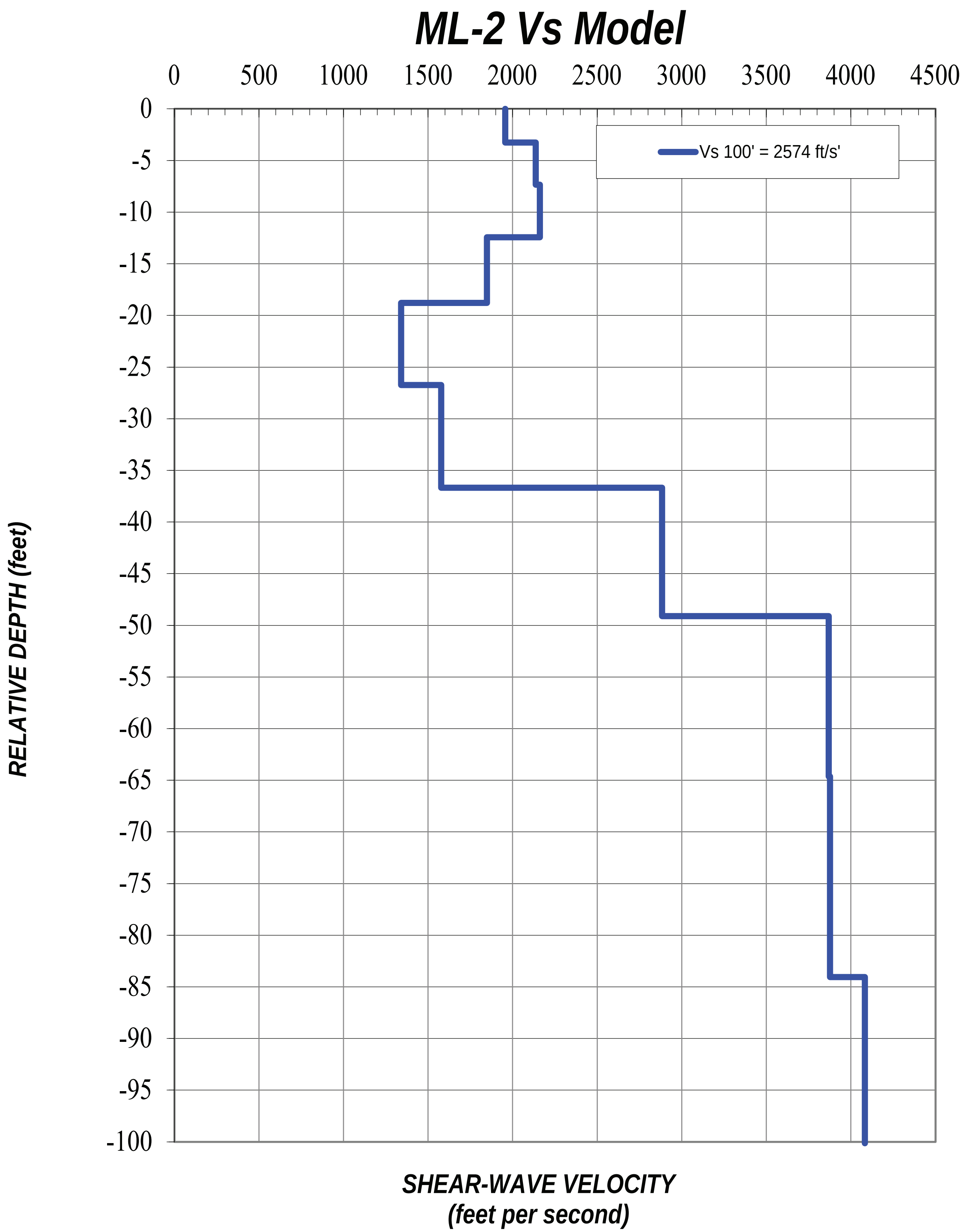
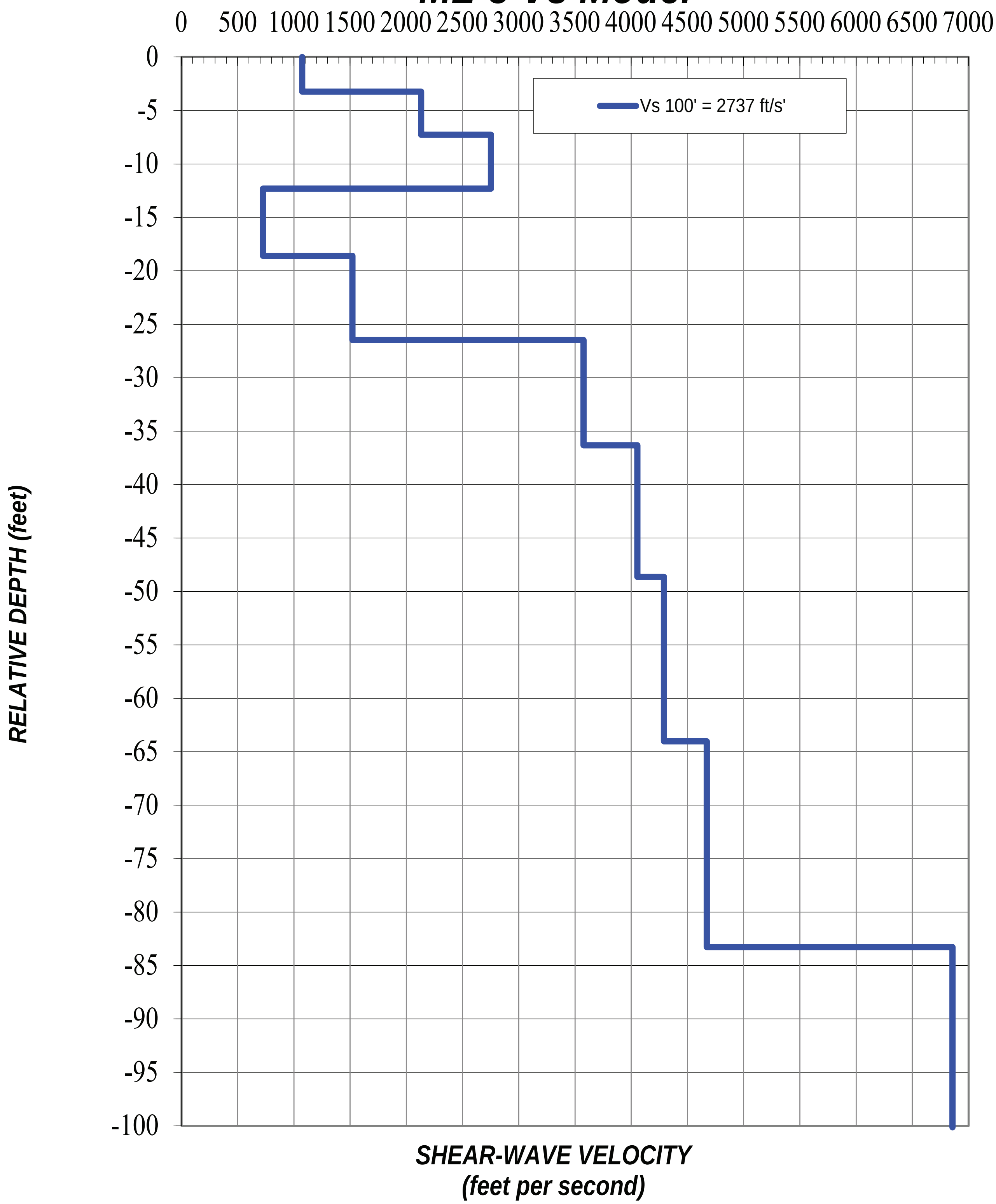


1-D MASW RESULTS ML-1	Design of Crossover Pipeline Interstate 15 Project San Diego, California Project No.: 210012P6SWG Date: 10/21	ATLAS Figure 5a



1-D MASW RESULTS **ML-2**	Design of Crossover Pipeline Interstate 15 Project San Diego, California	ATLAS Figure 5b
	Project No.: 210012P6SWG / Date: 10/21	

ML-3 Vs Model



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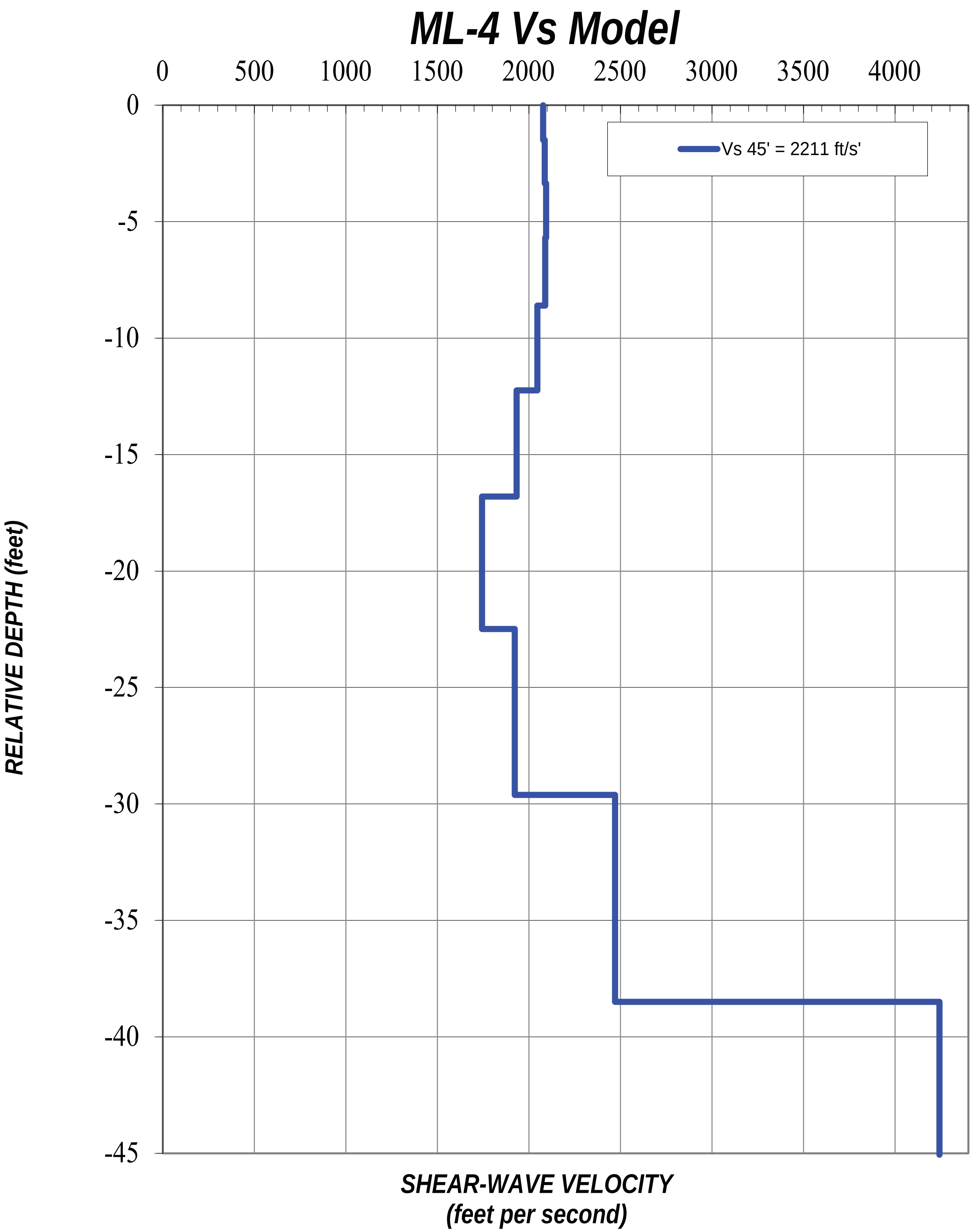

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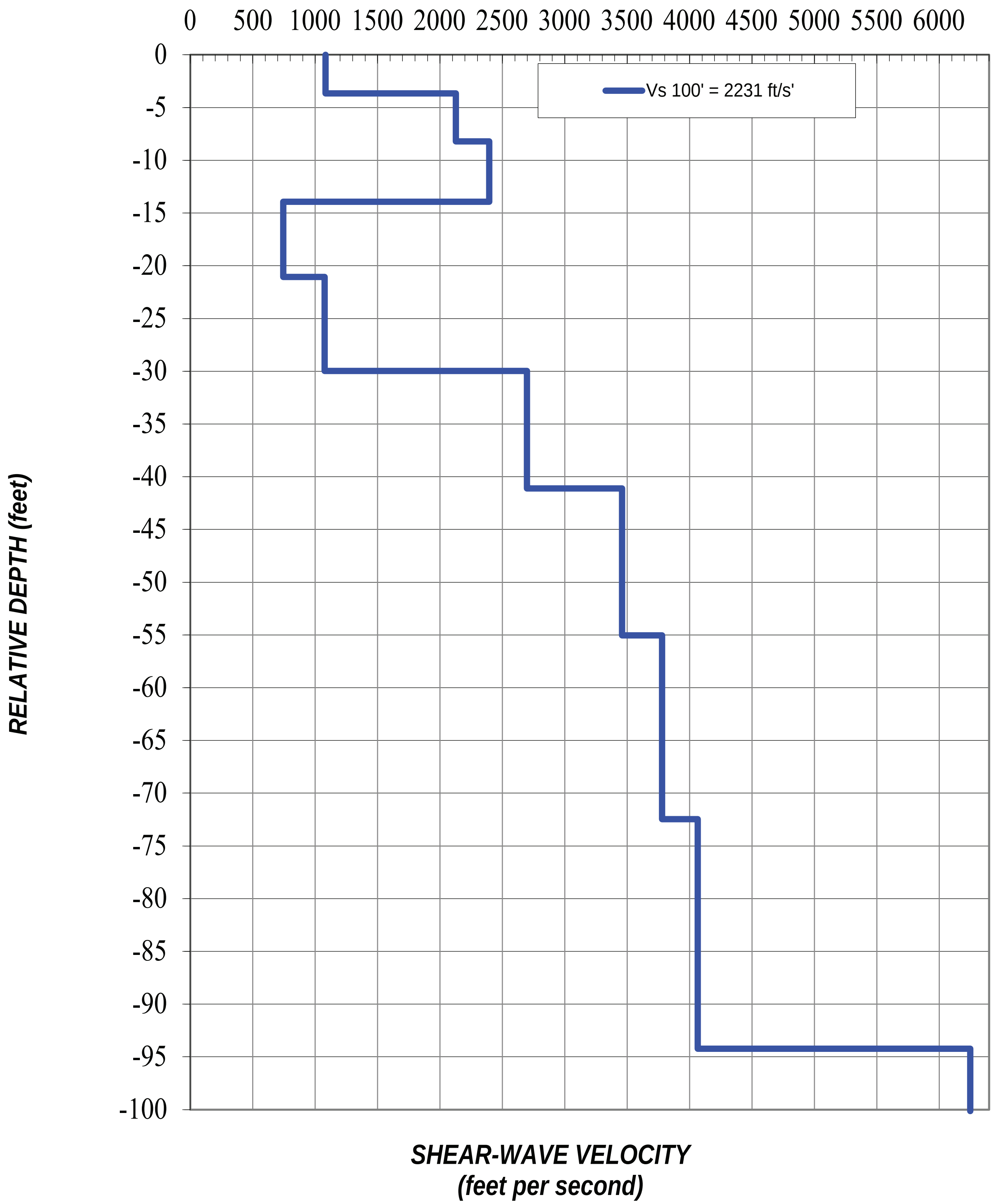
ML-5 Vs Model



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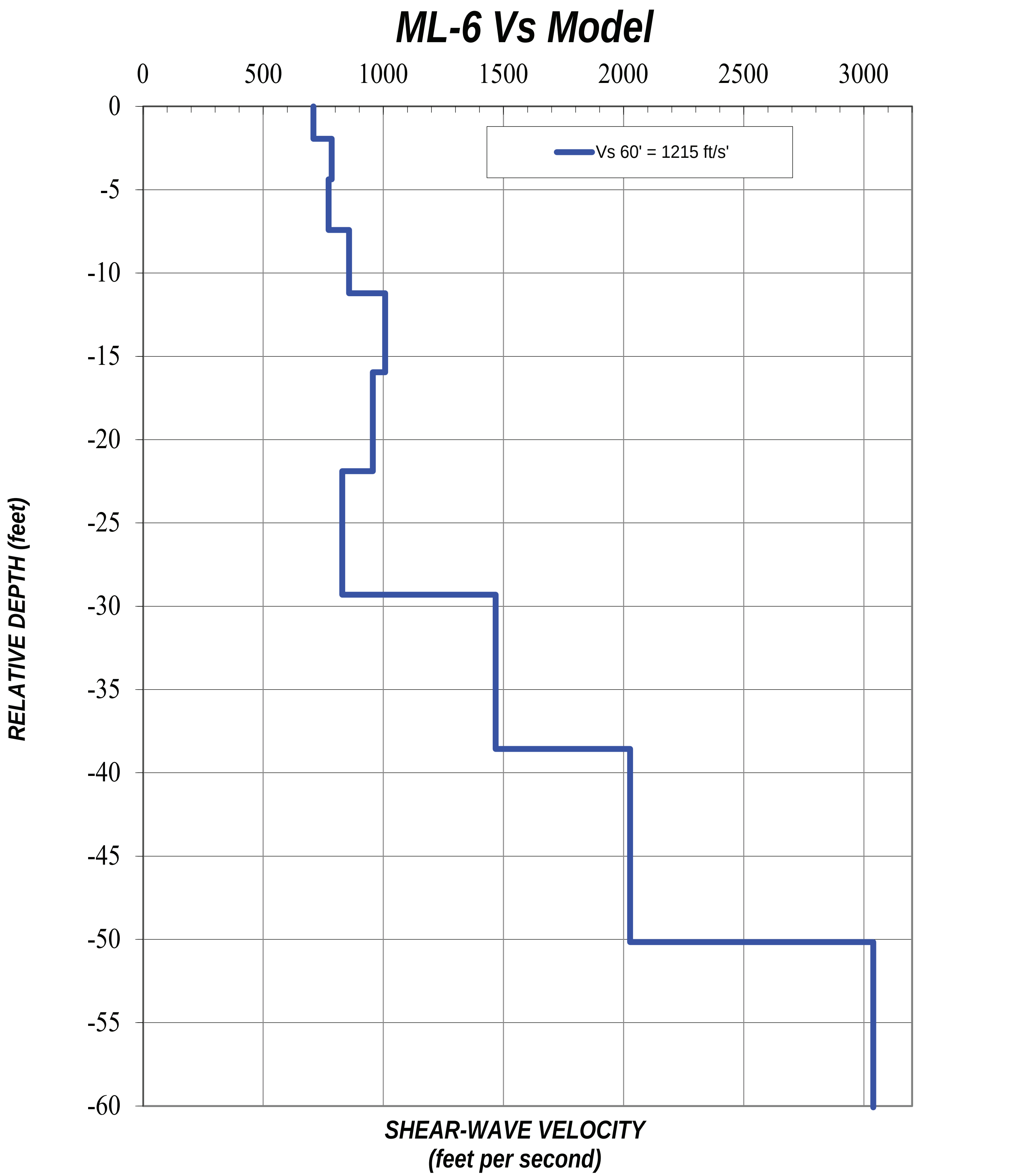
	Project No.: 210012P6SWG	Date: 10/21	



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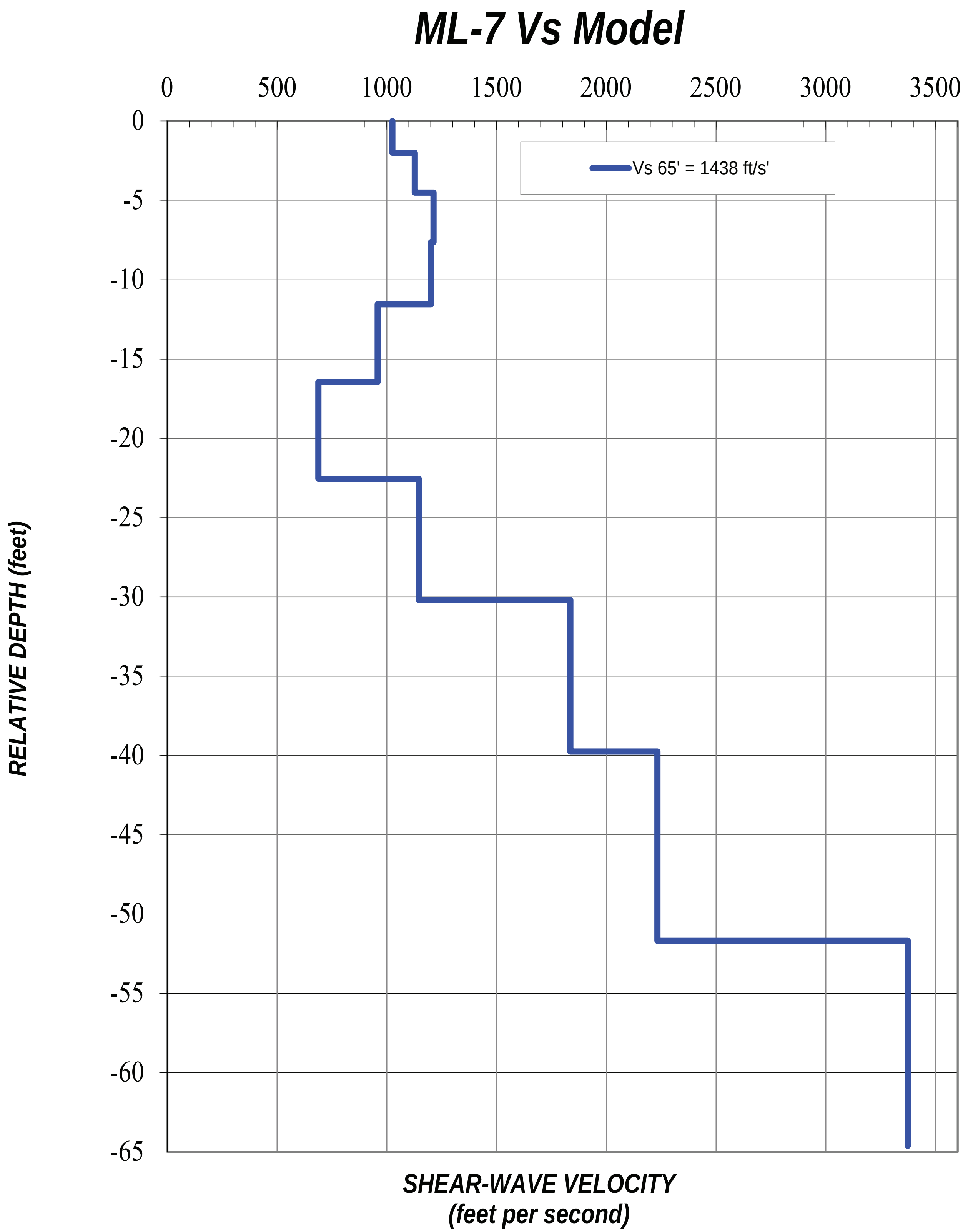

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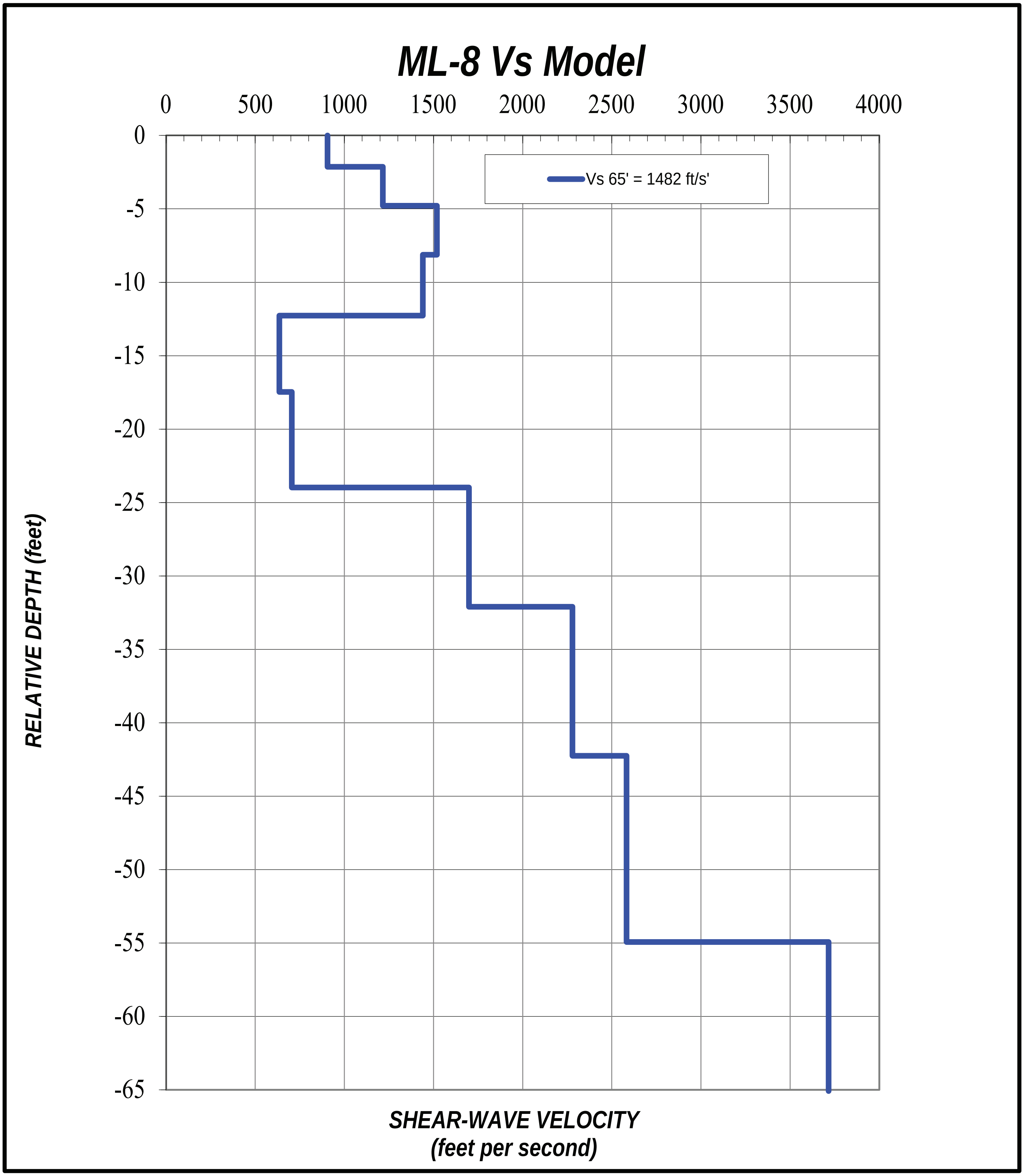

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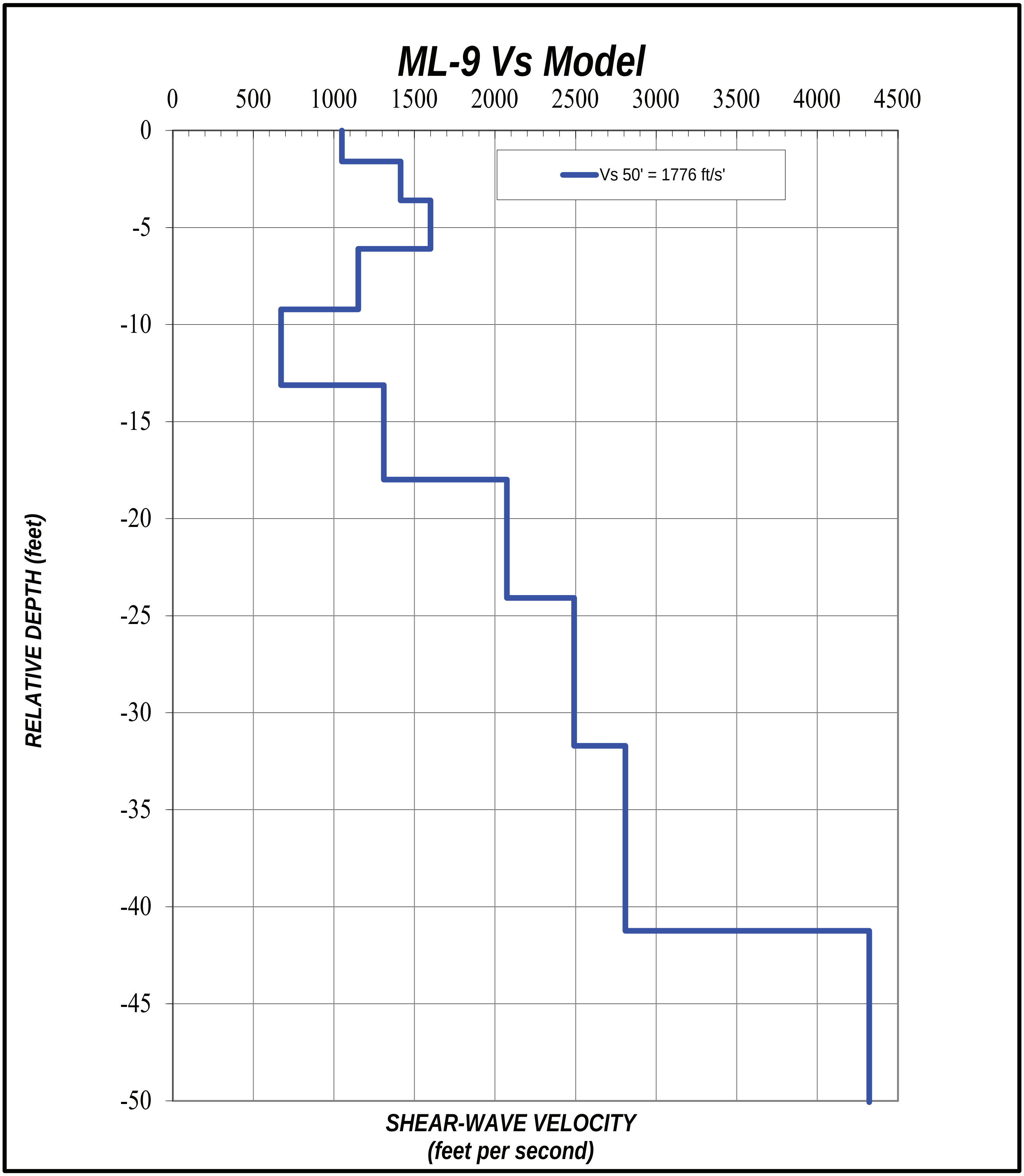


1-D MASW RESULTS
ML-9

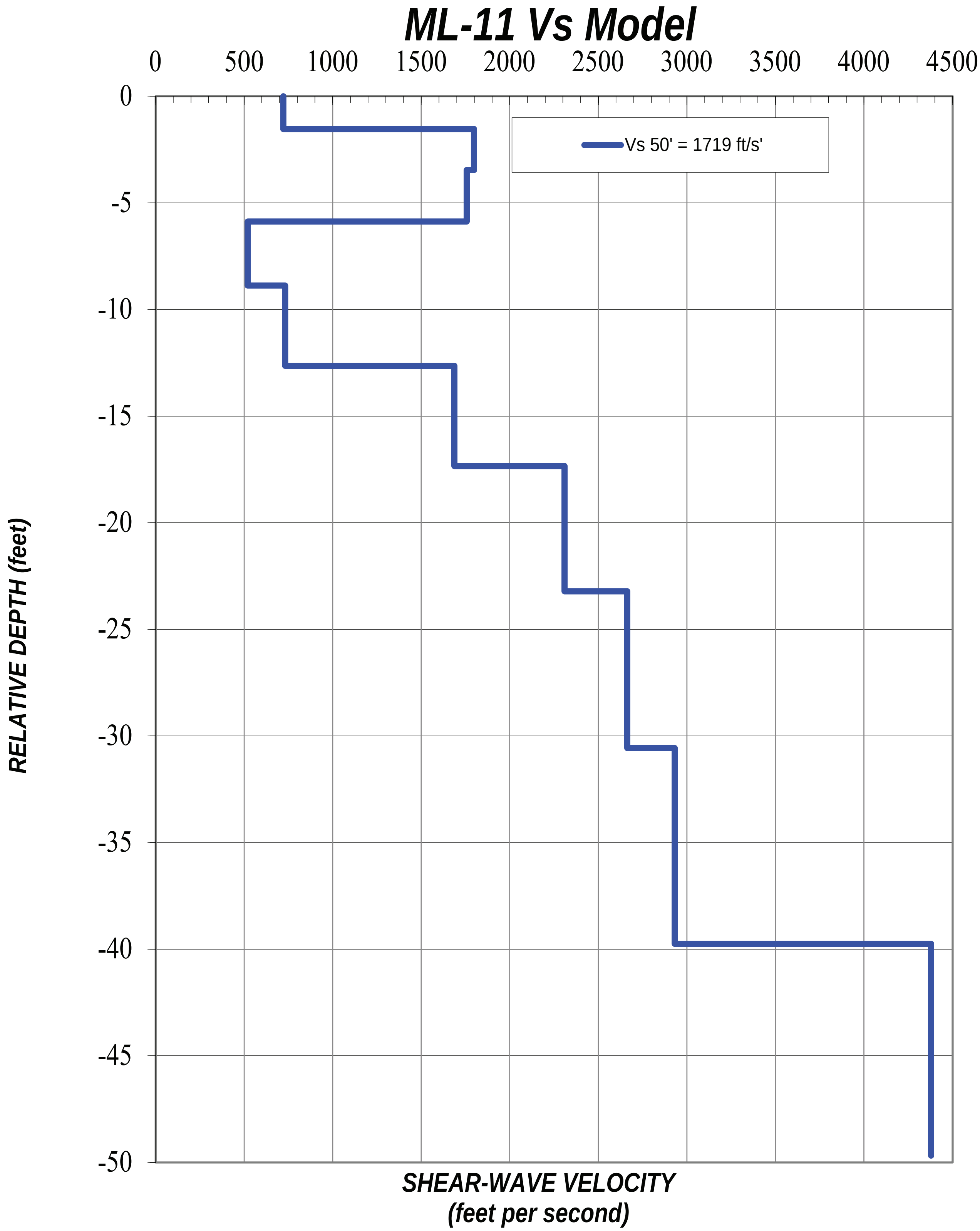
Design of Crossover Pipeline Interstate 15 Project
San Diego, California

Project No.: 210012P6SWG

Date: 10/21

ATLAS

Figure 5i



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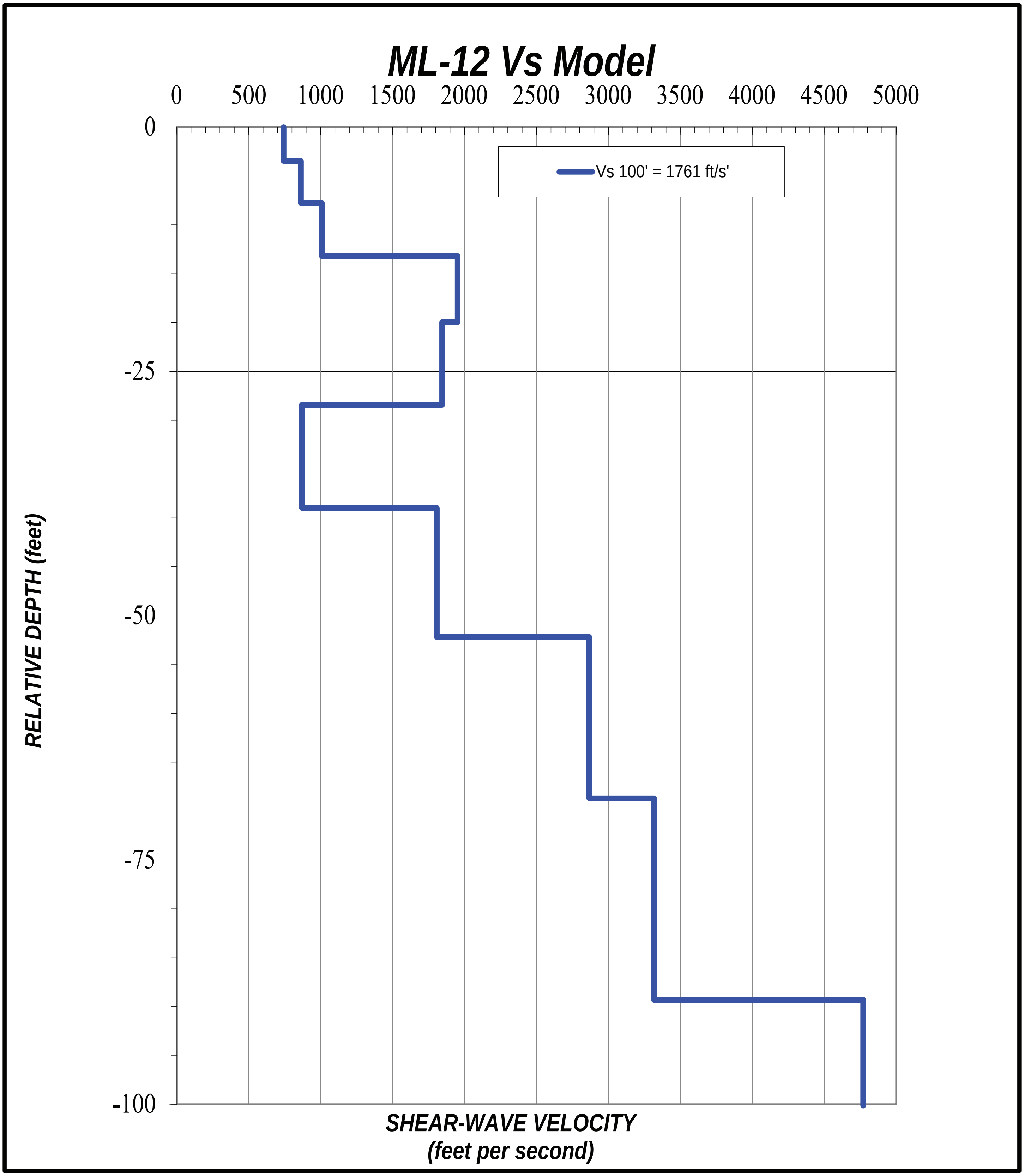


1-D MASW RESULTS
ML-12

Design of Crossover Pipeline Interstate 15 Project
San Diego, California

Project No.: 210012P6SWG | Date: 10/21

ATLAS

Figure 5k

Appendix F

Paleontological Records Search Results

DUDEK
MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 800.450.1818 F 760.632.0164

MEMORANDUM

To:	San Diego County Water Authority
From:	Sarah Siren, Paleontologist, Dudek
Subject:	Paleontological Resources Review – Crossover Pipeline Project
Date:	8/8/22
cc:	Andrew Talbert, Dudek
Attachment(s):	Figure 1. Records Search Map; Attachment A. Paleontological Resources Records Search Results Letter (Confidential); Attachment B. Field Photographs.

