Appendix B - 2005 Program EIR

1. DPEIR 07-2004
2. Final PEIR 5-05
3. Technical Appendices A-E and G-H
4. GeoScience Appendix F

Draft Program
Environmental Impact Report

for the Western Municipal Water District
Riverside - Corona Feeder Project

SCH Number 2003031121

Prepared for

WESTERN MUNICIPAL WATER DISTRICT

Prepared by

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Riverside, California

July 2004
With Cross-References
To Final PEIR

DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE WESTERN MUNICIPAL WATER DISTRICT RIVERSIDE – CORONA FEEDER PROJECT

SCH Number 2003031121

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See page 1.0-4 of the Final PEIR for text added as Section III-5, Irreversible Environmental Changes

APPENDICES

A. Notice of Preparation including Initial Study, Distribution List and Comments Received on Notice of Preparation (bound herein)

The following are bound under separate cover:

B. Air Quality Impact Analysis Report

C. Biological Assessment Report

D. Western Replenishment and Extraction Agreement

E. Phase I Cultural Resources Investigation

F. Phase I Groundwater Modeling Results

G. Preliminary Design Report for Reach B – North

H. School Flooding Study

Note: Appendices F – H were added as a result of comments received during the public review of the Draft PEIR.

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I. Summary

1. Introduction

Western Municipal Water District (WMWD) is proceeding with the planning of the Proposed Riverside-Corona Feeder (RCF) Project for the purpose of conveying potable water from the San Bernardino Basin Area (the Basin) to serve the needs of WMWD and other water purveyors within its service area. This Draft Program Environmental Impact Report (Program EIR) has been prepared to facilitate informed public participation and decision-making by creating a written record that discloses potential significant environmental effects that may be associated with the adoption and implementation of the proposed project. As shown in Figure I-1a, the RCF Project will extend across six jurisdictions, including unincorporated portions of Riverside County and the Cities of San Bernardino, Colton, Grand Terrace, Riverside and Corona.

The proposed RCF project will make WMWD less dependent on the direct delivery of water from The Metropolitan Water District of Southern California (MWD) The proposed infrastructure will allow WMWD to purchase State Water Project water from Metropolitan Water District when it is available and recharge it in the Basin. The proposed project also allows WMWD to extract water from the Basin when it is needed. If appropriate agreements can be reached, additional native water may at times, also be available. The facilities, for example, may be used to convey native water pursuant to rights held by the City of Riverside and the Elsinore Valley Municipal Water District.

The RCF Project will include approximately 30 miles of major feeder pipeline capable of delivering up to 40,000 acre feet per year of ground water at 100 cubic feet per second (cfs) from the San Bernardino Basin Area to WMWD's customers and to water purveyors in the WMWD boundaries (Figure I-1b). Other project elements will include several turnouts along the major feeder, a 2,500 horsepower (hp) pump station and 20 new or existing wells.

Proposed RCF Project pipelines may be shared with other public agencies within the San Bernardino Basin Area. The San Bernardino Valley Municipal Water District (SBVMWD) currently has under construction its proposed Baseline Feeder South Extension Pipeline. SBVMWD will participate in the Riverside Corona Feeder from the SBVMWD Baseline Feeder South Extension Pipeline to Barton Road (Reach A). At this point, SBVMWD will eventually transport approximately 30 cfs to its proposed South End Feeder in Reche Canyon Road. WMWD and SBVMWD have plans to connect RCF Project wells to SBVMWD's proposed Baseline Feeder South Extension Pipeline (Figure I-1b). Water would then be distributed from the SBVMWD Baseline Feeder South Extension Pipeline into the RCF Project near the intersection of Warm Creek Bypass maintenance road and the City of Riverside's Rice-Thorne Pipeline in the City of San Bernardino. Capacity will be made available on an interim basis to the City of Riverside for its use while the City replaces its Waterman Avenue pipeline. WMWD also intends to aquire capacity in the City of Riverside's Waterman Avenue pipeline. Water from this line would enter the RCF near the intersection of Orange Show Road and Waterman Avenue. A 2,500 hp pump station will be necessary at this location to raise City of Riverside water to the RCF hydraulic gradient level (HGL) of 1250-feet (Figure I-1b). The exact quantities of water to be distributed from the SBVMWD and City of Riverside lines (up to 100 cfs

combined total) will be determined based on engineering feasibility and water availability at the time of project implementation.

From its connection with the Baseline Feeder South Extension Pipeline the proposed pipeline will extend south across the Santa Ana River and then south and southwesterly through portions of the cities of Colton, Grand Terrace, Riverside and Corona and unincorporated

Riverside County (Figure I-1b). The proposed southerly terminus would be near the intersection of Ontario Avenue and Compton Avenue in the City of Corona.

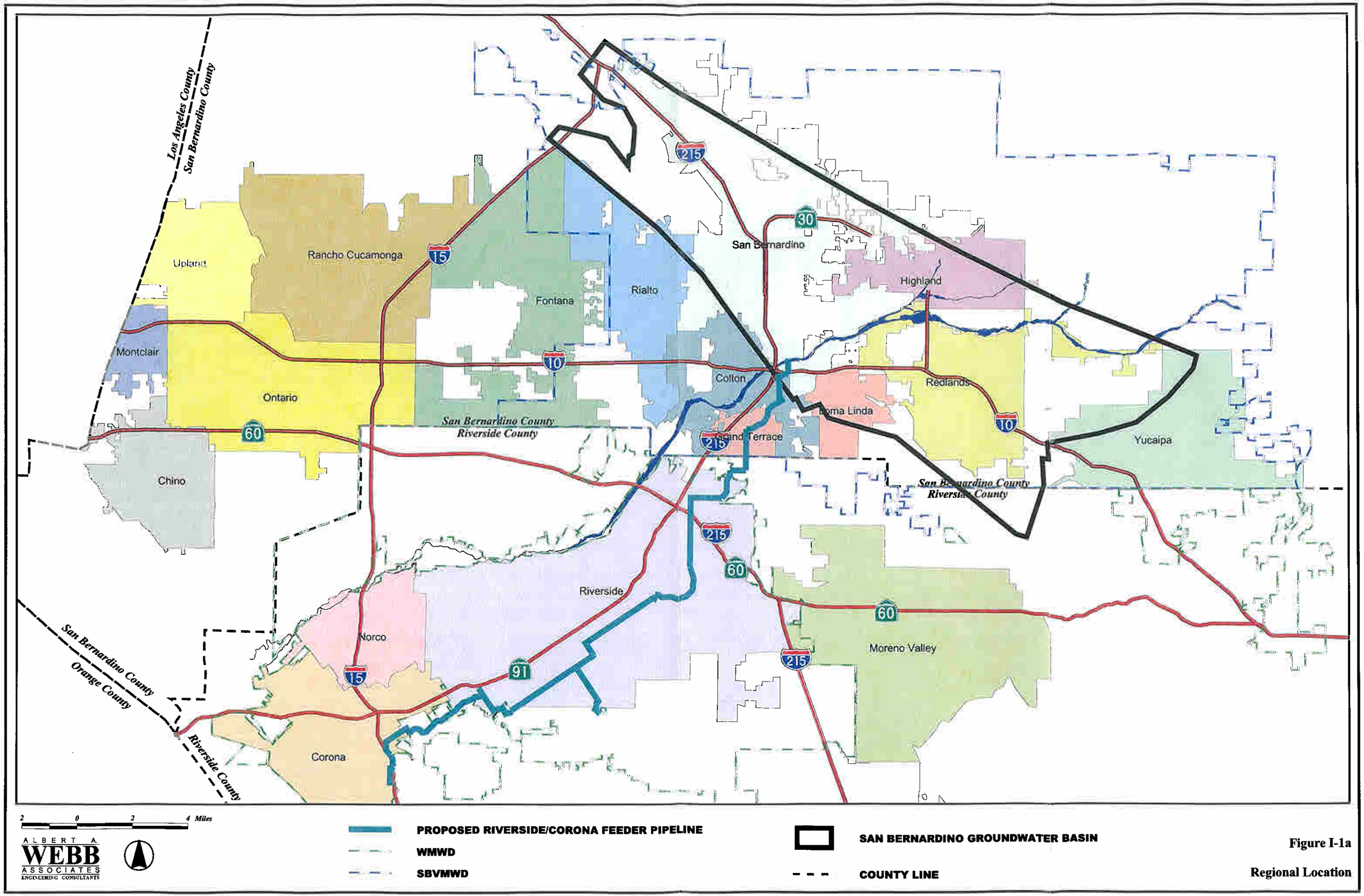

Figure I-1a

Regional Location

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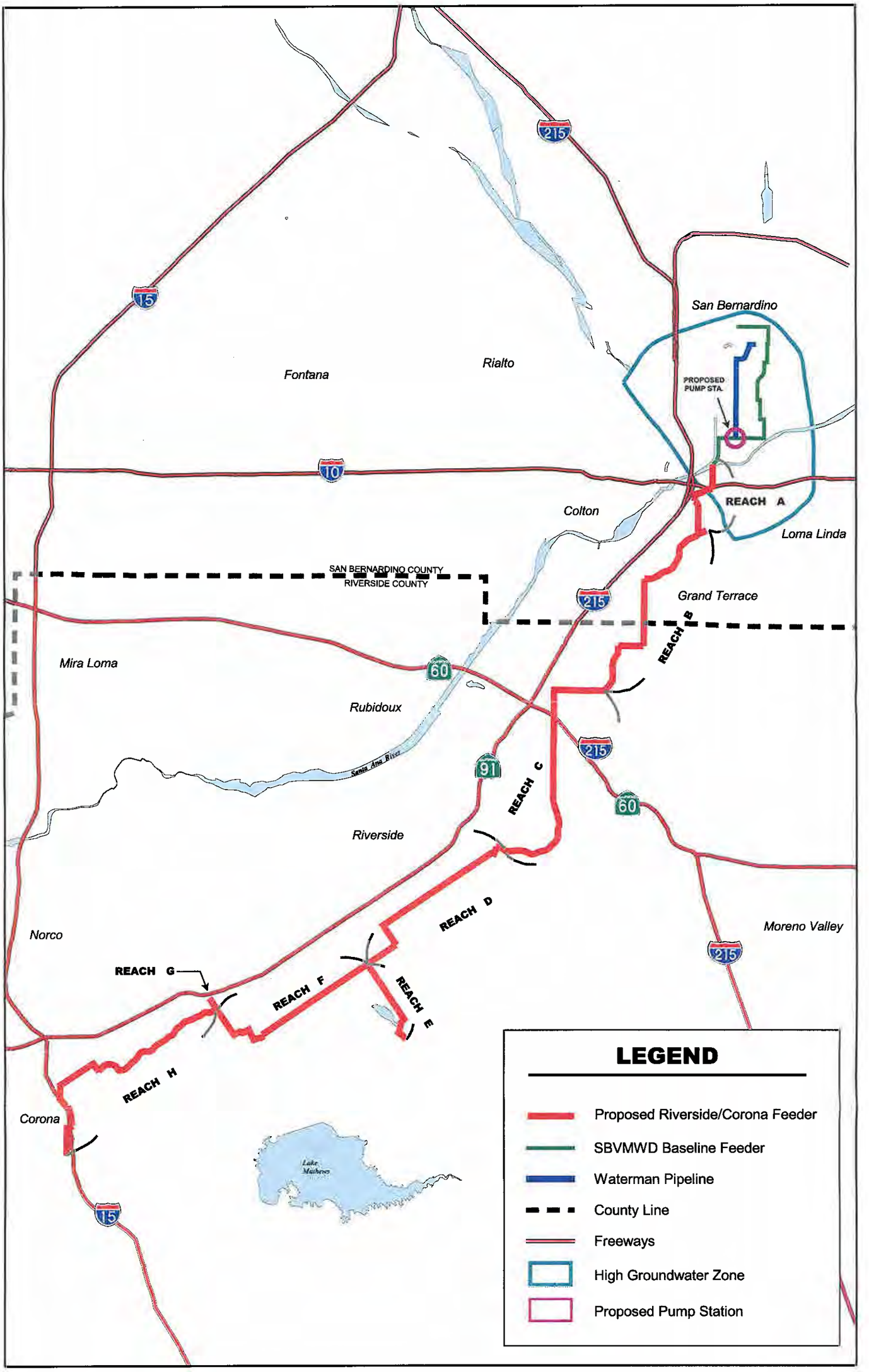

Not to Scale

ALBERT A. WEBB ASSOCIATES ENGINEERING CONSULTANTS

Figure I-1b

Proposed Project

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Purpose and Need

The goal and purpose of the project is to improve the reliability of WMWD's water supply, to its own retail customers and to its wholesale purveyors; to reduce possible water shortages during dry years, and to reduce dependence upon the direct delivery of imported water during dry year conditions, and thereby to contribute to the Upper Santa Ana Watershed (http://www.sawpa.org) effort to become drought proof and self sufficient.

Areas of Controversy and Issues to be Resolved

An Initial Study was prepared by WMWD to assess the project's potential to result in significant environmental impacts. The Initial Study was circulated to 183 responsible agencies and interested parties and nine local public libraries. A notice advising of the availability of the Initial Study and Notice or Preparation (NOP) of the Program EIR was posted at both the County of Riverside and the County of San Bernardino from March 28, 2003 until April 28, 2003. The NOP posted at the California State Clearinghouse on March 27, 2003. Copies of the Initial Study and the Initial Study/NOP distribution list are presented in Appendix A. The following is a summary of the responses received to the NOP.

1 4/22/03 Brunick, Battersby, McElhaney & Beckett
This letter was written on behalf of East Valley Water District (EVWD). EVWD expressed concern that the proposed project could result in serious water supply and water quality problems for agencies that rely upon such groundwater for in-basin (San Bernardino Basin) municipal use and is inconsistent with provisions and restrictions contained in the Judgment entered in Western Municipal Water District et al. v. East San Bernardino County Water District, et al., Riverside Superior Court Case No. 78426. These issues will be addressed in the Groundwater Levels and Groundwater Quality Sections of this Program EIR.

2 4/9/03 California Indian Legal Services
This letter was written on behalf of the Pechanga Band of Luiseno Indians. The Pechanga Band is concerned with the proposed and subsequent development of the project area and its impact on Luiseno cultural resources. The letter also includes requested mitigation measures and conditions of approval for the proposed project. A cultural resource survey was completed by McKenna et al. (April, 2003). This letter was forwarded to McKenna et al. and the Pechanga Band of Luiseno Indians requests and concerns are addressed in the Cultural Resource Section of this Program EIR. WMWD was advised by McKenna et al. not to incorporate the mitigation measures and conditions of approval requested by the Pechanga Band of Luiseno Indians. Other mitigation measures for cultural resources were incorporated into this Program EIR that were deemed appropriate by WMWD.

3 4/21/03 California, State of, Department of Fish and Game (CDFG)
This letter outlines the expectations of the CDFG, including the need for a complete biological assessment, focused surveys and mitigation measures. This letter also emphasizes the need to address cumulative impacts, off-site impacts and impacts to sensitive species. These issues will be addressed in the Biological Resource Section of this Program EIR.

4 4/16/03 California, State of, Department of Toxic Substances Control (DTSC)

DTSC requested that: the project alignment is reviewed for potentially contaminated sites, the applicable databases are investigated, and that the appropriate remediation, if any is necessary is conducted in compliance with State Laws. The above issues will be addressed in the Hazards Section of this Program EIR.

5 4/9/03 California, State of, Department of Transportation (CALTRANS)

This letter states that Caltrans does not foresee any adverse affects to State Transportation facilities and notes that any work done in the State right-of-way should be consistent with applicable design criteria per State Highway Design and Traffic Manuals.

6 4/16/03 Corona, City of, Planning Department

City of Corona planning staff members requested that WMWD include graphics depicting existing land uses in this Program EIR as well as some analysis regarding temporary traffic circulation impacts due to construction. City staff members also noted that methane is being recovered at the City of Corona landfill and that Caltrans permits may be required. These issues will be discussed in the Environmental Setting, Traffic, and Hazards sections of this Program EIR.

7 4/14/03 Elsinore Valley Municipal Water District (EVMWD)

EVMWD would like to see potential groundwater impacts to the San Bernardino Basin addressed in this Program EIR. This issue will be addressed in the Groundwater Levels and Groundwater Quality Sections of this Program EIR.

8 4/22/03 Metropolitan Water District of Southern California (MWD)

MWD requested that the institutional arrangements for water delivery be summarized in the project description of this Program EIR. MWD also noted that the proposed project will cross the Metropolitan Upper Feeder pipeline within the City of Riverside and the California Department of Water Resources Santa Ana Valley pipeline. MWD recommended that potential conflicts related to the maintenance of existing easements and potential conflicts between operations and construction activities be addressed in the Program EIR. A copy of MWD's Design Guidelines was included in the letter. MWD also suggested that this Program EIR Hydrology/Water Quality section include a discussion of the adjudication of the San Bernardino Basin. The above issues will be addressed in the Summary, Project Description, Hazard Sections of this Program EIR.

9 4/23/03 Orange, County of, Planning and Development Services Department

The County of Orange stated that they have no comments at this time, but would appreciate being informed of any further developments.

10 4/22/03 Riverside Highland Water Company (RHWC)

RHWC sent a package with three alternative alignments through the Grand Terrace area that were designed to reduce potential design problems. These alternatives will be discussed in the Alternatives Considered But Not Carried Out Further for Analysis of this Program EIR.

11 4/1/03 Riverside Transit Agency (RTA)

RTA pointed out that the Initial Study did not identify potential impacts to public transportation. The RTA letter stated that construction of the proposed project could interfere with service, alter normal bus routes or cut off access to bus stops. A more detailed analysis of these impacts and appropriate mitigation measures will be included in the Transportation Section of this Program EIR.

12 5/4/03 Riverside, City of, Planning Department

The City of Riverside Planning Department expressed concern that project construction may have significant impacts related to aesthetics and the project's potential to result in the removal of existing landscaping and mature trees. The City was also concerned that the project may result in significant cultural resource impacts related to the Gage Canal. These issues will be addressed in the Aesthetics and Cultural Resource Sections of this Program EIR.

13 3/14/03 Riverside, City of, Public Utilities

The City of Riverside Public Utilities Department expects to be directly and intimately involved in the location and operation of any proposed wells. They would also like to see an operational plan prior to the initiation of construction activity. Project operations will be discussed in the Summary and Project Description sections of this Program EIR.

15 5/14/03 Riverside, City of, Public Works Department

The City of Riverside Department of Public Works states that the Program EIR should address the proposed project's potential conflicts with existing utilities. This issue will be addressed on a programmatic level in the Hazards Section of this Program EIR.