Dudek is providing this memo after completing a review of the potential for impacts to paleontological resources during construction activities for the Crossover Pipeline Project (Project) area located along Interstate (I-) 15, in an unincorporated portion of San Diego County, California (Figure 1). The Project includes the replacement and realignment of an existing section of pipeline that traverses the I-15 north of the City of Escondido (Figure 1). This memo was prepared by Sarah Siren, MSc, with editorial comments provided by Michael Williams, PhD, who are both qualified as Principal Investigators for Paleontology, in accordance with the California Environmental Quality Act (CEQA) Guidelines and Society of Vertebrate Paleontology (SVP) standards (2010).

The Project area is located within the Peninsular Ranges Geomorphic Province (Harden, 2004). Published geological mapping indicates that the Project area is underlain by middle to late Pleistocene age (774,000 to 11,700 years old) Quaternary alluvium and Cretaceous age (> 66 million years old) plutonic igneous bedrock (Cohen et al., 2022, Kennedy et al., 2007; SDNHM, 2021). The Pleistocene age deposits have been assigned a moderate sensitivity, whereas the plutonic igneous rocks have no potential, or paleontological resources sensitivity, as they do not contain paleontological resources (Deméré and Walsh, 1993; SDNHM, 2021- Confidential Attachment A). A field survey of the Project area conducted by Dudek paleontologist, Jason Collins, on July 14, 2022 confirmed the geology, and no fossils were observed.

According to the records search conducted by the SDNHM (2021; see attached), there are no paleontological localities documented within a one-mile radius buffer of the Project area. However, fossil localities are known from Pleistocene age sedimentary deposits elsewhere in northern San Diego County, California (SDNHM, 2021-Confidential Attachment A). These localities have produced middle to late Pleistocene age terrestrial plants, freshwater and terrestrial invertebrates, and terrestrial mammals in nearby cities of Fallbrook, Vista, Carlsbad, and Oceanside, California (SDNHM, 2021-Confidential Attachment A).

Given the proximity of past fossil discoveries in the area and the underlying paleontologically sensitive deposits, the project site has the potential to yield scientifically significant paleontological resources. In the event that intact paleontological resources are located on the project site, ground-disturbing activities associated with construction of the project, such as grading and/or trenching, have the potential to destroy a unique paleontological resource or site. Without mitigation, the potential damage to paleontological resources during construction would be a potentially significant impact (Society of Vertebrate Paleontology [SVP], 2010). However, upon implementation of mitigation measures, as referenced in the museum records search results (Confidential Attachment A), impacts would be reduced to below a level of significance. Impacts of the project are considered less than significant with mitigation incorporated during construction.

If you have any questions regarding this technical report, please feel free to contact me (760.846.9326 or ssiren@dudek.com).

Sincerely,

Sarah A. Siren, MSc

Paleontologist, Dudek

Att. *Figure 1. Records Search Map*
A Paleontological Resources Records Search Results Letter (Confidential)
B Field Photographs

References Cited:

Cohen, K.M., S.C. Finney, P.L. Gibbard, and J.-X. Fan, 2022. "The ICS International Chronostratigraphic Chart." Episodes 36: 199–-204. 2013; updated. Available at: https://stratigraphy.org/ICSchart/ChronostratChart2021-05.jpg.

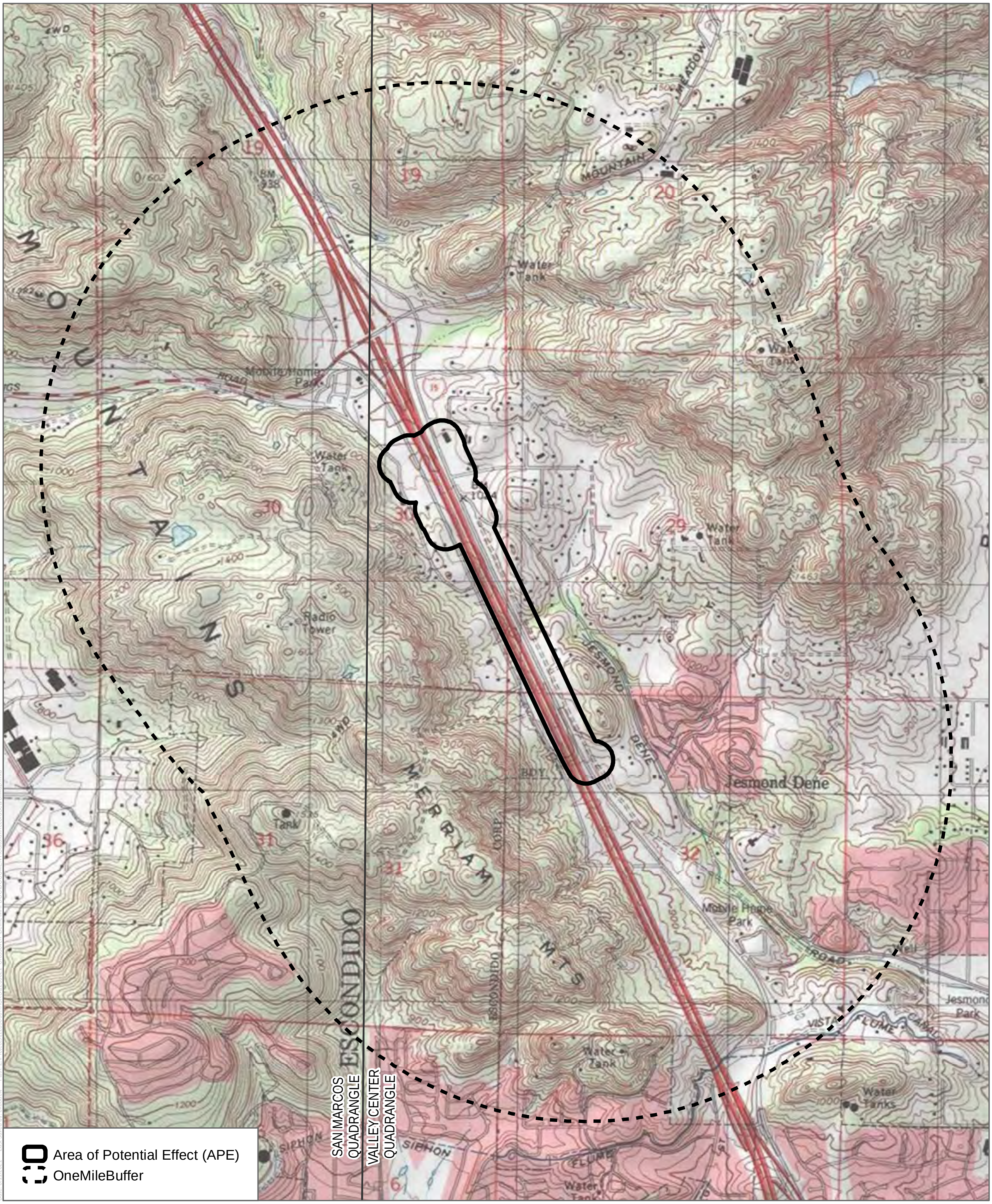
Deméré, T.A. and S.L. Walsh, 1993. Paleontological Resources, County of San Diego. Prepared for the San Diego Planning Commission, pp. 1-68.

Harden, D.R. 2004. California Geology. 2nd Edition. Pearson Education, Inc. New Jersey 552 pp.

Kennedy, M.P., S.S. Tan, K.R. Bovard, R.M. Alvarez, M.J. Watson, and C.I. Gutierrez, 2007. Geologic map of the Oceanside 30x60-minute quadrangle, California: California Geological Survey, Regional Geologic Map No. 2, scale 1:100,000.

San Diego Natural History Museum (SDNHM), 2021. Paleontological Record Search – Crossover Pipeline. Unpublished records search results letter by K. McComas from the San Diego Natural History Museum, San Diego, California. Dated August 19, 2021.

Society of Vertebrate Paleontology (SVP). 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Available: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf.



SOURCE: USGS 7.5-Minute Valley Center and San Marcos Quadrangles
Township 11S / Range 2W / Sections 29, 30, 32

DUDEK

0 1,000 2,000 Feet
0 300 600 Meters
1:24,000

Records Search Map

Crossover Pipeline

Attachment A

Paleontological Records Search Results Letter
(Confidential)

Attachment B

Field Photographs

Photograph 1: View looking west toward the I-15. Portions of the valley floor in this area of the I-15, south the Deer Springs Road interchange, are comprised of unnamed Quaternary older alluvium (Kennedy et al., 2007). Photograph taken by J. Collins from the northern Project area.

Photograph 2: Cretaceous bedrock visible in outcrop along the east side of the I-15. View looking east. Scale bar is approximately 5 feet in length. Photograph taken by J. Collins.

Appendix G
Construction Noise and Vibration Assessment

605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 F 760.632.0164

MEMORANDUM

To:	San Diego County Water Authority
From:	Mark Storm, INCE Bd. Cert. (Dudek)
Subject:	Construction Noise and Vibration Assessment for the Crossover Pipeline Interstate 15 Bypass Project
Date:	December 13, 2022
Attachments:	Figure 1, Regional Location Map Figure 2, Project Vicinity Figure 3, Project Components Figure 4, Locations of Noise-Sensitive Receptors, Baseline Sound Pressure Level Measurements, and Pipeline Alignment Stations Figure 5, Modeled Topography in Vicinity of Project Pipeline Alignment Attachment A, Field Noise Measurement Forms and Long-term Baseline Data Collection Attachment B, Conventional Construction Activity Noise Modeling Attachment C, Staging Area Noise Modeling Attachment D, Blasting Airborne Noise and Groundborne Vibration Estimates

As part of Dudek's approved Task Order 21 under San Diego County Water Authority (Water Authority) Contract ID 061904, this technical memorandum presents the results of a predictive noise and vibration study to determine potential environmental impacts associated with anticipated construction activities in the vicinity of the proposed alignment of the Crossover Pipeline (project), which connects the Second Aqueduct to the First Aqueduct between the Twin Oaks Water Treatment Plan (WTP) and Escondido. The project will be installed via trenching within Mesa Rock Road, with tunneling under Interstate 15 achieved between two 60'x25' tunnel pits. Apparent existing residential land uses adjoin the western side of Mesa Rock Road. With completed project features underground, Dudek assumes post-construction operational noise assessment will not be required. Similarly, because flows of traffic on nearby roadways will be unaffected by project operation, traffic noise impacts will not be assessed herein.

In summary, potential noise levels from anticipated project conventional construction activities may cause temporary increases to the existing outdoor sound environment already dominated by I-15 freeway traffic noise, but would be compliant with the County of San Diego 75 dBA 8-hour L_{eq} daytime standard. Noise from work occurring outside of allowable daytime hours could exceed the 66 dBA hourly L_{eq} limit adopted by the Water Authority. However, with proper implementation of temporary noise barriers where and when needed, essential construction activities performed to minimize interruption of service to the community would not exceed 66 dBA and thereby comply. Predicted groundborne vibration levels attributed to project activities and blasting as received by offsite occupied residential structures values are less than thresholds for annoyance and building damage risk per appropriate Caltrans guidance.

SDCWA Project No.	Q0238	SDCWA Project Name	Crossover Pipeline Interstate 15 Bypass Project
SDCWA ENV No.	E2022-03	SDCWA Contract ID/Task No.	061904/21
Associated Permits	2810-2011-001-05; TE03216A-0; waters permits TBD		

1 Background

1.1 Project Description and Context

The San Diego County Water Authority (Water Authority) was established in 1944 as the wholesale water provider for western San Diego County, and currently serves 24 member agencies that consist of six cities, 17 special districts, and Marine Corps Base Camp Pendleton. Between 75 and 90 percent of the total supply for the three million San Diego County residents comes from imported water supplied by the Water Authority. The two main sources of this imported water come from the Sacramento/San Joaquin rivers in the San Francisco Bay-Delta system to the north (State Water Project water) traveling south via the California Aqueduct, and from the Colorado River coming from the east via the Colorado River Aqueduct. Imported water is conveyed via the First San Diego Aqueduct (First Aqueduct) and Second San Diego Aqueduct (Second Aqueduct), each of which consist of a series of parallel pipelines that traverse from the Water Authorities' northern service boundary near the San Diego County border with Riverside County to the south throughout the Water Authorities service area. The First and Second San Diego Aqueducts and the Water Authority's service area are shown on Figure 1, Regional Location Map.

The existing Crossover Pipeline is a 66-inch pre-stressed concrete cylinder aqueduct pipe that was built in the 1960's to provide a connection between the First Aqueduct and Second Aqueduct. The Crossover Pipeline extends approximately 7.5 miles from the Second Aqueduct near the Twin Oaks Valley Water Treatment Plant in the west to the First Aqueduct south of Hubbard Hill in Escondido in the east, and allows untreated water from the Second Aqueduct to be transferred to the First Aqueduct, which carries only treated water north of the Crossover Pipeline terminal structure. The existing Crossover Pipeline alignment is shown on Figure 2, Project Vicinity.

The Water Authority is planning to implement the Crossover Pipeline Interstate 15 (I-15) Bypass Project (proposed project), which would replace and realign an approximately 5,400-foot segment of the existing Crossover Pipeline that runs beneath and parallel to I-15 in unincorporated San Diego County north of the City of Escondido. The Water Authority identified the need for rehabilitation of the Crossover Pipeline as their acoustic fiber optic monitoring system has detected wire breaks in a segment of the pipe west of I-15 and in the segment of the pipe that runs parallel to I-15, indicating structural concerns for the pipe. The Water Authority needs to repair or replace a segment of the existing Crossover pipeline to allow continued functioning of its system to meet its member agency water deliveries and extend the service life of its facilities.

1.1.1 Project Location

The project is primarily located in unincorporated areas of the County of San Diego (County), just north the City of Escondido. Construction activities are anticipated to be located within a mixture of Water Authority ROW, County ROW, and private property; the entire tunneled portion of the proposed pipeline would be located within Caltrans ROW. As shown in Figure 3, Project Components, one potential construction laydown area (referred to as Laydown Area D) is located within the City of Escondido municipal boundaries. The project spans primarily developed/disturbed land in a rural area, crosses beneath I-15, and travels along N. Centre City Parkway. The project alignment is surrounded by semi-rural residential development, commercial uses (nurseries and a golf driving range), undeveloped land, and local roadways.

1.1.2 Project Construction Methods

The project's replacement pipeline construction would include one tunnel segment and trench-based installation of the remaining segments. Approximately 500 feet of proposed pipeline would be installed under Mesa Rock Road, I-15, and N. Centre City Parkway using pipe jacking and tunnel boring machines. Approximately 5,700 feet of proposed pipeline would be installed via open trench construction. Open trench construction would consist of saw-cutting pavement to prepare for pipe installation. Then, the sequence of activity would start with trenching and excavation, followed by pipe installation. Backfill would be deposited into the trench and compacted. This process would proceed along the length of the pipeline alignment, with excavation, pipe installation, and backfill progressing along the alignment and would continue until the pipeline is completely installed. Typically, the construction contractor would install up to 40-feet of new pipeline in a single day. Steel plates or base pavement would be installed if the excavated area is left open at the end of each day. Initial paving of the disturbed roads would occur periodically, as needed. After pipe installation is completed, a portion of the paved roads would require finish paving and striping.

Typical construction work hours would be Monday through Friday, 7 a.m. to 7 p.m., but overnight work outside of these hours may occur. Constructing the northern and southern tie-in connections with the existing pipeline will require 10-day service shutoff periods, during which work may occur 24 hours per day, seven days per week.

Due to underlying geology, construction would require blasting and the use of a rock crusher for materials processing. Rock blasting is the controlled use of explosives to excavate, break down, or remove rock that cannot otherwise be conventionally excavating. The result of rock blasting is often known as a rock cut. Blasting is anticipated to be required during pipeline installation along N. Centre City Parkway.

1.1.3 Project Design Features

The Water Authority requires contractors to follow several standard conditions contained in the construction project specifications that avoid or minimize significant environmental impacts. In addition, design features specific to the proposed project that could minimize or avoid environmental effects would be incorporated into the project, as appropriate. Applicable design features for this action are listed below as they pertain to noise and vibration. The design features presented herein are not exhaustive, and other specification requirements or design features may be developed during the proposed project that are as effective as those listed.

A. Contractor will comply with the noise thresholds the Water Authority has established for this project. Noise levels associated with construction activities are not to exceed an average sound level of 75 decibels over an eight-hour period, between 7:00 a.m. and 7:00 p.m., and 66 decibels over a one-hour period between 7 p.m. to 7 a.m. at or beyond the property lines on any occupied property where the noise is being received.

B. All noise-producing project equipment and vehicles using internal combustion engines will be equipped with mufflers; air-inlet silencers, where appropriate; and any other shrouds, shields, or noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed package equipment (e.g., arc-welders, air compressors) will be equipped with shrouds and noise control features that are readily available for that type of equipment.

C. All mobile or fixed noise-producing equipment used on the project that is regulated for noise output by a local, state, or federal agency will comply with such regulation while in the course of project activity.

D. Electrically powered equipment will be used instead of pneumatic or internal combustion-powered equipment, where feasible.

E. Construction site and access road speed limits will be established and enforced during the construction period; speeds on unpaved roads will not exceed 20 miles per hour.

F. The use of noise-producing signals, including horns, whistles, alarms, and bells, will be for safety warning purposes only.

G. No project-related public address or music system will be audible at any adjacent noise-sensitive receptor.

1.2 Noise Characteristics

Sound is mechanical energy transmitted by pressure waves in a compressible medium, such as air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. The sound pressure level has become the most common descriptor used to characterize the loudness of an outdoor ambient sound level. The unit of measurement of sound pressure is a decibel (dB). Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dB when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dB in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dB. A change of 5 dB is readily perceptible, and a change of 10 dB is perceived as twice or half as loud (Caltrans 2013). A doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the number of daily trips along a given road) would result in a barely perceptible change in sound level.

Sound may be described in terms of level or amplitude (measured in dB), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel (dBA) scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear.

Several descriptors of noise (a.k.a., noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise. These descriptors include the equivalent noise level over a given period (L_{eq}), the day–night average noise level (L_{dn}), and the community noise equivalent level (CNEL). Each of these descriptors uses units of dBA.

The L_{eq} value is a decibel quantity that represents the constant or energy-averaged value equivalent to the amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour L_{eq} measurement of 60 dBA would represent the average amount of energy contained in all the noise that occurred in that hour. The L_{eq} value is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors, which can then be compared to an established L_{eq} standard or threshold of the same duration. Another descriptor is maximum sound level (L_{max}), which is the greatest sound level measured during a designated time interval or event. The minimum sound level (L_{min}) is often called the floor of a measurement period.

Unlike the L_{eq}, L_{max}, and L_{min} metrics, L_{dn} and CNEL descriptors always represent 24-hour periods and differ from a 24-hour L_{eq} value because they apply a time-weighted factor designed to emphasize noise events that occur during the non-daytime hours (when speech and sleep disturbance is of more concern). "Time weighted" refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m. to 7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m. to 10:00 p.m.) is penalized by adding 5 dB to the actual levels, and nighttime (10:00 p.m. to 7:00 a.m.) noise is penalized by adding 10 dB to the actual levels. L_{dn} differs from CNEL in that the daytime period is longer (defined instead as 7:00 a.m. to 10:00 p.m.), thus eliminating the dB adjustment for the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5–1 dB and are often considered or defined as being essentially equivalent by many jurisdictions.

1.3 Vibration Fundamentals

Vibration is oscillatory movement of mass (typically a solid) over time. It is described in terms of frequency and amplitude and can be expressed as displacement, velocity, or acceleration. For environmental studies, vibration is often studied as a velocity that, akin to the discussion of sound pressure levels, can also be expressed in dB in order to cast a wide range of vibration levels in a more convenient scale and with respect to a reference quantity. Vibration impacts to buildings are generally discussed in terms of inches per second (ips) peak particle velocity (PPV), which will be used herein to discuss vibration levels for ease of reading and comparison with relevant standards.

Vibration can also be annoying and thereby impact occupants of structures, and vibration of sufficient amplitude can disrupt sensitive equipment and processes (Caltrans 2020), such as those involving the use of electron microscopes and lithography equipment. Common sources of vibration within communities include construction activities and railroads. Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities where sudden releases of subterranean energy or powerful impacts of tools on hard materials occur. Depending on their distances to a sensitive receptor, operation of large bulldozers, graders, loaded dump trucks, or other heavy construction equipment and vehicles on a construction site also have the potential to cause high vibration amplitudes.

2 Regulatory Setting and Guidelines

2.1 Federal

Federal Transit Administration

Although not a regulation applicable to this project, the FTA Transit Noise and Vibration Impact Assessment guidance document suggests that when a "detailed assessment" of construction noise is performed, such as the analysis disclosed herein where anticipated rosters of operating construction equipment and distances to nearby noise-sensitive receivers are known, an 8-hour L_{eq} nighttime threshold of 70 dBA should be expected at the exteriors of residential land uses (FTA 2018).

2.2 State

California Department of Transportation

The project is subject to review or approval by the California Department of Transportation (Caltrans). This analysis considers Caltrans guidance with respect to analyzing vibration impacts because the Water Authority does not have its own established thresholds for assessing vibration impacts. In its Transportation and Construction Vibration Guidance Manual (Caltrans 2020), Caltrans recommends 0.5 ips PPV as a threshold for the avoidance of structural damage to typical newer residential buildings exposed to continuous or frequent intermittent sources of groundborne vibration. For transient vibration events, such as blasting, the damage risk threshold would be 1.0 ips PPV (Caltrans 2020) at the same type of newer residential structures. For older structures, these guidance thresholds would be more stringent: 0.3 ips PPV for continuous/intermittent vibration sources, and 0.5 ips PPV for transient vibration events. With respect to human annoyance, Caltrans guidance indicates that building occupants exposed to continuous groundborne vibration in the range of 0.2 ips to 0.6 ips PPV would find it “unpleasant” or “annoying” and thus a likely significant impact. Although these Caltrans guidance thresholds are not regulations and the project is not subject to Caltrans authorization, they can serve as quantified standards in the absence of such limits at the local jurisdictional level.

California Energy Commission

In its assessment of applicant-proposed energy projects, and with respect to impact significance for durable increases in outdoor ambient sound level per CEQA, California Energy Commission (CEC) technical staff has often concluded that it is “reasonable to assume that an increase in background noise levels up to 5 dBA in a residential setting is insignificant; an increase of more than 10 dBA is considered significant. An increase between 5 and 10 dBA should be considered adverse, but may be either significant or insignificant, depending on the particular circumstances of the case” (CEC 2010). In this context, the CEC defines “background” sound with an L_{90} statistical sound level descriptor, which is the sound level exceeded for a cumulative ninety percent (90%) of the time during a measurement period.

Regarding noise from construction activities, the CEC usually considers a project’s impact less than significant with respect to CEQA compliance if it is temporary, limited to daytime hours, and industry-standard noise abatement measures are implemented for noise producing equipment.

2.3 Local

2.3.1 County of San Diego

Aside from Staging Area D, the subject work area is located in the boundaries of the County of San Diego. The Water Authority is not bound by County noise regulations, but the Water Authority has elected to consider the project’s impacts in the context of the County Noise Ordinance for purposes of disclosure and impact analysis pursuant to CEQA.

County of San Diego Noise Ordinance

Section 36.408 of the County's Noise Ordinance limits allowable construction hours from 7:00 a.m. to 7:00 p.m. on Mondays through Saturdays, and on Sundays and designated holidays, construction activity is prohibited. Thus, when construction activity is permitted, Section 36.409 of the Noise Ordinance limits allowable construction noise to no more than 75 dBA L_{eq} over an 8-hour period between 7:00 a.m. and 7:00 p.m. when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

For performance of work on a public utility facility, Sections 36.423 through 36.435 of the County's Noise Ordinance provide opportunity for a variance request, approval, and continuance process that could permit an applicant to "temporarily deviate from the requirements of this chapter" and thus potentially operate—subject to the County's noise control officer review and approval—construction equipment outside of the aforesaid allowable hours and/or at levels that may exceed the 75 dBA 8-hour L_{eq} threshold.

2.3.2 City of Escondido

While its nearest NSR located to the north on the south side of Whiting Woods Drive are within unincorporated County jurisdiction, Staging Area D is located within the boundaries of the City of Escondido. Although the Water Authority is not bound by City noise regulations, the Water Authority has elected to consider the potential noise and vibration impacts attributed to activity at this staging area in the context of the City's Noise Ordinance for purposes of disclosure and impact analysis pursuant to CEQA.

City of Escondido Noise Ordinance

Excepting emergency work, Section 17-234 of the City's Municipal Code places time limits on operating construction equipment at a site as follows:

a) It shall be unlawful for any person, including the City of Escondido, to operate construction equipment at any construction site, except on Monday through Friday during a week between the hours of seven (7) a.m. and six (6) p.m. and on Saturdays between the hours of nine (9) a.m. and five (5) p.m., and provided that the operation of such construction equipment complies with the requirements of subsection (d) of this section.

b) It shall be unlawful for any person, including the City of Escondido, to operate construction equipment at any construction site on Sundays and on days designated by the president, governor or city council as public holidays.

c) A person may operate construction equipment at his/her residence or for the purpose of constructing or modifying a residence for himself/herself on Monday through Friday of a week between the hours of seven (7) a.m. and six (6) p.m., and on Saturdays, Sundays, and holidays between the hours of nine (9) a.m. and five (5) p.m.; provided, that such operation of construction equipment is not carried on for profit or livelihood and complies with the requirements of subsection (d) of this section.

d) No construction equipment or combination of equipment, regardless of age or date of acquisition, shall be operated so as to cause noise in excess of a one-hour average sound level limit of seventy-five (75) dB at any time, unless a variance has been obtained in advance from the city manager.

Additionally, Section 17-238 of the City's Municipal Code specifically limits grading activities as follows:

a) It shall be unlawful for any person, including the City of Escondido, to do any authorized grading at any construction site, except on Mondays through Fridays during a week between the hours of seven (7) a.m. and six (6) p.m. and, provided a variance has been obtained in advance from the city manager, on Saturdays from ten (10) a.m. to five (5) p.m.

b) For the purpose of this section, "grading" shall include but not be limited to compacting, drilling, rock crushing or splitting, bulldozing, clearing, dredging, digging, filling and blasting.

c) In addition, any equipment used for grading shall not be operated so as to cause noise in excess of a one hour sound level limit of seventy-five (75) dB at any time when measured at or within the property lines of any property which is developed and used in whole or in part for residential purposes, unless a variance has been obtained in advance from the city manager.

Note that unlike the County's construction noise limit of 75 dBA L_{eq} energy-averaged over an 8-hour period, the City's assessment metric for both Sections 17-234.d and 17-238.c is a one-hour energy-averaged L_{eq} value.

3 Existing Conditions

Dudek conducted sound pressure level (SPL) measurements at representative positions near the project site on August 11, 2022, to quantify and characterize the existing outdoor ambient sound environment and thus establish a quantified baseline for assessment of potential adverse effects at nearby existing off-site receptors in the project area. Table 2 provides the location, date, and time period at which these pre-project (or baseline) noise level measurements were performed by an attending Dudek field investigator using a Rion-branded Model NL-52 sound level meter equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The sound level meter (SLM) meets the current American National Standards Institute standard for a Type 1 (Precision Grade) SPL measuring instrument. The SLM accuracy was verified using a field calibrator before and after taking the outdoor SPL measurements, which were conducted with the microphone positioned approximately 5 feet above the ground.

Three short-term (ST) noise level measurement locations (ST1 through ST3) were selected along the Water Authority's right-of-way (or otherwise publicly accessible land and thus not on private property) to represent outdoor ambient sound environmental conditions considered comparable to those of existing off-site noise-sensitive receivers in the project vicinity. These surveyed locations ST1, ST2, and ST3 are displayed in Figure 4. The measured L_{eq} and L_{max} noise levels are presented in Table 2. Primary acoustical contribution measured and perceived at the sites was Interstate-15 freeway traffic. As shown in Table 2, the measured SPL at the three sampled locations ranged from approximately 67 dBA L_{eq} at ST1 to 70.3 dBA L_{eq} at ST2. These traffic-dominated noise levels are consistent with expectations and values that may be estimated with Federal Transit Administration (FTA) guidance (FTA 2018). Beyond the summarized information presented in Table 2, detailed noise measurement data is included in Attachment A, Baseline Noise Measurement Field Data.

Table 2. Measured Baseline Outdoor Ambient Noise Levels

Site	Location/Address	Date (yyyy-mm-dd) & Time (hh:mm)	L_{eq} (dBA)	L_{max} (dBA)
ST1	Approximately 180 feet east of N. Centre City Parkway roadway centerline on the north side of Silver Tree Lane	2022-08-11, 09:00 AM to 09:15 AM	67.2	71.9
ST2	Approximately 40 feet east of N. Centre City Parkway roadway centerline on the south side of McKveshal Road	2022-08-11, 09:30 AM to 09:45 AM	70.3	76.9
ST3	Approximately 20 feet west of Mesa Rock Road roadway centerline at the entrance to 26334 Mesa Rock Road	2022-08-11, 10:15 AM to 10:30 AM	67.9	80.5
LT1	Approximately 100 feet east of N. Centre City Parkway roadway centerline on the north side of Silver Tree Lane	2022-08-011, 09:00 AM to 2022-08-12, 13:00 PM	66.4	83.0

Source: Attachment A.
Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); dBA = A-weighted decibels; L_{max} = maximum sound level during the measurement interval.

Table 2 also presents summarized 28-hour metrics from SPL data collected at an unattended ANSI Type 2 SLM deployment position on Silver Tree Lane (LT1). Exhibit 1 presents a plot of the successive five-minute L_{eq} intervals collected by this fixed-position SLM. The intent of this longer-term SPL measurement was to quantify representative outdoor ambient noise over a full diurnal cycle, which Exhibit 1 demonstrates being consistent with expected changes in I-15 traffic volumes: higher during typical commuter hours, and lower during nighttime hours. The included plot of L_{90} statistical values, and its visible "tracking" with the plot of L_{eq} values, helps show that measured SPL was dominated by I-15 highway traffic acoustical contribution. Additional LT1 noise measurement data detail is included in Attachment A.

Exhibit 2 depicts the L_{eq} and L_{90} data plots of Exhibit 1 as hourly energy-averaged and statistically-averaged values, respectively, to allow direct comparison with an hourly noise level standard.