16 4/2/03 Riverside, County of, Department of Environmental Health (DEH)

DEH provided standard setbacks for the proposed project to adhere to and expressed some concerns regarding the pipeline's proximity to the Corona Landfill. Encroachment permits that will be required prior to project construction will assure that the proposed project adheres to all applicable setbacks. Potential land use conflicts and hazards associated with the landfill will be addressed in the Hazards Section of this Program EIR.

16 4/17/03 Riverside, County of, Planning Department

The Riverside County Planning Department acknowledged receipt of the NOP and requested a copy of this Program EIR when it is made available.

17 4/17/03 San Bernardino Valley Water Conservation District (SBVWCD)

SBVWCD requested that the following issues be identified, clarified and that the potential impacts with them be addressed in the Program EIR:

- Where will the water to be exported come from?
- How will exports occur?

- Identify the proposed export schedule.
- Identify the specific number, location and capacity of wells that would be used for export.
- Identify the total quantity of water to be exported on a seasonal and annual basis.
- Present the operational parameters or restrictions on exports from individual wells or from the Basin as a whole.
- How exports are to be accounted for.
- Identify the potential environmental impacts associated with export.
- Discuss groundwater rights.

Items that can be handled at a programmatic level will be discussed in the Project Summary, Project Description and Groundwater Level and Quality Sections of this Program EIR.

18 4/25/03 San Bernardino, City of, Municipal Water Department (SBMWD)

The SBMWD letter encourages WMWD to fully address the hydrologic consequences of its proposal to drill up to twenty (20) new or existing wells and address potential impacts to the Newmark pollution plume. SBMWD would like WMWD to justify their legal rights for additional supply. Potential impacts to their geothermal water wells were also a concern of SBMWD.

To the extent possible at the programmatic level, these issues will be addressed in the Groundwater Levels and Quality sections of this Program EIR.

19 4/21/03 San Bernardino, County, Department of Public Works

The Flood Control letter reminds WMWD that Flood Control Encroachment Permits will be required and that the latest FEMA flood-proofing regulations should be incorporated into the project design.

20 4/2/03 San Jacinto, City of, Development Services Department

The Letter from the City of San Jacinto confirmed receipt of the NOP.

Public Scoping Meeting

In accordance to Section 15083 of the CEQA Guidelines, a public scoping meeting was held on Wednesday, April 9, 2003 from 4:00-6:00 p.m. at the WMWD Administrative Offices. Two responsible agencies, Riverside Transit Agency (RTA) and Elsinore Valley Municipal Water District (EVMWD) raised concerns in relation to impacts on public transportation and groundwater.

Summary of Significant Environmental Effects and Proposed Mitigation Measures

The Initial Study that was prepared for the Riverside Corona Feeder Project (Appendix A) concluded that the proposed project may result in potentially significant impacts to the following resources: Air Quality, Biological Resources, Cultural Resources, Hazards and Hazardous Materials, Groundwater Supply and Water Quality. Potential impacts to traffic, public transportation, and aesthetics were also identified through the NOP process. The proposed project is also expected to result in significant cumulative impacts related to Air Quality. These issues are discussed further in this Program EIR.

Existing wells that may be utilized by the proposed project and Reaches C, D, F and G will be cleared for construction after certification of this Program EIR and implementation of the applicable mitigation measures in the adopted Mitigation Monitoring Program. Further studies related to biological resources (See Table I-1C) will be required, and any applicable permits must secured prior to construction of Reaches A, B, E and H.Table I-1-A provides a brief summary of potentially significant environmental effects, proposed mitigation measures and recommended future studies.

Table I-1-A
Significant Effects, Mitigation and Recommended Studies
Western Municipal Water District Riverside-Corona Feeder Project

AESTHETICS			
Reach	**Significant Environmental Effect**	**Proposed Mitigation**	**Future Studies**
Reach D **Reach A**	Loss of the historic landscape along Victoria Avenue, between Arlington Avenue and Lincoln Avenue (approximately 900 linear feet) and sensitive Vernacular Landscapes (i.e. palm trees, orange trees and windrows) adjacent to the proposed pipeline alternative alignments along the California Citrus State Historic Park and other streets within the City of Riverside Greenbelt area would be considered significant both aesthetically and historically. Loss of mature riparian vegetation within the Santa Ana River would be considered a temporary potentially significant adverse effect both aesthetically and biologically.	**MM Aes 1:** Plants and trees removed or damaged by the proposed project shall be replaced pursuant to the standards and requirements of each jurisdiction within which the loss or damage occurs. **MM Aes 2**: The location of all existing trees, palms and other landscaping shall be noted on the construction drawings that will be prepared for this project to facilitate review and proper permitting by the affected jurisdiction. **MM Aes 3:** If construction activities that require digging are located closer than eight feet from a mature palm, a certified arborist shall evaluate the specific palm(s) to determine if the palm can remain in place, be relocated successfully or if project redesign may be warranted. If the palm must be removed, replacement shall be pursuant to the requirements of the jurisdiction within which the palm(s) is/are located. **MM Aes 4:** If construction activities that require digging are located closer than thirty feet from the drip line of a mature tree, a certified arborist shall evaluate the specific tree(s). The arborist will recommend the course of action most likely to preserve the tree including but not limited to trimming to help with stability, no action and the tree remains in place as is, project redesign, or the means to achieve a successful relocation. If the tree must be removed, replacement shall be pursuant to the requirements of the jurisdiction within which the tree(s) is/are located.	None

Table I-1-A Significant Effects, Mitigation and Recommended Studies Western Municipal Water District Riverside-Corona Feeder Project			
AIR QUALITY			
Reach	**Significant Environmental Effect**	**Proposed Mitigation**	**Future Studies**
Reaches A and C	The project-specific evaluation of emissions shows that emissions of NOx and ROC are above the recommended SCAQMD thresholds during construction of the proposed project regardless of the construction method utilized to place the pipe under the Santa Ana River. Since NOx remains above SCAQMD significance thresholds even with mitigation measures incorporated, the project will result in cumulatively considerable impacts to air quality. The project will require adoption of a statement of overriding considerations prior to project approval.	**MM Air 1** Prior to construction of the proposed improvements, the project proponent will provide a traffic control plan that will describe in detail safe detours around the project construction sites and provide temporary traffic control (i.e. flag person) during earthen material transport and other construction related truck hauling activities (10% reduction). **MM Air 2** During construction of the proposed improvements one of the following options must be used to supply the power needs for boring operations: 1) use natural gas fueled generator sets; 2) use low emission, duel fueled generator sets; or 3) prior to construction of the proposed improvements, arrangements will be made with Southern California Edison to provide temporary construction power at the boring sites (67% reduction). **MM Air 3** During construction of the proposed improvements, all mobile and stationary construction equipment will be properly maintained at an offsite location including proper tuning and timing of engines (5% reduction). Equipment maintenance records and equipment design specification data sheets shall be kept on-site for the complete duration of construction. **MM Air 4** During construction of the proposed improvements, all contractors will be advised not to idle trucks on site for more than ten minutes (4% reduction).	None

Table I-1-A
Significant Effects, Mitigation and Recommended Studies
Western Municipal Water District Riverside-Corona Feeder Project

BIOLOGY			
Reach	**Significant Environmental Effect**	**Proposed Mitigation**	**Future Studies**
Reaches A, B, E and H	The **arroyo southwestern toad** has a low potential to occur in Reach B and a high potential of occurrence in Reach A along the proposed project alignment. The proposed project may have direct significant impacts on this species including physical damage to mature individuals and interference with breeding activities during the breeding season (mid-March through July 1) with either construction method. Indirect impacts could include adverse effects to the health of the hosting riparian habitat caused by the extraction of water prior to boring activities. Trenching activities across the river channel in Reach A, if required, could also result in direct adverse impacts including interference with foraging activities, or indirect adverse impacts, including habitat disturbance or the displacement of animals from the area. **Least Bell's Vireo** has a low to high probability of occurrence at several locations along the proposed project alignment. The proposed project may have indirect significant impacts on this species from extraction of water during micro-tunneling activities which may adversely affect the health of the hosting riparian habitat (Southern Willow Scrub and Mule-Fat Scrub). If micro-tunneling techniques become infeasible and open trench construction methods are utilized, removal of some hosting riparian habitat would result. The proposed project may have direct significant impacts on the species during its breeding season through construction noise from equipment	**MM Bio 1**: In Reach A, the dewatering activities should take place during the period from October 1 through the end of February. This is within the season when the dominant plant species of these riparian communities are dormant. Dewatering outside of this period would subject these communities to stress, desiccation, and potential defoliation. In addition, adherence to this suggested schedule avoids the generally accepted breeding chronology for nesting by the **least Bell's vireo** and **southwestern willow flycatcher** in southern California (Service 1998, Sogge *et al.* 1997), obviating the need for focused surveys that may be required, due to the project's potential to have significant noise impacts to these two listed migratory species. This suggested schedule also avoids the breeding season of the federally listed **arroyo toad**, generally regarded as mid-March through July 1 (Service 1999), thereby avoiding potential impacts to this species as well. Impacts to the arroyo toad during the breeding season would be direct, including physical damage to mature individuals and interference with breeding activities. Should it not be feasible to adhere to this schedule, additional mitigation measures are required, as specified below. **MMBio 2:** Should the construction occur during the breeding season for the **arroyo toad** (March 15 – July 1), a protocol-level survey shall be conducted at the Santa Ana River (Reach A), to determine presence/absence. If the arroyo toad is found to be present in the vicinity of Reach A, incidental take	Impacts related to water quality would not be significant. No mitigation measures are necessary.

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	used in micro-tunneling techniques or open trenching. The proposed project may have direct significant impacts on the species during its breeding season through construction noise. Construction equipment associated with the proposed project will generate noise levels in excess of 60 dBA CNEL. It is generally asserted that noise-sensitive bird species cannot breed successfully in an environment that is subjected to noise levels in excess of exceed 60 dBA CNEL. **The southwestern willow flycatcher** has a low probability of occurrence in Reaches "B", "E" and "H", and a high probability of occurrence in Reach A along the proposed project alignment. The proposed project may have significant direct impacts on this species through construction noise effects during the breeding season.. The proposed project may have significant indirect impacts on the health of the hosting riparian habitat (Southern Willow Scrub and Mule-Fat Scrub) from extraction of water activities during micro-tunneling techniques or the removal of hosting riparian habitat during open trenching activities. **The white-tailed kite** has a low to high probability of occurrence at several locations along the proposed project alignment. The proposed project may result in temporary indirect impacts to the white-tailed kite related to construction activities in or adjacent to habitat they may use. These impacts would not however, be considered to be significant due to their temporary nature.	permits (through either Section 7 or Section 10) shall be applied for. The survey reports shall identify further measures to be taken to avoid or minimize adverse project effects to the protected species and their habitat. **MMBio 3**: Should construction occur during the breeding season for the **least Bell's vireo** or southwestern willow flycatcher (March 15 through September 15), protocol-level surveys shall be conducted prior to construction at the following locations: the Santa Ana River (Reach A), Spring Brook wash (Reach B), the riparian vegetation along the Mockingbird Canyon alignment (Reach E), and the drainage located south of the Corona Landfill (Reach H). Should any of these species be detected, a temporary noise barrier shall be used during construction, at the appropriate location(s), in coordination with CDFG and the USFWS. The noise barrier shall attenuate noise levels to 60 dBA or less at the edge of breeding habitat. Surveys indicate these species are not present; this measure will not be required. Protocol-level surveys reports shall identify further measures to be taken to avoid or minimize adverse project effects to the protected species and their habitat. **MMBio 4:** Should construction occur during the breeding season for the **coastal California gnatcatcher** (March 15 through September 15), a protocol-level survey shall be conducted prior to construction at Spring Brook wash (Reach B), in the vicinity of the proposed project. Should coastal California gnatcatcher be detected, a temporary noise barrier shall be used during construction, at the appropriate location(s), in coordination with CDFG	

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	The **San Bernardino Kangaroo Rat (SBKR)** has a high probability of occurrence in Reach "A" and a low probability of occurrence in Reach "B". At Reach A, where the proposed project crosses the Santa Ana River, the drainage of the river is within Designated Critical Habitat for the San Bernardino Kangaroo Rat. Tunneling is expected to occur at such a depth below the surface of the earth (40 plus or minus feet) that no established impacts to burrowing rodents are expected at this time. Noise effects from tunneling may potentially affect such mammals, but there are no impact standards in this area. Project impacts to SBKR from micro-tunneling activities are considered to be less than significant. However if micro-tunneling techniques become infeasible and open trench construction methods will be utilized, the proposed project could result in direct and indirect adverse impacts to the SBKR. If SBKR are located within the footprint of trenching activities project adverse affects could include physical harm, disruption of normal activities such as breeding and foraging activities, habitat disturbance, or the displacement of animals from the area. Project impacts to SBKR from trenching activities are potentially significant. **The Stephen's Kangaroo Rat** has a high probability of occurrence in Reach "A" and a low probability of occurrence in Reach "B". At Reach A, where the proposed project crosses the Santa Ana River, the drainage of the river is within Designated Critical Habitat for the San Bernardino Kangaroo Rat. Tunneling is expected to occur at such a depth	and the USFWS. The noise barrier shall attenuate noise levels to 60 dBA or less at the edge of breeding habitat. Survey reports shall identify further measures to be taken to avoid or minimize adverse project effects to the protected species and their habitat. **MMBio 5**: In addition to use of the temporary noise barrier, a qualified on-site noise monitor shall be present during all construction activities conducted near habitat that has been identified in the surveys to host the **arroyo toad, least Bell's vireo, southwestern willow flycatcher, or coastal California gnatcatcher**. The noise monitor shall ensure that the temporary barriers are effective at reducing construction noise to 60 dBA or less. **MMBio 6**: Construction staging areas shall be located outside of riparian areas and away from (to the greatest distance feasible) riparian areas. **MMBio 7:** Construction activities adjacent to riparian areas shall be minimized where feasible. *In order to reduce indirect significant impacts to sensitive wetland vegetation and to jurisdictional wetlands and waters,* **MMBio 8:** A formal jurisdictional delineation for potential State and Federal wetland impacts will be conducted at Reaches A and B. **MMBio 9:** A project-wide 1601 Streambed Alteration Agreement prepared in accordance with CDFG requirements shall be secured by WMWD as the jurisdictional delineation warrants and shall include mitigation measures that are sufficient to reduce direct and indirect impacts to riparian habitat	

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	below the surface of the earth that no established impacts to burrowing rodents are expected at this time. Noise effects from tunneling may potentially affect such mammals, but there are no impact standards in this area. **Coastal California Gnatcatcher** has a very low probability for occurrence at one site only – Reach B, where the alignment crosses the Spring Brook drainage along the Gage Canal siphon south of Spring Street in the City of Riverside. A narrow band of Riversidean sage scrub occurs at this location and creates minimal marginal nesting habitat for the species. This potential is severely limited by its relative isolation and the presence of adjacent citrus orchards to the north, non-native Grassland dominated by Rancher's fiddleneck (*Amsinckia intermedia*) to the south, and industrial and residential development to the west and northwest. Due to the limited potential habitat for the gnatcatcher, the species is not expected to occur at this location and no project-related impacts are anticipated. The proposed dewatering activities at the Santa Ana River and other riparian crossings, where groundwater levels are high, may result in significant impacts to the health of **Southern Willow Sage Scrub, Riversidean Sage Scrub and Mule-fat Scrub**, the magnitude of which will depend on the seasonal timing of the activities. In the event that open-trenching techniques are utilized in lieu of micro-tunneling techniques at the Santa Ana River crossing in Reach A, the project would result in direct adverse impacts to the existing	to a level below significant. The Agreement may include some or all of the following: • Avoid impacts where possible by shifting the project location or construction timing. • Minimize impacts. • Remove invasive species. • Purchase off-site habitat credits. • Create and/or restore natural communities. • Avoid sensitive habitats by placing construction staging areas as far away from them as is feasible. • Limit construction activity to daylight hours to minimize potential impacts related to artificial lighting. • Require the presence of a qualified biological monitor during all construction activities that are within or near sensitive habitats and areas that have been identified to host the **arroyo toad, least Bell's vireo, southwestern willow flycatcher, coastal California gnatcatcher, Stephen's kangaroos rat, or San Bernardino kangaroo rat**. **MMBio 10**: An ACOE Section 404 permit shall be secured as the jurisdictional delineation warrants. The Nation-wide Section 404 Permit will apply to the project for linear utility projects. The Corps may require the implementation of measures similar to those listed for the Section 1602 Streambed Alteration Agreement as part of the Section 404 Permit approval process. Implementation of these measures will mitigate potential impacts to the bed	

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	riparian vegetation due to temporary physical disturbance to the Santa Ana River channel and removal of existing riparian vegetation within the construction footprint. Impacts to the riparian community from trenching activities are considered significant. If micro-tunneling techniques become infeasible due to geologic conditions under the Santa Ana River, open trench excavation methods will be utilized for Reach A at the Santa Ana River crossing location. If **Santa Ana River woolly-star** are located within the footprint of the pipeline alignment, trenching activities would result in significant impacts to the species through the removal and/or destruction of individual plants. If micro-tunneling techniques become infeasible and open trench construction methods will be utilized the proposed project could result in significant impacts to **slender-horned spineflower**. Although the slender-horned spineflower has a low potential of occurrence in the river at Reach A, if plants are located within the footprint of trenching activities the project would result in significant impacts to the species. Critical habitat was designated for the **Santa Ana sucker** in February 2004. The proposed project is located in Unit 1B: Santa Ana Wash of designated Critical Habitat for the Santa Ana River. Micro-tunneling construction techniques are proposed for this crossing, to a depth of 40 feet below the surface. Due to the depth of the disturbance of the river channel, impacts to the surface of the river channel,	and banks of the Santa Ana River and any other jurisdictional drainage. Should open-trenching techniques be utilized to install the pipeline across the Santa Ana River, consultation with the US Fish and Wildlife Service will be initiated to determine whether or not the proposed project would result in significant impacts to Critical Habitat for the Santa Ana sucker. If warranted incidental take permits (through Section 7) shall be applied for. The US Fish and Wildlife Service shall identify further measures to be taken to avoid or minimize adverse project effects to the protected species and their habitat. **MMBio 11**: In conjunction with the Corps' Section 404 Permit, a Section 401 Water Quality Certification from the California Regional Water Quality Control Board shall be secured. **MM Bio 12**: Any discharge into navigable waters, or "waters of the United States" shall also comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Federal Clean Water Act. Compliance with these provisions shall result in certification from the Regional Board that verifies that the project complies with all water quality standards. **MMBio 13:** California State Water Resources Control Board (SWRCB) dewatering Permits, submitted for dewatering activities associated with all boring and micro-tunneling, will be required and may specify typical mitigation measures required in a dewatering permit:	

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	including those to surface flows and substrates, are not expected. Consequently, impacts to the gravel and cobble substrate source of the river needed for downstream fish habitat are not expected. If open trench construction methods are used, the proposed project may affect Unit 1B: Santa Ana Wash of the designated Critical Habitat for the Santa Ana sucker possibly resulting in temporary, but significant impacts to Santa Ana sucker Critical Habitat without proper mitigation measures incorporated. Open trenching techniques, if utilized in Reach A, would likely result in adverse impacts to the Santa Ana River. Trenching across the river for pipeline installation would result in excavation activities within the channel, within federally protected "waters of the United States."	• Characterize the quality of the water that will be discharged • Treat water to be discharged to SWRCB standards prior to discharge • Delineate extent of contamination • Specify contaminants • Identify beneficial uses • Identify treatment **MMBio 14**: Should open-trenching techniques be utilized to install the pipeline across the Santa Ana River, a protocol-level survey shall be conducted at the Santa Ana River (Reach A), to determine presence/absence of the **Santa Ana River woolly-star** and **slender-horned spineflower** within the construction footprint. If Santa Ana River woolly-star or slender-horned spineflower are found to be present in the footprint, incidental take permits (through Section 7) shall be applied for. The survey reports shall identify further measures to be taken to avoid or minimize adverse project effects to the protected species and their habitat.	

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CULTURAL RESOURCES			
Reach	**Significant Environmental Effect**	**Proposed Mitigation**	**Future Studies**
Reach D	The landscaping along Victoria Avenue within the City of Riverside is a sensitive resource that may be impacted by the proposed project. Victoria Avenue is listed on the National Register of Historic Places and is a local City Historic Landmark. The landscaping along this street is one of the primary reasons for its designation on the National Register of Historic Places. The proposed project alignment includes the portion of Victoria Avenue between Arlington Avenue and Lincoln Avenue (approximately 900 linear feet). Loss of the historic landscape along Victoria Avenue would be considered significant both aesthetically and historically. If federal funding is involved in the RCF project, then the Federal Section 106 process for evaluating impacts to historic resources will be required. Local review and approval must also be acquired from the City of Riverside Cultural Heritage Board with or without federal involvement. As stated in the Project Compliance with Existing Regulations, the Secretary of the Interior is responsible for establishing professional standards and providing advice on the preservation of cultural resources listed in or eligible for listing in the National Register of Historic Places, including historic landscapes. The Secretary's Guidelines for the Treatment of Cultural Landscapes are used by the City of Riverside to evaluate impacts and recommend project changes/mitigation for proposed projects that affect Victoria Avenue.	**MM Cult 1:** Full time archaeological monitoring during excavations shall be conducted in sensitive areas (e.g. near the Santa Ana River crossing), within undeveloped areas along the project alignment, near Riverside Highland Water facility site thought to be in the vicinity of Barton Road (north of Palm Avenue), at the Gage Canal crossing in the cities of Riverside and Grand Terrace, at the Railroad crossings (AT&SF Railroad Alignment and Southern Pacific Railroad), the Riverside Canal, at Victoria Avenue and Irving Street. The extent and duration of the archaeological monitoring shall be determined by a qualified archaeologist once the construction schedule is defined. **MM Cult 2:** The archaeological monitoring program shall be executed in conjunction with Native American monitoring in sensitive locations where undisturbed soils will be excavated. The Native American monitor shall be of either Gabrielino or Luiseno descent. **MM Cult 3**: Should any resources be identified at any time during excavations for the Riverside-Corona Feeder Project, the archaeological monitor shall be permitted to evaluate the resources in accordance with the Federal and State guidelines. Current standards require the archaeologist to curate materials in federally recognized repositories (e.g. the San Bernardino County Museum or the University of California, Riverside, Archaeological	None NOTE: See Introduction to FEIR page 1.0-2 and Mitigation Monitoring and Reporting Program (MMRP) for revised Cultural Mitigation Measures.

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	Other sensitive landscapes will include palm rows and citrus trees within the City of Riverside Greenbelt area streets and within the California Citrus State Historic Park. The State of California Department of Parks owns and operates the California Citrus State Historic Park. This park borders Irving Street, within which the proposed project will be located. State permits and approvals would have to be granted if the proposed project requires the removal of the citrus and/or palm trees which line Irving Street.	Research Unit). **MM Cult 4:** If fossils are identified during excavation, a qualified paleontologist shall be contacted and permitted to recover and evaluate the find(s) in accordance with current standards and guidelines. **MM Cult 5:** If human remains are uncovered at any time, the County Coroner shall be notified and all activities in the area of the find shall be halted. If the Coroner determines that the remains are of Native American origin, the Native American Heritage Commission shall be notified and consultation with the local Native American representatives shall be initiated to determine the disposition of the remains in accordance with State and County guidelines. *In addition to the above mitigation measures, the following mitigation measures (as previously outlined in the Aesthetics Section VIII-A, should also be implemented:* **MM Cult 6:** Plants and trees removed or damaged by the proposed project shall be replaced pursuant to the standards and requirements of each jurisdiction within which the loss or damage occurs. **MM Cult 7:** The location of all existing trees, palms and other landscaping shall be noted on the construction drawings that will be prepared for this project to facilitate review and proper permitting by the affected jurisdiction. **MM Cult 8**: If construction activities that require digging are located closer than eight feet from a mature palm, a certified arborist shall evaluate the specific palm(s) to determine if the palm can remain	NOTE: See Introduction to FEIR page 1.0-2 and Mitigation Monitoring and Reporting Program (MMRP) for revised Cultural Mitigation Measures.

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		in place, be relocated successfully or if project redesign may be warranted. If the palm must be removed, replacement shall be pursuant to the requirements of the jurisdiction within which the palm(s) is/are located. **MM Cult 9:** If construction activities that require digging are located closer than thirty feet from the drip line of a mature tree, a certified arborist shall evaluate the specific tree(s). The arborist will recommend the course of action most likely to preserve the tree including but not limited to trimming to help with stability, no action and the tree remains in place as is, project redesign, or the means to achieve a successful relocation. If the tree must be removed, replacement shall be commensurate with the size and age of the tree being removed, pursuant to the requirements of the jurisdiction within which the tree(s) is/are located, and in no case shall replacement trees be less than 24-inch box size trees.	

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HAZARDOUS MATERIALS			
Reach	**Significant Environmental Effect**	**Proposed Mitigation**	**Future Studies**
Reaches A, B, C, D, and H	The proposed project will pass across or be constructed within the close vicinity of twenty six (26) hazardous materials sites under various regulatory statuses. Current conditions at these sites do not pose a threat to human health or the environment. With the exception of the currently closed Corona Disposal Site, the proposed project will not cross any of the above sites. Rather, it will be constructed in road rights-of-way, avoiding the hazardous materials sites. Although no significant impacts related to these sites are anticipated, common types of contamination could be encountered during construction of the project resulting from leaking underground storage tanks (UST), poor chemical handling, and accidental or intentional unauthorized chemical releases. Also, many of the proposed project wells do not have exact site locations identified and changes may occur to the proposed alignment prior to construction. Sites or alignments not evaluated in this document may currently be contaminated with hazardous waste or may be contaminated prior to facility construction.	**MM HAZ 1** Avoid sites and alternative alignments on or near environmentally contaminated property. If avoiding a particular site compromises physical engineering requirements, then the following mitigation measures will reduce environmental effects related to hazards as a result of the project to a level below significance. **MM HAZ 2** Check potential sites for listing on the most recent Hazardous Waste and Substances List (List) provided by the San Bernardino County Division of Hazardous Materials and by the Riverside County Department of Environmental Health pursuant to Section 65962.5 of the Government Code. If a selected site is on the List, avoidance of that property will be the first consideration. **MM HAZ 3** If the selected future alignment traverses a site listed on the List and avoidance is not feasible, or if there are other indications that a site could be contaminated (i.e. where pipeline alignment crosses railroad rights-of-way) a Phase 1 Environmental Site Assessment (ESA) will be prepared. **MM HAZ 4** If the Phase 1 ESA identifies possible contamination on the pipeline alignment, then recommended subsurface investigation measures listed in the Phase I ESA will be implemented. Based on subsurface investigations	

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		characterizing subsurface contamination, remediation measures shall be implemented for the applicable site or an alternative alignment will be chosen. **MM HAZ 5** All environmental investigation and/or remediation shall be conducted under a work plan approved by jurisdictional regulatory agencies overseeing hazardous waste cleanups. For the cities of Corona and Riverside the local agencies are City of Corona Fire Department and City of Riverside Fire Department. For the Cities of San Bernardino, Colton and Grand Terrace the enforcement agency is the County of San Bernardino Department of Environmental Health Services. In the unincorporated Riverside County, the Department of Environmental Health administers a program for the purpose of monitoring establishments where hazardous waste is generated, stored, handled, disposed, treated, or recycled, and to regulate by the issuance of permits, the activities of establishments where hazardous waste is generated. **MM HAZ 6** Prior to any excavation or soil removal action on contaminated sites, complete characterization of the soil will be conducted. Appropriate sampling shall be conducted prior to disposal of the excavated soil. If the soil is contaminated, it shall be properly disposed of it according to Land Disposal restrictions. If site remediation involves the removal of contamination, then contaminated material will need to be transported off-site to a licensed hazardous waste disposal facility. This may incrementally decrease the volume available at a hazardous waste disposal site or incrementally increase the emissions of a hazardous waste incinerator. These impacts are not	

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		considered significant. If the proposed project plans on importing soils to backfill the areas excavated, proper sampling shall be conducted to make sure that the imported soil is free of contamination. **MM HAZ 7** If during construction of the project, soil and/or groundwater contamination is suspected, construction in the area shall cease and appropriate Health and Safety measures shall be implemented. The project proponent shall contact the respective jurisdictional enforcement agency (see MMHaz 6) to obtain the necessary information on appropriate measures and their implementation.	

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TRANSPORTATION AND TRAFFIC			
Reach	**Significant Environmental Effect**	**Proposed Mitigation**	**Future Studies**
Reaches A-H	The proposed project alignments will be located adjacent to or near sensitive uses that may be especially sensitive to traffic disruption or construction hazards. Schools, especially high schools, have students that arrive via public transportation as well as key times of day when construction equipment could pose traffic disruption and/or safety hazards. Bus stops in general are in locations where bus patrons might be put in danger during heavy construction activities within streets. Hospitals and fire stations need continuous access to be able to provide emergency services. Lack of coordination or consideration for these types of land uses and situations would be considered temporary but significant. The proposed project will be constructed primarily in road rights-of-way. Impacts to traffic from the project will consist of minor, short-term increases in vehicle trips and delays as a result of pipeline construction. Direct disruption or the need for temporary relocation of one bus route can indirectly affect many more routes. RTA has provided the following list of potential impacts caused by major pipeline construction: • Bus lines often must be re-routed to other streets due to construction;	**MM Trans 1:** Bus stops and signs temporarily removed or closed by the proposed project shall be replaced and posted pursuant to the standards and requirements of the affected transit agency. **MM Trans 2:** A Traffic Safety Plan shall be prepared for each reach of construction. WMWD shall coordinate with affected transit agencies, schools, fire stations and other affected local jurisdictions on the preparation of each Traffic Safety Plan. Traffic Safety Plans may include, but not be limited to, such things as adjusted hours of construction in certain locations, signs, flagmen, adequate notice of construction schedules, and cones or barriers to detour traffic.	

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	• Re-routings significantly affect published schedules. Public notices of changes need to be distributed well in advance so that buses are not missed; • Construction-caused congestion and slower traffic affects schedules and route connections; • The above difficulties can "domino" through much of the transit system' • Bus benches, bus stops, etc. are closed, moved or otherwise made inaccessible and riders are unsure where to safely board the bus or step off the bus; • Transit agency dispatchers will need to publish numerous driver bulletins as necessary to keep the crew informed of changes to routes and stops. [For example,] in a normal week, perhaps 10 are issued for the entire Western Riverside County RTA service area. A project such as the RCF could quadruple this number. There are total of 16 bus lines that may be impacted by the proposed project, 13 RTA lines and 3 Omnitrans lines.		

GROUNDWATER QUALITY			
Reach	**Significant Environmental Effect**	**Proposed Mitigation**	**Future Studies**
Operational	Direct groundwater quality impacts that may result from the proposed importation of State Water Project water for replenishment are considered less than significant due to the equal or better quality of the imported water than existing Basin water quality. No mitigation measures are necessary. Although a specific conclusion as to the significance of potential indirect groundwater quality impacts associated with pollution plumes would be speculative at this time, future studies, plans and modeling shall conform to §15168(c) of the CEQA Guidelines which states, "Subsequent activities in the program must be examined in the light of the Program EIR to determine whether an additional environmental document must be prepared." This may include, for example, sufficient hydrology studies, groundwater modeling or coordinated studies with other agencies with jurisdiction over regional groundwater and related surface resources, in order to evaluate and address all potentially significant direct, indirect and cumulative impacts of the proposed actions under CEQA.	MM GWQ 1: Prepare operating strategies to be tested using the most current versions of the groundwater flow and groundwater quality model(s) available at the time. An operating plan shall be developed prior to commencing replenishment activities for the project that defines parameters of replenishment and extraction based on groundwater model(s) as evaluative tool(s). MM GWQ 2: As described in MM GWQ 1, existing groundwater flow and groundwater quality model(s) shall be used to predict the effects of project operations pursuant to the operating plan developed as a requirement of MM GWQ 1. If the model(s) suggest that the replenishment and pumping regime of the proposed project operation would result in significant impacts, the project operation shall be modified to reduce impacts or appropriate mitigation measures shall be developed as part of a subsequent CEQA compliance document (i.e. tiered negative declaration, EIR addendum, Supplemental EIR or Subsequent EIR). Typical mitigation measures that may be implemented to improve water quality may include but are not limited to: • Appropriate Use. Contaminated water could be utilized for purposes that would allow or require lower water quality standards. • Blend. Water that has poor quality can be blended and diluted until water quality standards are achieved. • Move (Avoid). Choose another	Groundwater modeling

		production area. • Careful Management. Operate wells in a manner that will prevent or delay contamination. This may include installation of barrier wells or avoidance of strategies that would result in acceleration of the movement of contaminated water towards existing wells. • Wellhead Treatment. Wellhead treatment can be utilized to bring water to acceptable water quality levels.	

2. Project Description

As shown in Figure I-1a, the RCF Project will extend across six jurisdictions, including unincorporated portions of Riverside County and the Cities of San Bernardino, Colton, Grand Terrace, Riverside and Corona.

Proposed Facilities

Infrastructure proposed to be constructed as part of the Riverside Corona Feeder (RCF) Project will include: a 30 mile long feeder pipeline with one mainline meter and five metered turnouts, a 2,500 horsepower (hp) pump station designed to lift water from the City of Riverside's Waterman Pipeline into the RCF which operates at an hydraulic gradient line (HGL) of 1250±, and 20-350 HP x 2,200 gallons per minute (GPM) new or existing groundwater production wells to be located within the San Bernardino Basin Area.

The RCF will operate under gravity flow conditions, from the connection to SBVMWD's 1250-foot pressure zone in the City of San Bernardino to its southerly terminus in the City of Corona. The RCF reaches are sized for maximum design velocities in the range of 3.5-5.3 feet per second (fps). When all five turnouts are delivering their maximum design deliveries, totaling 100 cubic feet per second (cfs), the HGL will be 1,056-feet at the RCF terminus in the City of Corona.

The RCF will connect to and obtain capacity from San Bernardino Valley Municipal Water District's (SBVMWD) 28,000-foot, 78-inch diameter Baseline Feeder South Extension Pipeline at the southerly terminus of the SBVMWD pipeline. The RCF will also connect to and obtain capacity from the City of Riverside's proposed 10,000-foot, 60-inch diameter Waterman Avenue Pipeline Replacement Project which is at a HGL of 1060'±. This connection will necessitate the construction and operation of a pump station to lift the water into WMWD's proposed RCF project at a HGL of 1250'±. Total capacity obtained via these two systems will be 100 cfs. SBVMWD will obtain about 30 cfs of capacity in the RCF from the Baseline Feeder South Extension Pipeline to Barton Road.

The majority of the RCF will be constructed utilizing traditional trenching techniques. Segments of the feeder that will not be installed utilizing trenching techniques include the Santa Ana River crossing, under busy roadways, under rail crossings, under drainages and under other sensitive areas. Micro-tunneling techniques are proposed to install the RCF under the Santa Ana River and boring techniques are proposed at all of the other locations mentioned above.

The RCF will extend south from a point north of the Santa Ana River near the intersection of the Warm Creek Bypass maintenance road and the City of Riverside's Rice-Thorne pipeline, underneath the Santa Ana River, through a commercial and industrial area parking lot, within multiple road right of ways, under Interstate 10, within the Gage Canal right-of-way, within the right-of-way of proposed roads that are currently dirt roads used for agricultural activities, under the Arlington Flood Control Channel, under several rail lines and flood control easements, just inside the boundaries of the Corona Landfill within the City of Corona and under Interstate 15. The majority of the RCF would be constructed within road right-of-ways.

The proposed pump station will be constructed within the City of San Bernardino on a vacant lot near the intersection of Orange Show Road and Waterman Avenue. The exact locations of the existing and/or proposed wells have not yet been determined.

The 30-mile long RCF project has been divided into reaches A-H (Figures I-2a – I-2f). Each reach is described below.

Reach A – 8,000-feet of 72-inch diameter pipeline

Reach A would be constructed from the southerly terminus of the SBVMWD Baseline Feeder North/South, at a point north of the Santa Ana River near the intersection of the Warm Creek Bypass maintenance road and the City of Riverside's Rice-Thorne Pipeline in the City of San Bernardino. From that point, it would extend southerly across the Santa Ana Riverbed east of Interstate 215. A 72-inch pipeline would be installed across the riverbed utilizing micro-tunneling techniques within a 92-inch structure. SBVMWD will obtain approximately 30 CFS of capacity in this portion of the RCF.

Due to the preliminary nature of the proposed project, geologic conditions under the Santa Ana River are not known in detail for the proposed crossing location. Should micro-tunneling techniques become infeasible due to geologic conditions under the Santa Ana River, Alternative 5 in the Alternatives section of this EIR (Section III-2) addresses the potential impacts of open trench construction methods for this Reach at the Santa Ana River crossing location.

South of the Santa Ana River, Reach A will continue south through a commercial business park parking lot, south within the right-of-way of Hunts Lane, under Interstate 10, west on Steel Road (City of Colton) to a point approximately 600 feet east of Interstate 215, south through an industrial park to Cooley Drive, south on Cooley Drive, southwesterly on Washington Street then east on Barton Road for approximately 1,100 feet where the pipeline will connect to the 100 CFS mainline meter facility on Barton Road located just east of Reche Canyon Road. SBVMWD will obtain approximately 30 cfs of capcity in this portion of the RCF.

The RCF will be placed underground utilizing boring techniques where it will travel under Hospitality Lane, Interstate 10 and under the flood control facility located just west of Reche Canyon Road. SBVMWD will be able to connect at Reche Canyon Road to divert their share of the water capacity in the 72-inch pipe to their proposed South End Feeder.