Exhibit 1. Measured Baseline Outdoor Ambient Noise Levels at LT1

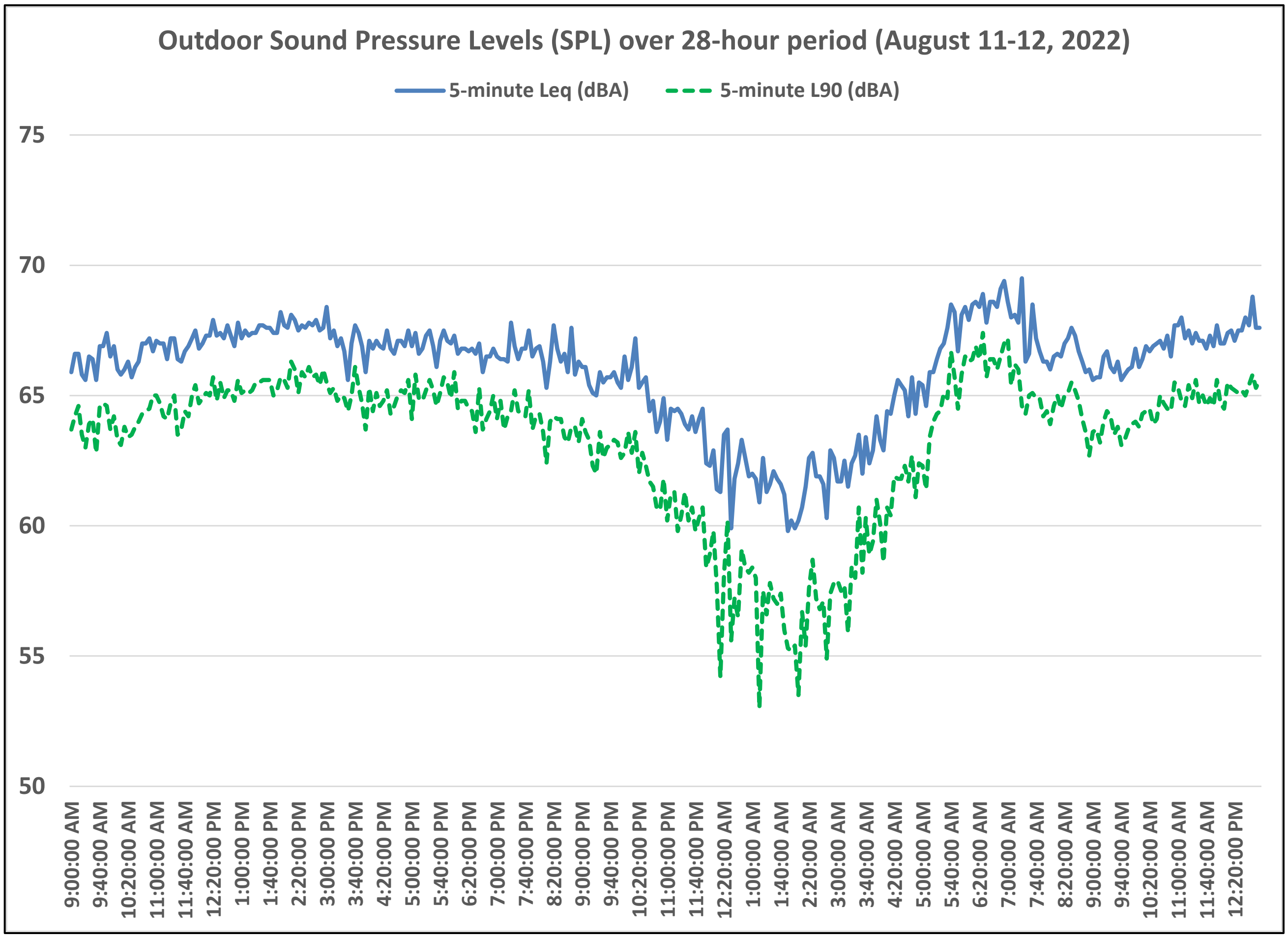
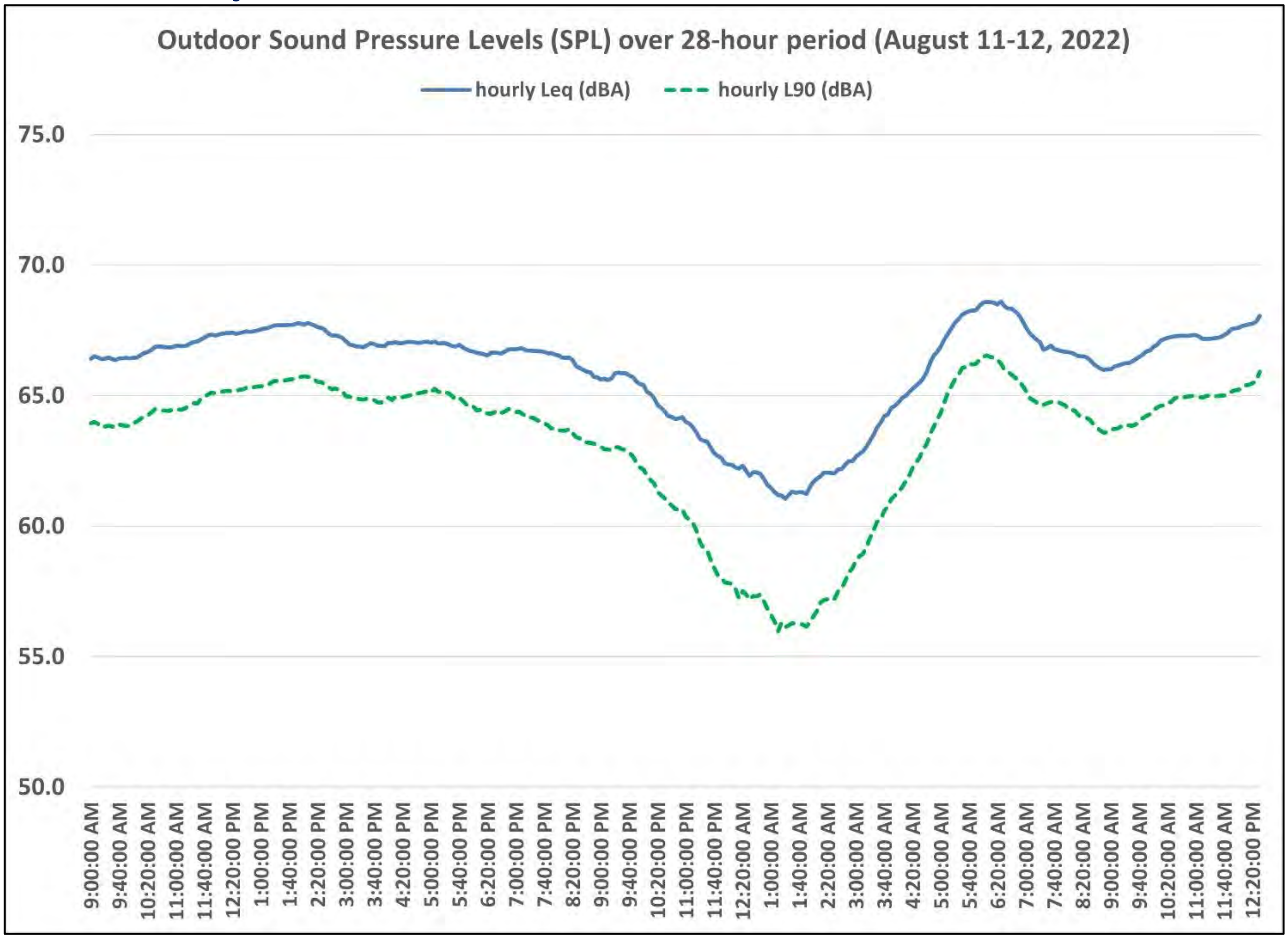


Exhibit 2. Hourly Baseline Outdoor Ambient Noise Levels at LT1



4 Impact Thresholds

4.1 Noise

Project construction subject to this assessment would occur mostly within unincorporated County of San Diego, with Staging Area D placed within City of Escondido boundaries. Offsite occupied properties and noise-sensitive receivers (e.g., residences) nearest to the Project are within the boundaries of unincorporated County of San Diego jurisdiction. Hence, construction activities have been analyzed in light of applicable County and City noise standards summarized in Section 2 and as adopted by the Water Authority.

Construction activities will largely occur during allowable daytime hours; however, work may occur during evening hours (7:00 p.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.) over 10-day periods when the aqueduct is temporarily deactivated and cleared of water to facilitate tie-in connections and other Project needs. Round-the-clock work is needed during these periods to limit the duration that the aqueduct is out of service. Under such evening and nighttime conditions, the Water Authority, as lead agency under CEQA, has selected an hourly construction noise level threshold (L_{eq1hr}) of 66 dBA for analysis of project impacts pursuant to CEQA. This threshold represents no more than a 10 dB increase over the quietest continuous freeway noise received by the studied receptors, which was recorded as having a background noise level (i.e., the L_{90} descriptor) as low as 56 dBA as appearing in Exhibit 2. The 66 dBA threshold is also several decibels quieter than the FTA-recommended 70 dBA magnitude for nighttime construction noise at a residential receptor. On these bases, project evening and nighttime construction noise exposure levels at a receptor at or below this empirically-based and guidance-consistent threshold would be considered a less-than-significant impact pursuant to CEQA.

Although this noise threshold is much louder than the corresponding 45 dBA hourly L_{eq} threshold at night (10:00 p.m. to 7:00 a.m.) for Noise Zone 1 properties under County jurisdiction, the measured quietest nighttime L_{90} of 56 dBA shown in Exhibit 2 indicates that existing ambient sound conditions during nighttime hours in the vicinity of the project and the I-15 freeway already exceed this default County standard by an 11 dB margin. Additionally, a 66 dBA L_{eq} hourly threshold is still much quieter than the magnitude of the County's abovementioned construction noise threshold (75 dBA) during daytime hours, and thereby provides further support for its usage as a reasonable threshold at which to analyze short-duration night construction for critical infrastructure work.

For purposes of this assessment, noise exposure levels from construction noise activities were evaluated at the nearest project property line. However, due to construction areas of multiple project structure locations lying within property lines of neighboring occupied parcels, the noise exposure levels for some locations have been evaluated herein at the exteriors of apparent occupied properties and compared with this adopted quantified nighttime 1-hour L_{eq} standard.

4.2 Vibration

For construction vibration impacts, guidance from Caltrans indicates that a vibration velocity level of 0.2 ips PPV received at a structure would be considered annoying by occupants within (Caltrans 2020). As for the receiving structure itself, Caltrans guidance as discussed in Section 2 recommends that a vibration level of 0.3 to 0.5 ips PPV would represent the threshold range for damage risk of older to newer residential structures, respectively.

5 Impact Discussion

Construction noise and vibration are temporary phenomena. Although construction noise and vibration levels vary from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor, noise exposure levels from the aggregate of concurrently operating equipment can be accurately predicted with industry-proven and standardized sound propagation modeling techniques. Hence, the following subsections evaluate conventional construction equipment noise emission along the Project alignment, noise from staging areas, and noise from expected blasting activities within pre-defined areas of blasting need.

5.1 Conventional Construction Noise Prediction and Impact Assessment

5.1.1 Methodology

To reasonably estimate aggregate project-attributed construction noise exposure at thirteen (13) nearest offsite noise-sensitive receptors (NSR) over the course of Project progress (and from potentially concurrent scheduled activities), the following methodology and assumptions were adopted. Detailed information on the reference source sound levels and the prediction results appear in Attachment B.

Summarized Approach

The predictive analysis herein locates one or multiple sound-emitting sources (i.e., stationary and mobile equipment) associated with a distinct construction activity or phase as a collective single point at an approximate geographic position of the activity considered closest to the studied NSR. While the exact positions of these equipment are unknown at any moment, they would not stray beyond the defined zone or area on which they are expected to work; hence, the collective equipment sound source single-point approximation is assumed to be located along the pipeline alignment for the trenching activities or at one of the two pits on either side of the tunneling extent.

As shown in Attachment B that details the Microsoft Excel workbook output, predicted noise from each distinct phase or activity—using the above approach—populates a matrix that depicts the Project schedule at a monthly level of granularity. The assumed schedule of listed activities is based on estimated time periods provided in the current Project Description (PD). The total concurrent noise exposure level, expressed as an energy equivalent sound level (L_{eq}), is predicted for each successive month at an indicated NSR position as the Project progresses.

Modeled Sources

Figure 4, Locations of Noise-Sensitive Receptors, Baseline Sound Pressure Level Measurements, and Pipeline Alignment Stations displays the Project site and its surroundings with “station” tags showing all considered construction activity point-source locations along the alignment used in this predictive model. Table 3 lists the modeled construction activities and their associated noise-producing equipment. For purposes of this assessment, the presumed location of the collected equipment point-type sound emission sources for each activity would be, at any given time, one of the eleven (11) indicated station tags (JPW, JPE, STA8, STA13, STA23, STA33, STA43, STA53, STA57, NTI, and STI). Consistent with Project information, at or near the tie-in positions with the existing piping (NTI, JPW, STA57, and STI) the quantity of ventilation fans would be doubled.

The reference sound emission levels for the listed equipment used as model input parameters are based on maximum sound levels (L_{max}) and acoustical usage factor (AUF) values appearing in Table 1 of the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) User's Guide. For example, usage of the RCNM guide indicates 84 dBA L_{max} at a distance of 50 feet for an "auger drill rig" (FHWA 2006).

Table 3. Modeled Project Construction Activities and Equipment Types

Activity Name (Abbreviation)	Operating Equipment Types*
Excavate, Shore, Trench (EXST)	excavator, generator, front-end loader, concrete saw, man-lift (a.k.a., boom-truck), pump, ventilation fan
"Restore" (REST)	Scarifier, paver, "all other equipment > 5 HP", compactor, roller
Striping (STRP)	air compressor
Final Paving (FPAV)	scarifier, paver, "all other equipment > 5 HP"
Soldier Beam Install (SBIN)	auger drill rig, front-end loader, ventilation fan
Shaft Excavation and Support (SHFT)	excavator, generator, ventilation fan
Tunnel Excavation (TUNX)	crane, front-end loader, horizontal boring hydraulic jack, air compressor, generator, welder/torch, ventilation fan
Install Carrier Pipe (INCP)	concrete batch plant, crane, air compressor, generator, welder/torch, ventilation fan
Backfill (BACK)	excavator, crane
Excavate, Shore, Trench at the Tie-In (ETIE)	excavator, generator, front-end loader, concrete saw, man-lift (a.k.a., boom-truck), pump, ventilation fan (x2)
Install Carrier Pipe at the Tie-In (ITIE)	crane, air compressor, generator, welder/torch, ventilation fan (x2)
Backfill at the Tie-In (BTIE)	excavator, crane

Notes: *per Federal Highway administration (FHWA) Roadway Construction Noise Model (RCNM) designations.

Modeled Topography

For purposes of this construction noise level assessment, topographical effects (i.e., potential sound path occlusion due to natural terrain variation or manufactured structures) have been included by approximating terrain for the Project area and its surroundings with the following technique:

- The Project area shown in Figure 4 was divided into an 8x24 array of 192 identical rectangular-shaped parcels, within which an approximate center-point was assigned a mean sea level (MSL) elevation using Google Earth Pro elevation profile data.
- Using the above 192 reference elevation points, an inverse-distance-weighted (IDW) interpolation method[1] was used to populate the remainder of 6,912 elevation points across a square grid depicting the geography of the Project area and surroundings as appearing in Figure 5, Modeled Topography in Vicinity of Project Pipeline Alignment. Hence, this method creates a terrain approximation upon which noise emission sources, barriers, and receptors may be located. Figure 5 depicts a not-to-scale view of this profile, which exaggerates height.

[1] https://en.wikipedia.org/wiki/Inverse_distance_weighting

Modeled Noise-Sensitive Receptors

Figure 4 also presents (as green oval callouts) the thirteen studied NSR positions that include as follows:

- NSR1 represents an apparent residence east of North Centre City Parkway on Silver Tree Lane;
- NSR2 represents an apparent residence west of the I-15 on Windsong Lane, near the proposed underground pipeline crossing;
- NSR3 represents apparent residences west of the Bell Marie Winery;
- NSR4 represents the Belle Marie Winery;
- NSR5 represents an apparent residence on Windsong Lane and east of proposed pipeline Station 23;
- NSR6 represents an apparent residence at 26064 Mesa Rock Road, or a nearby residence at the intersection of “Mesa Ranch” and Mesa Rock Road;
- NSR7 represents an apparent residence at 25990 Mesa Rock Road;
- NSR8 represents an apparent residence at 25984 Mesa Rock Road;
- NSR9 represents an apparent a few residences accessed via 25812 Jesmond Dene Road;
- NSR10 represents an apparent residence at 25880 Jesmond Dene Road;
- NSR11 represents an apparent residence near baseline measurement position ST3, east of the intersection of McKveshal Road and N. Centre City Parkway;
- NSR12 represents a few residences accessed via private road that intersects N. Centre City Parkway; and
- NSR13 represents an apparent residence at 26322 Jesmond Dene Road.

Each NSR position assumes a listener elevation of five feet (5’) above local grade elevation.

Sound Propagation Parameters

The predictive model assumes point-source sound propagation, and the following three attenuation terms:

- Geometric divergence (i.e., “6 dB per doubling of distance”);
- Atmospheric absorption (1 dBA reduction per 1,000 feet of distance travelled); and,
- Distance-dependent acoustical ground absorption, per equation 10 from ISO 9613-2, that limits available noise reduction due to potentially porous ground surface at 0 to 4.8 dBA.
- Calculations in the model consider up to two path-intervening barrier elements: the "nearest" and "farthest" with respect to a receiver point along the ray to a sound emission point source. The path length difference adds the calculated distance difference between these two barriers as part of the calculation, as a way to approximate conditions for "double diffraction" consistent with ISO 9613-2 (ISO 1996).

5.1.2 Prediction Results

Representing application of the sound prediction methodology described in the preceding paragraphs, Table 4 presents predicted noise level exposures from project-attributed conventional construction activity sources during daytime hours at the indicated receptor locations, which appear in Figure 4.

Table 4. Predicted Daytime Conventional Construction Noise at Modeled Receptor Locations

Modeled Receptor Location	Predicted Highest Hourly L_{eq} (dBA)	Predicted Lowest Hourly L_{eq} (dBA)
NSR1	59	35
NSR2	71	36
NSR3	60	38
NSR4	61	39
NSR5	64	41
NSR6	63	45
NSR7	61	43
NSR8	63	41
NSR9	68	37
NSR10	64	38
NSR11	70	41
NSR12	70	45
NSR13	66	41

Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); dBA = A-weighted decibels

As presented in Table 4, the estimated hourly construction noise levels are predicted to not exceed 71 dBA L_{eq} at the nearest studied occupied properties. Under these conditions, predicted operation of daytime construction equipment and processes would not exceed the County-based threshold (i.e., Section 36.409 of the County's Noise Ordinance) identified for this assessment.

However, it is anticipated that for pipeline shutdown periods work may be required during evening and nighttime hours at the pipeline tie-in locations on the northern and southern ends of the project alignment. For this evening and nighttime work, the threshold of 66 dBA hourly L_{eq} would apply. Modeling predicts that nighttime noise levels generated at the southern tie-in work area would exceed this threshold at NSR2. At all other studied NSR locations and as summarized in Table 5, project construction noise emanating from these localized tie-in locations is predicted to be lower than 66 dBA due to attenuation with greater distance.

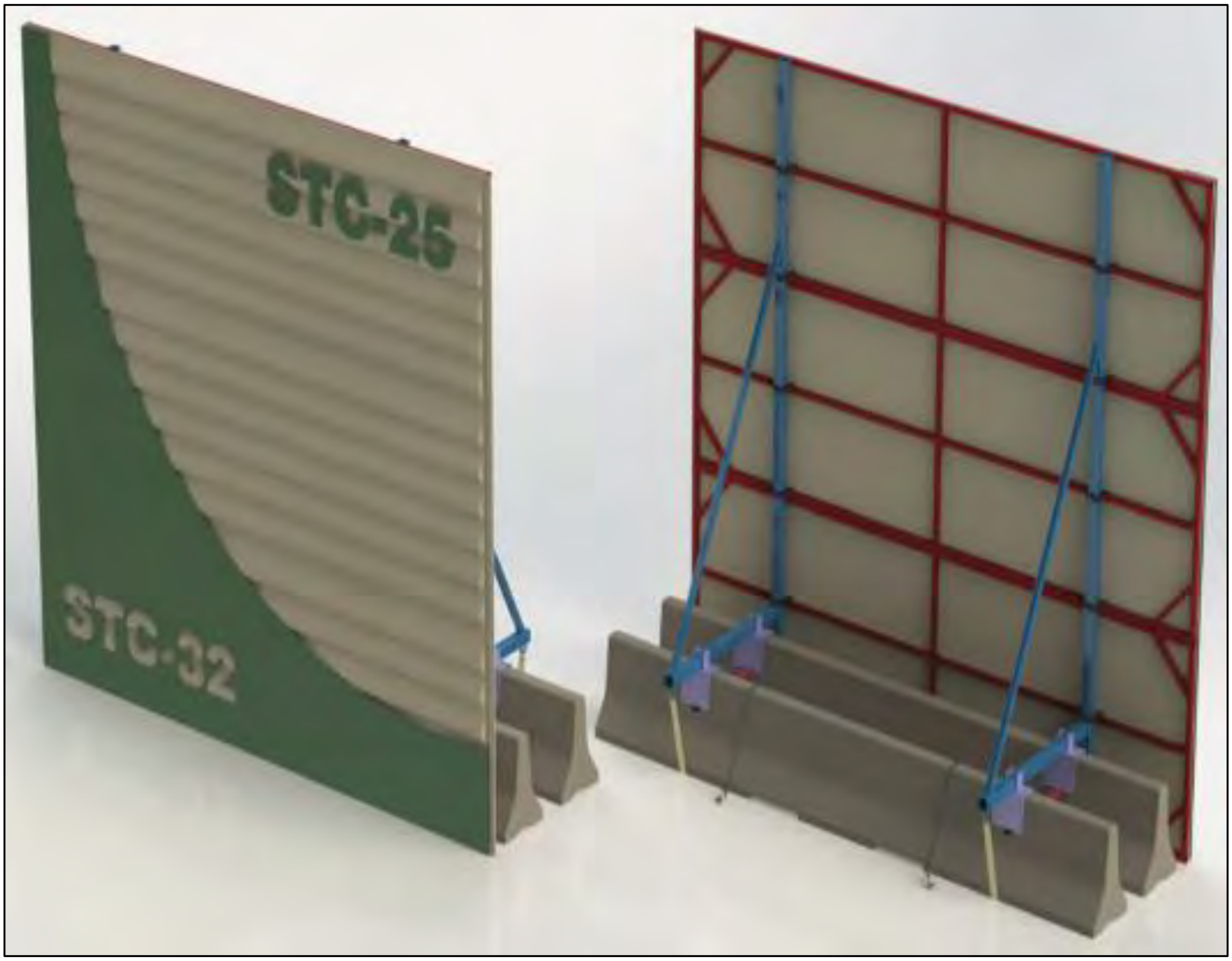
The aforementioned worksheets for each NSR featured in Attachment B highlight predicted levels that exceed the 66 dBA hourly L_{eq} nighttime limit and thus help inform when noise mitigation may be needed. The degree of noise reduction need is an arithmetic difference between the predicted level and 66 dBA, and does not exceed the field-installed capabilities of modern acoustical blankets like the samples shown in Exhibit 3 that also represent sound abatement techniques that the Water Authority has successfully implemented to support comparable nighttime work. By way of illustration, the estimated attenuation need for NSR2 during evening or nighttime ETIE and ITIE activities ranges from 2 to 5 dB, which can easily be attained by a portable barrier that occludes line-of-sight between the noise sources and the receiving property.

Table 5. Predicted Evening and Nighttime Project Construction Noise at Modeled Receptor Locations

Modeled Receptor Location	Predicted Hourly L_{eq} (dBA) for Indicated Construction Activity*		
	Excavate, Shore, Trench at the Tie-In (ETIE)	Install Carrier Pipe at the Tie-In (ITIE)	Backfill at the Tie-In (BTIE)
NSR1	53	49	44
NSR2	71	68	63
NSR3	57	54	49
NSR4	55	51	47
NSR5	50	46	41
NSR6	45	42	37
NSR7	48	44	40
NSR8	50	47	42
NSR9	66	63	58
NSR10	60	57	52
NSR11	51	47	42
NSR12	45	42	37
NSR13	49	46	41

Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); dBA = A-weighted decibels. *When activity is taking place at the closer of the two project alignment positions (northern tie-in or southern tie-in) with respect to the receptor location.

Exhibit 3. Temporary Construction Noise Barrier Sample



Source: Environmental Noise Control 2021.

Temporary sound barrier elements like the sample shown in Exhibit 3 typically feature an outdoor-use vinyl-covered multi-layer of materials comprising one or more materials that demonstrate a sound transmission class of 25 or better. The "K-rail" supporting structure shown in Exhibit 2 represents one of a variety of means to install such temporary barriers at a work site. The sound transmission class 25 value is at least 10 dB greater than the highest predicted noise reduction effect due to barrier intervention, and is thus consistent with Caltrans Technical Noise Supplement guidance that states, "any material may be used for a barrier between a noise source and a noise receiver as long as it has a TL [transmission loss] of at least 10 dBA more than the desired noise reduction" (Caltrans 2013).

5.2 Noise from Staging Areas

Prediction Methodology

Using an FHWA RCNM emulator, noise exposure level attributed to staging area onsite idling or low-speed construction vehicle activity was predicted at the nearest offsite noise-sensitive receptor (NSR) for each of the five anticipated staging areas. These NSR are among the same set of receptors studied in Section 5.1, or added based on review of aerial topography. For purposes of this assessment, expected noise-producing equipment was assumed to be the same for each staging area and includes the following: 1) dump truck idling for up to five minutes within a one-hour period, and 2) water truck spraying the site over a 5-minute period. The prediction assumes that both noise sources are at the geographic center of the studied staging area.

Prediction Results

Table 6 presents the predicted staging area noise exposure level at the NSR for each of the five staging areas.

Table 6. Predicted Staging Area Noise Levels

Staging Area Identification Tag*	Nearest Noise-Sensitive Receptor (NSR)	Approximate Horizontal Distance (Feet) to Nearest Noise-Sensitive Receptor (NSR)	Predicted Staging Area Hourly L_{eq} Noise Exposure (dBA) at NSR
A	NSR13 (26322 Jesmond Dene Road)	250	45.1
B	25467 Jesmond Dene Road	750	34.4
C	25467 Jesmond Dene Road	900	32.7
D	NSR8 (25984 Mesa Rock Road)	500	41.1
E	NSR13 (26322 Jesmond Dene Road)	850	33.2

Notes: dBA = A-weighted decibels.
*Identifying letter is the same as appearing in Figure 3.

All predicted staging area noise levels appearing in Table 5 are less than 66 dBA L_{eq}, which means that as modeled onsite idling vehicle noise would not require further noise control or sound abatement to be compliant with the Water Authority's adopted nighttime noise standard. Details of the prediction results appear in Attachment C.

5.3 Blasting Noise Impact Assessment

The Project expects to perform at least five blasting events, with approximate locations appearing in Figure 4, that would support the fracturing and removal of 4,000 cubic yards (Blasting Area "1") and 6,000 cubic yards (Blasting Area "2") of rock to be later processed with rock crushing machinery at a location assumed to be near each of the blasting areas. Two successive blast events, affecting 2,000 cubic yards each, are expected for Blasting Area 1; and a minimum of three successive blast events, affecting 2,000 cubic yards each, are expected for Blasting Area 2.

Blasting typically involves drilling a series of boreholes, placing explosives (the "charge") in each hole, then topping the charge with fill material to help confine the blast. Table 7 presents predicted values for these two blasting event scenarios, as well as the predicted A-weighted L_{max} for each detonated charge. Weighing approximately five (5) pounds for purposes of this analysis, and as confirmed by the Water Authority's blasting contractor, each installed charge would be detonated in rapid succession and thus separated by a slight "charge delay". Therefore, each detonation would produce a distinct and vibration and noise-producing event, with corresponding magnitudes predicted and presented as "single charge" values in Table 7. The predicted one-hour L_{eq} and 12-hour L_{eq} values and account for all detonations occurring within a single blast. This assessment assumes that only one blast event would occur in any 12-hour daytime period. Details of the prediction results, based on Dyno Nobel estimation techniques (Dyno Nobel 2010), appear in Attachment D.

Table 7. Predicted Blast Event Noise and Vibration Levels

Blast Area # and Horizontal Distance (feet) to nearest NSR	Cubic Yards (CY) of Rock Cut per Blast	Single Charge Detonation Airborne Sound Pressure Level (SPL, dBA L_{max}) at the Receiving Structure	Single Charge Detonation Peak Particle Velocity (PPV, inches per second)	1-hour L_{eq} for the Blast Event (SPL, dBA)	8-hour L_{eq} for the Blast Event (SPL, dBA)
1 – NSR12 (500 feet)	2,000	85	0.12	79.5	70
2 – NSR10 (500 feet)	2,000	85	0.12	79.7	71

Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); dBA = A-weighted decibels; NSR = noise-sensitive receiver.

Predicted 8-hour L_{eq} airborne noise levels for the entirety of each blast event are compliant with the County's daytime construction noise standard. Due to acoustic principles of logarithmic addition, other Project construction noise up to a magnitude of 71 dBA 8-hour L_{eq} could occur during the same day as the blasting event and result in a cumulative Project-attributed noise level that complies with the County's 75 dBA 8-hour L_{eq} threshold.

5.4 Rock Crushing Noise

This assessment assumes a portable rock-crushing/processing facility would be used on-site during construction activities. The rock-crushing operation would begin with a front-end loader picking up material and dumping the material into a primary crusher. The material would then be crushed, screened, and stacked in product piles. The material would be stockpiled adjacent to the rock-crushing equipment. Electric power would most likely be provided by a diesel engine generator. The primary crusher would generate impulsive noise events, in addition to relatively steady-state or continuous-type noise emission from motors, conveyors, etc. Maximum noise levels associated with the primary crusher would be expected to reach approximately 87 dBA at 45 feet (Ldn Consulting 2011). At this reference noise level (if conservatively interpreted to be an L_{eq} value) and distance, the operating rock crusher could be located no closer than 180 feet to a receiving "residential, village zoning or civic use" occupied property as defined by the County. If construction site conditions required positioning the rock crusher within this screening distance, sufficient sound abatement (e.g., suspended acoustical blankets akin to Exhibit 2 or field-erected walls composed of slightly-overlapping ½" or ¾" plywood sheets) would be needed based on the machine-to-receptor distance. For example, a distance of only 100 feet would require an installed noise barrier that clearly blocks line-of-sight between the receptor and the rock crusher and thus yields 5 dB of reduction. Closer distances would raise the barrier height further to achieve more decibel reduction.

5.5 Vibration

5.5.1 Conventional Construction Activities

Under certain conditions, construction activities may expose persons to excessive groundborne vibration or groundborne noise, causing a potentially significant impact. Caltrans has collected groundborne vibration information related to construction activities (Caltrans 2020), and indicates that continuous vibrations with a PPV of approximately 0.2 ips is considered annoying. For context, heavier pieces of construction equipment, such as a bulldozer, which may be expected on the project site have reference PPV values of approximately 0.089 ips or less at a reference distance of 25 feet (FTA 2018).

Groundborne vibration attenuates rapidly, even over short distances. The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in FTA and Caltrans guidance. By way of example, for the same aforementioned bulldozer operating on site, the estimated vibration velocity level at a source-to-receptor distance of just 15 feet would be 0.19 ips PPV per the equation that follows (FTA 2018):

$$PPV_{rcvr} = PPV_{ref} * (25/D)^{1.5} = 0.19 = 0.089 * (25/15)^{1.5}$$

where PPV_{rcvr} is the predicted vibration velocity at the receiver position, PPV_{ref} is the reference value at 25 feet from the vibration source (the bulldozer), and variable "D" is the actual horizontal distance (in feet) to the receiver.

Therefore, at this predicted PPV for such a very close receptor distance that is not foreseen for the Project activities, the potential impact of vibration-induced annoyance to occupants of nearby existing homes would not exceed the 0.2 ips PPV and 0.3 ips PPV thresholds identified herein for building occupant annoyance and façade damage risk to older residential structures.

5.5.2 Blasting Activities

Blasting vibration is assessed for an individual vibration event—the single detonation or delayed charge. While the predicted blast comprises a succession of many such charges, they are not additive in magnitude at a receptor. Larger weight of explosive for each charge detonated, on the other hand, would increase the energy released and thus the magnitude of vibration propagating through the ground—and correspondingly, a greater airborne over-pressure as well. Thus, with a presumed per-delay charge weight of five pounds of explosive, fully confined in a pre-drilled hole, Table 6 in the preceding Section 5.3 indicates that the predicted groundborne vibration level from a single detonation is only 0.12 ips PPV, which would be well below the 0.2 ips PPV building occupant annoyance and 0.3 ips PPV residential structure damage risk thresholds; thus, vibration impacts from these two blasts at the associated nearest sensitive receptors would be less than significant.

6 Conclusions

This technical noise memorandum was conducted to predictively quantify potential construction noise and vibration adverse effects attributed to the proposed project at the nearest existing occupied properties along the studied pipeline alignment, its underground crossing of the I-15 freeway, and the tie-ins to existing aqueduct infrastructure. The results indicate that potential noise levels from anticipated project conventional construction activities may cause temporary and substantial increases to the existing outdoor sound environment, but would be compliant with the 75 dBA 8-hour L_{eq} standard per Section 36.409 from the County of San Diego Noise Ordinance when construction occurs during daytime hours of 7:00 a.m. to 7:00 p.m. Noise from work occurring outside of these hours at a studied noise-sensitive location could exceed the identified evening and nighttime threshold of 66 dBA hourly L_{eq}. However, with proper installation of temporary noise barriers that adequately occlude direct sound paths between the project activity and this nearest sensitive receptor of concern, essential construction activities performed by the Water Authority and its contractors to minimize interruption of water conveyance to the community would not exceed 66 dBA, and would thereby comply with the adopted standard. Adequacy of such installed sound abatement would depend on several factors that include barrier height relative to both the noise-producing source(s) and the receptor, barrier extent, and its materials of composition (such as the acoustical blanket samples appearing in Exhibit 2).

With respect to groundborne vibration received by occupied residential structures at these aforementioned studied nearest occupied properties, predicted PPV values are less than thresholds for annoyance and building damage risk per appropriate Caltrans guidance.

We trust that this technical memorandum meets your project needs at this time. Should you have any questions or require additional information, please do not hesitate to contact Mark Storm at 760.479.4297 or mstorm@dudek.com.

Sincerely,

Mark Storm, INCE Bd. Cert.
Acoustic Services Manager

7 References

Caltrans (California Department of Transportation). 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September. Accessed at https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/
env/tens-sep2013-a11y.pdf.