Reach B - 29,000-feet of 60-inch diameter pipeline

Reach B would continue southwesterly into the City of Grand Terrace in Barton Road from its intersection with Washington Street, south in and/or adjacent to the Gage Canal right-of-way, and west in Marlborough Avenue to Turnout No. 1, which would be located near the intersection of Rustin Avenue and Marlborough Avenue in the City of Riverside. Boring techniques will be utilized where the RCF is proposed to cross under a riparian area located within and/or adjacent to the Gage Canal right-of-way, under the Union Pacific rail lines just east of the intersection of Rustin Avenue and Marlborough Avenue. Turnout No. 1 will have a capacity of 10 CFS (4,500 GPM).

Reach C - 29,000-feet of 60-inch diameter pipeline

Reach C would be constructed from Turnout No. 1, west in Marlborough Avenue, then south in Chicago Avenue, west in Arlington Avenue, to Turnout No. 2 which would be located near the

intersection of Arlington Avenue and Fairview Avenue in the City of Riverside. The RCF will be placed underground utilizing boring techniques where it will travel under Iowa Avenue, a Union Pacific rail line located just east of Chicago Avenue, Spruce Street, Interstate 215/State Route 60, Third Street, University Avenue, Martin Luther King Boulevard, and Central Avenue. Turnout No. 2 will have a capacity of 10 CFS (4,500 GPM).

Reach D - 24,000-feet of 54-inch diameter pipeline

Reach D would continue west in Arlington Avenue from Turnout No. 2, then south in Victoria Avenue, southwest in Lincoln Avenue, southeast in Adams Street, southwest in Cleveland Avenue to the intersection of Cleveland Avenue and Irving Street to Turnout No. 3 which would be located near the intersection of Cleveland Avenue and Irving Street in the City of Riverside. Boring techniques will be utilized to construct the RCF under Mary Street, Madison Avenue and a rail line northeast of St. Lawrence Street. Turnout No. 3 will have a capacity of 35 cfs (15,750 GPM), and will deliver water into the Reach E branch pipeline.

Reach E - 11,000-feet of 36-inch diameter branch pipeline

Reach E is a branch pipeline that would extend from Turnout No. 3 southeast in Irving Street to a point approximately 200-feet northwest of Firethorn Avenue. Boring techniques will be utilized to install a 36-inch pipeline that will cross under the open Gage Canal, traverse downhill just southwest of the intersection of Irving Street and Firethorn Avenue southwest to Firethorn Avenue and across Van Buren Boulevard to the Mockingbird Pump Station.

Reach F - 24,000-feet of 42-inch diameter pipeline

Reach F would extend southwest in Cleveland Avenue from the intersection of Cleveland Avenue and Irving Street, southeast on La Sierra Avenue, west in Dufferin Avenue, northwest on Lyon Avenue, southwest in Victoria Avenue, northwest in Fillmore Street to Indiana Avenue to Turnout No. 4 which would be located at the intersection of Fillmore and Indiana Avenues in the City of Riverside. Boring techniques will be utilized to bore under Van Buren Boulevard, a riparian drainage located within the right-of-way, but un-constructed portion of Cleveland Avenue, and a drainage facility (under construction) located at the intersection of Dufferin Avenue and Lyon Avenue. Turnout No. 4 will have a capacity of 20 cfs (9,000 GPM) and will be located near the intersection of Indiana Avenue and Fillmore Street in the City of Riverside.

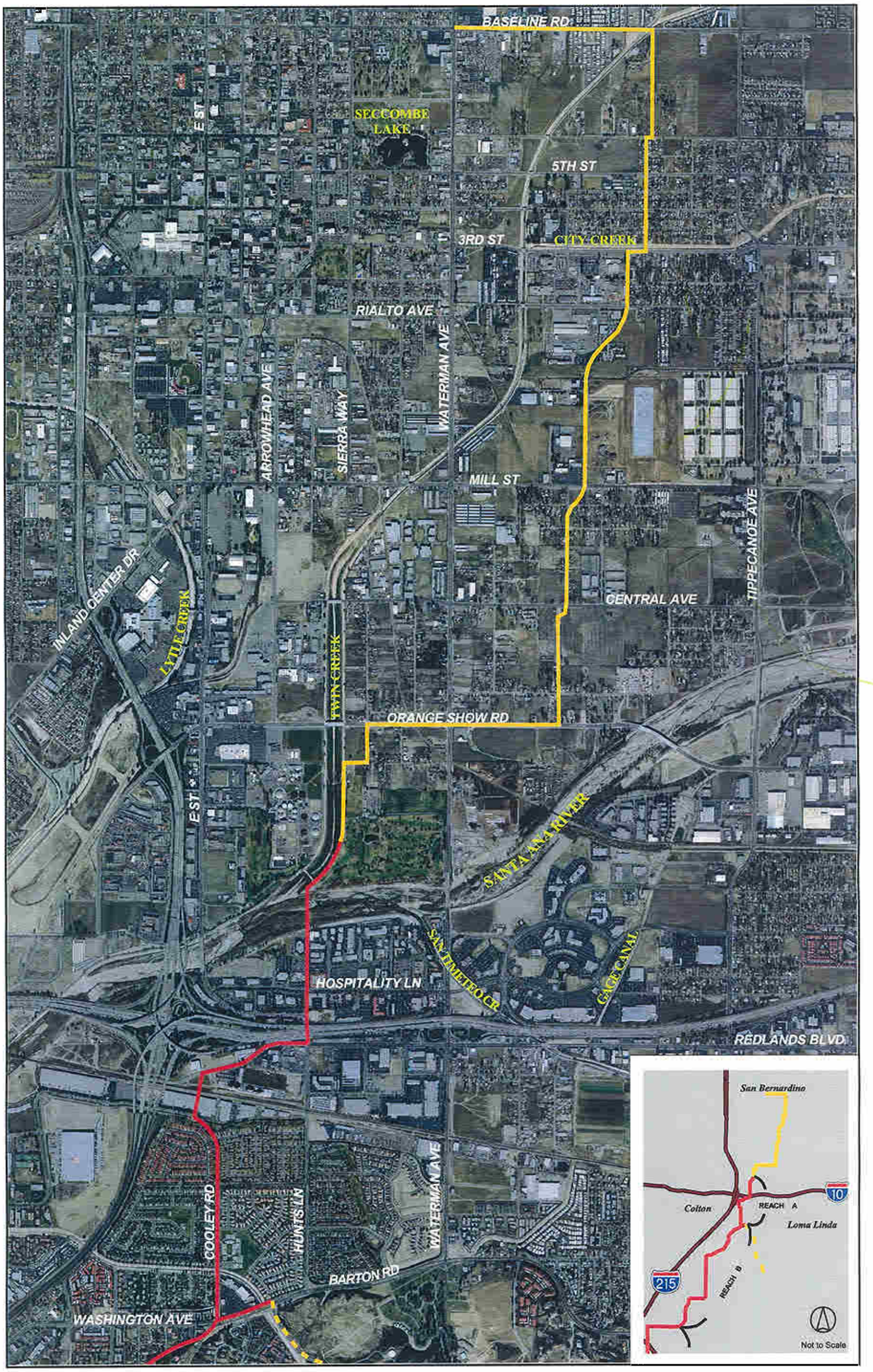
Reach G - 2,000-feet of 30-inch diameter branch pipeline

Reach G is a branch pipeline that would extend from Turnout No. 4, then northwest in Fillmore Street from the intersection of Fillmore Street and Indiana Avenue under rail lines and across the Arlington Flood Control Channel to the Arlington Pump Station (Turnout No. 4). Boring techniques will be utilized to bore under rail lines and the Arlington Flood Control Channel.

Reach H - 32,000-feet of 36-inch diameter pipeline

Reach H would begin at the intersection of Fillmore Street and Indiana Avenue in the City of Riverside and will extend southwest on Indiana Avenue, northwest on Neece Street, southwest into the City of Corona on Magnolia Avenue, (including on Leeson Lane), south through an industrial park parking lot, southeast through the Corona Landfill, entering the north end of Belair Street, continuing south in Belair Street, west in Old Temescal Road, under Interstate 15, south on Compton Avenue to the intersection of Compton Avenue and Ontario Avenue.

Boring techniques will be utilized to construct the RCF under flood control facilities near Lincoln Street, McKinley Street, American Way and the north end of Belair Street in Corona. Bores will also be utilized to construct the RCF under a rail line near Sherborn Street and under Interstate 15 on Old Temescal Road. Turnout No. 5 will have a capacity of 25 CFS (11,250 GPM) and will be located near the intersection of Ontario and Compton Avenues in the City of Corona.



Source: AirPhoto USA February 2002
Scale : 1" = 1,800'

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

LEGEND

- PROPOSED RIVERSIDE/CORONA FEEDER
- PROPOSED SBVMWD BASELINE FEEDER
- PROPOSED SBVMWD SOUTH END FEEDER

Figure I-2a

Reach A

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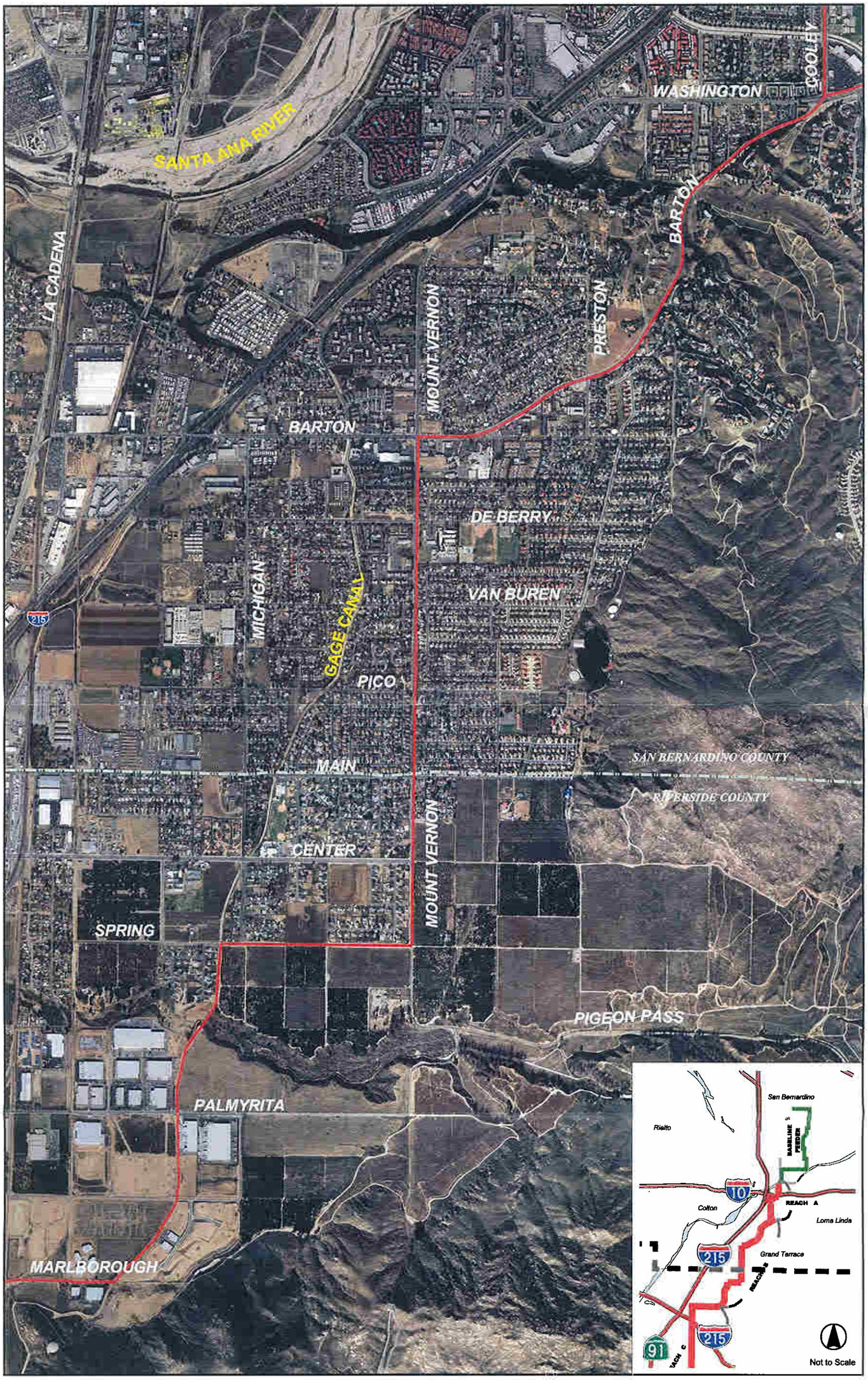

Source: AirPhoto USA February 2002
Scale : 1" = 1,500'

ALBERT A. WEBB ASSOCIATES ENGINEERING CONSULTANTS

PROPOSED RIVERSIDE/CORONA FEEDER

Figure I-2b

Reach B

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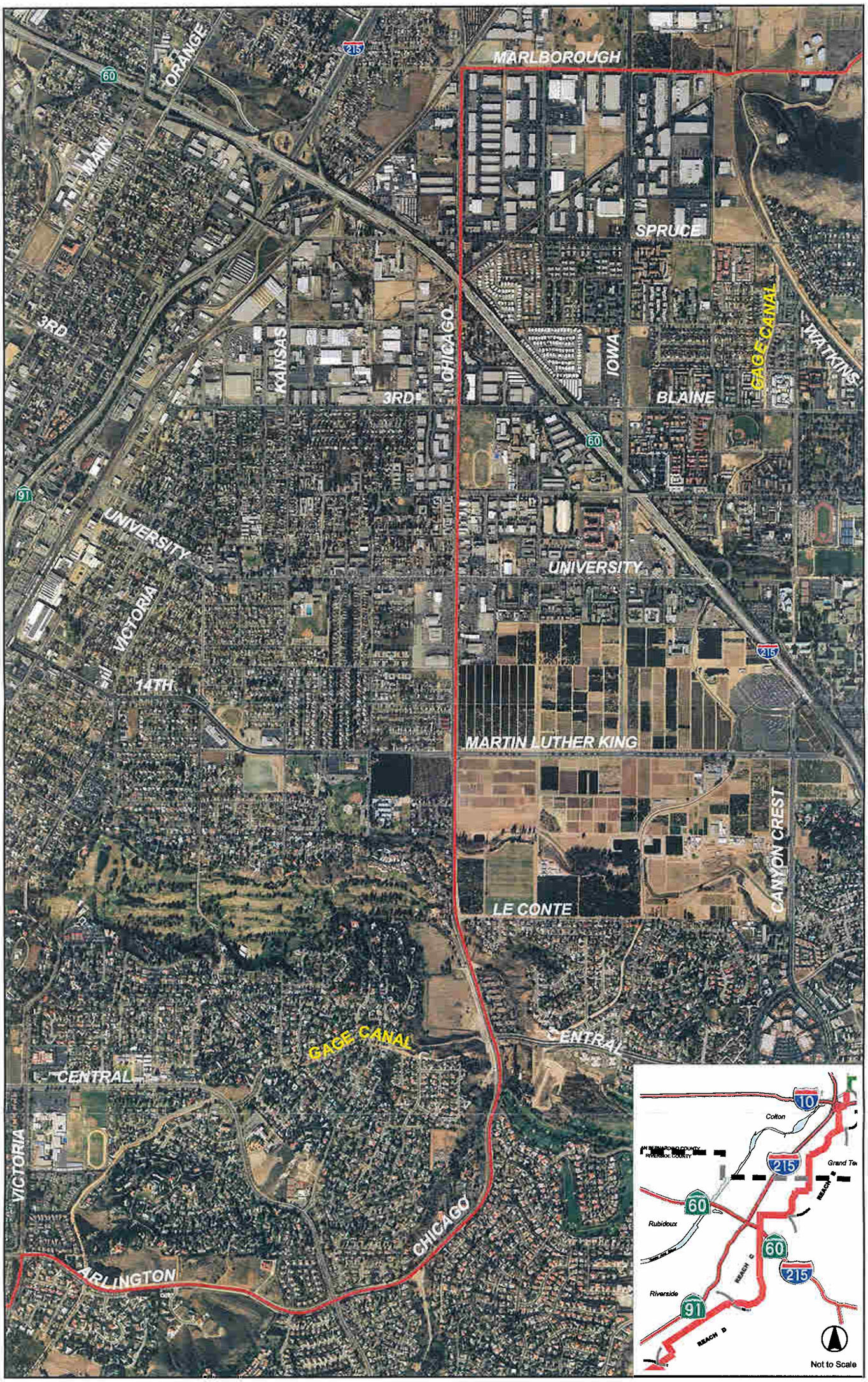


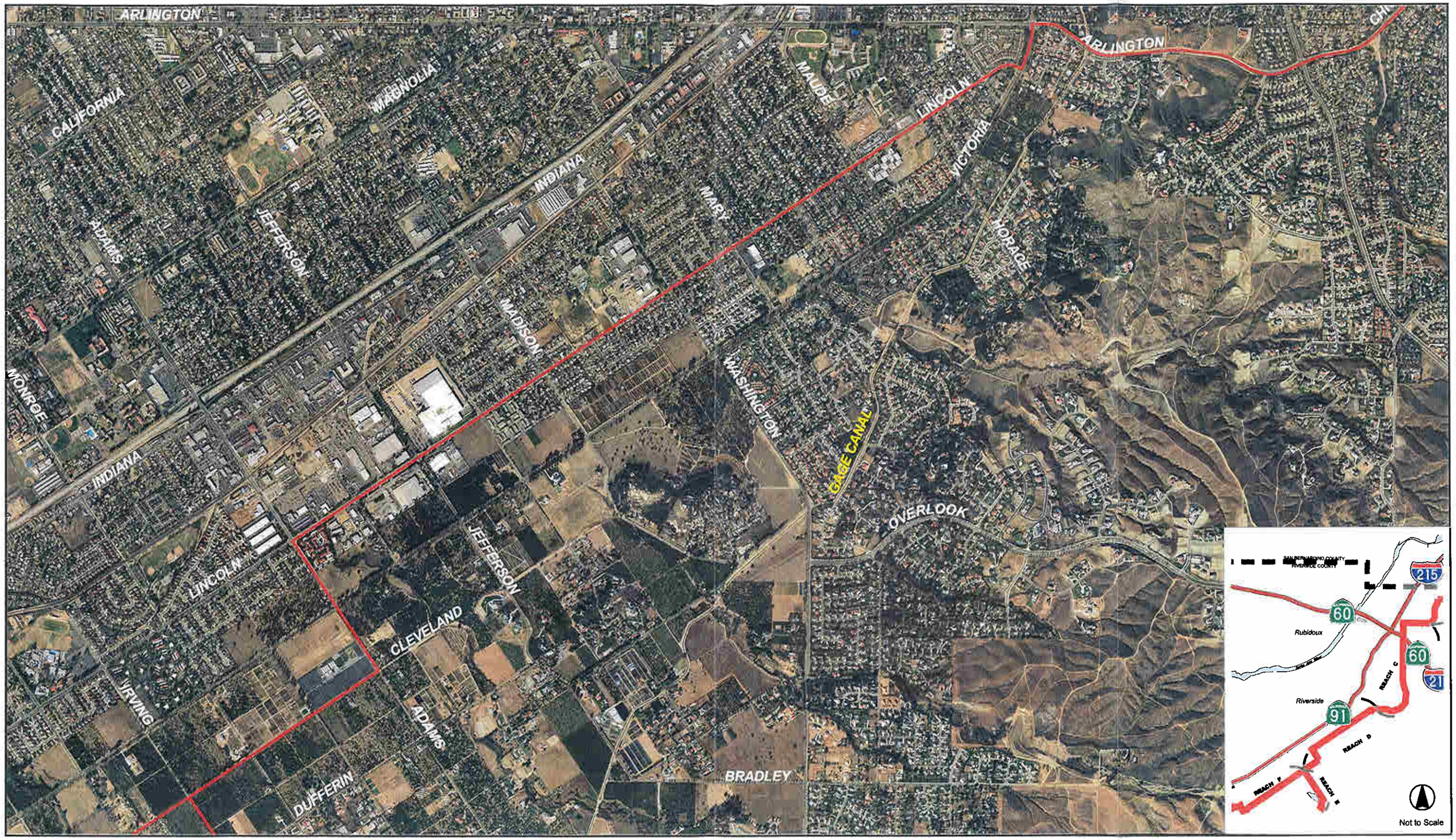
Source: AirPhoto USA February 2002
Scale : 1" = 1,500'