Caltrans. 2020. *Transportation and Construction Vibration Guidance Manual*. Division of Environmental Analysis, Environmental Engineering, Hazardous Waste, Air, Noise, Paleontology Office. Sacramento, California. April. Accessed at https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf.

California Energy Commission (CEC). 2010. Noise and Vibration Testimony of Erin Bright. A2PP Revised Condition Noise-4. July 26.
https://efiling.energy.ca.gov/GetDocument.aspx?tn=57736&DocumentContentId=50506.

Dyno Nobel. 2010. Blasting and Explosives Quick Reference Guide. https://www.leg.state.mn.us/docs/2015/other/150681/PFEISref_1/Dyno%20Nobel%202010.pdf.

Environmental Noise Control. 2021. "K-Rail Mounted Temporary Sound Wall." Accessed July 2021. https://www.environmental-noise-control.com/products/k-rail-mounted-temporary-sound-wall/.

Federal Highway Administration (FHWA). 2006. *FHWA Roadway Construction Noise Model: User's Guide.* Final Report. FHWA-HEP-06-015. DOT-VNTSC-FHWA-06-02. Cambridge, Massachusetts: DOT, Research and Innovative Technology Administration. August. Accessed at https://www.gsweventcenter.com/
Draft_SEIR_References/2006_01_Roadway_Construction_Noise_Model_User_Guide_FHWA.pdf.

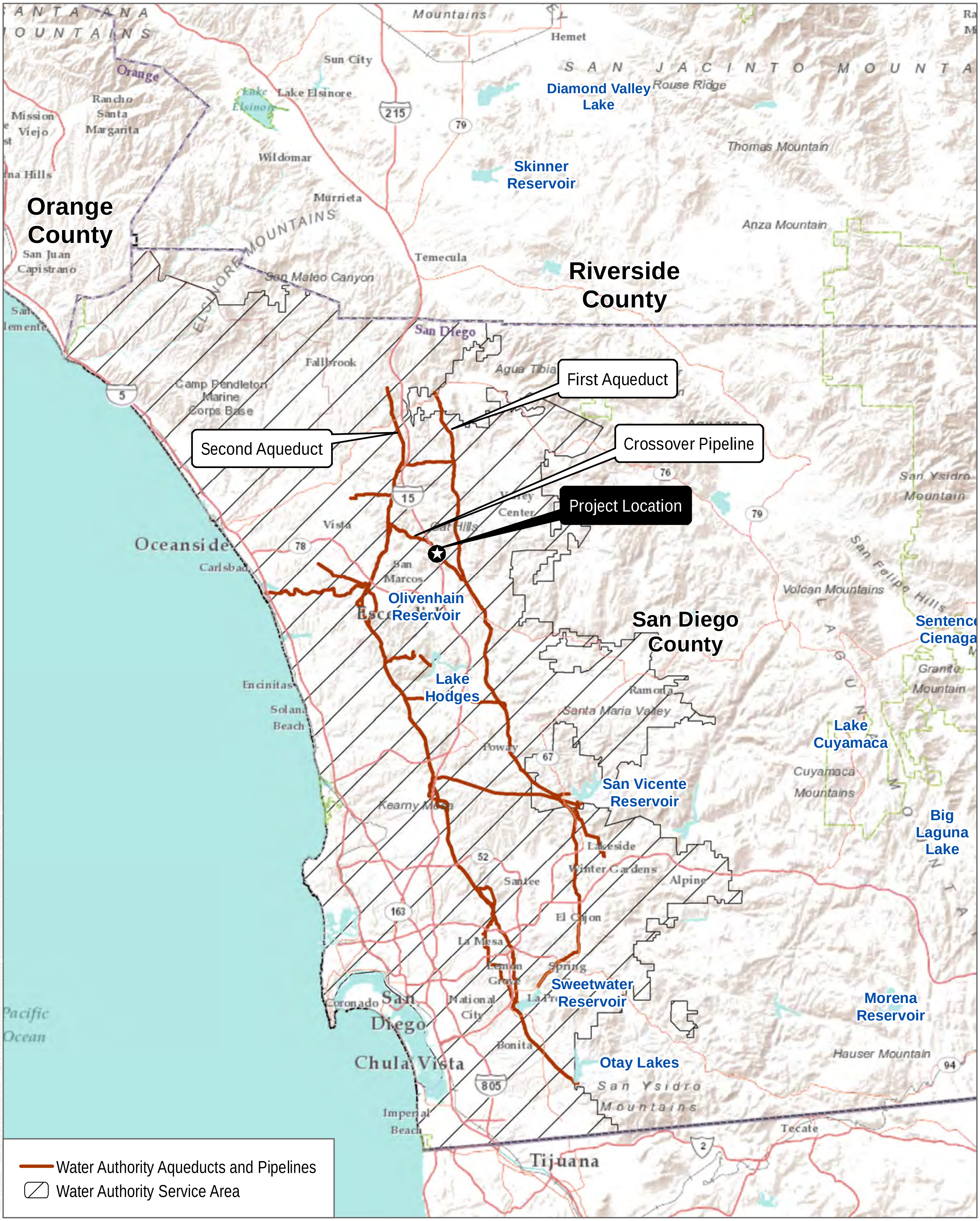
Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual.* FTA Report No. 0123. John A. Volpe National Transportation Systems Center. September. Accessed at https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

International Organization of Standardization (ISO). 1996. *Standard 9613-2 (Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation)*. Geneva.

Ldn Consulting Inc. 2011. University District Rock Crusher. City of San Marcos.

https://en.wikipedia.org/wiki/Inverse_distance_weighting

Figures



SOURCE: ESRI 2019; SDCWA 2011, 2021

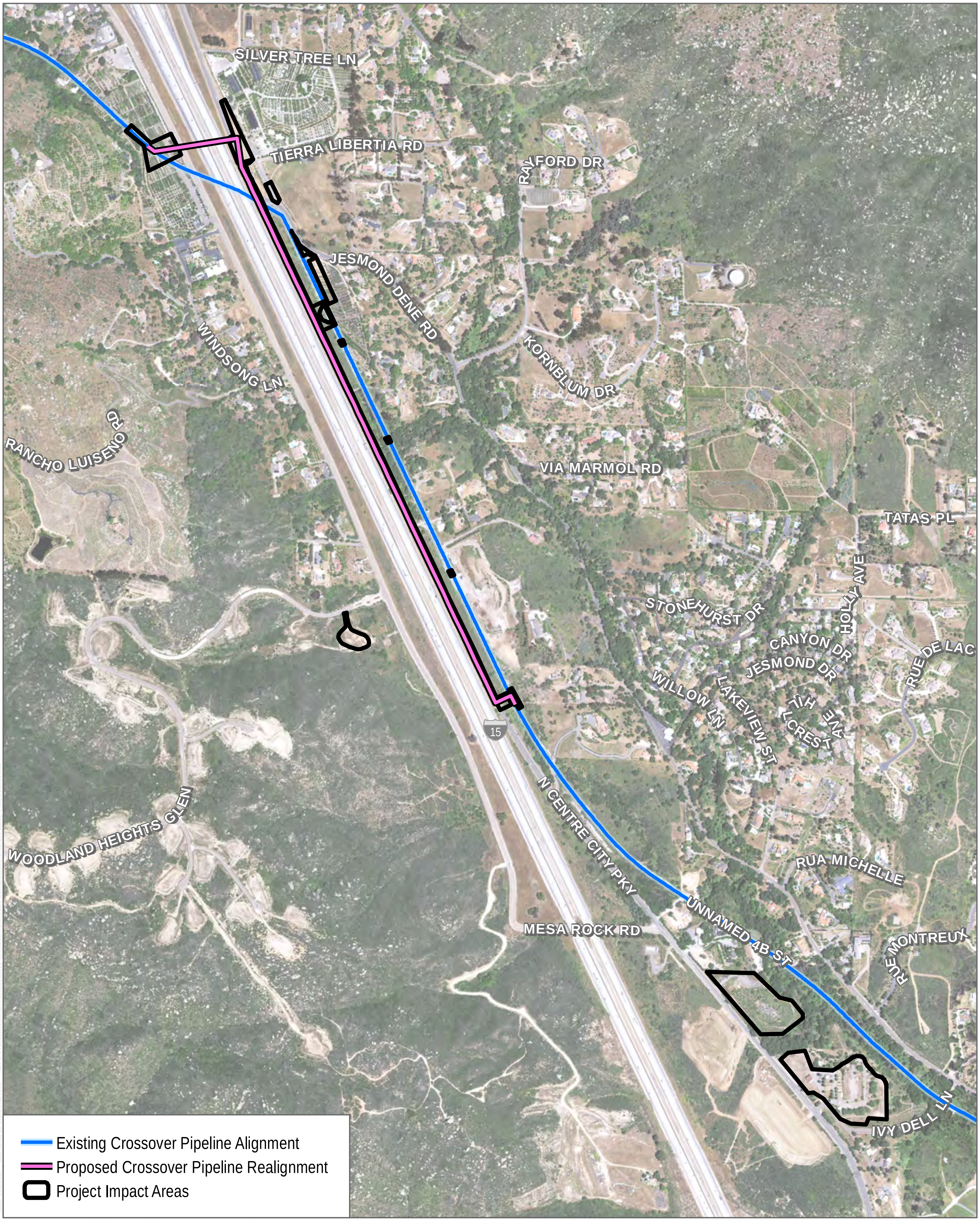
FIGURE 1

Regional Location Map

Crossover Pipeline I-15 Bypass Project

DUDEK

0 5 10 Miles



SOURCE: NAIP 2022; SDCWA 2011, 2022

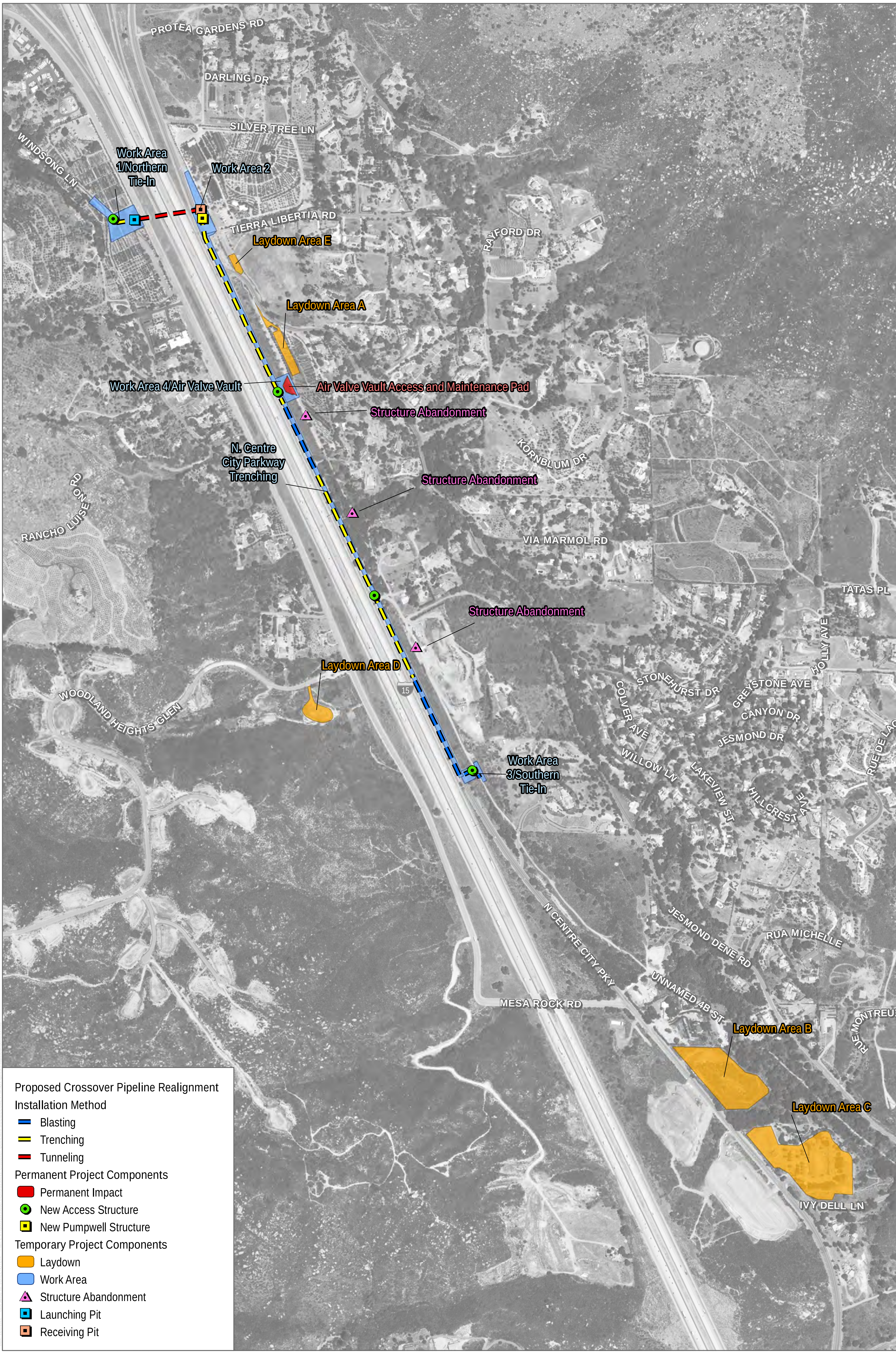
DUDEK

0 250 500 Feet

FIGURE 2

Project Vicinity

Crossover Pipeline I-15 Bypass Project



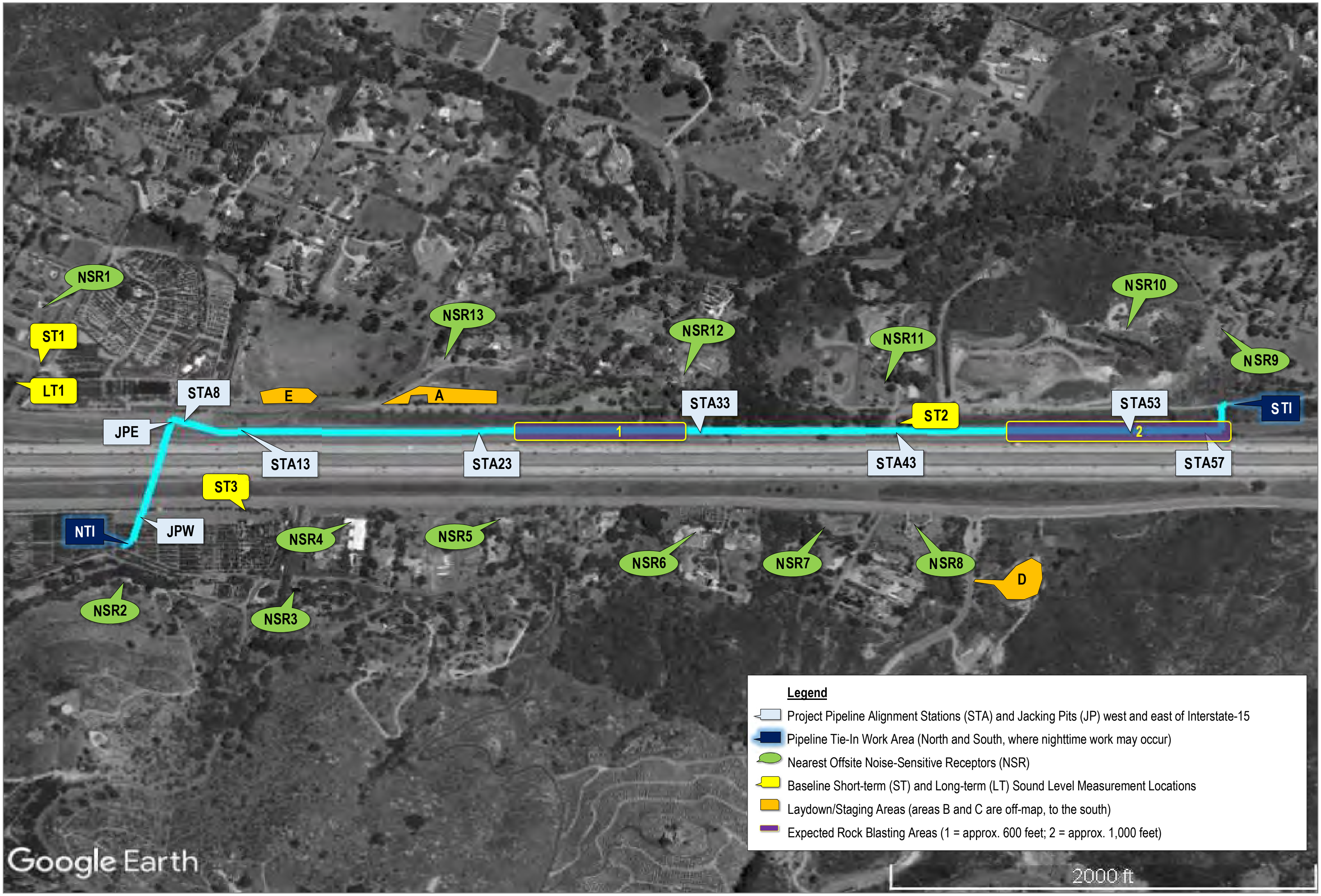
SOURCE: NAIP 2022; SDCWA 2022

DUDEK

FIGURE 3

Project Components

Crossover Pipeline I-15 Bypass Project



SOURCE: Dudek 2022

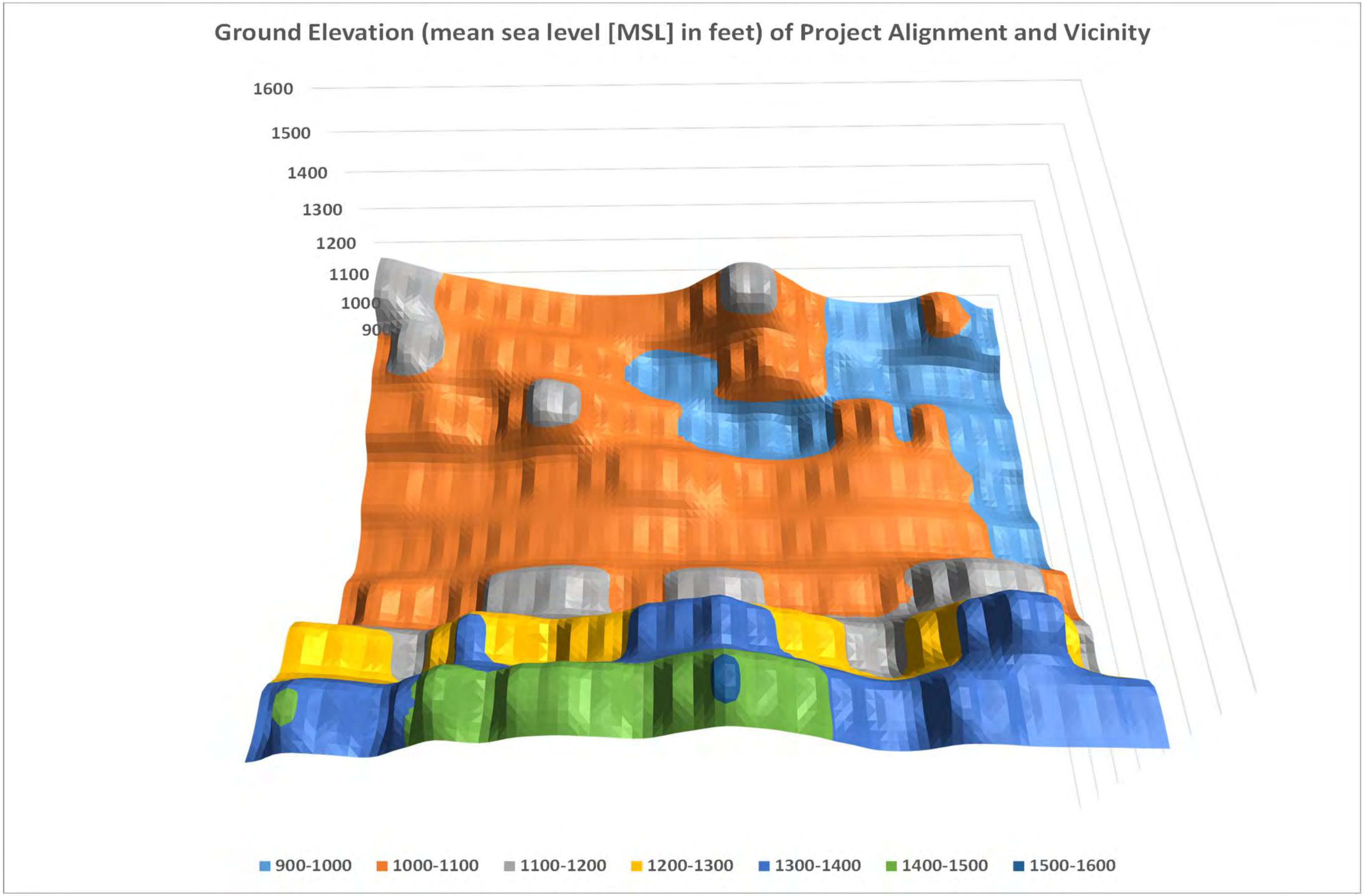
DUDEK

0 258.5 517 Feet

FIGURE 4

Locations of Noise-Sensitive Receptors, Baseline Sound Pressure Level Measurements, and Pipeline Alignment Stations

Crossover Pipeline Interstate 15 Bypass Project



SOURCE: Dudek 2022

DUDEK

FIGURE 5

Modeled Topography in Vicinity of Project Pipeline Alignment (elevation scale exaggerated)

Attachment A

Field Noise Measurement Forms and Long-term Baseline Data Collection

FORMS DUDEK FIELD DATA REPORT

Field Noise Measurement Data

Record: 1510

Project Name	*Crossover pipeline*
Observer(s)	*Connor Burke*
Date	*2022-08-11*

Meteorological Conditions

Temp (F)	*82*
Humidity % (R.H.)	*40*
Wind	*Calm*
Wind Speed (MPH)	*2*
Wind Direction	*North West*
Sky	*Sunny*

Monitoring

Record #	*1*
Site ID	*ST1*
Site Location Lat/Long	*33.193674, -117.122193*
Begin (Time)	*09:00:00*
End (Time)	*09:15:00*
Leq	*67.2*
Lmax	*71.9*
Lmin	*63.5*
Other Lx?	*L90, L50, L10*
L90	*64.6*
L50	*66.8*
L10	*68.9*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources Additional Description	*I15 dominant*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

FORMS DUDEK FIELD DATA REPORT

Photo	

Monitoring

Record #	2
Site ID	ST2
Site Location Lat/Long	33.183267, -117.116975
Begin (Time)	09:30:00
End (Time)	09:45:00
Leq	70.3
Lmax	76.9
Lmin	64.2
Other Lx?	L90, L50, L10
L90	66.6
L50	71.3
L10	72.8
Other Lx (Specify Metric)	L
Primary Noise Source	Traffic
Other Noise Sources Additional Description	I15 dominant
Is the same instrument and calibrator being used as previously noted?	Yes
Are the meteorological conditions the same as previously noted?	Yes

Description / Photos

FORMS FIELD DATA REPORT

Site Photos

Photo	

Monitoring

Record #	*3*
Site ID	*ST3*
Site Location Lat/Long	*33.190163, -117.122520*
Begin (Time)	*10:15:00*
End (Time)	*10:30:00*
Leq	*67.9*
Lmax	*80.5*
Lmin	*60.3*
Other Lx?	*L90, L50, L10*
L90	*62.8*
L50	*65.9*
L10	*68.4*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources Additional Description	*I15 dominant*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo

Number	Start Date	Start Time	End Time	Duration	Meas Mod	Input Rang	Input Type	SPL Time W	LN% Freq W	Overload	UnderRang	Sensitivity	LZeq	LCeq	LAeq	LZSmax	LCSmax	LASmax	LZSmin	LCSmin	LASmin	LZE	LCE	LAE	LZpk	LCpk	LApk	LAS1%	LAS2%	LAS5%	LAS8%	LAS10%	LAS25%	LAS50%	LAS90%	LAS95%	LAS99%	1/1 Oct. (dI	31.5	63	125	250	500	1000	2000	4000	8000
181	8/11/2022	8:59:12 AM	9:00:00 AM	0:00:48	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.1	75.8	70.8	82.6	81.1	79.8	72.5	70.8	63.8	93.9	92.6	87.6	111.9	109.4	111.2	78.8	77.2	75.8	74.7	74.3	71.4	68.8	65.3	64.9	64.3		29	44.9	54	56.5	58.4	65.9	65.9	62.5	61.3
182	8/11/2022	9:00:00 AM	9:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.3	71.9	65.9	80	77.8	72	69.5	68.2	61.9	98.1	96.7	90.7	91.4	89	84.2	69.7	68.9	68.1	67.6	67.5	66.6	65.6	63.7	63.2	62.5		27.5	41.7	49	49.9	56.7	63.8	59.2	49.4	36.2
183	8/11/2022	9:05:00 AM	9:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.7	72.4	66.6	79.1	78.8	71.8	69	67.8	61.4	98.5	97.2	91.4	92.1	90.7	85.9	71	70.3	68.9	68.5	68.3	67.4	66.1	64.2	63.4	62		26.4	42.1	50.3	50.4	57.8	64.4	59.7	50.1	36.7
184	8/11/2022	9:10:00 AM	9:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74	72.8	66.6	80.5	79.8	70.9	69.7	68.8	62.7	98.8	97.6	91.4	90.2	89.7	84.2	70	69.2	68.7	68.3	68.1	67.3	66.4	64.6	64.2	63.1		26.7	42.7	50.6	51.5	57.5	64.4	59.9	50.4	37
185	8/11/2022	9:15:00 AM	9:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.3	71.7	65.8	77.8	76.9	70.8	67.5	66.4	60.4	98.1	96.5	90.6	90.4	89.1	86.2	69.8	69.3	68.3	67.8	67.6	66.6	65.5	63.5	62.8	61.9		26.5	41.5	48.7	50	56.2	63.7	59.4	49.6	36.4
186	8/11/2022	9:20:00 AM	9:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.1	71.6	65.6	78.6	78	69.8	69.5	67.1	58.8	97.9	96.4	90.4	90.5	88.9	83.5	69.2	68.8	68.2	67.7	67.5	66.4	65.5	63	62.3	59.5		25.7	40.7	50.3	49.8	56.1	63.5	59.1	49.8	36.9
187	8/11/2022	9:25:00 AM	9:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.3	73.2	66.5	83.4	82.9	72.1	69.2	68.2	61.6	99.1	98	91.3	95.4	95	87.3	70.7	69.3	68.6	68.4	68.2	67.3	66.2	63.9	63.5	62		27	42.8	51.9	52.3	57	64.3	59.7	50.4	37.7
188	8/11/2022	9:30:00 AM	9:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74	72.6	66.4	77.7	76.8	70.7	69.4	67.6	60.9	98.8	97.4	91.2	91.3	88.5	86.1	69.8	69.6	68.8	68.4	68.2	67.2	65.9	64.1	62.7	61.5		27.5	42.5	50	50.6	57.5	64.1	59.8	50.6	37.6
189	8/11/2022	9:35:00 AM	9:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.9	71.4	65.6	76.9	75.8	70.5	66.8	65.7	59.5	97.7	96.2	90.4	90.4	89.9	84.9	69.1	68.5	67.9	67.6	67.4	66.5	65.4	62.8	61.7	60.4		26.5	40.7	48.8	49.4	55.7	63.5	59.3	50.4	37.9
190	8/11/2022	9:40:00 AM	9:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74	72.6	66.9	77.7	76.7	71.8	69	67.9	62.9	98.8	97.4	91.7	89.9	88.6	86.7	71.1	70.5	69.1	68.6	68.4	67.5	66.5	64.6	64.1	63.3		27.2	42.5	49.6	51	57.6	64.7	60.2	51.2	38.6
191	8/11/2022	9:45:00 AM	9:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.8	72.5	66.9	78.1	76.6	72.5	69.2	68.3	62.9	98.6	97.3	91.7	90.2	89.1	85	71.8	70.8	69.5	68.6	68.4	67.4	66.6	64.7	64.2	63.5		27.5	42.4	49.1	51.2	57.8	64.7	60.3	51.7	39.5
192	8/11/2022	9:50:00 AM	9:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	73.3	67.4	81.6	81.2	78.7	68.9	68	62.7	99.7	98.1	92.2	98	97.1	96.1	74.4	70.9	69.5	68.9	68.7	67.8	66.7	64.6	63.9	63.4		28.5	43.4	50.1	50.6	58	65	61.4	52.5	38.8
193	8/11/2022	9:55:00 AM	10:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.1	72.7	66.5	79.3	78.8	70	69.1	67.7	61.8	98.9	97.5	91.3	91.6	90.5	83.6	69.5	69.3	68.9	68.6	68.4	67.3	66.2	63.7	63	62.3		27.4	42.6	50	51.4	57.2	64.1	60.2	51.5	38.9
194	8/11/2022	10:00:00 AM	10:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.9	72.4	66.9	79	77.5	70.9	69.6	68.2	62.4	98.7	97.2	91.7	91.1	88.8	85.7	70.5	70.3	69.7	69.2	68.9	67.8	66.4	64.2	63.6	63.1		27.2	41.8	49.5	50.9	57.9	64.6	60.3	51.4	38.5
195	8/11/2022	10:05:00 AM	10:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74	72.2	66	78.5	75.8	71.1	69	67.5	61.1	98.8	97	90.8	91.2	88.3	84.1	69.7	69.3	68.7	68.2	68	67	65.6	63.3	62.7	61.7		27.5	42.2	49.3	49.6	56.5	63.8	59.6	50.7	38.2
196	8/11/2022	10:10:00 AM	10:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	72.8	65.8	86.9	86.5	74.6	68	66.9	59.5	99.7	97.6	90.6	98.8	96.8	88	72.1	69.8	68.6	68.2	67.8	66.2	65	63.1	62.7	60.9		27.9	40.7	52.3	52.4	56.1	63.4	59.1	50.1	38.2
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198	8/11/2022	10:20:00 AM	10:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	72.6	66.3	83.8	83.6	73.8	70.8	68.8	60.9	99.7	97.4	91.1	95.3	93	86.3	71.3	69.6	68.7	68.2	67.9	67.1	66.1	63.4	62.7	61.4		27.8	41.6	50.7	51.2	57.2	64.2	59.5	50.9	38.2
199	8/11/2022	10:25:00 AM	10:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.7	71.9	65.7	79.1	78.5	72.2	67.5	65.3	59.4	98.5	96.7	90.5	91.9	91.6	87.9	69.6	68.7	68	67.6	67.4	66.3	65.3	63.5	62.5	60.6		26.8	41.3	49.8	51	56.7	63.2	59.3	50.2	37.8
200	8/11/2022	10:30:00 AM	10:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.5	71.6	66.1	79.8	76.2	72	68.7	67.5	61.2	98.3	96.4	90.9	91.8	88.2	85.3	70	69.4	68.4	67.9	67.7	66.8	65.9	63.8	63.3	62.1		26.5	41	48.6	49.4	56.9	64	59.7	50.6	38.1
201	8/11/2022	10:35:00 AM	10:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.5	72.4	66.3	80.7	76.7	71.5	70.5	68.8	62.6	99.3	97.2	91.1	95.5	89.6	85.9	69.5	69	68.4	68.1	67.9	67	66.2	64	63.7	63		27.7	42	49.7	50.3	57	64.2	59.9	50.7	38.1
202	8/11/2022	10:40:00 AM	10:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.7	73.8	67	81.8	80.3	71.6	69.1	68	60.7	100.5	98.6	91.8	93.7	90.7	86.2	69.9	69.6	69.3	69	68.8	67.9	66.7	64.3	63.6	61.9		30.3	44	49.7	51.7	57.7	64.7	60.6	52	40
203	8/11/2022	10:45:00 AM	10:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.4	73.7	67	81.9	79.8	72.1	70.8	69.3	62.4	100.2	98.5	91.8	94.8	92.7	86.7	71.2	70.8	70.1	69.6	69.4	67.6	66.2	64.4	63.6	62.9		30.1	43.1	50.5	54.3	58.7	64.5	60.2	51.3	38.7
204	8/11/2022	10:50:00 AM	10:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.7	73.8	67.2	82.3	79.7	72.7	69.8	68.6	63.1	100.5	98.6	92	96.6	94	87.1	71.2	70.4	69.7	69.3	69	68	66.8	64.5	64.2	63.3		30.7	43	51.2	52.3	57.8	65	60.6	51.4	38.8
205	8/11/2022	10:55:00 AM	11:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.1	73.1	66.7	80.6	79.4	70.6	70.9	69.1	62.2	99.9	97.9	91.5	93.2	90.5	86	69.5	69.3	68.6	68.4	68.3	67.5	66.5	65	64.5	63.4		29.6	42.3	50.6	51.1	57	64.5	60.6	51.5	38.7
206	8/11/2022	11:00:00 AM	11:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.7	75	67.1	87	83.2	71.7	72.7	71	63.6	102.5	99.8	91.9	101.7	96.4	85.2	70.7	70.3	69.5	69	68.9	67.9	66.7	65	64.5	64		33.8	44.1	50.3	51.9	57.9	64.9	60.7	51.8	39.7
207	8/11/2022	11:05:00 AM	11:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.4	75	67	84.2	82	72.6	71.3	68.7	61.1	102.2	99.8	91.8	97.5	94.8	86.4	71.3	70.5	69.5	69	68.6	67.6	66.7	64.7	63.8	61.6		33	44.6	51.8	52.1	57.6	64.7	60.4	51.7	39.3
208	8/11/2022	11:10:00 AM	11:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.6	74.4	67	82.4	79.9	71.8	70.4	69.3	61.4	101.4	99.2	91.8	95.5	93.1	88.6	70.9	70.6	69.8	69.3	69	67.8	66.5	64.2	63.4	62.5		31.9	43.6	51.7	51.8	57.6	64.7	60.5	51.5	38.8
209	8/11/2022	11:15:00 AM	11:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.1	73	66.4	83.2	80.4	71.8	69.8	68.4	61.3	99.9	97.8	91.2	97	94	88.1	70	68.7	68.3	67.9	67.8	67.1	66.3	64.1	63.6	62.1		30.3	42.6	49.6	50.3	56.5	64.2	60	51.3	38.9
210	8/11/2022	11:20:00 AM	11:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.6	74.6	67.2	87.7	84.6	73.6	70.6	69.4	62.5	101.4	99.4	92	101.3	96.8	87.4	71	70.2	69.6	69.2	69	68	66.9	64.7	64	63.1		32.1	44.4	51.2	51	57.8	65.1	60.6	51.8	39.5
211	8/11/2022	11:25:00 AM	11:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.9	74.5	67.2	85.3	82.9	72.1	70.4	69	62.7	101.7	99.3	92	98.2	96.6	87.5	70.7	69.9	69.4	69.1	68.9	68	67	65	64.3	63.4		32.6	44	50.3	51.1	56.8	65.2	60.8	51.9	39.4
212	8/11/2022	11:30:00 AM	11:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.4	73.9	66.4	86	82.6	71.6	69.8	67.8	60.3	101.2	98.7	91.2	102	97.7	87	70.5	69.8	69	68.6	68.3	67.1	66.1	63.5	62.8	61.4		32.7	43	49.6	50.9	56.3	64.1	60.3	51.6	39.5
213	8/11/2022	11:35:00 AM	11:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.2	73.1	66.3	82.2	79.5	70.2	70.1	68.7	62	100	97.9	91.1	96	92.5	84.3	69.5	69.1	68.6	68.3	68.2	67	65.9	63.7	63.3	62.3		30.3	42.6	49.5	50.7	56.2	64.1	59.9	51.1	38.6
214	8/11/2022	11:40:00 AM	11:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.3	74	66.7	84	83.3	70.9	70.7	69.2	61.7	101.1	98.8	91.5	96.1	94.6	84.9	70.1	69.7	69.2	68.8	68.6	67.6	66.4	64.4	63.9	62.6		31.2	43.4	51.6	50.7	57.2	64.4	60.4	51.4	39
215	8/11/2022	11:45:00 AM	11:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.1	73.9	66.9	84.1	80.5	72.7	69.8	68.2	62.2	100.9	98.7	91.7	97.9	94.5	89.7	70.8	69.9	69.2	68.9	68.8	67.9	66.6	64.2	63.7	62.8		31.4	43.5	50.7	50.8	56.9	64.8	60.7	51.9	39.2
216	8/11/2022	11:50:00 AM	11:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.7	75.2	67.2	84.7	82.9	76.4	70.3	69.3	63.4	102.5	100	92	98.1	95	90.7	71.2	70.4	69.4	68.9	68.6	67.6	66.7	65	64.5	63.8		34.1	44.3	51.4	51.6	56.8	64.9	61.1	52	40.3
217	8/11/2022	11:55:00 AM	12:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	78.6	76	67.5	87.4	84.4	72.5	70.8	70	64.1	103.4	100.8	92.3	103.2	102	89	71.2	70.9	70.2	69.6	69.2	68.2	67	65.4	65	64.5		34.8	45.6	51.5	52.1	57.7	65.3	60.9	52	40.7
218	8/11/2022	12:00:00 PM	12:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.7	75	66.8	87.5	85	72.5	70.9	69.5	63.2	102.5	99.8	91.6	103.4	99.6	86.8	69.8	69.6	69	68.6	68.4	67.5	66.4	64.7	64.3	63.7		33.9	44.2	50.9	51.3	56.7	64.5	60.6	51.6	39.7
219	8/11/2022	12:05:00 PM	12:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	78.8	76.1	67	86.9	83.3	71.2	70.7	69	62.5	103.6	100.9	91.8	98.8	97.7	86.2	70.4	69.8	69.1	68.8	68.6	67.6	66.7	64.9	64.3	63		35.1	45.8	51.3	51.2	57.7	64.7	60.4	51.8	40.3
220	8/11/2022	12:10:00 PM	12:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.1	74	67.3	82.3	78.8	72.6	70.6	69.3	62.3	100.9	98.8	92.1	96.1	93.7	87.6	71.4	70.7	69.7	69.2	68.9	67.9	67	65.1	64.7	63.3		31.2	43.3	50.4	52.1	57.8	65.2	60.9	51.9	39.5
221	8/11/2022	12:15:00 PM	12:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	78.6	76.1	67.3	89.3	87	70.9	70.3	69.2	63.2	103.4	100.9	92.1	101.8	101.8	91.5	70.5	70.4	69.8	69.3	69.1	68	67	65	64.6	63.9		34.7	45.8	52.4	51.8	57.5	65	61.1	52.1	40.7
222	8/11/2022	12:20:00 PM	12:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	79.4	76.8	67.9	87.7	83.9	73	71.6	70.1	63.6	104.2	101.6	92.7	100.2	97.9	87.9	70.6	70.1	69.6	69.5	69.4	68.7	67.7	65.7	65.1	64.4		35.7	46.1	53.1	53	57.8	65.7	61.3	52.4	40.9
223	8/11/2022	12:25:00 PM	12:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	78.9	76.3	67.3	85.9	83	71.9	69.3	68.3	62.5	103.7	101.1	92.1	99.1	96.1	87.6	70.9	70.7	70	69.5	69.2	68.1	66.7	64.8	64.3	63.3		35.3	45.7	52.3	52.4	57.6	65.1	60.7	51.9	40.6
224	8/11/2022	12:30:00 PM	12:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	79.2	76.4	67.4	89	86	71.4	71.3	70.1	64	104	101.2	92.2	103.7	98.7	84.3	70.6	70.1	69.4	69.1	68.9	68.1	67.1	65.5	64.9	64.3		35.6	46	51.8	52	58.1	65.1	60.9	51.9	40.6
225	8/11/2022	12:35:00 PM	12:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.1	74.8	67.2	87.3	84.6	71.6	70.5	69.2	63.4	101.9	99.6	92	102.4	100.8	86.9	70.3	70	69.4	69	68.8	67.9	67.1	64.9	64.3	63.7		32.3	44.6	51.3	52	57.2	65.1	60.7	51.8	39.2
226	8/11/2022	12:40:00 PM	12:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	80.1	77.4	67.7	90.9	89.2	72.3	69	67.9	62.1	104.9	102.2	92.5	108.1	104.4	88.1	71.2	70.9	70.1	69.6	69.3	68.3	67.5	65.2	64.6	63.2		36.5	47.6	52.5	52	57.8	65.5	61	52.1	41.3
227	8/11/2022	12:45:00 PM	12:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.4	73.6	67.3	84.3	80.9	71.7	70.4	69	62.3	100.2	98.4	92.1	99.6	96.8	86.3	70.3	70	69.5	69.1	68.9	68	67	65.2	64.5	63		29.4	42.9	51.3	51.1	57	65.2	60.8	51.6	38.4
228	8/11/2022	12:50:00 PM	12:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.7	73.4	66.9	85.1	81.8	70.9	69	67.9	63.4	100.5	98.2	91.7	99.5	95.8	94	69.7	69.5	69	68.7	68.5	67.8	66.6	64.8	64.4	63.9		30.8	42.5	49.8	50.6	56.6	64.9	60.6	51.5	38.6
229	8/11/2022	12:55:00 PM	1:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.8	74.9	67.8	86	83.2	73.9	70.2	68.9	63.1	101.6	99.7	92.6	100.4	97.7	88.9	71.5	70.7	69.9	69.4	69.3	68.5	67.5	65.6	65.1	63.8		31.7	44.4	52.5	53.4	58.2	65.6	61.1	51.8	39.4
230	8/11/2022	1:00:00 PM	1:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.1	74.3	67.2	85.6	82.8	73.6	69.2	67.9	62.3	100.9	99.1	92	97.5	96.6	91.2	71.1	70.6	69.2	68.8	68.7	68	66.8	65.1	64.5	62.9		30.9	43.6	51.6	54.5	57.5	64.9	60.6	51.3	38.3
231	8/11/2022	1:05:00 PM	1:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.1	74	67.5	86.8	84	71.7	70.3	69.2	62.7	100.9	98.8	92.3	100.3	98.4	87.8	71	70.3	69.6	69.3	69.1	68.3	67.2	65.2	64.7	63.6		31.5	43.2	50.5	52	58	65.4	60.8	51.6	39
232	8/11/2022	1:10:00 PM	1:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	79.3	76.7	67.3	89.1	87.1	71.2	70.4	69.3	63.4	104.1	101.5	92.1	101.2	98.2	85.7	70.3	70.1	69.6	69.3	69	68.1	67.1	65.1	64.5	63.9		35.6	46.6	52	53.1	57.6	65.1	60.8	52.1	40.7
233	8/11/2022	1:15:00 PM	1:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	79	76.3	67.4	88.7	86.3	73.9	69.7	68.4	62.2	103.8	101.1	92.2	101	98.4	95.7	71.2	70.3	69.6	69.1	68.9	68.1	67.1	65.2	64.5	62.5		35.3	46	51.6	51.2	57.6	65.3	60.9	52.3	41
234	8/11/2022	1:20:00 PM	1:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	78	75.4	67.4	87.4	84.8	73.4	70.2	68.4	63.7	102.8	100.2	92.2	100	97.4	87.3	70.3	70	69.5	69.1	68.9	68	67.1	65.5	65.1	64.4		34.3	44.9	50.5	51.4	57.4	65.3	60.9	51.8	39.9
235	8/11/2022	1:25:00 PM	1:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.6	74.4	67.7	84.9	82.3	72.2	70.8	69.6	63.6	101.4	99.2	92.5	96.4	95.6	88.5	71.1	70	69.5	69.3	69.2	68.6	67.6	65.5	65.1	64.3		31.8	43.8	50.9	51.8	57.9	65.7	61.4	52.2	39.2
236	8/11/2022	1:30:00 PM	1:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.2	74.9	67.7	85.6	82.7	72.2	70.8	69.8	64	102	99.7	92.5	98.7	97.2	88	70.8	70.1	69.6	69.3	69.1	68.4	67.6	65.6	65.2	64.3		32.8	44.6	50.9	51.3	58	65.5	61.5	52.4	39.9
237	8/11/2022	1:35:00 PM	1:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	81.5	78.7	67.6	89.5	86.9	72.2	72.2	70.6	63.9	106.3	103.5	92.4	102.3	101.4	86.2	71	70.5	69.5	69.2	69	68.2	67.4	65.6	65.2	64.6		38.2	48.8	53.5	52.4	57.4	65.3	61.2	52.5	42.3
238	8/11/2022	1:40:00 PM	1:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	79.9	77.3	67.6	89.7	87.5	72.9	71.4	69.9	63.6	104.7	102.1	92.4	107.2	104	88.5	71.3	70.4	69.7	69.3	69.2	68.3	67.3	65.6	65.2	64.5		36.8	47.3	51.4	51	57.1	65.5	61.3	52.4	41.3
239	8/11/2022	1:45:00 PM	1:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	79	76.3	67.4	85.3	82.2	72.5	70.5	69.2	62.2	103.8	101.1	92.2	99	96.6	86.6	71.3	70.9	69.9	69.5	69.3	68.3	67	65	64.5	63.2		35.3	46	51.4	53.2	57.3	65.3	61.1	52	40.3
240	8/11/2022	1:50:00 PM	1:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	73.2	67.4	86.9	83.3	74.8	70.5	69.2	61.5	99.7	98	92.2	97.8	96.5	87.5	72	70.3	69.5	69	68.8	68.1	67.2	65.2	64.3	63		29.1	42.7	49.7	52.6	57	65.4	61	51.4	38.3
241	8/11/2022	1:55:00 PM	2:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	79	76.5	68.2	89.3	85.9	79.1	69.6	68.6	64	103.8	101.3	93	101.1	97.8	92.6	74.4	71.2	69.9	69.5	69.4	68.6	67.6	65.7	65.4	64.6		35.2	46.1	52.1	53.2	59.3	66	61.3	51.8	39.7
242	8/11/2022	2:00:00 PM	2:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.3	75	67.7	84.2	81.3	71.4	70.7	69.7	64.3	102.1	99.8	92.5	98.1	97.4	88.6	70.6	70.4	69.9	69.5	69.3	68.4	67.4	65.6	65.2	64.7		33.1	44.4	51.2	51.3	57.8	65.6	61.3	52.1	39.4
243	8/11/2022	2:05:00 PM	2:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	78.1	76.1	67.6	88.9	88.1	76.4	70.5	69.7	64.1	102.9	100.9	92.4	99.8	99.6	89.5	74.8	72.6	69.5	69.2	69	67.9	66.9	65.3	65	64.6		33.1	47.1	52.1	52.6	57.3	65.1	61.4	54.2	46.7
244	8/11/2022	2:10:00 PM	2:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77	75.2	68.1	86.6	84.1	71.8	70.5	69.3	64.4	101.8	100	92.9	99.8	97.3	87.9	71.4	71.2	70.4	69.8	69.7	68.6	67.7	66.3	65.9	64.9		31.7	45.7	51.3	51.8	58.1	65.9	61.8	53	41.9
245	8/11/2022	2:15:00 PM	2:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.5	74	67.9	82.9	80.4	72.4	71.2	70.1	63.8	100.3	98.8	92.7	96.6	92.7	85.3	71.2	70.8	69.9	69.6	69.4	68.5	67.6	66	65.3	64.3		29.3	43.1	52.2	53.6	57.8	65.8	61.2	51.9	38.5
246	8/11/2022	2:20:00 PM	2:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	78	75.6	67.5	85.5	83	71.1	70.7	69.4	62.8	102.8	100.4	92.3	98.4	97.1	87	69.9	69.7	69.3	69.1	69	68.3	67.4	65.1	64.6	63.3		33.9	45.2	52.1	51.3	56.8	65.5	61	51.7	39.4
247	8/11/2022	2:25:00 PM	2:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.9	74.7	67.7	85.7	82.8	72.3	68.8	67.9	62.7	101.7	99.5	92.5	98.3	95.8	88.5	71.2	70.7	69.9	69.5	69.3	68.4	67.4	65.9	65.1	63.2		32.4	43.6	51.8	51.8	57.3	65.7	61.3	51.8	38.8
248	8/11/2022	2:30:00 PM	2:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.7	74.8	67.6	84.4	83.3	72.4	69.3	68	62.2	101.5	99.6	92.4	97.4	96.9	89.8	71	70.6	69.7	69.2	69	68.2	67.3	65.7	65.1	63.8		31.8	45.3	50.7	50.9	57.5	65.6	61.1	51.5	38.3
249	8/11/2022	2:35:00 PM	2:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.5	74.3	67.8	83.5	80.3	73.6	69.7	68.3	64.7	101.3	99.1	92.6	96.7	94.2	88.1	71	70.3	69.5	69.2	69	68.4	67.5	66.1	65.8	64.9		32.2	43.5	50.5	51.6	57.5	65.7	61.6	52.3	39.6
250	8/11/2022	2:40:00 PM	2:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.4	74.4	67.7	84.7	81.7	71.9	71	69.6	63.3	101.2	99.2	92.5	98.4	95.6	87.2	70.6	70.4	69.9	69.5	69.2	68.4	67.5	65.7	65	64		31.7	43.8	50.8	52.4	57.7	65.7	61.2	51.9	38.6
251	8/11/2022	2:45:00 PM	2:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	78.1	76.1	67.9	87.3	84.9	72.9	69.6	68.6	63.6	102.9	100.9	92.7	100.9	98.1	89.4	71.1	70.7	69.8	69.5	69.3	68.4	67.7	65.8	65.4	64.8		33.6	45.8	53.7	52.9	57.3	65.7	61.5	52.4	39.4
252	8/11/2022	2:50:00 PM	2:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.8	73.1	67.5	81.9	78.9	71	68.8	67.6	62.6	99.6	97.9	92.3	96.6	92.5	86.3	70.5	70.1	69.4	69.1	68.9	68.2	67.3	65.4	64.9	63.6		28.8	42.4	50.1	50.8	56.8	65.5	61.4	52.2	39.1
253	8/11/2022	2:55:00 PM	3:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	78.2	75.8	67.6	89.7	86.4	71.8	70.5	69.5	64.6	103	100.6	92.4	102.2	99.5	85.9	70.4	70.1	69.3	68.9	68.8	68.1	67.4	66	65.7	65		33.5	46.1	51.6	51.8	57	65.6	61.2	52	40.6
254	8/11/2022	3:00:00 PM	3:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	79.3	76.6	68.4	90.8	85.9	77.9	70.9	69.3	62.3	104.1	101.4	93.2	99.7	96.5	93.3	76.1	75.1	72.5	70.6	70	68.3	67.3	65.5	64.7	62.8		34.8	45.1	52.9	57	60.8	65.8	61.3	52	38.2
255	8/11/2022	3:05:00 PM	3:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.5	74.4	67.2	86.6	82.7	71.2	70.6	69.2	63.5	101.3	99.2	92	97.6	95.7	87.9	70.3	70	69.1	68.7	68.6	67.9	67.1	65.1	64.8	64		32.1	43.3	51.8	52	57	65	60.9	51.8	38.6
256	8/11/2022	3:10:00 PM	3:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.7	74.7	67.5	85.9	83.5	77.7	69.7	68.4	63.2	101.5	99.5	92.3	100.5	100	99.3	73.1	71.7	69.9	69.1	68.9	67.8	66.8	65.3	64.9	63.9		31.9	44.3	51.3	54.6	57.8	65.2	61.1	52.1	38.7
257	8/11/2022	3:15:00 PM	3:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76	73.9	66.9	81.6	79.5	73.4	70.5	68.9	63.6	100.8	98.7	91.7	95.9	93.1	90.4	71	70.1	69.2	68.8	68.6	67.4	66.4	64.8	64.4	64		31.3	43.1	50.9	52.8	57.3	64.6	60.5	51.6	38.5
258	8/11/2022	3:20:00 PM	3:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.3	74.5	67.2	84.5	83.6	71.4	69.5	68.6	62.7	101.1	99.3	92	95.6	92.9	86.7	70.5	70.1	69.6	69.2	68.9	67.8	67.1	65	64.4	63.3		30.7	45.3	50.4	50.6	56.8	65.2	61	51.8	38.9
259	8/11/2022	3:25:00 PM	3:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.3	73	66.7	80.8	80.4	70.3	69.5	68.7	62.4	99.1	97.8	91.5	92.4	90.7	85.2	69.5	69.2	68.8	68.5	68.2	67.4	66.4	64.9	64.4	63.4		27.4	42.5	51.4	51.4	56.3	64.6	60.2	51	37.5
260	8/11/2022	3:30:00 PM	3:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.9	73.9	65.6	83.9	81.9	68.3	70.2	69.1	63.3	100.7	98.7	90.4	99.8	94.8	84.5	67.7	67.3	67	66.8	66.7	66.1	65.5	64.4	64.2	63.8		30.6	44.2	51.5	50.9	55.2	63.3	59.6	50.6	38.2
261	8/11/2022	3:35:00 PM	3:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.8	73.9	67	82.2	78.4	73.3	70.1	69	63.2	100.6	98.7	91.8	94.4	91.6	87.8	71	70.3	69.3	68.7	68.5	67.6	66.5	65	64.5	63.8		30.1	43.2	51.6	52.6	57.7	64.8	60.3	51	37.8
262	8/11/2022	3:40:00 PM	3:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.4	74	67.7	82.1	81.7	71.1	69.8	68.8	62.7	100.2	98.8	92.5	94.4	93.3	85.3	70.2	70	69.5	69.1	68.9	68.3	67.5	66.1	65.5	64		28.6	43.7	52.2	52.6	57.1	65.6	61.3	52.1	38.3
263	8/11/2022	3:45:00 PM	3:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.7	73.1	67.4	82.4	80.9	73.8	70.1	68.2	62.7	99.5	97.9	92.2	94.3	93.5	93.6	72.2	70.7	69.7	68.9	68.7	68	67	65.3	64.5	63.7		28.2	42.6	50.4	51.5	57.4	65.2	61.2	51.7	37.5
264	8/11/2022	3:50:00 PM	3:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.5	72.3	66.9	77.8	77.2	71.8	69.5	68.6	63.4	98.3	97.1	91.7	91.2	91.1	91.8	70.8	70.2	69.3	68.6	68.4	67.5	66.6	64.7	64.3	63.8		25.9	41	51	51.6	56.4	64.8	60.5	50.9	36.6
265	8/11/2022	3:55:00 PM	4:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.3	72.2	65.9	79.7	79.4	69.7	67.8	66.9	61.2	98.1	97	90.7	91.9	91.7	87.4	69.2	68.7	68.3	67.8	67.5	66.5	65.6	63.7	62.6	61.5		25.3	42.4	50.6	51.2	55.5	63.6	59.8	50.6	37
266	8/11/2022	4:00:00 PM	4:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.2	73.6	67.1	81.2	79.6	70.9	69.7	68.7	63.3	100	98.4	91.9	92.9	91.7	85.9	70.3	70	69.2	68.7	68.6	67.7	66.9	65.3	64.9	64		29.6	42.8	52.1	51.3	56.4	64.9	61	51.6	38.1
267	8/11/2022	4:05:00 PM	4:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.2	73.3	66.8	83	80.4	71.3	68.8	67.8	62.7	100	98.1	91.6	96.7	93.5	87.4	70.1	70	69.4	69	68.7	67.3	66.5	64.4	63.9	63.1		29.7	42.3	51.4	52.1	56.6	64.7	60.4	51	37.7
268	8/11/2022	4:10:00 PM	4:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.3	73.4	67.1	82.7	81.6	75.8	69.8	68.7	63.1	100.1	98.2	91.9	94.5	94.5	95.3	72.8	70.4	69.2	68.7	68.5	67.6	66.7	65.1	64.8	63.7		29.8	42.1	51.4	52.2	57	64.9	60.9	51.4	37.6
269	8/11/2022	4:15:00 PM	4:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.1	74.2	66.9	84.7	82.1	76.9	68.9	67.8	61.9	101.9	99	91.7	97.8	94.9	90.4	72.8	71.8	69.1	68.5	68.1	67.1	66.2	64.6	64	62.9		31.1	43.9	51	51.4	56.8	65	60.2	50.6	37.4
270	8/11/2022	4:20:00 PM	4:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.7	73.6	66.8	85.1	84.6	74	69.8	68.9	62.7	99.5	98.4	91.6	97.7	95.5	93.7	73	71.3	69.5	68.5	68.2	67.1	66.2	64.8	64.3	63		27.4	41.9	53.4	54.1	56.7	64.4	60.3	51.2	37.7
271	8/11/2022	4:25:00 PM	4:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.2	73	67.5	81.5	80.4	75	68.7	67.5	63.6	99	97.8	92.3	92.1	91.5	89.9	72.8	71.8	70.4	69.8	69.4	68	66.9	65.2	64.7	64.2		27	42.2	51.6	50.6	56.5	65.5	61.3	52.1	38.1
272	8/11/2022	4:30:00 PM	4:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.7	71.6	66.8	77.7	77.4	73.7	68.4	67.4	62.5	97.5	96.4	91.6	93.2	91.8	90.4	71.3	70.8	69.9	69.1	68.6	67.2	66.1	64.3	63.7	63.1		25.1	41.3	48.3	50.4	57	64.6	60.7	51.4	37.6
273	8/11/2022	4:35:00 PM	4:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.4	72.5	66.6	81.1	77.2	72.6	69.6	68.6	63.2	99.2	97.3	91.4	92.2	89.1	88	69.4	68.8	68.4	68.1	67.9	67.2	66.3	64.6	64.2	63.7		28.3	41.8	50.1	50.5	56.1	64.3	60.6	51.5	37.8
274	8/11/2022	4:40:00 PM	4:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.2	72.9	67.1	79.7	79.1	70.7	68.8	67.9	62.3	99	97.7	91.9	92	90.5	85	69.9	69.5	69.1	68.8	68.7	68	67.1	65	64.3	63.1		26.9	41.7	51.7	52	56.3	65	61	51.9	37.8
275	8/11/2022	4:45:00 PM	4:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.2	73.5	67.1	83.3	82.6	73.5	69.4	68.4	62.8	100	98.3	91.9	94.2	93.1	86.9	70.8	70.2	69.6	69	68.7	67.8	66.7	65.2	64.5	63.4		29.6	42.5	51.5	51.4	57.2	65.1	60.7	51.4	37.9
276	8/11/2022	4:50:00 PM	4:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.1	73.4	66.9	82	81.5	71.5	69.7	68.8	63.3	99.9	98.2	91.7	96.9	94.4	89.6	70.2	69.4	68.8	68.5	68.4	67.5	66.7	65.1	64.5	63.8		28.8	42.7	51.8	51.5	56.2	64.8	60.7	51.3	37.5
277	8/11/2022	4:55:00 PM	5:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.2	73.9	67.5	80.9	80.7	75.1	69.7	68.9	64.4	100	98.7	92.3	97	97.4	94.8	71.3	70.6	69.7	69.4	69.2	67.9	66.9	65.6	65.1	64.7		28.6	43.4	52.2	53.1	57.4	65.2	61.2	52.4	38.3
278	8/11/2022	5:00:00 PM	5:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.7	72.5	66.9	81.1	80.9	73.2	68.9	67.9	60.8	98.5	97.3	91.7	93.5	91.6	86.3	71.6	70.9	69.7	69.3	69	67.7	66.3	64.1	63.4	61.7		25.3	42	50.7	52.7	56.4	64.9	60.5	51.6	37.7
279	8/11/2022	5:05:00 PM	5:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.5	74.3	67.4	83.3	82.5	72.9	71.2	70	64.1	100.3	99.1	92.2	97.1	93.1	87.8	71	70.6	69.5	69	68.7	67.9	67.1	65.8	65.5	64.6		28.1	43.6	53.7	54.1	57.3	65.1	61	51.8	37.8
280	8/11/2022	5:10:00 PM	5:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.8	71.7	66.6	80.8	80.5	72.7	68.7	67.9	63.9	97.6	96.5	91.4	92.9	91.8	86.8	70.7	69.6	68.4	68	67.8	67.1	66.4	64.9	64.5	64.1		25	40.8	50.1	50.3	55.7	64.5	60.6	51.3	37.2
281	8/11/2022	5:15:00 PM	5:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.4	73.4	66.8	82.2	81.9	72.6	69.5	68.4	63.4	99.2	98.2	91.6	92.7	92.3	88	70.2	69.8	69	68.6	68.4	67.5	66.5	64.8	64.4	63.7		26.8	42.5	52.6	53.6	56.6	64.4	60.6	51.8	37.9
282	8/11/2022	5:20:00 PM	5:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.8	72.6	67.3	79.3	78.6	72.7	69.3	68.4	64.1	98.6	97.4	92.1	90.6	89.2	87.9	71	70.3	69.5	69.1	68.8	68	66.8	65.2	65	64.4		26.6	41.6	50.6	51.7	57	65.1	61.2	52.2	38.1
283	8/11/2022	5:25:00 PM	5:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.5	73.4	67.5	82.4	81.9	73.1	70.5	69.3	63.8	99.3	98.2	92.3	94.5	94.8	89.4	71.1	70.2	69.5	69	68.8	67.9	67.3	65.6	64.8	64		26.6	42.6	52.3	52.6	57.5	65.3	61	52.2	38.4
284	8/11/2022	5:30:00 PM	5:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.5	72.5	66.9	78.8	78.2	69.8	69.2	68.4	62.9	98.3	97.3	91.7	89.3	89.2	83.5	69.1	68.9	68.5	68.2	68.1	67.6	66.8	65.2	64.6	63.5		25.4	41.2	51.6	53	55.9	64.6	60.9	51.8	37.5
285	8/11/2022	5:35:00 PM	5:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.1	72.5	66.1	80	78.2	70.2	69.3	68.2	61.9	98.9	97.3	90.9	94.1	90.2	84.8	69.1	68.5	67.9	67.5	67.3	66.7	66	64.6	64.1	63.3		28.1	41.5	51	50	55.4	63.8	60.3	51.5	38.1
286	8/11/2022	5:40:00 PM	5:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	73.5	67.1	83	82.6	75.1	70.8	69.9	62	99.7	98.3	91.9	95.9	95.5	91.5	73.7	70.8	69	68.5	68.3	67.4	66.7	65.1	64.5	63.2		28.3	42.2	52.6	53.9	56.2	64.7	61.1	52.4	38.6