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

PROPOSED RIVERSIDE/CORONA FEEDER

Figure I-2c

Reach C



Souce: AirPhoto USA February 2002
Scale 1" = 1,700"

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

PROPOSED RIVERSIDE/CORONA FEEDER

Figure I-2d

Reach D

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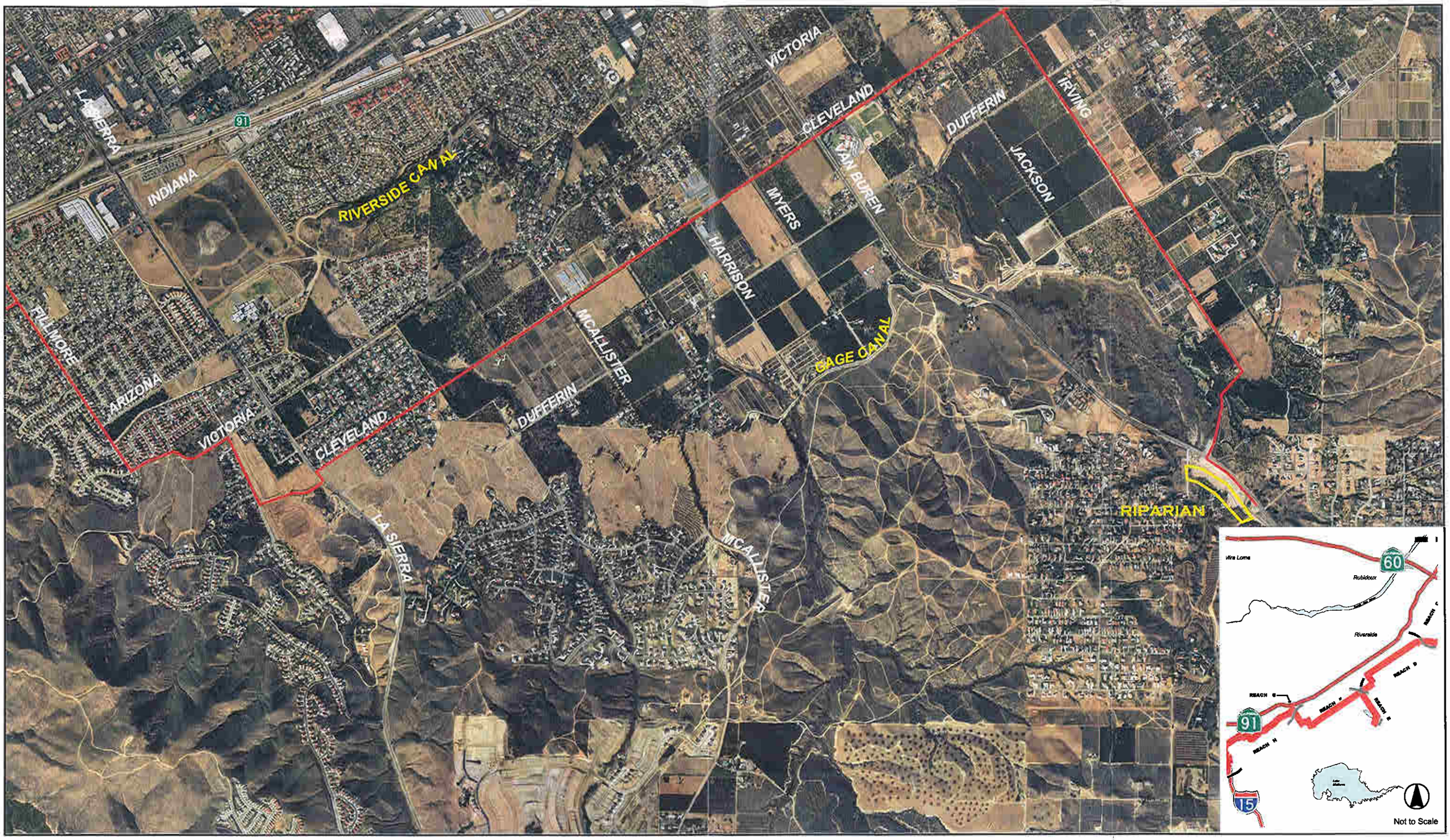

Souce: AirPhoto USA February 2002
Scale 1" = 1,700"

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

PROPOSED RIVERSIDE/CORONA FEEDER

Figure I-2e

Reaches E and F

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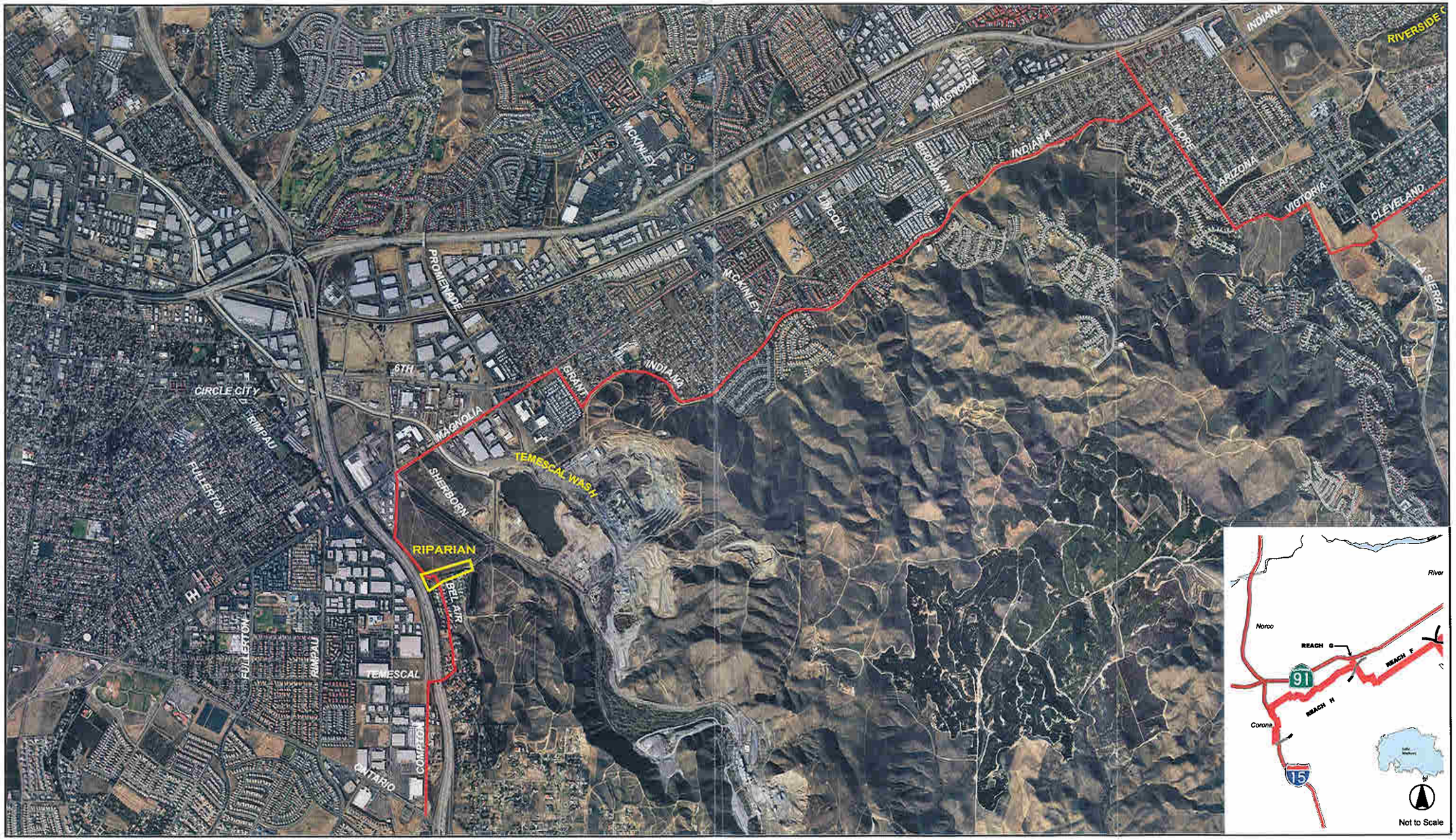

Souce: AirPhoto USA February 2002
Scale 1" = 2,300"

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

PROPOSED RIVERSIDE/CORONA FEEDER

Figure I-2f

Reaches G and H

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Proposed Project Operations

WMWD intends to purchase State Water Project water from the Metropolitan Water District of Southern California (MWD) for delivery through the Devil Canyon Power Plant afterbay, and to provide such water to San Bernardino Valley Municipal Water District (SBVMWD) for replenishment of the San Bernardino Basin Area (the Basin) pursuant to the Replenishment and Extraction Agreement, Appendix D herein. WMWD shall have the right to extract from the Basin amounts of water equal to the amount that have been purchased from MWD for such replenishment. Any amounts of replenishment water purchased that have not been extracted by calendar year end will be accounted for by Watermaster as a credit to WMWD. Pursuant to the Replenishment and Extraction Agreement, Watermaster will report annually to the court all amounts of imported water replenished directly or by in lieu measures, all extractions, and any accumulation of any credits in the Basin Area as a result of direct or in-lieu replenishment.

WMWD plans to replenish the Basin with State Water Project Water when available from MWD and when the basin will benefit from such replenishment. WMWD plans to use the proposed RCF to extract and deliver up to 40,000 acre-feet per year as needed.

Water purchased from MWD will be delivered to SBVMWD through its existing distribution facilities pursuant to the SBVMWD and MWD Coordinated Operating Agreement dated July 10, 2000 and Attachment 2 thereto dated May 14, 2001 (See Western Replinishment and Extraction Agreement, Appendix D, herein). SBVMWD may replenish the Basin at any location, including but not limited to, those shown in Table I-2-A. Another method of replenishment, or "in lieu" replenishment could occur whereby WMWD would arrange for imported water to be delivered directly to entities who would otherwise be producing groundwater, and who would assign to WMWD's credit, an equivalent amount of their un-produced groundwater.

Table I-2-A - Replenishment Locations

PIPLINE	TURNOUT
Foothill	Sweetwater
	Badger
	Waterman
	Patton
	City Creek
	Santa Ana Low
Devil Canyon-Azusa	Lower Lytle Creek Basins
Santa Ana River Crossing	Seven Oaks Dam Borrow Site
Greenspot	Mill Creek Spreading

WMWD plans to extract the water using some combination of new and existing wells. While WMWD intends to make arrangements with other existing groundwater producers to utilize their wells whenever possible, the proposed project may result in the construction of up to 20 new wells for use by existing producers or WMWD. The amount of pumping and the location of pumping is expected to vary depending on groundwater conditions within the San Bernardino Basin Area. Although it would be speculative at this time to attempt to identify the existing wells or any new well sites that will be used to extract water for the proposed RCF Project, future well sites and project operations will be subject to project level environmental analysis. The proposed new or existing wells will, however, be located in or near the area of historically high groundwater in the lower portion of the San Bernardino Groundwater Basin Area and in reasonable proximity to pipelines that are proposed to connect to the RCF.

WMWD intends to conduct proposed operations in cooperation with other water agencies who recharge or extract water in the Basin; in compliance with the Judgment in the case of Western Municipal Water District of Riverside County, et al. v East San Bernardino County Water District, et al., Riverside Superior Court No. 78426 ("Judgment"); and in accordance with the Replenishment and Extraction Agreement (Appendix D).

Operation of the Project shall be limited so as: not to deplete natural (i.e. not imported) groundwater supplies or interfere substantially with groundwater recharge; not to cause undesirable high groundwater levels in the area of historically high groundwater (AHHG); not to interfere with other programs being implemented to manage and protect groundwater in the Basin; and not to substantially degrade the water quality of any individual pumper.

3. Compliance with the California Environmental Quality Act (CEQA)

The Purpose of this Document

This EIR is intended to serve as an informational document for public agency decision- makers and the general public regarding the objectives and components of the proposed Riverside-Corona Feeder Project, which is the proposed project for the purpose of CEQA. This document will address the potential significant adverse environmental impacts that may be associated with build out of the proposed project, and identify feasible mitigation measures and alternatives that may be adopted to reduce or eliminate these impacts.

According to Section 15002 of CEQA Guidelines, the basic purposes of CEQA are to:

- Inform government decision-makers and the public about potential significant environmental effects of proposed activities;
- Identify ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment be requiring changes in projects through the use of alternatives or mitigation measures when the governing agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Definition of a Program Environmental Impact Report

According to CEQA Guidelines (Section 15168(a)), a State or local agency should prepare a Program EIR, rather than a Project EIR, when the lead agency proposes a series of activities that are related either (1) geographically; (2) as logical parts in the chain of contemplated actions; (3) in connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or (4) individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects that can be mitigated in similar ways.

Tiering refers to the concept of a multilevel approach to preparing environmental documents (CEQA Guidelines, Section 15152). This program EIR can be thought of as a "first tier" document, and for certain elements, a "second tier" document. It evaluates the large-scale impacts on the environment that can be expected to result from the adoption of the proposed project, and to a certain degree the site-specific impacts that each of series of actions that will follow may have. The majority of the site-specific analyses will be encompassed in second-tier documents, such as negative declarations and supplemental EIRs, which typically evaluate the impacts of a single activity undertaken to implement the overall plan.

In this case, the Program EIR will address the Riverside-Corona Feeder, which is the proposed project. This Program EIR considers a series of related actions that are related geographically and are needed to achieve the implementation of the proposed project.

4. Other Regulations With Which the Project Must Comply

This Program EIR addresses the potential environmental effects of the implementation of the proposed RCF Project. WMWD is the Lead Agency for the purposes of CEQA because it has the principal responsibility for deciding whether or not to approve the RCF Project, and how it will be implemented. As the Lead Agency, WMWD is responsible for preparing the environmental documentation for the proposed project in compliance with California Environmental Quality Act. There are however, several agencies that have regulations with which the project must comply. The agencies listed below are expected to use this Program EIR when considering the following actions.

U.S. Army Corps of Engineers

A 404 permit will be required if the proposed project involves fill in the definable bed, bank or channel (as indicated by the ordinary high water mark) of the Santa Ana River and any other stream or drainage feature due to installation of a pipeline crossing.

Regional Water Quality Control Board

Regional Water Quality Control Board, Santa Ana Region (RWQCB) National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Discharge Permits will be required. A 401 Permit will be required if the proposed project involves fill in the definable bed, bank or channel of the Santa Ana River or any other drainage feature. A Waste Discharge Permit will be required if ground dewatering is necessary during tunneling and or boring activities.

California Department of Fish and Game

A 1600 Streambed Alteration Agreement will be required. A California Endangered Species Act (CESA) permit will be required if the project results in the "take" of a state listed threatened or endangered species.

United States Fish and Wildlife Service

Either a Section 7 or a Section 10(a) consultation (relative to federal involvement in the project) will be required if the project results in the "take" of a federally listed threatened or endangered species.

California Department of Transportation (Caltrans)

Encroachment permits for crossings of State Route 60 and Interstate 10 will be required. Caltrans Water Pollution Control Plans (WPCP) will also be required as part of the encroachment permit application.

South Coast Air Quality Management District

The project will be required to comply with District Rule 403 requirements controlling construction related fugitive dust emissions.

Union Pacific and Burlington Northern Sante Fe Railways

Encroachment permits will be required for rail line crossings.

San Bernardino and Riverside County Flood Control and Water Conservation Districts

See page 1.0-2 of Intro-duction to FPEIR for corrected text.

Encroachment permits will be required for boring underneath the Santa Ana River and other drainage channels.

County of Riverside and Cities of San Bernardino, Riverside, Grand Terrace, Colton, Corona

Encroachment permits will be required to construct the pipeline in road/right-of-ways. Grading permits will also be required by each of the local jurisdictions where construction occurs outside of the road right of way. In addition to encroachment and grading permits the proposed project will also be required to comply with all local policies related to cultural resources and tree preservation policies. These policies are discussed in more detail in the Aesthetics and Cultural Resources Section of this Program EIR.

The California Department of Health Services, Office of Drinking Water (CDHS)

CDHS will review and have approval authority for potable water facility plans and specifications.

The California Department of Transportation, County of Riverside Department of Transportation, County of San Bernardino Department of Engineering, and each of the cities with facilities proposed within their jurisdiction

These agencies will review and have approval authority over construction of any improvements in public roadways.

Utility Purveyors

Several utility purveyors will require encroachment permits for any facilities encroaching upon underground utility easements in the project area. Public and private water purveyors will be notified and coordination will occur prior to project construction.

5. Consistencies and Inconsistencies of the Proposed Project and Existing Regional Water Plans

San Bernardino Valley Municipal Water District Regional Water Facilities Master Plan

WMWD is proposing to recharge water purchased from the Metropolitan Water District into the San Bernardino Basin Area and then withdraw it as needed. The water would be extracted from the San Bernardino Basin Area via 20 new or existing wells and be transported within City of Riverside and San Bernardino Valley Municipal Water District water lines to connection points near the Santa Ana River where it would be delivered into the proposed 30-mile long RCF. This pipeline would bring water to areas, south and west of the San Bernardino Basin Area.

The proposed project is a part of a larger conjunctive use and management plan for the San Bernardino Basin Area which is outlined in the San Bernardino Valley Municipal Water District (SBVMWD) Regional Water Facilities Master Plan. As presented below, the project is also consistent with the SBVMWD Master Plan water resource management objectives and strategies regarding water supply reliability, controlling high ground water, optimizing the use of imported water and groundwater management.

Improve Water Supply Reliability

Availability of water in the region is subject to the impacts of drought, contamination, natural disasters, political and institutional differences, and regulatory actions. Coordinated use of multiple sources would increase the reliability of the water supply system.

Control High Groundwater

The San Bernardino Basin provides an excellent opportunity to increase the capture of local water, as well as optimize the use of imported water through increased replenishment in the groundwater basin. However, to take full advantage of the replenishment potential, the adverse impacts associated with high groundwater levels in the lower end of the basin must be controlled through an effective groundwater level management strategy.

The proposed project can be utilized to transport water out of the area of historic high groundwater, thus providing an additional outlet for water when groundwater levels become too high in the lower end of the basin.

Optimize Use of Imported Water

Imported water supplies can be halted or severely cut back as a result of drought, natural disaster, aqueduct maintenance or repairs. Reliance on imported water to meet immediate or instantaneous demands renders local purveyors vulnerable to these external factors. Using imported water to supplement the overall long-term water supply for an area as opposed to relying solely on imported water to meet peak demands will reduce the vulnerability to these outside factors.

As part of the proposed project, imported water will be used to replenish the Basin when available and extracted when needed.

Groundwater Management

Groundwater production has been, and will continue to be, the principal means by which many of the local water purveyors meet demand in SBVMWD. Currently, over 80 percent of the total annual supply in SBVMWD's service area consists of groundwater production. Effective management of the groundwater basins to maximize yield, while minimizing the impacts of high groundwater and addressing water quality, requires the implementation of sometimes conflicting operating objectives including: 1) those oriented towards maximizing water levels and storage volumes; 2) those geared to preserving and improving water quality; and 3) those aimed at increasing the basin yield and maximizing groundwater production. Depending on the objective, different strategies may be proposed under specific conditions and basin management must achieve a balance between objectives.

In support of this policy, WMWD intends to conduct replenishment and extraction operations in cooperation with other water agencies who recharge water in and/or extract water from groundwater basins located within the San Bernardino Basin Area, including the parties to the Judgment in the case of Western Municipal Water District of Riverside County, et al. v East San Bernardino County Water District, et al., Riverside Superior Court No. 78426 ("Judgment"), and in compliance with that Judgment.

The California's Colorado River Water Use Plan (California 4.4 Plan)

In late 1996 the Secretary of the Interior, Bruce Babbitt, issued a strongly worded directive to California to reduce its over-reliance on the Colorado River. Noting that other lower basin states such as Arizona and Nevada would soon be using their full entitlements, California was urged to come up with a strategy to live with its legal allotment of 4.4 million acre feet per year. A framework for that strategy, formally know as California's Colorado River Water Use Plan (California 4.4 Plan), was drafted and released in 1997. The plan laid out an array of programs and actions to wean California from its reliance on surplus Colorado River water without major disruption to local economies or to the state's water supply. The proposed project is consistent with the following goals outlined in the draft 4.4 Plan:

- Develop water replenishment and conjunctive use programs to increase normal and dry year water supplies;
- Encourage water exchanges;
- Implement administrative actions necessary for effective use and management of water supplies;
- Encourage improved reservoir management and operations;
- Develop drought and surplus water management plans;
- Encourage coordinated project operations for increased water supply yield and groundwater management.

6. Effects Found Not Significant

Effects Found Not Significant During Preparation of the Initial Study

The California Environmental Quality Act (CEQA) provides that an EIR shall focus on the significant effects on the environment, discussing the effects with emphasis in proportion to their severity and probability of occurrence. Effects dismissed in an Initial Study as clearly insignificant and unlikely to occur need not be discussed further in the EIR unless information inconsistent with the finding in the Initial Study is subsequently received.

Section of 21100 (c) of the Public Resources Code states that an EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR. Section 15128 of the CEQA Guidelines adds, "Such a statement may be contained in an attached copy of an Initial Study."

The Initial Study prepared for the Riverside Corona Feeder project (Appendix A) concluded that the proposed project would not result in significant impacts to the following: Aesthetics, Agricultural Resources, Land Use/Planning, Population and Housing, Public Services, Transportation and Traffic, Utilities and Service Systems, Mineral Resources and Recreation. These issue areas are not discussed further in this EIR. Subsequent to the Initial Study, potential significant impacts to aesthetics and transportation were identified. The basis for elimination of each relevant impact in these issue areas is documented in the appended Notice of Preparation (NOP) document (Appendix A).

II. Significant Environmental Effects and Proposed Mitigation Measure Measures

1. Aesthetics

Potential aesthetic impacts resulting from the proposed project were addressed in the Notice of Preparation (NOP) and were determined to have no impact or a less than significant impact (NOP, Appendix A). In response to the NOP, a comment letter raised the issue of the potential loss of existing landscaping and mature street trees as a potentially significant aesthetic impact that could result from the proposed pipeline project. The focus of the following analysis is related to such potential impacts.

Aesthetic or scenic resources refer to what is seen as being visually pleasing or beautiful. Because "beauty is in the eye of the beholder," this aspect of environmental impact analysis is inherently a somewhat subjective issue. It is not the purpose of this section of the EIR to try to determine if the existing landscaping in one area is more pleasing to the eye than landscaping in another area. Rather, this analysis will address definable thresholds of significance related to the respective local jurisdictional policies, specified sizes or ages of plant material, designated scenic resources, and known landmarks to determine if the proposed project has significant negative aesthetic effects.

Environmental Setting

The project site is located within the Santa Ana River valley of southern California. On clear days, scenic views of the San Gabriel and San Bernardino Mountains to the north and east, and the Santa Ana and San Jacinto Mountains to the south exist from the valley floor. The proposed Riverside Corona Feeder (RCF) pipeline winds its way through the valley and hills. Most of the jurisdictions that the proposed project traverses are old established communities that may have mature street trees, agricultural windrows, or other landscaping that is mature and not easily replaceable from an aesthetic standpoint. The communities through which the project winds were historically citrus producing communities. Some of these jurisdictions or areas still maintain their sense of identity and aesthetic value from the existing historic citrus landscape which includes the citrus trees themselves, windrows of eucalyptus trees and rows of palms that helped define the edges of groves and entries to home sites.

Landscapes can have both aesthetic and cultural (historic) value and are categorized in two broad groups, "Designed Landscapes" and "Vernacular Landscapes." A Designed Landscape is a landscape that is consciously designed or laid out by a landscape architect, master gardener, architect, or horticulturist according to design principles, or an amateur gardener working in a recognized style or tradition. Public examples typically include parks, campuses, and street parkways and medians. A Vernacular Landscape is a landscape that evolved through use by the people whose activities shaped that landscape. Function plays a significant role in vernacular landscapes. They can be a single property such as a farm or a collection of properties such as a district of historic farms. Examples include rural villages, industrial complexes, and agricultural landscapes.

The proposed project alignment may impact both Designed and Vernacular landscapes. The City of Riverside has made an effort to preserve both street trees (designed landscapes) and the

historic citrus landscape (vernacular landscapes) throughout its greenbelt area. Riverside's commitment to these aesthetic resources is reflected in its policies, ordinances and staffing. Similar vernacular landscapes exist elsewhere along the proposed alignment in Grand Terrace and the County of Riverside's Highgrove area.

Criteria for Determining Significance

Impacts resulting from the proposed project would be considered significant if the project:

- Substantially damage scenic/aesthetic resources, including, but not limited to, trees, rock outcroppings, and historic buildings.

Project Compliance with Existing Regulations

Each jurisdiction along the project alignment has its own unique rules governing the removal of or injury to street trees and other landscaping. The following summarizes each jurisdiction's requirements related to this issue.

City of San Bernardino

The City of San Bernardino General Plan includes the Urban Design for Public Spaces Element which addresses "the physical and visual character of the San Bernardino planning area [and] determines to a large degree the City's environmental quality of life and image." Policy 5.3.10 "require[s] that street trees be adequately maintained and replaced if removed due to damage or health." The proposed project will be required to address loss of street trees and important landscaping within the City of San Bernardino pursuant to this policy. City Public Works Department Encroachment Permit(s) for the construction will grant permission for removal and will likely require replacement "in-kind and –like" (same species and similar size) landscaping and street trees (San Bernardino). Potentially sensitive areas within San Bernardino may include mature trees in the vicinity of the Santa Ana River, and landscape/streetscape improvements around Hospitality Lane.

City of Colton

The City of Colton General Plan includes an Open Space and Conservation Element that addresses the desire of the City to establish and maintain "street tree planting and landscaped medians." Title 12 of the City of Colton Municipal Code regulates the removal, trimming and disturbance of street trees, shrubs and plants in public streets, planting strips, parkways or alleys. All or some of Sections 12.20.040, 12.20.50, and 12.20.70 may apply to the proposed project. Generally these sections require that no person, firm or corporation maintaining any pipes or underground conduits shall trim, prune, plant, injure or interfere with any tree, shrub or plant upon any public street, planting strip, parkway or alley in the city without permission from the recreation and parks director. The recreation and parks director is authorized to grant a permit at his discretion, provided, however, such authority shall not arbitrarily be withheld.

City of Grand Terrace

The City of Grand Terrace's General Plan does not identify street trees or landscaping as an aesthetic resource within the City. Per personal communication with City staff (Grand Terrace) the City would simply require the replacement of like species of trees when the encroachment permit for work within the roadway is issued.

County of Riverside

The County of Riverside Municipal Code Title 12.24 deals with the issue of tree removal in all situations. Permits are typically required, however, Section 12.24.040 exempts from such requirements "any activities conducted by a public utility, subject to the jurisdiction of the public utilities commission or any other constituted public agency, where, to construct and maintain safe operation of facilities under their jurisdiction, trees are removed, pruned, topped or braced."

City of Riverside

City of Riverside General Plan 2010 includes Community Enhancement goals and policies to "support and maintain the community's existing character, [and] to preserve resources that contribute positively to that character." Policy 19.4 addresses the City's commitment to street tree preservation and replacement.

"The City should support the retention of existing street trees and should, where appropriate, require developers to supplement these trees with additional landscaping, emphasizing plant material that epitomizes Southern California, particularly citrus and palm trees, in accordance with City landscape standards." Policy 19.4

The proposed project will be required to address loss of street trees and important landscaping within the City of Riverside pursuant to City landscape standards and the above policy.

Victoria Avenue (the avenue), within the City of Riverside, is listed on the National Register of Historic Places and is a local City Historic Landmark. The portion of the avenue that is located between Arlington Avenue and Boundary Lane is the portion on the National Register. The City Landmark also includes the portion of the avenue between Arlington Avenue and Myrtle Avenue. If federal funding is involved in the RCF project, then the Federal Section 106 process for evaluating impacts to historic resources will be required. Local review and approval must also be acquired from the City of Riverside Cultural Heritage Board with or without federal involvement. As stated in the Cultural Resources section of this EIR, the Secretary of the Interior is responsible for establishing professional standards and providing advice on the preservation of cultural resources listed in or eligible for listing in the National Register of Historic Places, including historic landscapes. The Secretary's Guidelines for the Treatment of Cultural Landscapes are used by the City of Riverside to evaluate impacts and recommend project changes/mitigation for proposed projects that affect Victoria Avenue.

The state of California Department of Parks owns and operates the California Citrus State Historic Park located within the City of Riverside. The primary goal of this park is to preserve the citrus industry-related landscape and interpret it for the public. This park borders Irving Street, within which the proposed project will be located. State permits and approvals would have to be granted if the proposed project required the removal of the citrus and/or palm trees which line Irving Street.

City of Corona

The City of Corona General Plan does not designate any of the project-affected streets as Scenic Highways or Corridors, however, the Community Design and Scenic Highways Element does include "streets with ornamental landscaping, landscape medians and areas containing mature vegetation" as "other scenic resources" within the City. In the City of Corona, removal or replacement of trees next to streets requires a permit issued by the Parks and Community

Services Department pursuant to Corona Municipal Code Section 12.22.070. The City requires the maintenance of replanted trees by the responsible party (WMWD) for a one-year period after planting. The proposed project will be required to address loss of street trees and important landscaping within the City of Corona pursuant to City policy.

Design Considerations

The proposed and alternative alignments are primarily located within street rights-of-way. Since the exact location of the RCF pipe within any given street will be determined as construction documents are prepared, it is not known whether the pipe will impact median, parkway, or parking lot landscaping and/or mature trees.

Environmental Impacts Before Mitigation

Threshold - Substantially damage scenic/aesthetic resources, including, but not limited to, trees, rock outcroppings, and historic buildings.

The proposed project will be located within road or utility rights of way and across some developed parking lots. These proposed alternative alignments will not require the removal of any buildings or rock outcroppings. The project will not create impacts to these scenic resources.

Both Designed and Vernacular Landscapes are located within the potential impact areas of the project alternatives. In some places affected by the proposed project, landscaping is newer and immature. The simple replacement in-kind of such areas disturbed by the project construction would be sufficient to reduce aesthetic impacts to these areas to a less than significant level. A mature wood tree is considered to have a diameter of 8-10 inches or more at 4½ feet off the ground. A palm tree is considered to be mature at 25 feet or more in height.

Other landscaped areas that may be affected by the proposed pipeline construction are considered by the local jurisdiction within which they are located to be a significant aesthetic resource regardless of the age of the landscaping. Mature landscaping can be replaced, but its loss from an aesthetic point of view can be significant. Trying to save the existing plant material and/or replacing it with a greater number of plants to achieve a similar visual affect are common approaches to mitigating such impacts.

The most sensitive aesthetic resource that may be impacted by the proposed project is the Designed Landscaping along Victoria Avenue within the City of Riverside. The landscaping along this street is one of the primary reasons for its designation on the National Register of Historic Places. One or more of the proposed project alternatives includes the portion of Victoria Avenue between Arlington Avenue and Lincoln Avenue (approximately 900 linear feet). Loss of the historic landscape along Victoria Avenue would be considered significant both aesthetically and historically (See the Cultural Resources Section, II-4).

In addition, sensitive Vernacular Landscapes also exist adjacent to the proposed pipeline alternative alignments. Such landscapes include palm rows and citrus trees within the California Citrus State Historic Park and other streets within the City of Riverside Greenbelt area. Other jurisdictions that may have Vernacular Landscapes that include citrus trees and windrows adjacent to (sometimes within) road rights of way where this pipeline is proposed to be located include the County of Riverside in the Highgrove area and Grand Terrace.

Different types and ages of trees respond differently to construction within close proximity of their trunks. Palms have a very limited root structure and are more easily relocated than "wood" trees. Trenching closer than 8 feet of the closest face of a palm tree may be significant depending on the size and location of the palm. Trenching within 30 feet of the drip line of trees other than palms may be significant, depending on the species and age of the tree. Each tree and its related location, soil type, etc. can be affected differently by trenching and construction activities.

The Santa Ana River contains sensitive natural vegetation. At the proposed river crossing, the vegetation consists of a mix of riparian communities, including Southern Willow Scrub and Mule-fat Scrub. Loss of mature riparian vegetation within the Santa Ana River would be considered significant both aesthetically and biologically (See the Biological Resources Section, II-3).

Loss or significant damage to existing Designed, Vernacular Landscapes, and/or natural riparian vegetation that function as scenic resources is considered significant.

Proposed Mitigation Measures

The following measures shall be implemented to eliminate or reduce potentially significant impacts to aesthetic resources.

MM Aes 1: Plants and trees removed or damaged by the proposed project shall be replaced pursuant to the standards and requirements of each jurisdiction within which the loss or damage occurs.

MM Aes 2: The location of all existing mature trees, palms and other landscaping shall be noted on the construction drawings that will be prepared for this project to facilitate review and proper permitting by the affected jurisdiction. Generally, a mature wood tree is considered to have a diameter of 8-10 inches or more at 4½ feet off the ground. A palm tree is considered to be mature at 25 feet or more in height. Citrus trees are mature when commercial levels of fruit-bearing occur at about 5 to 7 years.

MM Aes 3: If construction activities that require digging are located closer than eight feet from a mature palm, (over 25 feet in height) a certified arborist shall evaluate the specific palm(s) to determine if the palm can remain in place, be relocated successfully or if project redesign may be warranted. If the palm must be removed, replacement shall be pursuant to the requirements of the jurisdiction within which the palm(s) is/are located.

MM Aes 4: If construction activities that require digging are located closer than thirty feet from the drip line of a mature wood tree, a certified arborist shall evaluate the specific tree(s). The arborist will recommend the course of action most likely to preserve the tree including but not limited to trimming to help with stability, no action and the tree remains in place as is, project redesign, or the means to achieve a successful relocation. If the tree must be removed, replacement shall be pursuant to the requirements of the jurisdiction within which the tree(s) is/are located.

Summary of Environmental Effects after Mitigation Measures are Implemented

After mitigation designed to evaluate and replace existing trees and landscaping, as appropriate, is implemented, potential significant scenic/aesthetic impacts due to the loss of trees and landscaping will be reduced to less than significant levels.

2. Air Quality

Potential impacts related to applicable air quality plans and objectionable odors were found to have less than significant impacts in the NOP prepared for this project (Appendix A). The following discussion summarizes the Air Quality Impact Analysis Report and the Riverside-Corona Feeder Pipeline Project Air Quality Impact Analysis Addendum memorandum (both in Appendix B). The focus of the following discussion is related to the potential impacts related to air quality standards, sensitive receptors and cumulative air quality impacts.

Environmental Setting

The proposed project is located in the South Coast Air Basin (SCAB, which includes Orange County, together with the coastal and mountain portions of Los Angeles, Riverside and San Bernardino counties. Regionally, the interaction of land (offshore) and sea (onshore) breezes control local wind patterns in the area. Daytime winds typically flow from the coast to the inland areas, while the pattern typically reverses in the evening, flowing from the inland areas to the ocean (SCAQMD). Air stagnation may occur during the early evening and early morning during periods of transition between day and nighttime flows. The region also experiences periods of hot, dry winds from the desert, known as Santa Ana winds. The prevailing wind however, is generally from west to east (Figure II-2a).

Regional and local air quality within the SCAB is affected by topography, atmospheric inversions, and dominant onshore flows. Topographic features such as the San Gabriel and San Bernardino Mountains form natural barriers to the dispersion of air contaminants. The presence of atmospheric inversions limits the vertical dispersion of air pollutants. With an inversion, the temperature initially follows a normal pattern of decreasing temperature with increasing altitude, however, at some elevation, the trend reverses and temperature begins to increase as altitude increases. This transition to increasing temperature establishes the effective mixing height of the atmosphere and acts as a barrier to vertical dispersion of pollutants. Dominant onshore flow provides the driving mechanism for both air pollution transport and pollutant dispersion.