287	8/11/2022	5:45:00 PM	5:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.8	75.3	67.5	82.6	80.6	72.8	72.1	70.2	63.5	102.6	100.1	92.3	96.1	95.5	89.9	71.1	70.2	69.4	69.1	68.9	68.1	67.1	65.7	65	64	34.3	44.7	50.7	51	56.7	65.3	61.4	52.6	40
288	8/11/2022	5:50:00 PM	5:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.5	72.3	67.1	77.3	76.2	70.4	69.7	68.7	64.1	98.3	97.1	91.9	91.2	89.9	84.3	69.8	69.4	68.9	68.6	68.4	67.8	66.9	65.5	64.8	64.4	26.2	41.7	49.9	50.7	55.7	65	61.2	51.8	37.5
289	8/11/2022	5:55:00 PM	6:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.1	72.1	67	78.4	77.7	71.1	67.8	66.8	61.9	97.9	96.9	91.8	90.7	90.2	84.3	69.9	69.6	69	68.6	68.5	67.6	66.8	64.9	64	62.3	25.7	41.7	49.8	50.8	55.8	64.8	60.9	52.1	39.4
290	8/11/2022	6:00:00 PM	6:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.1	72.6	67.3	81.2	78.8	71.8	68	66.8	62.9	98.9	97.4	92.1	93.5	90.2	85.7	70.5	70	69.3	68.8	68.6	67.8	67.1	65.9	65.3	64.1	27.9	41.7	49.9	50.6	56.3	65.3	61.3	52.3	38.3
291	8/11/2022	6:05:00 PM	6:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.3	71.7	66.6	79.7	78.9	74.6	68.6	67.4	62.3	98.1	96.5	91.4	93.3	89.8	89	70.5	69.5	68.5	68.1	68	67.2	66.3	64.5	63.9	63.2	26.4	40.4	49.9	49.4	55.1	64.4	60.9	51.8	38.1
292	8/11/2022	6:10:00 PM	6:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.7	72.1	66.8	81	78.3	70.6	69	67.1	62.8	98.5	96.9	91.6	93.1	90.6	85.9	69.9	69.4	68.9	68.6	68.4	67.6	66.6	64.8	64.1	63.1	27.8	41.5	49	49.3	54.8	64.8	61	52.1	38.8
293	8/11/2022	6:15:00 PM	6:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.5	72.4	66.8	79.9	79	70.4	68.2	67.4	63.3	98.3	97.2	91.6	92.4	91.2	86.1	69.5	69.3	68.8	68.4	68.2	67.5	66.6	64.8	64.3	63.8	26.3	42.4	49.8	51.1	55.9	64.5	60.9	52.1	38
294	8/11/2022	6:20:00 PM	6:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.3	71.1	66.7	76.6	75.6	71.3	68.6	67.4	61.8	97.1	95.9	91.5	89.8	88.3	87.1	70.4	69.8	68.8	68.4	68.2	67.5	66.5	64.5	63.9	62.6	25.3	40.1	48.1	49.4	55.3	64.6	61	52.4	38.4
295	8/11/2022	6:25:00 PM	6:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.7	71.8	66.8	81.5	81.3	74.1	67.7	66.2	61.3	97.5	96.6	91.6	94.6	94.1	89.1	72.3	70.4	69.2	68.7	68.6	67.4	66.3	64.4	63.5	62.1	24.2	41.2	49.9	50.8	56.2	64.6	60.9	52.2	38.4
296	8/11/2022	6:30:00 PM	6:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.9	73	66.6	86.6	86.3	72.8	66.2	64.3	59.2	98.7	97.8	91.4	96	95.5	85.3	72	71.2	69.6	68.9	68.6	67.1	66.2	63.6	62.3	59.9	25.5	40.4	53.3	54.4	55.8	64	60.7	52.2	39.4
297	8/11/2022	6:35:00 PM	6:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.7	71.7	67	78.3	77.9	71.3	69.3	68.1	63.7	97.5	96.5	91.8	89.3	88.9	89.6	70.9	70.4	69.3	68.6	68.4	67.4	66.6	65.3	64.9	64.1	25	39.7	50.6	50.5	55.8	64.7	61.3	52.4	38.5
298	8/11/2022	6:40:00 PM	6:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.9	71.3	65.9	79.1	77.1	69.8	68.1	67	61.5	97.7	96.1	90.7	93.6	88.8	84.3	69.3	68.9	68.1	67.7	67.5	66.5	65.6	63.7	63.2	62.2	26.8	40.5	49.1	48.5	54.6	63.6	60.3	51.7	38.3
299	8/11/2022	6:45:00 PM	6:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.6	72.8	66.5	84.1	83.6	72.2	67.5	66.8	62.4	98.4	97.6	91.3	96.3	96.6	86.7	70.5	69.8	69.1	68.4	68.1	67.2	66.1	64.1	63.5	62.8	24.6	41.4	52.9	51.6	54.6	64	60.9	52.4	38.5
300	8/11/2022	6:50:00 PM	6:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.6	71.5	66.5	78	77.5	71.1	68.4	67.5	62.2	97.4	96.3	91.3	89.9	89.5	87	70.3	69.8	69.1	68.4	68.1	67	66.1	64.4	64.2	63.1	24.8	40.6	50.2	49.7	54.8	64.2	60.9	52.2	38.1
301	8/11/2022	6:55:00 PM	7:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73	72	66.8	78.9	78.4	71.3	69.3	68.4	63.5	97.8	96.8	91.6	90.5	88.8	84.9	70	69.5	68.9	68.5	68.3	67.5	66.5	65	64.7	63.8	25.5	41.5	50.3	49.5	55.1	64.6	61.2	52.5	38.4
302	8/11/2022	7:00:00 PM	7:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.5	71.4	66.5	81.3	80.8	73.1	67.8	66.8	61.2	97.3	96.2	91.3	93.1	93.7	92.5	70.6	69.6	69	68.4	68.2	67.3	66.1	64.1	63.4	61.7	24.4	40.7	49.8	49.2	55.2	64.2	60.7	52.5	38.9
303	8/11/2022	7:05:00 PM	7:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72	70.7	66.4	76.3	75	70.7	67.7	66.5	62.6	96.8	95.5	91.2	88.6	87.4	83.7	69	68.6	68.1	67.9	67.7	67.1	66.2	64.8	64.2	63.2	25.1	39.6	47.8	48.2	54.7	64.3	60.8	52	38.1
304	8/11/2022	7:10:00 PM	7:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.1	70.9	66.4	79.1	78.8	71.9	67	65.7	61.6	96.9	95.7	91.2	90.4	90.4	86.4	69.4	69	68.6	68.4	68.1	67.3	66.2	63.7	63.2	62.2	25	39.7	48.6	48.8	55.3	64.1	60.8	52.1	38.3
305	8/11/2022	7:15:00 PM	7:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.9	71.8	66.3	80.6	80.2	72.9	68.6	67.6	61.7	97.7	96.6	91.1	94.7	93.9	89.8	69.7	68.9	68.2	67.9	67.6	66.9	66.1	64.2	63.7	62.2	25.1	41.4	49.9	51.5	54.9	64.1	60.3	51.5	38.4
306	8/11/2022	7:20:00 PM	7:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.1	72	67.8	83.4	83.3	83	66.9	65.5	62.1	97.9	96.8	92.6	103.6	103.2	104	77.1	70.9	68.9	68.5	68.4	67.5	66.6	64.4	63.9	62.7	25.3	40.7	49.6	49.7	57	65.3	62.7	53.1	39.3
307	8/11/2022	7:25:00 PM	7:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.3	72.2	66.9	80.8	80.2	70.8	68.6	67.9	61.9	98.1	97	91.7	92.4	90.2	85.6	69.3	69.1	68.7	68.4	68.2	67.5	66.7	65.2	64.7	63.7	25.4	41.7	50.7	49.3	54.7	64.7	61.1	52.2	38.2
308	8/11/2022	7:30:00 PM	7:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.4	72.3	66.4	84	82.7	72.5	68.1	67.1	62.2	98.2	97.1	91.2	94.5	93.7	87.4	71.2	69.7	68.5	68	67.8	67	66.1	64.4	63.8	62.8	25.6	43	49.8	50.7	55	64.2	60.7	51.9	38.4
309	8/11/2022	7:35:00 PM	7:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.7	71.4	66.8	76.8	76.3	69.4	67.9	66.9	62.9	97.5	96.2	91.6	88.7	87.6	86.9	69.2	69	68.6	68.3	68.2	67.6	66.8	64.3	63.9	63	26.3	40.8	47.8	48.3	55.4	64.7	61	52.3	38.5
310	8/11/2022	7:40:00 PM	7:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.1	71.2	66.8	76.7	75.6	70.9	67.3	66.4	61.2	96.9	96	91.6	88.6	87.8	84.4	69.6	69.4	69	68.7	68.6	67.4	66.7	64.2	63.3	62.3	24.4	40.2	48.8	49.5	55.4	64.6	61.1	52.2	38.5
311	8/11/2022	7:45:00 PM	7:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.2	74.5	67.5	90.6	90.4	75.2	68.3	67.6	63.8	100	99.3	92.3	99.2	98.4	87	73.4	71.6	70	69.5	69.3	67.9	66.8	65.2	64.7	64.3	24.6	40.1	56.3	55	56	65.1	61	52.1	38.6
312	8/11/2022	7:50:00 PM	7:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.2	71.3	66.5	83.6	83.3	74.3	65.5	64.7	61.1	97	96.1	91.3	97.2	97.1	92.4	71.1	69.7	68.9	68.5	68.3	67.3	66.2	63.7	63	61.6	23.9	39.7	50.4	49.5	54.6	64.3	61	52.2	38.5
313	8/11/2022	7:55:00 PM	8:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.8	71.6	66.8	80	79.4	72.7	68.3	66.8	62.2	97.6	96.4	91.6	92.1	90.1	85.6	70.4	70.2	69.7	69.2	69	67.4	66.3	64.2	63.6	62.6	25.2	41.2	48.9	48.3	55.1	64.9	60.9	51.9	38.6
314	8/11/2022	8:00:00 PM	8:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.2	72.1	66.9	79.8	79.4	72	68	66.8	61.4	98	96.9	91.7	91.9	91.1	86.2	70.1	69.8	69.3	68.8	68.6	67.8	66.7	64.3	63.2	62	26.2	41	50.6	50.2	55.5	64.9	60.8	51.8	38.3
315	8/11/2022	8:05:00 PM	8:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.4	71.1	66.3	78.2	77.4	71.6	66.4	65.5	62.4	97.2	95.9	91.1	91.4	92.5	88.6	70.1	69.1	68.6	68.3	68.1	67.1	65.9	63.6	63.1	62.6	25.8	40.8	47.4	48.7	55.3	64.1	60.5	51.9	38.5
316	8/11/2022	8:10:00 PM	8:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.7	70.6	65.3	80.9	80.6	69.3	66.2	64.8	59.8	96.5	95.4	90.1	93.2	93.3	84.3	68.6	68.3	67.9	67.5	67.3	66.2	65.1	62.4	62	60.9	24.6	39.8	48.4	50.5	54.3	62.9	59.8	51.2	38.2
317	8/11/2022	8:15:00 PM	8:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.4	71.1	66.3	77.2	75.9	69.9	66.3	65.1	61	97.2	95.9	91.1	89.8	87.6	84.8	69.4	68.9	68.3	68.1	67.9	67	66	64	63.2	61.6	25.8	40.6	48.3	48.6	54.5	64.2	60.4	51.4	37.8
318	8/11/2022	8:20:00 PM	8:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.6	73.9	67.7	88.2	87.8	78.7	67.7	66.8	62.1	99.4	98.7	92.5	99.9	98.6	95	76.2	73	70.6	69.7	69.3	67.9	66.6	64.2	63.8	63.1	24.7	43.8	52.3	54.9	58.5	65.2	61	51.9	38.1
319	8/11/2022	8:25:00 PM	8:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.5	71.8	66.8	81.5	81	71.3	67.7	66.6	62.3	97.3	96.6	91.6	95.7	94	88.4	70.3	69.8	69.3	68.9	68.6	67.5	66.5	64.1	63.5	62.8	23.5	41.3	50	50.7	54.8	64.8	60.8	51.6	37.9
320	8/11/2022	8:30:00 PM	8:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.7	70.5	66.3	76.4	74.5	70.3	68.2	67.2	62.5	96.5	95.3	91.1	88.3	86.2	83.2	69.2	69	68.3	68	67.9	67	66.1	64.1	63.6	63	25	39.7	46.8	47.2	54.3	64.2	60.5	51.2	37.3
321	8/11/2022	8:35:00 PM	8:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.8	70.7	66.6	76.9	76.1	71.6	67.1	66.1	62	96.6	95.5	91.4	91.5	91.8	90	69.8	69.5	69.1	68.7	68.4	67.4	66.5	63.4	62.8	62.4	24.4	39.7	48	48.2	55.1	64.5	60.8	51.5	37.6
322	8/11/2022	8:40:00 PM	8:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72	71.2	65.9	80.6	80.2	71.5	66.5	65.7	61.6	96.8	96	90.7	92.1	92.3	87.4	70	69.3	68.5	68	67.7	66.5	65.5	63.2	62.7	61.9	23.1	39.4	51.2	49.5	54.6	63.6	59.9	50.6	37.2
323	8/11/2022	8:45:00 PM	8:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.8	74	67.6	88.8	88.5	81.9	67.1	66.3	61.7	99.6	98.8	92.4	104.4	103.8	101	75.6	72.4	69.9	69.2	68.8	67.8	66.5	63.8	63.3	62.5	25	44	52.7	55.5	57.6	64.8	61.5	55	44.7
324	8/11/2022	8:50:00 PM	8:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.8	70.7	65.8	79.7	79.4	72.1	68	66.9	62	96.6	95.5	90.6	90.2	90.5	86.8	70.9	69.9	67.9	67.5	67.2	66.2	65.3	63.8	63.3	62.7	24.3	39.3	49	49.8	55	63.4	60.1	51.3	37.7
325	8/11/2022	8:55:00 PM	9:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72	71.1	66.3	78.5	77.9	70	66.4	65.7	60.7	96.8	95.9	91.1	89.9	89.7	83.8	69.3	69.2	68.7	68.3	68.2	67.2	66.1	63.2	62.4	61.3	24.3	40.2	49.5	48.4	54.4	64.3	60.2	51	37.4
326	8/11/2022	9:00:00 PM	9:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.4	71.2	66.1	78.9	78.5	70.7	68.3	67.2	61.3	97.2	96	90.9	90.4	90.5	86.2	69.7	69	68.3	67.7	67.5	66.7	66	64.1	63.2	61.8	25.3	40	49.3	50.7	55.2	64	60.1	51	37.5
327	8/11/2022	9:05:00 PM	9:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.1	70.6	66.1	77.3	75.1	69.9	65.7	64.7	61.1	96.9	95.4	90.9	88.5	88.1	83.9	69.5	69.2	68.6	68.2	68	67	65.8	63.6	63	61.5	25.7	39.6	47.2	47.4	54.8	64.2	59.9	50.9	37.3
328	8/11/2022	9:10:00 PM	9:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.3	69.3	65.4	76.5	76.2	70.3	66	65.2	61.9	95.1	94.1	90.2	87.7	87.3	84.2	69.6	68.6	67.7	67.2	67	66	65	63.3	62.9	62.4	22.6	38.4	46.4	46.5	52.9	63.4	59.8	50.8	37.3
329	8/11/2022	9:15:00 PM	9:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.6	69.6	65.1	75.6	75.2	71.1	65.3	64.1	58.5	95.4	94.4	89.9	88.1	87.5	86	69.6	68.7	67.5	67.2	66.9	65.9	64.8	62.3	61.8	59.2	23.3	38.7	46.6	48.2	54.2	62.9	59.3	50.8	37.8
330	8/11/2022	9:20:00 PM	9:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.1	70	65	76.2	75.9	71.5	64.9	64	60	95.9	94.8	89.8	87.3	88	85.2	69.5	69.2	67.9	67.3	67	65.8	64.6	62	61.6	60.6	24.3	39	47.6	48.2	54.7	62.7	59.3	50.4	37.5
331	8/11/2022	9:25:00 PM	9:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72	71	65.9	77.4	77	69.5	67.5	66.6	61.9	96.8	95.8	90.7	88.8	88.1	85.1	68.9	68.5	67.9	67.7	67.5	66.8	65.8	63.6	63	62.1	24.2	40.5	49.3	49	54.2	63.7	60.3	51.4	37.8
332	8/11/2022	9:30:00 PM	9:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.4	70.4	65.5	79	78.3	69.2	65	63.8	58.8	96.2	95.2	90.3	89.1	88.5	82.3	68.2	68.1	67.8	67.5	67.3	66.4	65.3	62.6	61.7	59.4	24.2	40	47.9	48.1	54.4	63.5	59.4	50.6	37.5
333	8/11/2022	9:35:00 PM	9:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.3	70.3	65.7	77.6	77.3	70.6	66.6	65.6	60.9	96.1	95.1	90.5	88	87	87.7	69.3	68.8	68.3	67.8	67.6	66.6	65.4	63	62.5	61.6	24	39.2	48.1	47	55	63.8	59.4	50.6	37.4
334	8/11/2022	9:40:00 PM	9:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71	69.8	65.7	75.7	73.7	69.7	65.6	64.8	61.1	95.8	94.6	90.5	86.9	87	84.3	69	68.7	68	67.6	67.4	66.4	65.6	63.1	62.7	61.8	23.7	38.5	46.6	47.9	54.6	63.6	59.9	51.2	37.7
335	8/11/2022	9:45:00 PM	9:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.6	70.5	65.9	75.8	75.3	71.2	65.8	64.9	61.3	96.4	95.3	90.7	90.8	90.7	86.4	69.9	69.3	68.4	68	67.7	66.7	65.6	63.3	62.6	61.7	25.3	40.1	46.8	48	54.9	63.7	60.2	51.1	37.7
336	8/11/2022	9:50:00 PM	9:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.6	70.7	65.5	78.5	78.2	72.4	65.8	64.9	60.2	96.4	95.5	90.3	90.4	88.7	85.9	70.3	69.6	68.3	67.7	67.4	66.1	64.9	63.2	62.3	61.1	23.9	39.8	49.4	47.4	53.9	63.7	59.2	50	37.3
337	8/11/2022	9:55:00 PM	10:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72	70.9	65.3	81.8	81.2	70.9	65.8	64.6	58.2	96.8	95.7	90.1	93.3	91.7	85.8	69	68.5	67.7	67.3	67.2	66	65	62.6	61.8	59.2	25	40.3	49	48.8	55	63.2	58.9	50.2	37.3
338	8/11/2022	10:00:00 PM	10:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.6	71.4	66.5	78.1	77.3	72.9	65.2	64.2	60.3	97.4	96.2	91.3	89.5	88.5	85.4	70.7	70.2	69.6	68.9	68.7	67.3	66	62.8	61.6	60.7	26.3	40.5	48.7	49.2	56.5	64.6	59.7	50.8	37.9
339	8/11/2022	10:05:00 PM	10:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.5	70.2	65.6	78.3	76.8	72.7	66	64.9	60.9	96.3	95	90.4	89.5	89.6	86	69.4	68.4	67.6	67.2	67	66.2	65.3	63.6	62.9	61.8	26.2	39.2	46.4	46.7	53.8	63.6	59.7	50.7	38
340	8/11/2022	10:10:00 PM	10:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72	71	66.1	79.5	79.3	72.1	63.7	62.7	58.8	96.8	95.8	90.9	91.2	91.4	85.9	69.4	69	68.6	68.1	67.9	67.1	66.1	62.8	61.2	59.5	24.3	39.7	49.6	50.2	54.6	64.1	59.8	50.9	37.5
341	8/11/2022	10:15:00 PM	10:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.2	72.3	67.2	85.3	84.9	79	67.2	66.4	61.4	98	97.1	92	97.7	97.8	94.3	73.6	71	69.4	68.8	68.5	67.7	66.6	63.6	62.8	61.9	24.1	42.9	48.3	49.6	57.5	65.4	60.3	51.3	38.3
342	8/11/2022	10:20:00 PM	10:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72	71.3	65.3	79.1	78.7	70.5	64.7	63.8	59.2	96.8	96.1	90.1	89.9	89.3	84	69.7	69.1	68.1	67.7	67.5	66.2	64.9	62	61.2	59.5	22.4	41.6	49.9	47.9	55.4	63.3	58.6	49.6	36.4
343	8/11/2022	10:25:00 PM	10:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.8	70.9	65.5	81	80.5	71.8	65.2	64.3	59.2	96.6	95.7	90.3	89.9	89.2	85	69.2	68.9	67.9	67.6	67.4	66.1	65.2	62.8	61.7	60.2	22.6	41.8	47.7	48.1	54.6	63.6	59	50.5	37.1
344	8/11/2022	10:30:00 PM	10:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.2	71	65.7	79.9	79.2	74.9	64.5	63.2	58.1	97	95.8	90.5	94.6	94.1	92.1	71.2	70.1	68.5	67.8	67.6	66.4	65.2	62.3	60.8	59	25.4	40.1	48.7	50.8	55.1	63.6	59.4	50.6	37.6
345	8/11/2022	10:35:00 PM	10:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.6	68.8	64.4	75.8	75.5	74	65	64.1	59.5	94.4	93.6	89.2	87.6	87.1	87.4	69.6	68.7	67.1	66.4	66.2	64.9	63.7	61.7	61	60.1	21.1	37	47.6	47.4	53.1	62.3	58.4	49.3	36.4
346	8/11/2022	10:40:00 PM	10:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.4	69.5	64.8	77.3	77.2	73	64.8	63.9	58.7	95.2	94.3	89.6	91.4	90.2	86.9	69.7	68.1	67.4	67	66.9	65.8	64.4	61.5	60.5	59.2	22.4	38.8	47	48.7	54.4	62.7	58.7	50	36.9
347	8/11/2022	10:45:00 PM	10:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.4	68.5	63.6	77.2	76.6	67.3	62.6	61.3	56.3	94.2	93.3	88.4	90.7	90.7	87.6	66.9	66.6	66.2	65.9	65.7	64.5	63.4	60.7	59.7	56.8	21.7	38.5	45.7	46.1	52.2	61.2	58.4	49.6	36.5
348	8/11/2022	10:50:00 PM	10:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.4	69.2	64	77.7	77.3	70.7	64.1	62.6	59	95.2	94	88.8	88.3	87.5	85.4	69.5	68.3	67.1	66.7	66.5	65.1	63.1	60.6	60.2	59.4	23.6	39.1	46.1	46.2	52.9	62	58	49.4	36.7
349	8/11/2022	10:55:00 PM	11:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.3	70.1	64.9	80.4	80	69.6	62.1	61	57.5	96.1	94.9	89.7	91.4	91.4	83.3	69	68.5	67.6	67.1	66.8	65.8	64.7	61.8	61.1	58.9	24.8	38.5	48.5	49	54.5	62.6	58.9	50.6	37.8
350	8/11/2022	11:00:00 PM	11:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.9	67.7	63.3	73.9	73	69.9	62	60.5	55.4	93.7	92.5	88.1	85.3	84.8	85.3	67.7	66.9	66.1	65.5	65.3	64.3	62.7	60.2	59	56.6	21.9	37.2	44.2	45	52.3	61	57.8	48.9	36.2
351	8/11/2022	11:05:00 PM	11:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.6	68.5	64.5	73.6	72.2	69.5	63.3	62.5	58.4	94.4	93.3	89.3	86.3	85.4	84.5	68	67.7	67.1	66.9	66.7	65.6	64	61.2	60.2	59	22.1	37.9	44.6	46.5	53.2	62.1	59.2	50.1	37
352	8/11/2022	11:10:00 PM	11:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.6	68.8	64.4	80	79.7	75.3	63.8	62.5	58.2	94.4	93.6	89.2	90.6	90.4	89.9	72.9	71.6	67.1	66.5	66.1	64.7	63.1	61.3	60.7	59.1	21.1	37.4	46.9	45.8	55.5	61.9	58.7	50.1	36.6
353	8/11/2022	11:15:00 PM	11:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.2	72.1	64.5	86.8	83	72.6	65.8	64	58	99	96.9	89.3	95.6	93.8	86.1	71.5	70.4	68.1	67.4	66.8	65.2	63.6	59.8	58.9	58.2	29.5	41.3	48.5	54.1	56	61.7	57.7	48.7	36.1
354	8/11/2022	11:20:00 PM	11:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.2	70.9	64.3	79.9	79.5	70.4	64.1	62.9	58.2	98	95.7	89.1	91.9	90.2	83.7	69	68.4	67.4	66.9	66.6	65.3	63.5	60.4	59.6	58.6	28.2	39	48.9	47.4	53.3	62.3	57.7	48.6	36.1
355	8/11/2022	11:25:00 PM	11:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71	70.1	63.9	83.5	83	69.6	64.8	63.8	58.8	95.8	94.9	88.7	90.6	90.5	82.4	67.9	67.1	66.5	66	65.8	64.6	63.4	61.3	60.4	59.4	21.9	41.4	46.9	49.3	52.2	61.8	57.6	49.1	36.7
356	8/11/2022	11:30:00 PM	11:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70	68.6	63.7	76.1	74.9	69.2	63.9	62.7	56.6	94.8	93.4	88.5	86.8	85.5	81.7	68.2	67.5	66.8	66.5	66.4	64.8	62.7	60.2	59.7	58.4	22.9	38.9	44.1	45.7	53.4	61.7	57.2	48.5	36.4
357	8/11/2022	11:35:00 PM	11:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.4	68.3	64.2	75	74.8	73.4	63	61.9	56.5	94.2	93.1	89	86	86.1	84.3	70.2	69	67.8	67.2	66.8	64.6	63.2	60.7	60	57	22.3	37.4	43.8	46	54.8	62.3	57.4	48.4	36.2
358	8/11/2022	11:40:00 PM	11:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.8	67.8	63.6	75.4	74.7	73.2	60.6	59.3	53.9	93.6	92.6	88.4	88.6	88.5	87.4	70.4	69.5	67.5	66.6	66.2	64.2	62.4	59.8	57.8	54.9	20.8	37.5	44.4	45.3	51.9	62	56.9	47.8	35.7
359	8/11/2022	11:45:00 PM	11:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.3	69.1	64.1	79	78.7	72.3	63.6	62.5	57.9	95.1	93.9	88.9	88	88.2	86.1	69.3	68.5	67.3	66.7	66.4	65.1	63.4	60.3	59.4	58.1	23	37.6	47.5	46.4	54.7	62.2	57.1	48.8	36.3
360	8/11/2022	11:50:00 PM	11:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70	68.8	64.5	79	78.9	77.2	64.2	63.1	58.6	94.8	93.6	89.3	93.3	93.1	92.6	71.5	69	67.5	66.8	66.5	65.1	63.3	60.7	60.3	59.2	22.4	37.9	44.7	47.4	54.9	62.6	57.8	49.2	36.9
361	8/11/2022	11:55:00 PM	12:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	67.6	66.5	62.4	72.8	71.8	69.5	60.4	59.2	55.5	92.4	91.3	87.2	84.6	83.9	81	66.5	65.9	65.3	65	64.8	63.8	61.6	58.4	57.9	56.3	21.2	34.9	43.5	43.9	51.4	60.1	56.7	48.4	35.6
362	8/12/2022	12:00:00 AM	12:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.5	68.3	62.3	77.1	76.7	67.6	62.8	61.8	56.9	94.3	93.1	87.1	87.6	86.9	82.4	67	66.4	65.3	64.9	64.6	63.2	61.8	58.9	57.9	57.5	22.6	37.5	47	46.4	51.6	60.2	56.3	47.7	35.9
363	8/12/2022	12:05:00 AM	12:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.7	68.3	62.9	75.1	74.3	68.4	63.2	62.2	58.1	94.5	93.1	87.7	86.2	85.7	82.1	67.7	67.1	66.1	65.3	65.1	63.6	62.2	59.8	59.4	58.4	23	38.2	45.1	46.3	53	60.6	56.8	48.4	36.1
364	8/12/2022	12:10:00 AM	12:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.2	66.9	61.4	75.6	75.2	68.7	58.8	57.9	53.3	93	91.7	86.2	87.8	87.5	83.5	67.1	66.2	65.2	64.3	63.9	62.3	60.5	57.7	56.8	53.9	21.4	36	44.6	45.9	51.7	59	55.5	47	35.5
365	8/12/2022	12:15:00 AM	12:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.3	68	61.3	77.5	76.4	68.3	59.3	58.1	51.7	94.1	92.8	86.1	88.6	87.6	82.1	67.2	66.8	65.3	64.2	63.8	62.3	60.4	54.2	53	52.3	23.2	38.5	44.8	46.3	51.7	58.8	55.2	46.8	35.6
366	8/12/2022	12:20:00 AM	12:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.7	69	63.5	82.9	82.6	73.3	59.1	58	52.8	94.5	93.8	88.3	95	93.8	86.5	71.4	69.6	67.3	66.6	66.3	64.4	62.1	58.1	56.9	53.6	20.7	37.5	47.6	51.3	53.7	61.4	56.4	48.5	36.4
367	8/12/2022	12:25:00 AM	12:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.8	68.4	63.7	76.8	75.7	70.9	63.4	61.8	56	94.6	93.2	88.5	87.7	87.5	85.4	69	68.6	67.1	66.3	65.9	64.4	62.9	60.2	58.9	56.7	22.8	38.1	44.6	46.2	53.5	61.7	57.1	48.5	36.3
368	8/12/2022	12:30:00 AM	12:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	66.1	64.7	59.9	75.1	73.6	68.6	57.9	57.3	52.8	90.9	89.5	84.7	86	84.7	82.6	65.5	64.9	63.8	62.8	62.4	60.9	58.9	55.6	54.7	53.3	20.2	34.7	40.1	42.6	48.2	57.8	54.3	46.2	35.1
369	8/12/2022	12:35:00 AM	12:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	67.5	66.6	61.8	78.5	78.1	69.7	59.8	58.3	52.6	92.3	91.4	86.6	88.7	88.8	83.1	68	66.9	65.5	64.8	64.5	62.5	60.8	57.2	56.1	53	19.5	35.8	44.8	44.4	50.7	59.6	55.8	47.6	35.7
370	8/12/2022	12:40:00 AM	12:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.2	68.1	62.4	77.6	77.5	72.4	60.1	58.6	52.7	94	92.9	87.2	90.6	90.9	86.9	68.6	67.3	66.2	65.5	65.2	63.5	61.5	56.5	55.2	53	21.9	37.9	44.5	50	54	59.8	56	48.1	36.8
371	8/12/2022	12:45:00 AM	12:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.4	69.5	63.3	80	79.7	68.6	63.4	62.4	57.4	95.2	94.3	88.1	89.5	89.3	83.5	67.7	67.3	66.7	66.2	65.8	64.4	62.8	59.1	58.5	57.8	22.4	38	49	50	53.9	60.8	57	48.6	36.8
372	8/12/2022	12:50:00 AM	12:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.1	69	62.6	77.1	76.7	68.3	62.8	61.7	55.1	94.9	93.8	87.4	88.7	88.3	81.3	67.2	66.8	66.2	65.7	65.4	63.4	61.9	58.4	57.2	55.7	22.7	38.3	47.8	48.6	53.2	60.2	56.2	47	35.5
373	8/12/2022	12:55:00 AM	1:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.6	68.1	61.9	76.5	75.2	68.2	61.9	60.9	55.7	94.4	92.9	86.7	88.8	86.4	81.7	67.2	66.2	65.6	64.9	64.7	62.7	61	58.2	57.7	56.4	23.9	38.5	44.4	46	52.3	59.7	55.5	46.7	35.5
374	8/12/2022	1:00:00 AM	1:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.6	67.2	62	74.5	72.5	68.4	62.1	61.4	56.8	93.4	92	86.8	87.8	85.1	81.2	66.8	66.3	65.7	65.1	64.7	63	61.2	58.4	58	57.4	21.9	36.2	44.5	45.6	52	59.7	56.1	47.5	35.9
375	8/12/2022	1:05:00 AM	1:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.6	67.1	61.8	76	74.1	68.4	60.1	58.9	53.9	93.4	91.9	86.6	86.9	85.7	81.8	67	66.1	65	64.3	64.1	62.7	61.3	58	57	55.2	22.4	36.7	43.7	45.1	51.4	59.7	55.8	47.4	36.1
376	8/12/2022	1:10:00 AM	1:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	Yes	16.06mV/P	66.9	65.6	60.9	72.2	71	68	56	54.7	44.2	91.7	90.4	85.7	85.8	84	81.8	66.7	66	65.1	64.6	64.2	62.4	60.2	53	49.8	44.6	20.5	35.4	41	43.3	51.1	58.5	55.3	46.8	35.6
377	8/12/2022	1:15:00 AM	1:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.8	68.7	62.6	79.2	78.4	68.9	61.7	60.8	54.5	94.6	93.5	87.4	89.4	89.3	83.1	67.7	67	66.1	65.6	65.3	63.6	62.1	57.5	56.5	55.3	21.7	39	46.5	47.6	53.9	60.1	56.3	47.4	36.1
378	8/12/2022	1:20:00 AM	1:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.2	66.8	61.3	73.9	72.8	68.7	58.4	57.2	51.4	93	91.6	86.1	87.3	85.4	82.6	67.1	66.4	65.2	64.3	63.9	62.4	60.6	56.6	53.9	51.8	22.3	35	44.5	46.6	53.1	58.5	55.3	46.7	35.9
379	8/12/2022	1:25:00 AM	1:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.6	67.3	61.6	74.8	72.8	66.9	61.3	60.1	55.3	93.4	92.1	86.4	85.5	84.5	82.4	66.2	65.5	64.9	64.5	64.3	62.6	60.8	57.8	57	56.1	21.9	36.2	45.8	45.7	52.1	59.1	55.6	46.8	35.6
380	8/12/2022	1:30:00 AM	1:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.7	67.3	62.1	74.3	73	69.6	62.3	60.6	54.7	93.5	92.1	86.9	86.5	85.8	84.1	68.8	66.7	65.6	65	64.7	63.1	61.2	57.2	56.4	55.3	22.4	37.5	42.6	44.7	51.9	59.9	56.3	47.3	35.5
381	8/12/2022	1:35:00 AM	1:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.4	68.2	61.8	76	74.2	69.2	63.8	62.7	52.3	94.2	93	86.6	88.2	86.2	83.2	67.8	66.9	66	65.2	64.5	62.6	60.8	57	55	52.9	24.5	38.4	44.3	45	52.4	59.5	55.4	46.6	35.6
382	8/12/2022	1:40:00 AM	1:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.8	67.3	61.6	75.1	73.3	67.6	59.7	58.2	53.8	93.6	92.1	86.4	86.6	84.7	80.6	66.3	65.8	64.7	64.3	64.1	62.8	61.2	57.4	56	54.4	23	37.1	43.4	45	52.4	59.3	55.5	47.3	36.3
383	8/12/2022	1:45:00 AM	1:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.1	66.8	61.2	74.8	73	68.9	57.9	56.9	53.4	92.9	91.6	86	85.8	83.8	83.8	67.3	66.6	65.2	64.5	64.1	62.2	60.1	56	55.4	54.3	21.7	36.8	42.9	47.2	51.5	58.7	55.3	47.2	36
384	8/12/2022	1:50:00 AM	1:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	67.6	66.5	59.8	80.3	80	70	57.4	56.6	52.3	92.4	91.3	84.6	91.6	90.5	85	67.5	65.9	63.5	62.8	62.3	60.4	58.4	55.3	54.5	52.9	20.2	34.8	46.2	46.8	49.3	57.5	53.3	45.7	34.8
385	8/12/2022	1:55:00 AM	2:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	67.4	66.3	60.2	73.8	73.6	71.1	57.6	56.7	51.4	92.2	91.1	85	85.7	85.2	83.3	68.8	65.9	63.9	63.3	62.8	60.8	58.8	55.2	53.6	51.7	20	37.3	42.3	42.8	52.4	57.8	53.3	45.3	34.8
386	8/12/2022	2:00:00 AM	2:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	66.7	65.6	59.9	73.5	73.3	67.8	57.4	56.2	50.7	91.5	90.4	84.7	86.7	84.8	83.4	66.6	65.7	63.8	63	62.6	60.8	58.7	55.4	53.6	51.5	18.9	35	44	44.3	50.1	57.7	53.6	45.3	34.9
387	8/12/2022	2:05:00 AM	2:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	67.3	65.9	60.2	74.3	72.5	68.7	57.4	56.4	49.1	92.1	90.7	85	86.1	84.9	82.5	67	65.8	64.9	63.8	63.5	61.3	58.3	53.5	52.6	49.9	21.8	35.7	41.8	43.9	50.9	58.1	53.6	45.1	34.7
388	8/12/2022	2:10:00 AM	2:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.2	66.8	60.7	74	72.2	67.9	63	61.4	51.4	93	91.6	85.5	86.1	84.9	81.2	66.7	66	64.4	63.4	63.1	61.5	60	56.7	54.6	52.3	23.9	36.2	43.4	43	50.1	58.5	54.7	46.2	35.4
389	8/12/2022	2:15:00 AM	2:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.3	69.1	61.5	83	82.7	70.7	57.6	56.3	49	95.1	93.9	86.3	95.4	94.5	84.3	68.6	67.6	65.9	65.2	64.7	62.5	59.8	55.4	54.5	50.8	23.5	38.4	48.5	48.8	52.1	59.2	54.4	46.8	35.7
390	8/12/2022	2:20:00 AM	2:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.1	67.9	62.6	74.4	73.3	71	57.4	56	48	93.9	92.7	87.4	86.3	86.6	84.3	69.3	68.2	66.3	65.6	65.2	63.7	61.7	57.6	56.3	48.4	21.9	38.1	44	45.5	53.7	60.6	55.7	47.2	36
391	8/12/2022	2:25:00 AM	2:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.2	68.8	62.8	79.2	78.8	68.9	60.8	59.1	54.4	95	93.6	87.6	89.7	88	83	67.7	67	66.3	65.7	65.4	63.7	62.2	58.7	57.1	56	23.3	38.6	45.9	48.4	53.3	60.8	55.7	47.7	36
392	8/12/2022	2:30:00 AM	2:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.7	67.3	61.9	76	73.3	70.1	60.9	59.2	53	93.5	92.1	86.7	87	84.9	81.7	67.1	66.5	65.6	65	64.7	62.9	61.2	57.2	56	54.2	22	36.8	43.7	45.2	53	59.8	55.2	47.3	35.9
393	8/12/2022	2:35:00 AM	2:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70	68.6	61.9	76.5	75.4	68.4	58.9	57.4	48.6	94.8	93.4	86.7	87.8	86.1	81.8	67.2	66.5	65.8	65.1	64.9	63.2	61.2	56.8	53.9	49.7	23.2	38.9	46	46	53.3	59.7	55.1	46.4	35.3