Air pollution generated in coastal areas is transported east to inland receptors by the onshore flow during the daytime until the mountains are confronted, limiting the horizontal dispersion of pollutants. The result is a gradual degradation of air quality from the coastal areas to the inland areas. This degradation is most evident with the photochemical pollutants such as ozone. The greatest ozone problems are recorded at South Coast Air Quality Management District (SCAQMD) monitoring stations, located at the base of the San Gabriel and San Bernardino mountains, from the City of Santa Clarita, east to the City of San Bernardino.

Climate

Terrain and geographical location determine climate in the SCAB. The project site lies south of the San Gabriel and San Bernardino Mountains and north of the Santa Ana Mountains. The climate in the SCAB is a typical southern California's Mediterranean climate, which is characterized by dry, warm summers and mild winters. Winters typically have infrequent rainfall, light winds, and frequent early morning fog and clouds that turn to hazy afternoon sunshine.

The following factors govern micro-climate differences among inland locations within the SCAB:

- The distance of the mean air trajectory from the site to the ocean;
- The site elevation;
- The existence of any intervening terrain that may affect airflow or moisture content;
- The proximity to canyons or mountain passes.

As a general rule, locations farthest inland from the ocean have the hottest summer afternoons, the lowest rainfall, and the least amount of fog and clouds. Foothill communities in the SCAB have greater levels of precipitation, cooler summer afternoons and may be exposed to wind funneling through nearby canyons during Santa Ana wind conditions. Terrain generally steers local wind patterns. The project site is located in the cities of San Bernardino, Colton and Grand Terrace, Riverside and Corona, and some unincorporated areas within Riverside County. All of these communities are located within the eastern portion of the SCAB.

Precipitation and Temperature

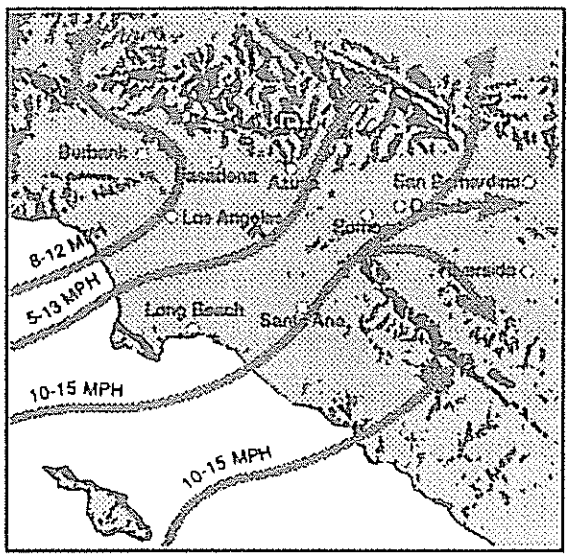
Annual average temperatures in the SCAB are typically in the low to mid-60s (degrees Fahrenheit). Temperatures above 100 degrees are recorded for all portions of the SCAB during the summer months. In winter months, temperatures in the lower 30s can be experienced in parts of the SCAB, including the project area.

The rainy season in the SCAB is from November to April. Summer rainfall however, can occur as widely scattered thunderstorms near the coast and in the mountainous regions in the eastern SCAB. Rainfall averages vary over the SCAB. The City of Riverside averages 9 inches of rainfall, while the City of Los Angeles averages 14 inches. Rainy days vary from 5 to 10 percent of all days in the SCAB, with the most frequent occurrences of rainfall near the coast.

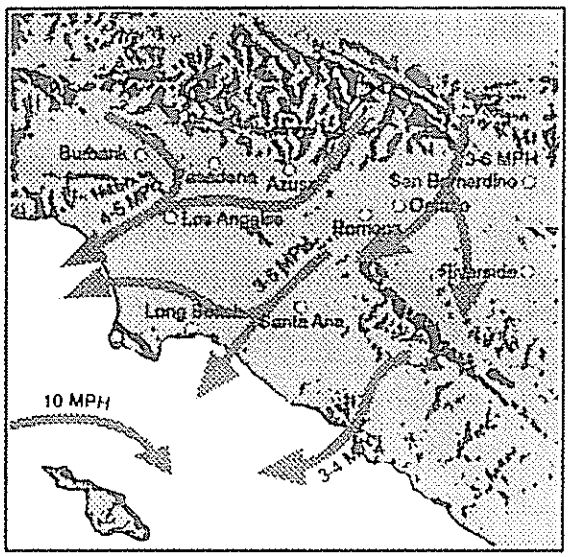
Categories of Emission Sources

Air pollutant emissions sources are typically grouped into two categories: stationary and mobile sources. These emission categories are defined and discussed in the following subsections.

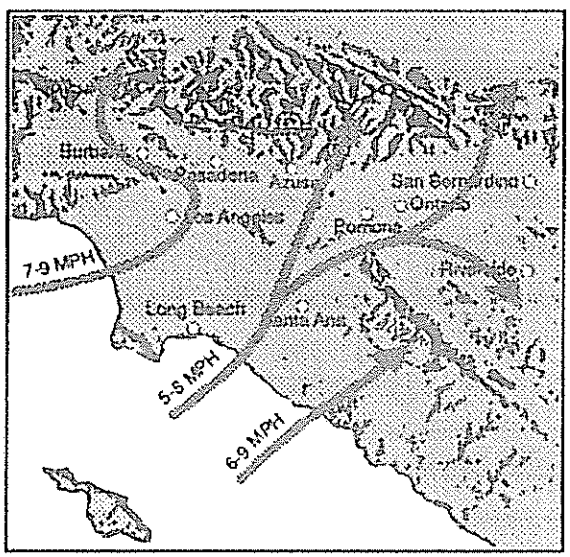
Stationary sources are divided into two major subcategories: point and area sources. Point sources consist of a single emission source with an identified location at a facility. A single facility could have multiple point sources located onsite. Stationary point sources are usually associated with manufacturing and industrial processes. Examples of point sources include boilers or other types of combustion equipment at oil refineries, electric power plants, etc. Area sources are small emission sources that are widely distributed, but are cumulatively substantial because there may be a large number of sources. Examples include residential water heaters; painting operations; agricultural fields and landfills.



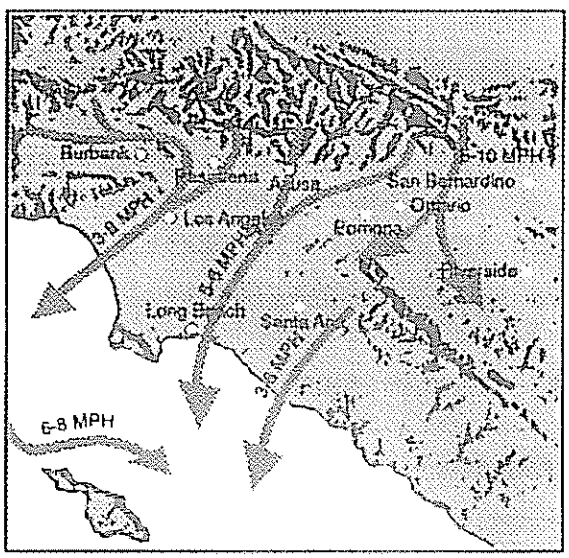
TYPICAL SUMMER DAYTIME OCEAN WINDS
(Noon to 7:00 PM)



TYPICAL SUMMER NIGHT DRAINAGE WINDS
(Midnight to 5:00 AM)



TYPICAL WINTER DAYTIME OCEAN WINDS
(Noon to 5:00 PM)



TYPICAL WINTER NIGHT DRAINAGE WINDS
(Midnight to 7:00 AM)

South Coast Air Quality Management District
CEQA Air Quality Handbook

Figure II-2a
Dominant Wind Patterns of the South Coast Air Basin
Riverside-Corona Feeder Project,
Riverside County and San Bernardino County
California

Mobile sources are motorized vehicles, which are classified as either on-road or off-road. On-road mobile sources typically include automobiles and trucks that operate on public roadways. Off-road mobile sources include aircraft, ships, trains, and self-propelled construction equipment that operate off public roadways. Mobile source emissions are accounted for as both direct source emissions (those directly emitted by the individual source) and indirect source emissions, which are sources that by themselves do not emit air contaminants but indirectly cause the generation of air pollutants by attracting vehicles. Examples of indirect sources include office complexes, commercial and government centers, sports and recreational complexes.

Air Pollution Constituents

Air pollutants are classified as either primary, or secondary, depending on how they are formed. Primary pollutants are generated daily and are emitted directly from a source into the atmosphere. Examples of primary pollutants include carbon monoxide (CO), nitrogen dioxide (NO_2) and nitric oxide (NO)—collectively known as oxides of nitrogen (NOx), sulfur dioxide (SO_2), particulates (PM-10 and PM-2.5) and various hydrocarbons (HC) or volatile organic compounds (VOC), which are also referred to as reactive organic compounds (ROC). The predominant sources of air emissions generated by the proposed project will include: the mobile construction equipment, the diesel powered electric generators, and the heavy-duty diesel trucks.

Secondary pollutants are created over time and occur within the atmosphere as chemical and photochemical reactions take place. An example of a secondary pollutant is ozone (O3), which is one of the products formed when NOx reacts with HC, in the presence of sunlight. Other secondary pollutants include photochemical aerosols. Secondary pollutants such as ozone represent major air quality problems in the SCAB.

The Federal Clean Air Act of 1970, established the National Ambient Air Quality Standards (NAAQS). Six "criteria" air pollutants were identified using specific medical evidence available at that time, and NAAQS were established for those chemicals. The State of California has adopted the same six chemicals as criteria pollutants, but has established different allowable levels. The six criteria pollutants are: carbon monoxide, nitrogen dioxide, ozone, lead, atmospheric particulates, and sulfur dioxide. A more detailed discussion of each is found in Appendix B.

- **Carbon Monoxide (CO)** – A colorless, odorless toxic gas produced by incomplete combustion of carbon-containing fuels. Concentrations of CO are generally higher during the winter months when meteorological conditions favor the build-up of primary pollutants. Motor vehicles are the major source of CO in the SCAB, although various industrial processes also emit CO through incomplete combustion of fuels.

- **Oxides of Nitrogen (NOx)** – Important forms of nitrogen oxide in air pollution are nitric oxide (NO) and nitrogen dioxide (NO_2). The principal form of nitrogen oxide produced as a byproduct of fuel combustion is nitric oxide (NO), but NO reacts quickly with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NOX. Combustion in motor vehicle engines, power plants, refineries and other industrial operations, as well as ships, railroads and aircraft, are the primary sources of NOX. Although NO_2 concentrations have not exceeded national standards since 1991 and the

state hourly standard since 1993, NOX emissions remain of concern because of their contribution to the formation of O3 and particulate matter.

- **Ozone (O_3)** – A colorless toxic gas that irritates the lungs and damages materials and vegetation. O_3 is one of a number of substances called photochemical oxidants that is formed when volatile organic compounds (VOC) and NOx react in the presence of ultraviolet sunlight. O_3 concentrations are higher in the SCAB than anywhere else in the nation and the damaging effects of photochemical smog are generally related to the concentration of O_3. Conditions that lead to high levels of O_3 are adequate sunshine, early morning stagnation in source areas, high surface temperatures, strong and low morning inversions, greatly restricted vertical mixing during the day, and daytime subsidence that strengthens the inversion layer.
- **Lead (Pb)** - Lead concentrations once exceeded the state and federal air quality standards by a wide margin, but have not exceeded state or federal air quality standards at any regular monitoring station since 1982. Though special monitoring sites immediately downwind of lead sources recorded very localized violations of the state standard in 1994, no violations have been recorded at these stations since 1996.
- **Atmospheric Particulates (PM)** – A large portion of total suspended particulate (TSP) is fine particulate matter. PM-10 consists of extremely small suspended particles or droplets 10 microns or smaller in diameter that can lodge in the lungs, contributing to respiratory problems. PM-2.5 is defined as particulate matter with diameter less than 2.5 microns. PM-10 arises from such sources as road dust, agriculture, diesel soot, combustion products, tire and brake abrasion, construction operations, and fires. It is also formed from NO and SO_2 reactions with ammonia. PM-10 scatters light and significantly reduces visibility. PM-2.5 consists mostly of products from the reaction of NOx and SO_2 with ammonia, secondary organics and finer dust particles. The United States Environmental Protection Agency (USEPA) established its PM-2.5 standard in July 1997. On June 20, 2002, the California Air Resources Board (ARB) approved an annual average standard for particulate matter smaller than 2.5 micrometers in aerodynamic diameter (PM2.5) of 12 mg/m^3.
- **Sulfur Dioxide (SO_2)** - A colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Although SO_2 concentrations have been reduced to levels well below state and federal standards, further reductions in SO_2 emissions are needed because SO_2 is a precursor to sulfate and PM-10.
- **Volatile Organic Compounds (VOCs)** - It should be noted that there are no state or federal ambient air quality standards for VOCs because they are not classified as criteria pollutants. VOCs are regulated, however, because a reduction in VOC emissions reduces certain chemical reactions, which contribute to the formation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, contributing to higher PM-10 and lower visibility levels. Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOC because of interference with oxygen uptake. In general, ambient VOC concentrations in the atmosphere are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis, even at low concentrations. Some hydrocarbon components classified as

VOC emissions are thought or known to be hazardous. Benzene, for example, is a hydrocarbon component of VOC emissions that is known to be a human carcinogen.

Monitored Air Quality

The Southern California Air Quality Management District (SCAQMD) performs extensive air quality monitoring throughout the SCAB and performs monitoring for carbon monoxide (CO), oxides of nitrogen (NOx), sulfur dioxide (SO_2), PM10, and reactive organic compounds (ROC), in addition to nitrogen dioxide (NO_2), ozone (O_3), and PM2.5. Ozone is a secondary pollutant that forms from photochemical reactions with NOX and ROC precursor pollutants while PM2.5 is both directly emitted and forms in the atmosphere as a secondary pollutant.

The project area is within SCAQMD Source Receptor Areas (SRA) 22, 23, 34, and 35. The most recent published data for these source receptor areas is presented in Tables II-2-A through II-2-D, Air Quality Monitoring Summary 1991-2001. This data shows that the baseline air quality conditions in the project area include occasional events of very unhealthful air. Even so, the frequency of smog alerts has dropped significantly in the last decade.

As shown in Tables II-2-A through II-2-D, no exceedance of Federal or State standards were reported in the project area for three of the six criteria pollutants including: carbon monoxide (CO), nitrogen dioxide (NOx) or sulfur dioxide (SO_2).

The greatest recognized air quality problem in the SCAB is ozone. The yearly monitoring records document that prior to 1995, approximately one-third or more of the days each year experienced a violation of the state hourly ozone standard, with around ten days annually reaching first stage alert levels of 0.20 parts per million (ppm) for one hour. Ozone levels, however, have dropped significantly in the last few years with approximately one-tenth of the days each year experiencing a violation of the state hourly ozone standard in 2001. Locally, no first stage alert for ozone (0.20 ppm/hour) has been called by SCAQMD in over two years, and no second stage alert (0.35 ppm/hour) has been called by SCAQMD in the last ten years.

Over the last decade the State air quality standard for PM-10 has been consistently exceeded in the project area, and the Federal standard has been exceeded in all but two years. SCAQMD monitoring data also shows that all of the source receptor areas the project is within are exceeding the federal annual and 24-hour standards since SCAQMD began monitoring PM-2.5 in 1999.

TABLE II-2-A. SOURCE RECEPTOR AREA 22
AIR QUALITY MONITORING SUMMARY 1991-2001

	Pollutant/Standard	Monitoring Year										
	Source: CARB 1/25/99	1991	1992	1993	1994	199	1996	1997	1998	1999	2000	2001
No. Days Exceeded	**Ozone [a]:**											
	California Standard:											
	1-Hour - 0.09 ppm	103 [a]	57 [a]	71 [a]	83 [a]	75 [a]	8 [a]	[c]	[c]	[c]	[c]	[c]
	Federal Primary Standards:											
	1-Hour - 0.12 ppm	54 [a]	16 [a]	17 [a]	14 [a]	23 [a]	2 [a]	[c]	[c]	[c]	[c]	[c]
	8-Hour - 0.08 ppm [a]							[c]	[c]	[c]	[c]	[c]
	Max 1-Hour Conc. (ppm)	0.22	0.23	0.16	0.17	0.1	0.16	[c]	[c]	[c]	[c]	[c]
	Max 8-Hour Conc. (ppm) [a]							[b]	[b]	[b]	[b]	[b]
No. Days Exceeded	**Carbon Monoxide [c]:**											
	California Standard:											
	1-Hour - 20 ppm	0	0	0	0	0	0	0	0	0	0	0
	8-Hour - 9.0 ppm	0	0	0	0	0	0	0	0	0	0	0
	Federal Primary Standards:											
	1-Hour - 35 ppm	0	0	0	0	0	0	0	0	0	0	0
	8-Hour - 9.5 ppm	0	0	0	0	0	0	0	0	0	0	0
	Max 1-Hour Conc. (ppm)	14.0	11.0	10.0	11.0	9.0	9.0	7.0	6.0	7.0	5.0	5.0
	Max 8-Hour Conc. (ppm)	6.9	6.1	6.3	7.3	6.5	5.0	5.8	4.6	4.4	4.3	3.43
No. Days Exceeded	**Nitrogen Dioxide:**											
	California Standard:											
	1-Hour - 0.25 ppm	0	0	0	0	0	0	0	0	0	0	0
	Federal Standard:											
	Annual Standard - 0.053ppm	No [e]	No [e]	No [e]	No [e]	No	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.16	0.23	0.14	0.18	0.1	0.11	0.12	0.10	0.13	0.10	0.15
No. Days Exceeded	**Sulfur Dioxide:**											
	California Standards:											
	1-Hour – 0.25 ppm	0	0	0	0	0	0	0	0	0	0	0
	24-Hour – 0.04 ppm	0	0	0	0	0	0	0	0	0	0	0
	Federal Primary Standards:											
	24-Hour – 0.14 ppm	0	0	0	0	0	0	0	0	0	0	0
	Annual Standard – 0.03 ppm	No [e]	No [e]	No [e]	No [e]	No	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.02	0.02	0.02	0.02	0.0	0.01	0.04	0.03	0.04	0.03	0.02
	Max. 24-Hour Conc. (ppm)	0.00	0.02	0.01	0.00	0.0	0.00	0.00	0.010	0.00	0.01	0.01
No. Days	**Inhalable Particulates (PM-**											
	California Standards:											
	24-Hour - 50 ug/m^3	[c]	[c]	31 [a]	35 [a]	28 [a]	19 [a]	25 [a]	23 [a]	31 [a]	28 [a]	18 [a]
	Annual Geometric Mean	[c]	[c]	43.9	45.3	44.	39.7	38.5	41.0 [a]	49.0	43.4	39.3
No Days	Federal Primary Standards:											
	24-Hour – 150 ug/m^3	[c]	[c]	1 [a]	0 [a]	2 [a]	0 [a]	1 [a]	0 [a]	0 [a]	0 [a]	0 [a]
	Annual Arithmetic Mean	[c]	[c]	53.0 [a]	52.9	54.	48.8	49.6	46.7 [a]	55.4	49.3	44.0
	Max. 24-Hour Conc. (ug/m^3)	[c]	[c]	164.	139.	177	94.0	158.	93.0 [a]	136.	129.	109.
No Days Exceeded	**Inhalable Particulates (PM-**											
	Federal Primary Standards:											
	Annual Standard – 15ug/m^3									Yes [e]	Yes [e]	Yes [e]
	24-Hour – 65 ug/m^3									9 [d]	11 [d]	19 [d]
	Annual Arithmetic Mean									30.9	28.2	31.3
	Max. 24-Hour Conc. (ug/m^3)									111.	119.	98.0

Note:
[a] Data is only available for ozone (1991-96) and PM-10 (1993-2001)
[b] 1997 is the first year of SCAQMD records for the Federal 8-hour Ozone standard.
[c] See Table B-2 (SRA 23).
[d] 1999 is the first year of SCAQMD records for the Federal 24-hour PM-2.5 standard
[e] Exceedance of the annual standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year.