394	8/12/2022	2:40:00 AM	2:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.5	67.4	61.6	76.5	76.1	70.9	60.8	59.5	53.2	93.3	92.2	86.4	90.6	90.7	85.2	69.3	67.8	65	64.2	63.9	62.2	60.6	57.1	55.6	53.7	21.4	36.8	44.3	49.2	53.1	59.1	54.8	46.5	35.6
395	8/12/2022	2:45:00 AM	2:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.5	67	60.3	73.3	71.9	66.5	59.4	58.1	51.6	93.3	91.8	85.1	85.6	84.4	80.5	65.9	65.4	64.4	63.7	63.4	61.5	59	54.9	54.1	52.5	24.5	36.5	42.5	45.3	50.6	58	53.9	45.6	35.1
396	8/12/2022	2:50:00 AM	2:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70	68.7	62.9	76.2	75.6	70.7	58.5	57	50.5	94.8	93.5	87.7	87.4	86.9	84.3	68.2	67.4	66.7	66.1	65.9	64.3	62	57.4	55.7	51.3	24.3	38.3	45.4	46.5	54.4	61	55.2	46.9	35.7
397	8/12/2022	2:55:00 AM	3:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.5	67.2	62.6	76.4	74.7	71.5	60.3	59.3	54.3	93.3	92	87.4	89.2	87.2	85.9	70.1	68.9	66.5	65.3	64.9	63.2	61.4	57.8	57	55.5	22.1	36.8	42.8	44.4	52.3	61.1	54.9	45.8	34.8
398	8/12/2022	3:00:00 AM	3:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.8	69.5	61.7	80	78.7	66.9	61.3	59.8	53.5	95.6	94.3	86.5	89	87.6	80.7	65.9	65.5	64.9	64.4	64.1	62.8	61.1	57.9	55.2	53.9	23.1	40.9	46.8	45.9	52.6	59.7	54.2	46.4	35.1
399	8/12/2022	3:05:00 AM	3:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.5	67.3	61.7	77.8	76.8	69.1	62.6	61.8	53.8	93.3	92.1	86.5	87.4	85.8	83.2	67.9	67.3	65.5	64.8	64.2	62.6	60.7	57.5	56.9	54.9	21	37.4	44.2	44.4	52.6	59.7	54.7	46.8	35.7
400	8/12/2022	3:10:00 AM	3:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.1	68	62.5	74.5	73.9	67.2	58.3	57	50.8	93.9	92.8	87.3	86.1	85.8	81.2	66.7	66.4	65.7	65.3	65.1	63.7	62	57.7	54.8	51.6	22.1	37.2	45.8	46.4	54.5	60.3	55	46.8	35.4
401	8/12/2022	3:15:00 AM	3:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.1	67.2	61.5	78.5	77.9	71.6	59.6	58.6	53.7	92.9	92	86.3	89.7	89.3	85.7	68.1	67.4	66.5	65.6	64.8	61.9	59.9	55.9	54.9	54	19.7	37.5	45.2	44.3	51.9	59.4	54.8	45.5	34.6
402	8/12/2022	3:20:00 AM	3:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.2	68	62.4	75.8	75	72.2	61.9	61.2	56.2	94	92.8	87.2	89.2	87.4	84.3	68.2	67.1	65.9	65.2	64.8	63.2	61.6	58.4	57.9	57	22.8	37.4	45.5	46.3	53.2	60.7	54.9	46.5	35.3
403	8/12/2022	3:25:00 AM	3:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.3	69	62.7	79.1	78.3	74	62.2	60.7	54.4	95.1	93.8	87.5	94.8	94	89.5	68	67.3	66.1	65.6	65.4	63.8	61.5	58	57.1	55.6	24.4	38.5	46.9	47.7	54.3	60.4	55.5	47.1	35.5
404	8/12/2022	3:30:00 AM	3:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71	69.6	63.5	76	75.2	69.4	65.4	64.1	58.2	95.8	94.4	88.3	88.1	85.8	82.3	67.8	67.1	66.4	66	65.8	64.3	62.8	60.7	60.1	59.2	24.5	40.1	46.1	47.2	54.8	61.3	56.5	47.7	36.3
405	8/12/2022	3:35:00 AM	3:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	67.9	66.7	62	72.4	71.5	68.7	61.6	60.4	55.5	92.7	91.5	86.8	85.8	85	81.8	67	66.3	65.4	64.8	64.4	62.8	61.4	58.2	57.2	56.1	21.3	35.9	43.2	44.6	52.6	60.2	54.6	46.5	35.3
406	8/12/2022	3:40:00 AM	3:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.4	69	63.4	76.8	76.3	69.9	61.9	60.6	56	95.2	93.8	88.2	87.3	86.1	82.3	68	67.2	66.5	65.9	65.6	64.4	62.7	60.3	59.3	57	23.9	38.5	46.7	46	53.5	61.5	56.5	48	36.2
407	8/12/2022	3:45:00 AM	3:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	68.7	67.7	62.4	76.1	75.5	68.5	62.3	61.6	55.7	93.5	92.5	87.2	88.6	88.4	86.7	67.7	66.9	65.7	65.1	64.9	63.4	61.5	58.9	58	56.4	21.1	37.2	45.5	46.5	53.1	60.1	55.9	47.3	35.7
408	8/12/2022	3:50:00 AM	3:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.4	68.8	62.9	75	73.7	70.1	63.1	61.5	55.1	95.2	93.6	87.7	87	87.1	83.6	67.4	66.8	66.2	65.6	65.4	63.9	62.1	59.4	58.7	56.6	24.4	38.9	44.3	46.1	54	61.1	55.3	47	35.8
409	8/12/2022	3:55:00 AM	4:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.3	68.9	64.2	74.6	73.5	71.3	65.7	64.1	58.2	95.1	93.7	89	86.8	85.3	83.8	69.3	68.1	66.9	66.5	66.2	65.1	63.5	61	60.5	59.9	24.1	38	44.7	45.8	54.9	62.8	56	47.6	35.6
410	8/12/2022	4:00:00 AM	4:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.7	68.6	63.3	75.4	74	70.7	62.5	61.5	57.5	94.5	93.4	88.1	87.1	85.6	82.4	68.2	67.7	66.7	65.9	65.6	64.2	62.5	60.1	59.1	57.9	23	38.2	45.5	46.3	54.1	61.5	56	47.5	35.8
411	8/12/2022	4:05:00 AM	4:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	69.2	68.2	62.9	75.3	74.4	68.8	63	61.9	54.9	94	93	87.7	86.6	85.3	82.3	67.8	67.3	66	65.5	65.3	64.1	62.1	58.6	57.3	55.7	22.2	38	45.6	45.2	53.2	61.1	55.6	47.1	35.3
412	8/12/2022	4:10:00 AM	4:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.2	69.7	64.4	75.5	74	70.6	63.2	61.9	57.2	96	94.5	89.2	88.3	86.7	85.8	69.3	68.8	67.8	67	66.7	65.2	63.8	60.7	59	57.7	25.2	39.4	45.5	47	55.8	62.5	56.7	48.7	36.6
413	8/12/2022	4:15:00 AM	4:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.3	69.2	64.3	78.9	76.5	71.4	64.1	63.2	58.4	95.1	94	89.1	90.6	90	85.6	70.2	69.3	67.8	67	66.7	65.1	63.5	60.4	59.7	58.9	23	38.4	46.5	46.2	55.3	62.5	57	47.7	35.7
414	8/12/2022	4:20:00 AM	4:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	70.6	69.7	65	81.2	80.9	71.2	64.9	64	59.3	95.4	94.5	89.8	91.4	91.6	84.3	69.7	69.1	68.2	67.7	67.2	65.8	64.5	61.9	60.9	59.7	22.2	37.9	48.7	47.4	55.3	63	58.3	49.7	36.7
415	8/12/2022	4:25:00 AM	4:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.5	70.5	65.6	79.3	78.4	72.3	63.9	62.9	57.2	96.3	95.3	90.4	90.6	89.5	87.8	70.2	69.1	68.5	68.2	68	66.5	65	61.8	60.4	58.4	24.5	39.5	48	49.2	56.1	63.7	58.4	49.5	36.6
416	8/12/2022	4:30:00 AM	4:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.6	70.5	65.4	82	81.6	73.1	66.1	64.9	58.6	96.4	95.3	90.2	92.5	92.2	86.8	71.6	69.9	68.5	67.9	67.5	66.2	64.8	61.8	60.9	59	23.5	39.7	48.8	47.6	56	63.8	57.7	48.8	36.3
417	8/12/2022	4:35:00 AM	4:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.8	71.9	65.2	81.4	81.1	69.6	66	65.1	60.1	97.6	96.7	90	92.2	92.8	84.8	69	68.5	67.8	67.4	67.2	66	64.9	62.3	61.8	60.9	24.6	40.3	51.9	52.1	55.6	63	58.2	49	36.3
418	8/12/2022	4:40:00 AM	4:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.2	70.2	64.2	78.4	78.1	70	66	64.8	59.8	96	95	89	88.6	88.8	86.7	67.8	67.2	66.7	66.4	66.2	65.2	63.8	61.7	60.7	60	23.8	39.9	48.8	47.8	54.2	62.1	57.9	48.9	36.2
419	8/12/2022	4:45:00 AM	4:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72	71.1	65.7	78.3	77.5	72.5	66.6	65.8	60.3	96.8	95.9	90.5	90	88.7	84.9	69.5	68.9	68.4	68	67.8	66.6	65.2	62.7	62.1	61	24.9	40.3	48.6	50.9	57.5	63.4	58.7	50	37.7
420	8/12/2022	4:50:00 AM	4:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.1	69.9	64.3	76.4	75.7	69.8	64.9	63.8	58	95.9	94.7	89.1	87.4	87.3	83.6	68.7	68.2	67.3	66.9	66.7	65.2	63.7	61.1	60.4	58.8	23.6	40	47.5	47.3	55	62	57.9	48.8	36
421	8/12/2022	4:55:00 AM	5:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.2	71.1	65.5	78.2	77.6	70.8	63.8	62.4	57.2	97	95.9	90.3	89.5	89.4	84.6	70	69.4	68.4	67.9	67.6	66.3	64.9	62.4	60.9	57.9	25	40.5	49.2	49.1	56	63.3	58.9	49.6	36.4
422	8/12/2022	5:00:00 AM	5:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.6	70.6	65.4	78.3	78	70.2	66.8	65.8	61.2	96.4	95.4	90.2	88.5	87.9	83.6	69.7	69.3	68.3	67.8	67.5	66.3	64.9	62.3	62	61.5	24.3	39.6	48.6	48.9	55.7	63.5	58.4	49.4	36.9
423	8/12/2022	5:05:00 AM	5:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	71.2	70.3	64.6	80.7	80.4	71.3	65.5	64.5	58.9	96	95.1	89.4	90.2	89.7	84.1	70.3	69	67.9	67.1	66.7	65.5	63.7	61.4	60.8	59.2	23.8	39.6	48.9	48	55.9	62.3	57.8	49	36.5
424	8/12/2022	5:10:00 AM	5:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.2	71	65.9	76.8	75.8	70.9	67.9	66.9	61.6	97	95.8	90.7	88	87.2	84.6	69.3	68.9	68.4	68	67.8	66.7	65.6	63.4	63	62	25.5	40.4	48.1	49.1	56.5	64	59.1	50.1	37
425	8/12/2022	5:15:00 AM	5:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.3	71.4	65.9	79.1	78.4	69.4	68.5	67.1	62.3	97.1	96.2	90.7	89.9	89.5	83	69	68.8	68.3	67.9	67.6	66.6	65.6	64	63.6	62.9	25	40.6	49.7	49.6	56.7	64	58.8	49.8	36.7
426	8/12/2022	5:20:00 AM	5:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.5	71.3	66.4	77.3	76.3	71.4	68.9	67.9	63	97.3	96.1	91.2	89	88.7	85.4	70.6	69.6	68.8	68.3	67.9	67	66	64.3	63.9	63.3	25.8	40.9	47.4	50.2	57.8	64.4	58.8	50	37.3
427	8/12/2022	5:25:00 AM	5:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	72.8	71.9	66.8	79.8	79.3	75.2	68.7	67.6	62.4	97.6	96.7	91.6	95.4	94.9	93.5	71.6	70.7	69.2	68.8	68.6	67.5	66.2	64.4	63.5	62.9	25	40.9	50	51.1	58.5	64.7	59.6	50.6	37.6
428	8/12/2022	5:30:00 AM	5:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.1	72.3	67	83.1	82.7	71	69.5	68.7	62.5	97.9	97.1	91.8	93.7	93.1	84.6	70	69.7	69	68.5	68.3	67.5	66.8	65.1	64.6	63.6	23.9	42.4	50.2	50	57.1	64.9	60.3	51	37.7
429	8/12/2022	5:35:00 AM	5:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74	73.1	67.6	79.2	78.7	72.1	67.5	66.8	63.4	98.8	97.9	92.4	91.2	90.6	84.8	71.4	70.9	70.2	69.9	69.6	68.4	67.3	64.9	64.4	63.8	25.8	42.3	51.8	52.2	58	65.3	61.3	52.4	38.3
430	8/12/2022	5:40:00 AM	5:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.1	73.1	68.5	80.2	79.6	71.7	70.3	69.3	64.5	98.9	97.9	93.3	90.7	90.4	86.4	70.9	70.7	70.1	69.9	69.8	69.2	68.3	66.7	66.1	65.3	26.4	41.7	51.2	50.4	59	66.5	61.8	52.1	37.9
431	8/12/2022	5:45:00 AM	5:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.8	74.1	68.2	81	80.7	73.4	69.6	68.8	64.3	99.6	98.9	93	94.2	94.2	92	72.5	71.8	71.2	70.6	70.3	69.1	67.3	65.7	65.4	65	25.9	43.9	52.2	55.7	59.2	65.9	61	51.5	37.4
432	8/12/2022	5:50:00 AM	5:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.9	73	66.7	82.3	81.5	69.9	66.5	65.5	61.1	98.7	97.8	91.5	93.4	92.7	83.3	69.4	69.1	68.7	68.4	68.2	67.5	66.6	64.5	64	62.2	25.5	43.1	51.8	50.6	56.8	64.6	60.2	50.9	37.2
433	8/12/2022	5:55:00 AM	6:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75	74.3	68.1	83.4	83	72.2	69.9	69	63.8	99.8	99.1	92.9	95.7	96	90.1	71.4	71	70.4	69.9	69.7	68.9	67.9	65.8	65.3	64.4	25.1	43.9	53.9	52.7	58.1	66	61.5	51.6	37.3
434	8/12/2022	6:00:00 AM	6:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74	73.1	68.4	78.4	77.9	73.7	70	69.2	64.4	98.8	97.9	93.2	91.4	89.4	86.2	71.3	70.6	70.1	69.8	69.7	69.1	68.2	66.5	66	65.1	26.1	42	51	51.2	58.8	66.6	61.3	51.5	37.3
435	8/12/2022	6:05:00 AM	6:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.4	73.4	67.9	79.4	78.5	71.1	70.9	70.1	64.8	99.2	98.2	92.7	91.7	89.4	85.5	70.5	70.3	69.8	69.6	69.4	68.6	67.6	66.3	65.9	65.1	26.8	42.9	51.3	52.7	58.4	65.8	61.2	51.6	37.7
436	8/12/2022	6:10:00 AM	6:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.4	73.3	68.5	78.1	77	74.9	69.9	69	63.3	99.2	98.1	93.3	89.8	88.6	87.7	72.1	71.2	70.4	70	69.9	69.1	68.4	66.4	65.7	64.5	27.6	42.8	49.9	51.6	58.9	66.7	61.7	51.9	37.6
437	8/12/2022	6:15:00 AM	6:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	74	68.6	83.3	83	73.2	70.2	69.3	65.5	99.7	98.8	93.4	94.1	93.3	85.8	72.1	71.4	70.3	70	69.9	69.2	68.4	66.9	66.3	65.8	27	42.8	52.9	52.9	58.6	66.6	61.9	52.4	38.5
438	8/12/2022	6:20:00 AM	6:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.3	73.3	68.4	79.6	79	74.7	70.8	69.9	65.5	99.1	98.1	93.2	91.4	90.8	87.8	73.3	72.6	70.9	70.5	70.2	68.8	67.8	66.4	66.2	65.8	27	42	51.7	51	58.6	66.3	62	52.3	38
439	8/12/2022	6:25:00 AM	6:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75	74.2	68.9	81.2	80.9	73	70.8	69.6	65.2	99.8	99	93.7	91.2	91.3	87.5	71.6	71.1	70.5	70.1	70	69.4	68.7	67.4	67.1	65.7	26.2	43.3	53.1	52.9	59.4	66.7	62.4	53	38.9
440	8/12/2022	6:30:00 AM	6:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.9	73.1	67.8	79.4	79.1	71.4	69.8	68.9	64.1	98.7	97.9	92.6	92.6	91.7	86.4	71	70.7	70	69.5	69.4	68.5	67.6	65.7	65.3	64.5	25.6	41.5	52.4	52.7	57.6	65.7	61.4	52	38.4
441	8/12/2022	6:35:00 AM	6:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	74.1	68.6	79.8	79.2	72.1	70.2	69.5	63.9	99.7	98.9	93.4	91.6	91.7	86	71.4	71.1	70.7	70.5	70.3	69.4	68.4	66.4	65.7	64.6	26.2	43.7	52.8	52	58.6	66.7	61.7	52.7	38.5
442	8/12/2022	6:40:00 AM	6:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.7	73.9	68.6	80.3	79.9	73.7	70.7	69.9	64.1	99.5	98.7	93.4	92.7	93.2	88.2	71.9	71.7	71.1	70.6	70.4	69.3	68.4	66.4	65.8	65	26.1	43	52.8	52.1	58.6	66.6	61.9	53	39.1
443	8/12/2022	6:45:00 AM	6:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.1	74.3	68.4	81.9	81.5	76.7	69.4	68.5	64.1	99.9	99.1	93.2	96.3	96.5	93.5	73	71.4	70.5	70.2	70	69	68.1	66	65.4	64.6	26.7	43.7	53	55.1	59	66.1	61.8	53	39.4
444	8/12/2022	6:50:00 AM	6:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76	75.1	69.1	83.9	83.4	79.2	72	71.2	63.8	100.8	99.9	93.9	93.8	93.7	93	76.1	74.2	70.9	70.5	70.3	69.4	68.5	66.5	65.9	64.9	27.8	44.4	54.5	53.4	59.8	66.9	62.2	53.7	40.2
445	8/12/2022	6:55:00 AM	7:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75	74.3	69.4	83	82.8	79.5	71.3	70.2	64.6	99.8	99.1	94.2	97.8	97.9	96.2	75.1	72.5	71.6	71.1	70.8	69.9	68.8	67	66.1	65	25.7	43.2	53	52.2	60.1	67.4	62.5	53.7	39.9
446	8/12/2022	7:00:00 AM	7:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.1	74.2	68.6	83.4	83	72.2	70.3	69.5	65.8	99.9	99	93.4	94.2	94.8	86.2	71.2	70.9	70.4	70	69.9	69.2	68.4	67.2	66.9	66.4	26.7	43.1	53.6	52.2	58.5	66.6	61.9	53.3	39.4
447	8/12/2022	7:05:00 AM	7:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.6	73.7	68	80.7	80.2	74.6	69.6	68.7	63.9	99.4	98.5	92.8	92.4	92.7	90.9	72.1	71.3	70.1	69.7	69.6	68.7	67.7	65.4	64.9	64.2	26	43.1	52.7	52.1	57.4	65.8	61.8	54.2	42.1
448	8/12/2022	7:10:00 AM	7:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.8	73.9	68.1	79.8	79.4	71.5	69.6	68.6	64.1	99.6	98.7	92.9	93.3	92.3	86.1	70.8	70.6	70	69.6	69.5	68.7	67.9	66.2	65.5	64.5	27.4	43.7	51.9	53	57.8	65.8	62	53.2	39.3
449	8/12/2022	7:15:00 AM	7:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.1	73.1	67.8	80.5	79.6	73.7	70.3	69.5	64	98.9	97.9	92.6	91.5	91.5	86.9	71.2	70.6	69.5	69.2	69.1	68.4	67.7	66	65.4	64.6	26.8	42.6	51.1	50.6	57.3	65.7	61.8	53.2	39.6
450	8/12/2022	7:20:00 AM	7:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.5	75.8	69.5	89.4	89.3	82.8	69.1	68	62.3	101.3	100.6	94.3	100.6	100.5	95	82.1	79.9	74.6	69.6	68.9	67.4	66.4	64.6	63.6	62.7	27	43.4	52.8	62.5	61.8	65.8	61.8	54	42.6
451	8/12/2022	7:25:00 AM	7:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74	72.8	66.3	80.7	80.3	70.1	69.7	68.7	62.5	98.8	97.6	91.1	90.6	91	83.5	68.9	68.6	68.3	68	67.9	67	66	64.3	63.9	62.9	26.9	42.7	51.4	51.1	56.7	63.8	60.2	51.7	38.5
452	8/12/2022	7:30:00 AM	7:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.9	72.9	66.6	78.7	78.3	71.4	69.5	68.7	62.9	98.7	97.7	91.4	90.7	90.7	84.2	69.3	69	68.2	67.9	67.8	67.2	66.5	65	64.5	63.9	26.2	42.8	51.3	51.1	56.9	64.2	60.6	52.1	38.8
453	8/12/2022	7:35:00 AM	7:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.9	75.2	68.5	85.3	85.1	79.4	70.5	69.4	62.3	100.7	100	93.3	97.1	97.5	92.9	77.8	76.4	71.4	70.3	69.8	68.5	67	65.1	64.5	63	26.5	44	54.4	58.7	60.4	65.3	62	53.9	44.2
454	8/12/2022	7:40:00 AM	7:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.4	73.4	67.2	82.4	82.1	74.7	70.5	69.5	63.1	99.2	98.2	92	96.3	95.7	90.6	72.3	70.6	69.7	69.1	68.7	67.8	66.6	64.9	64.5	63.7	26.6	43	51.9	53.4	57.5	64.8	60.9	52	38.2
455	8/12/2022	7:45:00 AM	7:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.4	73.2	66.7	78.7	78	70.3	70	68.8	63	99.2	98	91.5	93	90.6	85.8	69.3	68.9	68.4	68	67.9	67.4	66.7	64.9	64.3	63.6	27.6	43	51.6	51.3	56.9	64.4	60.5	52	39.9
456	8/12/2022	7:50:00 AM	7:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.2	73.2	66.3	78.4	77.5	71.7	70.2	68.8	61.8	99	98	91.1	89.9	89.5	84.5	69.7	68.7	68.2	67.8	67.7	67	66	64.2	63.5	62.3	26.2	43.9	51.1	51.1	57.2	63.7	60	51.5	38.3
457	8/12/2022	7:55:00 AM	8:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.7	72.6	66.3	80.6	80.2	69.2	70	68.9	62.3	98.5	97.4	91.1	91	90.9	82.6	68.6	68.4	68	67.7	67.6	67	66.3	64.4	64.1	63.2	26.9	42.2	51.1	50.3	56.2	63.9	60.4	51.8	38.6
458	8/12/2022	8:00:00 AM	8:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.8	72.6	66	78.8	78	70.8	70.2	69	61.5	98.6	97.4	90.8	90	88.9	84.5	69.4	69	68	67.7	67.5	66.7	65.6	63.9	63.4	62.4	26.8	42.6	51.2	50.7	56.4	63.5	59.8	51.2	38.4
459	8/12/2022	8:05:00 AM	8:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.8	72.7	66.5	80.1	79.6	71.8	69.2	68.2	61.7	98.6	97.5	91.3	91.9	92	86.6	69.8	69.2	68.6	68.2	68	67.2	66.2	64.6	63.8	62.5	26.2	42.6	51.1	51.2	56.7	64.2	60.4	51.6	38.2
460	8/12/2022	8:10:00 AM	8:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	73.8	66.6	83.9	83.6	70.2	70.8	70	63.3	99.7	98.6	91.4	93.9	93.5	84.9	69.5	69	68.4	68.1	67.9	67.3	66.5	65	64.5	63.7	27.4	43.2	53.4	51.8	56.7	64.2	60.4	51.8	38
461	8/12/2022	8:15:00 AM	8:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.1	73	66.5	79.8	79.2	70.8	70.2	69	62.4	98.9	97.8	91.3	90.9	89.6	85.8	69.6	69.1	68.6	68.2	68	67	66.3	64.5	64	62.8	26.7	43.5	50.7	50.9	56.9	64.3	60	51.3	37.7
462	8/12/2022	8:20:00 AM	8:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.6	73.4	67	79.5	78.5	72.1	70.1	69	62.9	99.4	98.2	91.8	93.4	93.5	87.6	70.7	70.3	69.5	69	68.7	67.5	66.5	65	64.8	63.7	27.6	43.5	51.3	52.9	57.4	64.7	60.5	51.8	38.5
463	8/12/2022	8:25:00 AM	8:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.3	73.2	67.2	80.8	79.9	70.9	69.4	68.5	63.2	99.1	98	92	90.5	89.6	86	70.3	69.8	69.2	69	68.8	68	67	65.1	64.5	63.8	26.7	42.8	51.6	51.4	57.8	64.9	60.9	51.9	38.6
464	8/12/2022	8:30:00 AM	8:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.7	73.6	67.6	81.2	80.5	73.4	70.9	69.9	64.2	99.5	98.4	92.4	92.7	92.1	90.1	72.4	71.9	70.5	69.6	69.3	68	66.9	65.5	65.1	64.6	27.4	43.3	51.9	50.9	57.3	65.7	61	51.9	37.8
465	8/12/2022	8:35:00 AM	8:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75	73.8	67.3	79.8	79.2	75.3	70.5	69.5	63	99.8	98.6	92.1	91	90.3	89.9	71.4	70.1	69.5	69.1	68.9	67.9	67	65.2	64.1	63.3	28	43.9	51.8	51.9	57.8	65.2	60.8	51.8	38
466	8/12/2022	8:40:00 AM	8:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.1	72.8	66.7	77.8	77.3	72.1	69.8	68.7	62.8	98.9	97.6	91.5	89.6	88.8	88.3	70.5	69.5	68.8	68.3	68.2	67.2	66.4	64.8	64.2	63.4	27.4	42.9	50	50.5	56.8	64.5	60.4	51.7	37.6
467	8/12/2022	8:45:00 AM	8:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74	72.8	66.3	77.6	76.9	70.5	69.8	68.9	62.7	98.8	97.6	91.1	91	89.8	83.6	69.5	69.2	68.5	68.1	68	67.1	66	64.1	63.6	63	27	43	50.9	50.2	56.6	64.1	59.9	51.3	37.5
468	8/12/2022	8:50:00 AM	8:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.2	72	65.9	78.1	77.4	70.9	69.3	68.2	62.1	98	96.8	90.7	90.8	89.7	83.6	69	68.4	67.9	67.5	67.4	66.6	65.8	63.6	63.1	62.5	26.2	42.2	49.4	50.1	56	63.7	59.7	51	37.2
469	8/12/2022	8:55:00 AM	9:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75	73.8	66	84.7	84.1	70.9	68	66.8	60.1	99.8	98.6	90.8	93.1	92	83.1	69.7	69.2	68.5	68.1	67.9	67	65.9	62.7	62	60.6	27.8	45.2	50.9	50.9	56.3	63.7	59.7	51	37.3
470	8/12/2022	9:00:00 AM	9:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.8	72.6	65.6	81.4	81.2	72	69.3	68.1	62	98.6	97.4	90.4	95	95.4	90.9	69.2	68.4	67.7	67.4	67.2	66	65.2	63.6	63.1	62.4	26.8	42.5	51.3	51.9	56.4	62.9	59.3	51	38.2
471	8/12/2022	9:05:00 AM	9:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.3	71.8	65.7	77.6	76.3	70.1	68.9	67.5	61.5	98.1	96.6	90.5	89.3	90	83.3	68.7	68.2	67.7	67.4	67.3	66.4	65.6	63.7	63.2	62.2	26.8	41.9	49.2	49.3	55.7	63.4	59.8	51.1	37.4
472	8/12/2022	9:10:00 AM	9:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.5	72.1	65.7	78.6	77.8	70	70.1	68.7	60.5	98.3	96.9	90.5	91.5	88.1	83	69.6	69.2	68.3	67.8	67.5	66.4	65.2	63.2	62.6	61.4	27	42	50	50	55.7	63.4	59.5	50.9	37.7
473	8/12/2022	9:15:00 AM	9:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.2	72.9	66.5	78.9	78.4	75	69	68	61.7	99	97.7	91.3	93.4	92.7	91.4	71.6	70.4	69.1	68.5	68.3	67.1	65.7	64	63.4	62.5	27.9	42.7	50.9	50.7	56.8	64.3	60.1	51.4	38
474	8/12/2022	9:20:00 AM	9:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.2	73	66.7	81.9	81.6	75.3	69.3	68.2	62.2	99	97.8	91.5	93.9	93.2	89	72.5	70.7	69.7	68.8	68.4	67	66	64.4	64	63	26.9	42.5	51.8	51.5	56.8	64.5	60.3	51.6	37.8
475	8/12/2022	9:25:00 AM	9:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.3	71.8	66.1	78.2	76.4	70.6	68.4	67.6	62.8	98.1	96.6	90.9	89.4	87.7	83.4	69.6	69.2	68.3	68	67.8	66.9	65.7	64.2	63.8	63.1	26.5	41.4	49.2	50	56.5	63.9	59.9	51.2	37.5
476	8/12/2022	9:30:00 AM	9:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.4	71.8	65.9	79.4	76.3	73.6	69.2	67.9	60.5	98.2	96.6	90.7	89.1	88.6	87.4	70.5	69.1	68.6	67.9	67.6	66.6	65.5	63.5	62.9	61.9	27.4	41.4	48.9	50.2	56.1	63.8	59.6	50.9	37.3
477	8/12/2022	9:35:00 AM	9:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.9	72.8	66.3	81.6	81.2	71	69.5	68.3	61.1	98.7	97.6	91.1	93.5	93	85.7	69.6	69.1	68.5	68.3	68.1	67.2	65.9	63.8	63.2	62	26.4	42.9	51	51.5	56.5	64	59.9	51.3	37.9
478	8/12/2022	9:40:00 AM	9:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.1	72.5	65.6	78.8	78.3	70.1	68.2	66.6	60	98.9	97.3	90.4	90.8	89.8	83.8	68.9	68.4	67.9	67.6	67.4	66.5	65.4	63.1	62.2	60.5	27.8	42.7	50.2	50	55.3	63.4	59.5	51	37.8
479	8/12/2022	9:45:00 AM	9:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.7	72	65.8	79.9	79.2	71.2	70.2	68.4	60.9	98.5	96.8	90.6	91.3	90.2	84.6	70.6	70.1	68.7	68.1	67.7	66.5	65.3	63.3	62.8	61.6	27.7	42.1	47.9	49.4	56.1	63.7	59.6	51.1	38.2
480	8/12/2022	9:50:00 AM	9:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	73	66	78.4	77.5	71.3	70	68.2	61.4	99.7	97.8	90.8	91.9	88.8	84	69	68.6	68.1	67.8	67.6	66.7	65.8	63.7	63.1	62.3	29	43.1	50.4	50.4	56	63.7	59.8	51.5	38.5
481	8/12/2022	9:55:00 AM	10:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.6	72.8	66.1	79.5	78.1	69.9	70	68.7	61.7	99.4	97.6	90.9	91.2	89.8	84.9	69.1	68.7	68.2	67.9	67.8	66.8	65.9	63.9	63.4	62.5	28.8	42.5	50.4	51	56.5	63.8	60	51.9	38.8
482	8/12/2022	10:00:00 AM	10:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.6	73.1	66.8	78.8	78.2	74.1	70	68.8	62.1	99.4	97.9	91.6	91.4	89.6	90.7	71.2	70.5	69.7	69.3	69	67.5	66.2	64	63.5	62.7	28.6	43.3	49.6	50.8	57	64.6	60.5	52.5	39.2
483	8/12/2022	10:05:00 AM	10:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.6	72.3	66.1	78	77.4	70.3	69.3	68.2	62.2	98.4	97.1	90.9	90.3	89.1	83.7	69.9	69.4	68.7	68.2	68	66.9	65.6	63.8	63.4	62.8	26.9	42.3	49.6	52	56.5	63.8	59.8	51.6	38.7
484	8/12/2022	10:10:00 AM	10:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74	72.7	66.4	78.5	77.4	70.3	69.5	68.5	63.1	98.8	97.5	91.2	90.9	89.1	84.7	69.7	69.3	68.5	68.1	67.9	67.1	66	64.3	63.9	63.3	26.6	43.4	49.7	50.3	56.6	64.2	60	51.7	38.6
485	8/12/2022	10:15:00 AM	10:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76	74.3	66.9	81.5	79.8	71.8	70.1	69	62.7	100.8	99.1	91.7	95.2	92	85.6	70.5	69.8	69.4	68.9	68.7	67.6	66.5	64.4	63.9	63.2	30	44.8	51.8	52.1	57.4	64.6	60.4	52.3	39
486	8/12/2022	10:20:00 AM	10:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75	73.2	66.7	78.7	76.9	70.6	70.5	69.2	62.8	99.8	98	91.5	90.7	89.4	85.4	70.1	69.8	68.9	68.5	68.3	67.5	66.4	64.5	64	63.3	29.4	42.5	50.7	51.9	56.9	64.4	60.5	52.2	39.2
487	8/12/2022	10:25:00 AM	10:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.4	73.5	66.9	80.1	79.4	72.9	71	69.5	61.6	100.2	98.3	91.7	94.2	93	90.3	72.2	71.1	70	68.9	68.7	67.6	66.4	63.9	63.1	62.2	30.1	42.5	51	51.4	57.7	64.7	60.4	52	39
488	8/12/2022	10:30:00 AM	10:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.4	73.4	67	81.9	79.4	76.9	70.1	67.5	60.2	100.2	98.2	91.8	96.2	92.4	89.8	73.4	70.9	69.4	69.1	68.8	67.6	66.1	64.1	63.2	61	30.2	42.2	51.3	51.7	57.1	64.7	60.7	52.6	41.1
489	8/12/2022	10:35:00 AM	10:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.4	73.6	67.1	80.1	79.4	72.7	71.4	70	62.8	100.2	98.4	91.9	93.7	92.4	85.6	71.2	70.6	69.5	68.9	68.6	67.6	66.6	65	64.2	63.5	29.5	42.8	51.5	52.5	57.4	64.7	60.7	52.3	39.1
490	8/12/2022	10:40:00 AM	10:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.3	74.3	66.8	81.8	81.3	71.9	70.1	68.3	61.5	101.1	99.1	91.6	95.1	92.4	89.3	70.9	70.3	69.1	68.5	68.3	67.4	66.5	64.7	64	62.9	31.3	43.6	52.1	52	57.1	64.4	60.5	52	39.3
491	8/12/2022	10:45:00 AM	10:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.3	74.2	67.3	82.4	79.9	71.4	71.3	69.1	62.5	101.1	99	92.1	94	91.9	84	69.9	69.7	69.3	69.1	69	68.2	67.3	64.5	63.7	62.7	31.3	43.7	50.8	52	57.7	65.1	60.9	52.9	39.6
492	8/12/2022	10:50:00 AM	10:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	73	66.5	81.4	78.4	69.9	70	68.3	61.1	99.7	97.8	91.3	95.1	91.4	84.5	69.2	68.9	68.5	68.3	68.1	67.3	66.4	64.4	63.8	62	29.5	42.2	50.3	51.4	56.3	64.3	60.4	52	39.1
493	8/12/2022	10:55:00 AM	11:00:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.4	73.7	67.7	80.4	79.3	71.1	70.7	69.5	64.1	100.2	98.5	92.5	92.8	92.2	84.4	70.4	70.1	69.6	69.2	69	68.4	67.5	65.5	65.1	64.5	29.5	43.2	50.7	51.4	57.5	65.6	61.2	52.7	39.6
494	8/12/2022	11:00:00 AM	11:05:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.3	73.6	67.7	81.1	80.9	79	70.5	69.5	62.3	100.1	98.4	92.5	95.5	95	92.1	73.7	70.4	69.5	69	68.9	68.1	67.1	65.3	64.9	63.3	29.5	43.3	50.1	52.4	58.8	65.3	61.2	53	39.7
495	8/12/2022	11:05:00 AM	11:10:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.3	74.1	68	84.5	84.1	76.6	69.2	68	61.2	100.1	98.9	92.8	96.1	95.9	89.7	74.5	73.2	70.7	69.9	69.7	68.5	67.4	64.8	64.1	63.2	27.6	43.7	51.7	56.3	58.8	65.6	61.1	53	41.7
496	8/12/2022	11:10:00 AM	11:15:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.6	72.8	67.2	80.7	78.7	73.2	70.6	69.4	63.1	99.4	97.6	92	94.7	91.8	87.9	70.6	70	69.4	69	68.8	68	66.9	64.6	64.2	63.4	28	41.6	50.8	51.7	57.4	64.9	60.8	51.8	39.8
497	8/12/2022	11:15:00 AM	11:20:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	73.7	67.5	81	80.6	72.2	70.2	68.9	64	99.7	98.5	92.3	93.6	93.8	87.1	71	70.1	69.5	69.3	69.1	68.2	67.2	65.4	64.8	64.2	27.7	42.7	52.9	51.5	57.2	65.3	61.2	52.9	39.5
498	8/12/2022	11:20:00 AM	11:25:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.1	73.7	67	81	80.7	71.5	69	67.6	60.9	99.9	98.5	91.8	93.5	92.8	90.5	70.5	70	69.1	68.7	68.4	67.7	66.7	64.9	64.1	62.4	28.4	43	52.2	53.9	57	64.5	60.6	52.4	41.2
499	8/12/2022	11:25:00 AM	11:30:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.4	72.9	67.4	79.9	79.2	73.5	70	69.1	63.7	99.2	97.7	92.2	92.1	90.9	87.3	72	70.5	69.4	69.1	68.8	67.9	67	65.6	65.1	64.3	28.2	41.3	51	51.7	58	65.2	61	52.6	39.2
500	8/12/2022	11:30:00 AM	11:35:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.9	72.4	67.1	77.8	77	72.2	68.6	67.4	62.6	98.7	97.2	91.9	91.9	89.3	87.1	70.6	70.3	69.5	69.1	68.9	67.9	66.8	64.7	64.1	63.2	27.2	41.5	49.8	51.3	57.5	64.8	60.9	52.4	39.5

501	8/12/2022	11:35:00 AM	11:40:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	73.5	67.1	80.6	79.8	71.6	71	69.6	63.4	99.7	98.3	91.9	93.8	91	86.3	70.9	70.2	69.2	68.8	68.7	67.8	66.7	65	64.5	63.8	28.1	43.9	50.7	52	57.1	64.8	60.8	52.5	39.1
502	8/12/2022	11:40:00 AM	11:45:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.4	72.8	66.8	81.9	81.1	73.1	69.9	68.9	62.3	99.2	97.6	91.6	92.9	90.4	87.8	72	71.4	69.2	68.3	68.1	67.4	66.4	64.6	63.8	62.9	28.5	42.7	49.5	50.9	56.8	64.6	60.6	52.5	39.9
503	8/12/2022	11:45:00 AM	11:50:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.2	72.7	67.3	79.9	79.1	71.6	69.6	68	60.8	99	97.5	92.1	93	93.1	92.8	70.6	70.3	69.7	69.2	69.1	68.1	67.1	64.9	63.3	61.4	28	42	50	51.1	57	65.2	61.1	52.6	39.2
504	8/12/2022	11:50:00 AM	11:55:00 AM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	73.7	72.2	66.9	77.9	76.7	71.4	68.6	67.5	59.8	98.5	97	91.7	90.5	89.9	86.3	70.4	70.1	69.4	69	68.7	67.6	66.7	64.6	63.7	61.2	27.3	41.7	48.9	50.4	57.1	64.7	60.6	52.8	39.9
505	8/12/2022	11:55:00 AM	12:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75	73.6	67.7	83.4	80.3	72.2	70.5	68.9	62.9	99.8	98.4	92.5	96.2	93.8	86.7	71.3	70.8	70	69.5	69.3	68.4	67.5	65.6	65.1	63.6	28.7	42.5	52	51.7	57.7	65.6	61.3	53	39.9
506	8/12/2022	12:00:00 PM	12:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.6	73.6	67	84.7	81.2	71.8	70.3	69.2	63.1	100.4	98.4	91.8	99.3	96.2	84.9	70	69.8	69.2	68.8	68.7	67.8	66.8	64.7	64.4	63.7	30.8	43	50.1	51.4	57.1	64.8	60.8	52.7	39.9
507	8/12/2022	12:05:00 PM	12:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.5	73.6	67	80.7	78.5	70.4	70.6	68.8	61.8	100.3	98.4	91.8	92.8	90.7	85.2	69.9	69.6	69.2	69	68.8	67.9	66.9	64.5	64.1	63	30.2	43.3	50.5	50.3	57.3	64.8	60.8	52.8	40.3
508	8/12/2022	12:10:00 PM	12:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76	74.1	67.4	81.8	80.3	71.8	71	69.6	62.3	100.8	98.9	92.2	95.1	91.4	87	70.4	70.2	69.7	69.4	69.3	68.1	67	65.5	64.9	63.7	31	43.1	51.6	52.6	57.1	65.2	60.9	52.6	40
509	8/12/2022	12:15:00 PM	12:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.2	75.2	67.5	83.7	83	71.2	72.1	70.5	62.5	102	100	92.3	98.7	96.2	85.5	70.7	70.3	69.6	69.2	69.1	68.2	67.3	65.3	64.6	63.2	32.4	45	52.4	52.8	57.5	65.2	61.1	53.1	40.8
510	8/12/2022	12:20:00 PM	12:25:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.8	75.3	67.1	84.9	82.1	72.8	72.2	70.6	63.2	102.6	100.1	91.9	99.2	96	86	71.1	70.5	69.3	68.6	68.4	67.6	66.9	65.2	64.8	63.7	34.1	44.7	51.3	51.4	57.2	64.8	61	52.8	40.9
511	8/12/2022	12:25:00 PM	12:30:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	74.9	73.1	67.5	81.6	78.9	73.6	69.2	67.9	63.6	99.7	97.9	92.3	97	95.8	88.5	71.5	70.8	69.8	69.3	69.1	68.2	67.1	65.1	64.6	63.9	29.4	42	50.2	52	57.4	65.2	61.3	53.1	40.1
512	8/12/2022	12:30:00 PM	12:35:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76	74	67.5	81.9	79.2	70.8	69.6	68.4	62.3	100.8	98.8	92.3	96	93.7	88.7	70.3	70.2	69.8	69.4	69.3	68.2	67.4	65.2	64.4	63.7	31.5	43.3	50.3	51.1	57.6	65.2	61.6	53.2	40.4
513	8/12/2022	12:35:00 PM	12:40:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.7	74.7	68	83.1	80.1	74.7	70.2	69.1	63.2	101.5	99.5	92.8	94.8	94.9	89	71.9	71.6	70.7	70.2	69.9	68.9	67.7	65	64.3	63.7	31.8	43.7	51.9	52.8	58.4	65.8	61.8	53.2	40.6
514	8/12/2022	12:40:00 PM	12:45:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.8	74.6	67.7	87.3	84.5	72.9	70.9	69.7	63.1	101.6	99.4	92.5	104.6	99.9	86	71.4	70.3	69.5	69.3	69.2	68.4	67.6	65.4	64.6	63.8	32.3	44	51.3	51.4	57.8	65.5	61.5	53.1	40.5
515	8/12/2022	12:45:00 PM	12:50:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.5	75.3	68.8	85.5	84.9	80.3	71	69.9	64.2	102.3	100.1	93.6	102.6	103.6	101.3	74.3	72.9	71.5	70.6	70.3	69.3	67.9	65.8	65.3	64.6	32.9	44.3	51.2	54.4	59.9	66.5	62.2	53.9	41.6
516	8/12/2022	12:50:00 PM	12:55:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.1	74.1	67.6	83.2	80.5	73	71.4	70.1	63	100.9	98.9	92.4	97.5	94.6	88	71.8	71	69.9	69.5	69.3	68.1	67.2	65.3	64.8	63.5	31	43.2	51.3	52.4	57.1	65.4	61.4	52.9	39.9
517	8/12/2022	12:55:00 PM	1:00:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.3	75	67.6	85	81.7	72.1	70.6	69.3	64.2	102.1	99.8	92.4	98.4	95.6	85.2	70.8	70.3	69.8	69.4	69.2	68.3	67.4	65.6	65	64.6	32.8	44.1	52	51.5	58.2	65.4	61.3	52.9	40.4
518	8/12/2022	1:00:00 PM	1:05:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	76.7	74.5	68	83.1	80.1	73.4	71.3	70	64.5	101.5	99.3	92.8	95.9	92	87.8	71.7	71	70.4	70	69.8	68.7	67.6	66	65.5	64.9	31.9	43.8	51.2	51.4	57.6	65.9	61.8	53.2	40
519	8/12/2022	1:05:00 PM	1:10:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75	73.3	67.4	81	78.9	73.9	70.6	69.4	62.6	99.8	98.1	92.2	93.6	91.2	86.7	70.8	70.2	69.4	69.1	68.9	68.2	67	65.5	65	63.6	29.5	42.4	50.6	51.3	57.2	65.2	61.5	52.9	39.4
520	8/12/2022	1:10:00 PM	1:15:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.3	75.2	67.9	84.7	82.2	72.7	69.6	68.7	63.7	102.1	100	92.7	99.2	96.4	87.9	71.3	70.7	70.2	69.7	69.5	68.6	67.6	65.6	65	64.1	32.8	44.4	52.6	52.6	57.7	65.7	61.5	53	40.3
521	8/12/2022	1:15:00 PM	1:20:00 PM	0:05:00	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	75.8	73.8	67.9	83.1	79.2	73	71.2	70	63.6	100.6	98.6	92.7	96.7	92.4	86	71.4	70.6	69.8	69.6	69.4	68.4	67.6	66.1	65.7	64.4	30.4	42.9	51.1	51.4	57.2	65.8	61.7	53.1	39.9
522	8/12/2022	1:20:01 PM	1:21:28 PM	0:01:27	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	79	76.4	68	83.4	79.8	73.1	74.5	72.9	64.6	98.4	95.8	87.4	99.7	95.4	96.6	72.6	72.1	70.8	70	69.7	68.4	67.5	66	65.4	64.9	34.9	45.4	53.1	54.6	58.5	65.4	61.9	54.6	45.1
523	8/12/2022	1:21:30 PM	1:21:33 PM	0:00:03	Auto	High	Mic	Slow	dBA	No	No	16.06mV/P	77.4	75.4	69.7	79.7	76.9	69.9	77.2	75.2	69.4	82.2	80.2	74.5	90	88.3	83.6	69.8	69.8	69.8	69.8	69.8	69.8	69.6	69.5	69.5	69.4	32.9	43.2	52.6	57.8	59.6	66.1	64.7	57.3	47
														28-hour metrics:	**66.4**			**83.0**																												

Attachment B

Conventional Construction Activity Noise Modeling

Construction Schedule

Year			**2024**															**2025**														**2026**			Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

Year			**2024**															**2025**														**2026**					
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd			
Studied Noise-Sensitive Receptor																																					
NSR1	0	0	0	0	0	56	57	57	57	59	57	58	58	56	56	55	55	54	54	53	53	50	41	41	41	40	36	36	36	35	56	55	47	0	53	49	44
NSR2	0	0	0	0	0	56	64	64	63	64	64	64	64	64	64	64	64	63	63	63	63	58	43	43	43	41	37	37	37	36	71	68	63	0	71	68	63
NSR3	0	0	0	0	0	54	57	57	57	60	59	60	60	59	59	58	58	57	57	56	56	50	45	45	45	44	39	39	39	38	59	57	50	0	57	54	49
NSR4	0	0	0	0	0	55	57	57	57	61	60	61	61	60	60	60	60	58	58	55	55	50	47	47	47	45	40	40	40	39	58	57	49	0	55	51	47
NSR5	0	0	0	0	0	50	52	52	51	56	55	55	55	62	62	64	64	61	62	57	57	51	50	50	50	48	43	43	42	42	60	60	50	0	50	46	41
NSR6	0	0	0	0	0	45	47	47	47	50	49	50	50	54	54	56	56	61	64	63	63	56	56	56	56	53	47	47	46	45	59	59	49	0	45	42	37
NSR7	0	0	0	0	0	43	44	44	44	48	47	47	47	50	50	52	52	57	60	59	59	61	61	61	61	58	50	50	49	49	57	57	47	0	48	44	40
NSR8	0	0	0	0	0	41	43	43	43	46	45	45	45	48	48	49	49	54	56	55	55	63	63	63	63	60	53	53	51	52	60	59	50	0	50	47	42
NSR9	0	0	0	0	0	37	38	38	38	42	41	41	41	43	43	44	44	46	48	47	47	52	52	52	52	59	59	59	63	57	68	64	58	0	66	63	58
NSR10	0	0	0	0	0	38	40	40	39	43	42	42	42	44	44	45	45	48	50	49	49	55	55	55	55	61	61	61	60	59	64	61	54	0	60	57	52
NSR11	0	0	0	0	0	41	43	43	43	47	45	46	46	49	49	50	50	55	57	57	57	70	70	70	70	66	54	54	51	52	66	66	56	0	51	47	42
NSR12	0	0	0	0	0	46	47	47	47	51	50	50	50	55	55	57	57	67	70	70	70	56	56	56	56	53	47	47	46	45	65	65	55	0	45	42	37
NSR13	0	0	0	0	0	52	53	53	53	57	56	56	56	64	64	66	66	63	63	56	56	50	49	49	49	47	42	42	42	41	62	62	52	0	49	46	41

Construction Schedule

Year			2024																2025														2026			Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

NSR1

Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	55.8	55.8	55.8	55.8	53.4	53.4	53.4	53.4	46.8	46.8	46.8	46.8	42.3	42.3	42.3	42.3	39.0	39.0	39.0	39.0	36.1	36.1	36.1	35.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.9	51.9	51.9	51.9	51.9	51.9	45.3	45.3	45.3	45.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.9	40.9	40.9	37.6	37.6	37.6	37.6	37.6	0.0	0.0	0.0	34.6	33.6	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.7	53.7	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.8	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	52.4	52.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.7	51.7	51.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.3	53.3	53.3	53.3	53.3	53.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.6	52.6	52.6	52.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.7	49.3	44.3	0.0	52.7	49.3	44.3
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**56**	**57**	**57**	**57**	**59**	**57**	**58**	**58**	**56**	**56**	**55**	**55**	**54**	**54**	**53**	**53**	**50**	**41**	**41**	**41**	**40**	**36**	**36**	**36**	**35**	**56**	**55**	**47**	**0**	**53**	**49**	**44**

Construction Schedule

Year	2024						2025																								2026				Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

NSR2

Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	55.7	55.7	55.7	55.7	55.1	55.1	55.1	55.1	48.5	48.5	48.5	48.5	43.7	43.7	43.7	43.7	40.2	40.2	40.2	40.2	37.1	37.1	37.1	36.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.7	53.7	53.7	53.7	53.7	53.7	47.0	47.0	47.0	47.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.3	42.3	42.3	38.8	38.8	38.8	38.8	38.8	0.0	0.0	0.0	35.6	34.6	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.6	53.6	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.7	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	62.9	62.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.4	62.4	62.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.5	63.5	63.5	63.5	63.5	63.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.0	63.0	63.0	63.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.1	67.7	62.7	0.0	71.1	67.7	62.7
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**56**	**64**	**64**	**63**	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**64**	**63**	**63**	**63**	**63**	**58**	**43**	**43**	**43**	**41**	**37**	**37**	**37**	**36**	**71**	**68**	**63**	**0**	**71**	**68**	**63**

Construction Schedule

Year	2024						2025																								2026				Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

NSR3

Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	54.0	54.0	54.0	54.0	55.6	55.6	55.6	55.6	52.7	52.7	52.7	52.7	47.0	47.0	47.0	47.0	42.9	42.9	42.9	42.9	39.3	39.3	39.3	38.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.2	54.2	54.2	54.2	54.2	54.2	51.2	51.2	51.2	51.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.6	45.6	45.6	41.4	41.4	41.4	41.4	41.4	0.0	0.0	0.0	37.9	36.7	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.5	53.5	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.6	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	54.2	54.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.8	53.8	53.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.8	54.8	54.8	54.8	54.8	54.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.4	54.4	54.4	54.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.1	53.7	48.8	0.0	57.1	53.7	48.8
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**54**	**57**	**57**	**57**	**60**	**59**	**60**	**60**	**59**	**59**	**58**	**58**	**57**	**57**	**56**	**56**	**50**	**45**	**45**	**45**	**44**	**39**	**39**	**39**	**38**	**59**	**57**	**50**	**0**	**57**	**54**	**49**

Construction Schedule

Year	2024						2025																								2026				Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE
NSR4																																					
Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	54.7	54.7	54.7	54.7	57.5	57.5	57.5	57.5	56.9	56.9	56.9	56.9	49.1	49.1	49.1	49.1	44.2	44.2	44.2	44.2	40.4	40.4	40.4	39.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56.0	56.0	56.0	56.0	56.0	56.0	55.4	55.4	55.4	55.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.6	47.6	47.6	42.8	42.8	42.8	42.8	42.8	0.0	0.0	0.0	38.9	37.6	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.4	55.4	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.5	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	52.5	52.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.0	52.0	52.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.1	53.1	53.1	53.1	53.1	53.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.6	52.6	52.6	52.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.9	51.5	46.5	0.0	54.9	51.5	46.5
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**55**	**57**	**57**	**57**	**61**	**60**	**61**	**61**	**60**	**60**	**60**	**60**	**58**	**58**	**55**	**55**	**50**	**47**	**47**	**47**	**45**	**40**	**40**	**40**	**39**	**58**	**57**	**49**	**0**	**55**	**51**	**47**

Construction Schedule

Year			2024															2025														2026					
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Potential Nighttime Work:		
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE
NSR5																																					
Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	49.8	49.8	49.8	49.8	51.7	51.7	51.7	51.7	61.7	61.7	61.7	61.7	54.3	54.3	54.3	54.3	47.7	47.7	47.7	47.7	43.0	43.0	43.0	42.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.3	50.3	50.3	50.3	50.3	50.3	60.3	60.3	60.3	60.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.8	52.8	52.8	46.2	46.2	46.2	46.2	46.2	0.0	0.0	0.0	41.5	40.1	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59.6	59.6	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.7	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	46.9	46.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.5	46.5	46.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.5	47.5	47.5	47.5	47.5	47.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.1	47.1	47.1	47.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.5	46.1	41.2	0.0	49.5	46.1	41.2
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**50**	**52**	**52**	**51**	**56**	**55**	**55**	**55**	**62**	**62**	**64**	**64**	**61**	**62**	**57**	**57**	**51**	**50**	**50**	**50**	**48**	**43**	**43**	**42**	**42**	**60**	**60**	**50**	**0**	**50**	**46**	**41**

Construction Schedule

Year	2024						2025																								2026				Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

NSR6

Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	45.0	45.0	45.0	45.0	46.3	46.3	46.3	46.3	53.0	53.0	53.0	53.0	60.8	60.8	60.8	60.8	53.5	53.5	53.5	53.5	46.9	46.9	46.9	45.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.8	44.8	44.8	44.8	44.8	44.8	51.5	51.5	51.5	51.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59.4	59.4	59.4	52.0	52.0	52.0	52.0	52.0	0.0	0.0	0.0	45.5	43.6	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.7	58.7	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.8	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	42.3	42.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.8	41.8	41.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.9	42.9	42.9	42.9	42.9	42.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.4	42.4	42.4	42.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.2	41.8	36.8	0.0	45.2	41.8	36.8
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**45**	**47**	**47**	**47**	**50**	**49**	**50**	**50**	**54**	**54**	**56**	**56**	**61**	**64**	**63**	**63**	**56**	**56**	**56**	**56**	**53**	**47**	**47**	**46**	**45**	**59**	**59**	**49**	**0**	**45**	**42**	**37**

Construction Schedule

Year	2024						2025																								2026				Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

NSR7

Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	42.6	42.6	42.6	42.6	43.7	43.7	43.7	43.7	49.1	49.1	49.1	49.1	56.9	56.9	56.9	56.9	58.7	58.7	58.7	58.7	50.2	50.2	50.2	48.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.2	42.2	42.2	42.2	42.2	42.2	47.6	47.6	47.6	47.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.4	55.4	55.4	57.2	57.2	57.2	57.2	57.2	0.0	0.0	0.0	48.8	46.5	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56.6	56.6	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.7	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	39.9	39.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.4	39.4	39.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.5	40.5	40.5	40.5	40.5	40.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.1	40.1	40.1	40.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.8	44.5	39.5	0.0	47.8	44.5	39.5
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**43**	**44**	**44**	**44**	**48**	**47**	**47**	**47**	**50**	**50**	**52**	**52**	**57**	**60**	**59**	**59**	**61**	**61**	**61**	**61**	**58**	**50**	**50**	**49**	**49**	**57**	**57**	**47**	**0**	**48**	**44**	**40**

Construction Schedule

Year			2024															2025														2026			Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

NSR8

	Oct 1st	Oct 2nd	Nov 1st	Nov 2nd	Dec 1st	Dec 2nd	Jan 1st	Jan 2nd	Feb 1st	Feb 2nd	Mar 1st	Mar 2nd	Apr 1st	Apr 2nd	May 1st	May 2nd	Jun 1st	Jun 2nd	Jul 1st	Jul 2nd	Aug 1st	Aug 2nd	Sep 1st	Sep 2nd	Oct 1st	Oct 2nd	Nov 1st	Nov 2nd	Dec 1st	Dec 2nd	Jan 1st	Jan 2nd	Feb 1st	Feb 2nd	ETIE	ITIE	BTIE
Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	41.0	41.0	41.0	41.0	42.0	42.0	42.0	42.0	46.6	46.6	46.6	46.6	53.0	53.0	53.0	53.0	60.8	60.8	60.8	60.8	53.5	53.5	53.5	51.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.5	40.5	40.5	40.5	40.5	40.5	45.2	45.2	45.2	45.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.5	51.5	51.5	59.3	59.3	59.3	59.3	59.3	0.0	0.0	0.0	52.0	49.2	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.6	58.6	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.8	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	38.3	38.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.8	37.8	37.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.9	38.9	38.9	38.9	38.9	38.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.4	38.4	38.4	38.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.3	46.9	42.0	0.0	50.3	46.9	42.0
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**41**	**43**	**43**	**43**	**46**	**45**	**45**	**45**	**48**	**48**	**49**	**49**	**54**	**56**	**55**	**55**	**63**	**63**	**63**	**63**	**60**	**53**	**53**	**51**	**52**	**60**	**59**	**50**	**0**	**50**	**47**	**42**

Construction Schedule

Year			2024																2025														2026		Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

NSR9

Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	36.7	36.7	36.7	36.7	37.4	37.4	37.4	37.4	40.8	40.8	40.8	40.8	44.9	44.9	44.9	44.9	50.0	50.0	50.0	50.0	58.8	58.8	58.8	62.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.9	35.9	35.9	35.9	35.9	35.9	39.4	39.4	39.4	39.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.4	43.4	43.4	48.5	48.5	48.5	48.5	48.5	0.0	0.0	0.0	57.3	60.6	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59.9	59.9	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	33.7	33.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	33.3	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.4	34.4	34.4	34.4	34.4	34.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.9	33.9	33.9	33.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.0	62.6	57.6	0.0	66.0	62.6	57.6
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**37**	**38**	**38**	**38**	**42**	**41**	**41**	**41**	**43**	**43**	**44**	**44**	**46**	**48**	**47**	**47**	**52**	**52**	**52**	**52**	**59**	**59**	**59**	**63**	**57**	**68**	**64**	**58**	**0**	**66**	**63**	**58**

Construction Schedule

Year			2024															2025														2026			Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE
NSR10																																					
Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	37.8	37.8	37.8	37.8	38.5	38.5	38.5	38.5	42.2	42.2	42.2	42.2	46.6	46.6	46.6	46.6	52.5	52.5	52.5	52.5	60.8	60.8	60.8	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.1	37.1	37.1	37.1	37.1	37.1	40.7	40.7	40.7	40.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.2	45.2	45.2	51.0	51.0	51.0	51.0	51.0	0.0	0.0	0.0	59.3	57.8	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.7	58.7	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.8	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	34.8	34.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.3	34.3	34.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.4	35.4	35.4	35.4	35.4	35.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.9	34.9	34.9	34.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.2	56.8	51.9	0.0	60.2	56.8	51.9
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**38**	**40**	**40**	**39**	**43**	**42**	**42**	**42**	**44**	**44**	**45**	**45**	**48**	**50**	**49**	**49**	**55**	**55**	**55**	**55**	**61**	**61**	**61**	**60**	**59**	**64**	**61**	**54**	**0**	**60**	**57**	**52**

Construction Schedule

Year	2024						2025																										2026				Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

NSR11

	Oct 1st	Oct 2nd	Nov 1st	Nov 2nd	Dec 1st	Dec 2nd	Jan 1st	Jan 2nd	Feb 1st	Feb 2nd	Mar 1st	Mar 2nd	Apr 1st	Apr 2nd	May 1st	May 2nd	Jun 1st	Jun 2nd	Jul 1st	Jul 2nd	Aug 1st	Aug 2nd	Sep 1st	Sep 2nd	Oct 1st	Oct 2nd	Nov 1st	Nov 2nd	Dec 1st	Dec 2nd	Jan 1st	Jan 2nd	Feb 1st	Feb 2nd	ETIE	ITIE	BTIE
Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	41.4	41.4	41.4	41.4	42.3	42.3	42.3	42.3	47.2	47.2	47.2	47.2	54.4	54.4	54.4	54.4	67.6	67.6	67.6	67.6	53.8	53.8	53.8	51.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.9	40.9	40.9	40.9	40.9	40.9	45.7	45.7	45.7	45.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.9	52.9	52.9	66.1	66.1	66.1	66.1	66.1	0.0	0.0	0.0	52.3	49.3	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.5	65.5	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.6	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	38.3	38.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.8	37.8	37.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.9	38.9	38.9	38.9	38.9	38.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.4	38.4	38.4	38.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.7	47.3	42.4	0.0	50.7	47.3	42.4
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**41**	**43**	**43**	**43**	**47**	**45**	**46**	**46**	**49**	**49**	**50**	**50**	**55**	**57**	**57**	**57**	**70**	**70**	**70**	**70**	**66**	**54**	**54**	**51**	**52**	**66**	**66**	**56**	**0**	**51**	**47**	**42**

Construction Schedule

Year	2024						2025																								2026				Potential Nighttime Work:		
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb				
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

NSR12

Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	45.6	45.6	45.6	45.6	46.9	46.9	46.9	46.9	54.4	54.4	54.4	54.4	67.3	67.3	67.3	67.3	53.8	53.8	53.8	53.8	46.9	46.9	46.9	45.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.4	45.4	45.4	45.4	45.4	45.4	52.9	52.9	52.9	52.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.8	65.8	65.8	52.3	52.3	52.3	52.3	52.3	0.0	0.0	0.0	45.4	43.5	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.2	65.2	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.3	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	42.1	42.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.7	41.7	41.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.7	42.7	42.7	42.7	42.7	42.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.3	42.3	42.3	42.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.2	41.8	36.9	0.0	45.2	41.8	36.9
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**46**	**47**	**47**	**47**	**51**	**50**	**50**	**50**	**55**	**55**	**57**	**57**	**67**	**70**	**70**	**70**	**56**	**56**	**56**	**56**	**53**	**47**	**47**	**46**	**45**	**65**	**65**	**55**	**0**	**45**	**42**	**37**

Construction Schedule

Year	2024						2025																								2026						
Month	Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Potential Nighttime Work:		
Semi-month	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	ETIE	ITIE	BTIE
Construction Activity																																					
Excavation/Shore/Trench (EXST)						EXST8	EXST8	EXST8	EXST8	EXST13	EXST13	EXST13	EXST13	EXST23	EXST23	EXST23	EXST23	EXST33	EXST33	EXST33	EXST33	EXST43	EXST43	EXST43	EXST43	EXST53	EXST53	EXST53	EXST57								
Restore (REST)										REST8																											
Restore (REST)										REST13	REST13	REST13	REST13	REST13	REST13	REST23	REST23	REST23	REST23																		
Restore (REST)																			REST33	REST33	REST33	REST43	REST43	REST43	REST43	REST43				REST53	REST57						
Final Paving (FPAV)																															FPAV	FPAV					
Striping (STRP)																																	STRP				
Soldier Beam Install (SBIN)							SBIN	SBIN																													
Shaft Excavation and Support (SHFT)									SHFT	SHFT	SHFT																										
Tunnel Excavation (TUNX)												TUNX	TUNX	TUNX	TUNX	TUNX	TUNX																				
Install Carrier Pipe (INCP)																		INCP	INCP	INCP	INCP																
Backfill (BACK)																						BACK															
Tie-In Connections (ETIE, ITIE, BTIE)																															ETIE	ITIE	BTIE		ETIE	ITIE	BTIE

NSR13

Excavation/Shore/Trench (EXST)	0.0	0.0	0.0	0.0	0.0	51.5	51.5	51.5	51.5	53.4	53.4	53.4	53.4	63.5	63.5	63.5	63.5	52.9	52.9	52.9	52.9	46.8	46.8	46.8	46.8	42.3	42.3	42.3	41.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.0	52.0	52.0	52.0	52.0	52.0	62.0	62.0	62.0	62.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Restore (REST)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.4	51.4	51.4	45.3	45.3	45.3	45.3	45.3	0.0	0.0	0.0	40.8	39.4	0.0	0.0	0.0	0.0	0.0	0.0
Final Paving (FPAV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61.4	61.4	0.0	0.0	0.0	0.0	0.0
Striping (STRP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.5	0.0	0.0	0.0	0.0
Soldier Beam Install (SBIN)	0.0	0.0	0.0	0.0	0.0	0.0	47.1	47.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shaft Excavation and Support (SHFT)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.4	46.4	46.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tunnel Excavation (TUNX)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.0	48.0	48.0	48.0	48.0	48.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Install Carrier Pipe (INCP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.4	47.4	47.4	47.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backfill (BACK)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tie-In Connections (ETIE, ITIE, BTIE)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.0	45.7	40.7	0.0	49.0	45.7	40.7
Concurrent Total (dBA)	**0**	**0**	**0**	**0**	**0**	**52**	**53**	**53**	**53**	**57**	**56**	**56**	**56**	**64**	**64**	**66**	**66**	**63**	**63**	**56**	**56**	**50**	**49**	**49**	**49**	**47**	**42**	**42**	**42**	**41**	**62**	**62**	**52**	**0**	**49**	**46**	**41**

Attachment C

Staging Area Noise Modeling

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase at residential land use, nighttime = 50
allowable hours over which Leq is to be averaged = 1

= temporary barrier (TB) of input height inserted between source and receptor

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 1-hour Leq
Staging Area A	dump truck	1	40	76		250	0.1		57.7	0.083	4.98	43
	flat bed truck	1	40	74	water truck	250	0.1		55.7	0.083	4.98	41
									Total for Staging Area A Phase:			**45.1**
Staging Area B	dump truck	1	40	76		750	0.1		47.1	0.083	4.98	32
	flat bed truck	1	40	74	water truck	750	0.1		45.1	0.083	4.98	30
									Total for Staging Area B Phase:			**34.4**
Staging Area C	dump truck	1	40	76		900	0.1		45.3	0.083	4.98	31
	flat bed truck	1	40	74	water truck	900	0.1		43.3	0.083	4.98	29
									Total for Staging Area C Phase:			**32.7**
Staging Area D	dump truck	1	40	76		375	0.1		53.8	0.083	4.98	39
	flat bed truck	1	40	74	water truck	375	0.1		51.8	0.083	4.98	37
									Total for Staging Area D Phase:			**41.1**
Staging Area E	dump truck	1	40	76		850	0.1		45.9	0.083	4.98	31
	flat bed truck	1	40	74	water truck	850	0.1		43.9	0.083	4.98	29
									Total for Staging Area E Phase:			**33.2**

Construction Activity	Equipment	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	Heff (with barrier)	Heff (wout barrier)	G (with barrier)	G (without barrier)	ILbarr (dB)
Staging Area A	dump truck	5	5	0	125	125	250	125.1	125.1	250.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	flat bed truck	5	5	0	125	125	250	125.1	125.1	250.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Staging Area B	dump truck	5	5	0	375	375	750	375.0	375.0	750.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	flat bed truck	5	5	0	375	375	750	375.0	375.0	750.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Staging Area C	dump truck	5	5	0	450	450	900	450.0	450.0	900.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	flat bed truck	5	5	0	450	450	900	450.0	450.0	900.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Staging Area D	dump truck	5	5	0	250	125	375	250.0	125.1	375.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	flat bed truck	5	5	0	250	125	375	250.0	125.1	375.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
Staging Area E	dump truck	5	5	0	425	425	850	425.0	425.0	850.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1
	flat bed truck	5	5	0	425	425	850	425.0	425.0	850.0	0.00	0.1	5.0	5.0	0.7	0.7	0.1

Attachment D

Blasting Airborne Noise and Groundborne Vibration Estimates

Dyno Nobel Reference Guide (2010)
https://www.leg.state.mn.us/docs/2015/other/150681/PFEISref_1/Dyno%20Nobel%202010.pdf

To User: bordered cells are inputs, unbordered cells have formulae

description	symbol	value	units	notes			
peak particle velocity (PPV)	V	3.09	mm/s			0.122 ips	<-- to compare w/ relevant criterion
site and rock factor constant	K	5000		considered typical for "heavily confined", per Dyno-Nobel			
max. instantaneous charge	Q	2.27	kg			4.994 lbs	
constant related to rock and site	B	-1.6		per Dyno-Nobel			
distance from charge	R	152.5	m	based on understood nearest receptor:	**NSR12**	**500.2** feet	

airblast pressure	P	0.011	kPa	**85.1** dBA Lmax	114.8 dBL	0.001589 psi	
state of confinement	K	3.3		"fully confined"	110.1 airborne dBL attenuated by ground absorption (per ISO 9613-2, eq. 10)		
max. instantaneous charge	Q	2.27	kg				
distance from charge	R	152.5	m				
				49.5 dBA	= hourly Leq (assumes a single, one-second blast)		

kg per blast =	2272.391	2000	cubic yards of material removed per blast
lbs. per blast =	4999.3	1529.2	cubic meters
number of charge detonations per blast, using above charge weight =	1001.1	1.486	assumed powder factor to achieve ANFO weight described in AQ/GHG study
hourly Leq, if all charges detonated [w/ delays] within the same hour =	79.5		
CNEL from the hourly value above =	65.7		
Leq energy-averaged over 8 hours	70	8	hours over which to average the Leq

Dyno Nobel Reference Guide (2010) *To User: bordered cells are inputs, unbordered cells have formulae*

https://www.leg.state.mn.us/docs/2015/other/150681/PFEISref_1/Dyno%20Nobel%202010.pdf

description	symbol	value	units	notes			
peak particle velocity (PPV)	V	3.09	mm/s			0.122 ips	<-- to compare w/ relevant criterion
site and rock factor constant	K	5000		considered typical for "heavily confined", per Dyno-Nobel			
max. instantaneous charge	Q	2.27	kg			4.994 lbs	
constant related to rock and site	B	-1.6		per Dyno-Nobel			
distance from charge	R	152.5	m	based on understood nearest receptor:	NSR10	**500.2** feet	

airblast pressure	P	0.011	kPa	**85.1** dBA Lmax	114.8 dBL	0.001589 psi	
state of confinement	K	3.3		"fully confined"	110.1 airborne dBL attenuated by ground absorption (per ISO 9613-2, eq. 10)		
max. instantaneous charge	Q	2.27	kg				
distance from charge	R	152.5	m				

49.5 dBA = hourly Leq (assumes a single, one-second blast)

kg per blast =	2364.143	2000	cubic yards of material removed per blast
lbs. per blast =	5201.1	1529.2	cubic meters
number of charge detonations per blast, using above charge weight =	1041.5	1.546	assumed powder factor to achieve ANFO weight described in AQ/GHG study
hourly Leq, if all charges detonated [w/ delays] within the same hour =	79.7		
CNEL from the hourly value above =	65.9		
Leq energy-averaged over 8 hours	71	8	hours over which to average the Leq