Source: Air Quality Impact Analysis Riverside-Corona Feeder Project, Webb, 2003

TABLE II-2-B. SOURCE RECEPTOR AREA 23
AIR QUALITY MONITORING SUMMARY- 1991-2001

	Pollutant/Standard	Monitoring Year										
	Source: CARB 1/25/99	1991	1992	1993	199	1995	1996	1997	1998	1999	2000	2001
No. Days Exceeded	**Ozone [a]:**											
	California Standard:											
	1-Hour - 0.09 ppm	139 [b]	142 [b]	132 [b]	134	109 [c]	92 [c]	89 [c]	70 [c]	38 [c]	41 [c]	41 [c]
	Federal Primary Standards:											
	1-Hour - 0.12 ppm	79 [b]	75 [b]	71 [b]	77 [c]	52 [c]	36 [c]	13 [c]	32 [c]	3 [c]	3 [c]	7 [c]
	8-Hour - 0.08 ppm [a]							55 [c]	57 [c]	27 [c]	29 [c]	34 [c]
	Max 1-Hour Conc. (ppm)	0.24	0.26	0.26	0.2	0.21	0.20	0.19	0.20 [c]	0.14	0.14	0.14
	Max 8-Hour Conc. (ppm) [a]							0.13	0.17 [c]	0.11	0.11	0.12
No. Days Exceeded	**Carbon Monoxide [c]:**											
	California Standard:											
	1-Hour - 20 ppm	0	0	0	0	0	0	0	0	0	0	0
	8-Hour - 9.0 ppm	0	0	0	0	0	0	0	0	0	0	0
	Federal Primary Standards:											
	1-Hour - 35 ppm	0	0	0	0	0	0	0	0	0	0	0
	8-Hour - 9.5 ppm	0	0	0	0	0	0	0	0	0	0	0
	Max 1-Hour Conc. (ppm)	14.0	11.0	10.0	11.	9.0	9.0	7.0	6.0	7.0	5.0	5.0
	Max 8-Hour Conc. (ppm)	6.9	6.1	6.3	7.3	6.5	5.0	5.8	4.6	4.4	4.3	3.43
No. Days Exceeded	**Nitrogen Dioxide:**											
	California Standard:											
	1-Hour - 0.25 ppm	0 [b]	0 [b]	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0
	Federal Standard:											
	Annual Standard - 0.053ppm	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.16	0.23	0.14	0.1	0.15	0.11	0.12	0.10 [c]	0.13	0.10	0.15
No. Days Exceeded	**Sulfur Dioxide:**											
	California Standards:											
	1-Hour – 0.25 ppm	0 [b]	0 [b]	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0
	24-Hour – 0.04 ppm	0 [b]	0 [b]	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0
	Federal Primary Standards:											
	24-Hour – 0.14 ppm	0 [b]	0 [b]	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0
	Annual Standard – 0.03 ppm	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.02	0.02	0.02	0.0	0.02	0.01	0.04	0.03 [c]	0.03	0.11	0.02
	Max. 24-Hour Conc. (ppm)	0.00	0.02	0.01	0.0	0.00	0.00	0.00	0.010	0.01	0.04	0.01
No. Days	**Inhalable Particulates (PM-**											
	California Standards:											
	24-Hour - 50 $\mu g/m^3$	41 [b]	39 [b]	42 [b]	41 [c]	38 [c]	19 [c]	41 [c]	42 [c]	46 [c]	68 [c]	78 [a]
	Annual Geometric Mean	65.4	52.5	58.0	55.	51.8	52.0	56.3	48.7 [c]	64.9	54.7	54.3
No Days	Federal Primary Standards:											
	24-Hour – 150 $\mu g/m^3$	2 [b]	0 [b]	4 [b]	1 [c]	4 [c]	1 [c]	1 [c]	0 [c]	1 [c]	0 [c]	0 [a]
	Annual Arithmetic Mean	76.0	62.5	72.4	65.	69.0	61.1	64.9	58.2 [c]	72.3	60.1	63.1
	Max. 24-Hour Conc. ($\mu g/m^3$)	179.	126.	231.	161	219.	162.	163.	116.0	153.	139.	135.
No Days Exceeded	**Inhalable Particulates (PM**											
	Federal Primary Standards:											
	Annual Standard – 15$\mu g/m^3$									Yes [e]	Yes [e]	Yes [e]
	24-Hour – 65 $\mu g/m^3$									9 [d]	11 [d]	19 [d]
	Annual Arithmetic Mean									30.9	28.2	31.3
	Max. 24-Hour Conc. ($\mu g/m^3$)									111.	119.	98.0

Note: [a] 1997 is the first year of SCAQMD records for the Federal 8-hour Ozone standard.
[b] Rubidoux air monitoring station (SRA 23) data summaries for ozone, NO_2, SO_2 and PM-10 during years 1991 -1993.
[c] Metro Riverside County 1 air monitoring station (also in SRA 23) data summaries for CO during all years and ozone, NO_2, SO_2 and PM-10 in years 1994 –2000
[d] 1999 is the first year of SCAQMD records for the Federal 24-hour PM-2.5 standard
[e] Exceedance of the Annual Standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year. *Source: Air Quality Impact Analysis Riverside-Corona Feeder Project, Webb, 2003*

TABLE II-2-C. SOURCE RECEPTOR AREA 34
AIR QUALITY MONITORING SUMMARY- 1991-2001

	Pollutant/Standard	Monitoring Year										
	Source: CARB 1/25/99	1991	1992	1993	199	1995	1996	1997	1998	1999	200	2001
No. Days Exceeded	**Ozone [a]:**											
	California Standard:											
	1-Hour - 0.09 ppm	120[b]	144[b]	134[b]	132	111[b]	80[b]	65[b]	60[b]	26[b]	36[b]	44[c]
	Federal Primary Standards:											
	1-Hour - 0.12 ppm	74[b]	88[b]	65[b]	96[b]	61[b]	38[b]	10[b]	32[b]	4[b]	7[b]	13[c]
	8-Hour - 0.08 ppm[a]							33[c]	43[c]	16[c]	16[c]	31[c]
	Max 1-Hour Conc. (ppm)	0.29	0.28	0.24	0.2	0.22	0.22	0.17	0.17[b]	0.14[b]	0.1	0.16
	Max 8-Hour Conc. (ppm)[a]							0.13	0.20[b]	0.10[b]	0.1	0.13
No. Days Exceeded	**Carbon Monoxide[c]:**											
	California Standard:											
	1-Hour - 20 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0
	8-Hour - 9.0 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0
	Federal Primary Standards:											
	1-Hour - 35 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]
	8-Hour - 9.5 ppm	0[b]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]	0[c]
	Max 1-Hour Conc. (ppm)	6.0[b]	7.0[c]	7.0[c]	9.0	8.0[c]	6.0[c]	8.0[c]	6.0[c]	5.0[c]	5.0	4.0[c]
	Max 8-Hour Conc. (ppm)	4.4[b]	5.9[c]	6.0[c]	6.5	6.3[c]	4.6[c]	6.0[c]	4.6[c]	4.0[c]	4.3	3.25
No. Days Exceeded	**Nitrogen Dioxide:**											
	California Standard:											
	1-Hour - 0.25 ppm	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0
	Federal Standard:											
	Annual Standard - 0.053ppm	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	No[e]
	Max. 1-Hour Conc. (ppm)	0.19	0.14	0.16	0.1	0.17	0.17	0.14	0.15[b]	0.15[b]	0.1	0.13
No. Days Exceeded	**Sulfur Dioxide:**											
	California Standards:											
	1-Hour – 0.25 ppm	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0
	24-Hour – 0.04 ppm	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0
	Federal Primary Standards:											
	24-Hour – 0.14 ppm	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0
	Annual Standard – 0.03 ppm	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	No[e]
	Max. 1-Hour Conc. (ppm)	0.05	0.02	0.01	0.0	0.01	0.01	0.01	0.02[b]	0.01[b]	0.0	0.01
	Max. 24-Hour Conc. (ppm)	0.01	0.01	0.00	0.0	0.00	0.00	0.00	0.010	0.010	0.0	0.01
No. Days	**Inhalable Particulates (PM-**											
	California Standards:											
	24-Hour - 50 µg/m³	41[b]	31[b]	34[b]	38[b]	35[b]	35[b]	29[b]	20[b]	36[b]	31[b]	34[a]
	Annual Geometric Mean	57.7	48.9	46.3	52.	50.6	48.2	47.6	43.3[b]	54.3[b]	47.	43.8
No Days	Federal Primary Standards:											
	24-Hour – 150 µg/m³	0[b]	0[b]	0[b]	0[b]	2[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[a]
	Annual Arithmetic Mean	63.1	56.1	57.1	60.	61.0	55.1	53.7	50.2[b]	60.2[b]	52.	50.5
	Max. 24-Hour Conc. (µg/m³)	127.	105.	143.	147	178.	130.	122.	101.0	116.0	108	105.
No Days Exceeded	**Inhalable Particulates (PM**											
	Federal Primary Standards:											
	Annual Standard – 15µg/m³									Yes[e]	Yes	Yes[e]
	24-Hour – 65 µg/m³									3[d]	2[d]	4[d]
	Annual Arithmetic Mean									25.9[d]	24.	24.3
	Max. 24-Hour Conc. (µg/m³)									98.0[d]	72.	74.6

Note:
[a] 1997 is the first year of SCAQMD records for the Federal 8-hour Ozone standard.
[b] Fontana air monitoring station (SRA 34) data summaries for ozone, NO_2, SO_2 and PM-10 during all years, CO in 1991 only, and PM-2.5 in 1999-2000.
[c] San Bernardino air monitoring station (also in SRA 34) data summaries for CO during years 1992-2000.
[d] 1999 is the first year of SCAQMD records for the Federal 24-hour PM-2.5 standard.
[e] Exceedance of the Annual Standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year.

Source: Air Quality Impact Analysis Riverside-Corona Feeder Project, Webb, 2003

TABLE II-2-D. SOURCE RECEPTOR AREA 35
AIR QUALITY MONITORING SUMMARY- 1991-2001

	Pollutant/Standard	Monitoring Year										
	Source: CARB 1/25/99	1991	1992	1993	199	1995	1996	1997	1998	1999	2000	2001
No. Days Exceeded	**Ozone [a]:**											
	California Standard:											
	1-Hour - 0.09 ppm	145 [b]	159 [b]	160 [b]	140	111 [b]	117 [b]	108 [b]	76 [b]	59 [b]	78 [b]	68 [b]
	Federal Primary Standards:											
	1-Hour - 0.12 ppm	91 [b]	103 [b]	95 [b]	98 [b]	61 [b]	65 [b]	35 [b]	43 [b]	12 [b]	11 [b]	21 [b]
	8-Hour - 0.08 ppm [a]							79 [b]	60 [b]	39 [b]	51 [b]	52 [b]
	Max 1-Hour Conc. (ppm)	0.25	0.27	0.27	0.2	0.22	0.22	0.20	0.22 [b]	0.15	0.15	0.16
	Max 8-Hour Conc. (ppm) [a]							0.14	0.19 [b]	0.13	0.13	0.14
No. Days Exceeded	**Carbon Monoxide [c]:**											
	California Standard:											
	1-Hour - 20 ppm	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
	8-Hour - 9.0 ppm	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
	Federal Primary Standards:											
	1-Hour - 35 ppm	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
	8-Hour - 9.5 ppm	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
	Max 1-Hour Conc. (ppm)	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
	Max 8-Hour Conc. (ppm)	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
No. Days Exceeded	**Nitrogen Dioxide:**											
	California Standard:											
	1-Hour - 0.25 ppm	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
	Federal Standard:											
	Annual Standard - 0.053ppm	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
	Max. 1-Hour Conc. (ppm)	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]
No. Days Exceeded	**Sulfur Dioxide:**											
	California Standards:											
	1-Hour – 0.25 ppm	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]
	24-Hour – 0.04 ppm	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]
	Federal Primary Standards:											
	24-Hour – 0.14 ppm	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]
	Annual Standard – 0.03 ppm	No [e]	No [e]	No [e]	No	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.05	0.02	0.01	0.0	0.01	0.01	0.01	0.02 [d]	0.01	0.02	0.01
	Max. 24-Hour Conc. (ppm)	0.01	0.01	0.00	0.0	0.00	0.00	0.00	0.010	0.01	0.01	0.01
No. Days	**Inhalable Particulates (PM-**											
	California Standards:											
	24-Hour - 50 µg/m³	[c]	[c]	[c]	24 [b]	24 [b]	25 [b]	23 [b]	19 [b]	23 [b]	27 [b]	22 [b]
	Annual Geometric Mean	[c]	[c]	[c]	37.	37.4	38.4	35.4	33.9 [b]	40.5	39.7	39.6
No Days	Federal Primary Standards:											
	24-Hour – 150 µg/m³	[c]	[c]	0 [b]	0 [b]	1 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]
	Annual Arithmetic Mean	[c]	[c]	45.3	47.	48.4	46.3	43.2	40.5 [b]	46.6	46.0	46.6
	Max. 24-Hour Conc. (µg/m³)	[c]	[c]	109.	138	172.	128.	103.	97.0 [b]	92.0	109.	102.
No Days Exceeded	**Inhalable Particulates**											
	Federal Primary Standards:											
	Annual Standard – 15µg/m³									[c]	[c]	[c]
	24-Hour – 65 µg/m³									[c]	[c]	[c]
	Annual Arithmetic Mean									[c]	[c]	[c]
	Max. 24-Hour Conc. (µg/m³)									[c]	[c]	[c]

Note:
- [a] 1997 is the first year of SCAQMD records for the Federal 8-hour Ozone standard.
- [b] Redlands air monitoring station (SRA 35) data summaries for ozone and PM-10 during all years.
- [c] See Table B-3 (SRA 34)
- [d] Fontana air monitoring station(also in SRA 34) data summaries for SO_2.
- [e] Exceedance of the Annual Standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year.
- [f] 1999 is the first year of SCAQMD records for the Federal 24-hour PM-2.5 standard

Source: Air Quality Impact Analysis Riverside-Corona Feeder Project, Webb, 2003

Criteria for Determining Significance

Impacts to air quality may be considered potentially significant if the proposed project would:

- Project-generated emissions violate federal or state ambient air quality standards.
- The project contributes a cumulatively considerable net increase of a criteria pollutant in a non-attainment area.
- Project-generated emissions expose sensitive receptors to substantial pollutant concentrations.

While the final determination of whether or not a project is significant is within the purview of the lead agency pursuant to § 15064(b) of the State CEQA Guidelines, the SCAQMD recommends that the following quantitative air pollution thresholds be used by the lead agencies in determining whether the proposed project could result in a significant impact. If the lead agency finds that the proposed project has the potential to exceed these air pollution thresholds, the project should be considered significant. These thresholds have been defined by SCAQMD for the South Coast Air Basin based on scientific data the SCAQMD has obtained and factual data within the federal and state Clean Air Acts. Since the project is located within the South Coast Air Basin and current air quality in the project area is typical of the air basin as a whole, these thresholds are considered valid and reasonable. Each threshold factors is discussed below.

Thresholds for Emissions Related to Construction (Short Term) Activities

Projects in the South Coast Air Basin with construction-related emissions that exceed any of the following thresholds should be considered significant:

- 100 pounds per day or 2.5 tons per quarter-year of NOx;
- 75 pounds per day or 2.5 tons per quarter-year of ROC;
- 550 pounds per day or 24.75 tons per quarter-year of CO; and
- 150 pounds per day or 6.75 tons per quarter-year of SOx or PM-10.

Thresholds for Emissions Related to Operation (Long Term) of the Project

Specific criteria for determining whether the potential air quality impacts of a project are significant are set forth in the SCAQMD Handbook. The criteria for these emissions thresholds include, compliance with the State and National air quality standards and conformity with the existing Air Quality Management Plan (AQMP) for the South Coast Air Basin. The daily operational emissions "significance" thresholds are:

- 55 pounds per day of NOx;
- 55 pounds per day of ROC;
- 550 pounds per day of CO; and
- 150 pounds per day of SOx or PM-10.

For projects that emit toxic air contaminants (TACs) or for project designated as a sensitive receptor within ¼ mile of a facility that emits TACs, the California Air Resources Board (CARB) recommends that a health risk assessment is conducted. If the health risk assessment

determines that TAC emissions either individually or cumulatively result in an individual cancer risk exceeding 10 in 1 million this is considered a significant impact.

Long-term exposure to TACs may also produce non-cancer risks. The California Office of Environmental Health Hazards Assessment (OEHHA) evaluates these non-cancer risks and has established maximum exposure levels also known as chronic reference exposure levels (REL) for each TAC. No adverse health effects are anticipated for exposures at or below the REL. OEHHA established the REL for PM-10 within diesel exhaust as 5 ug/m3. The exposure of PM-10 within diesel exhaust at concentrations equal to the REL represents a non-cancer chronic hazard index level of 1.0. Exposure above a hazard index of 1.0 is considered a significant impact.

With regard to conformity with Federal standards, the U.S. Environmental Protection Agency published "Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule" in the November 30, 1995 Federal Register (40 CFR Parts 6, 51 and 93). These guidelines provide implementing guidance to document Clean Air Act Conformity Determination requirements. 40 CFR Part 1 §51.853(b) establishes conformity thresholds for criteria pollutants (Table II-2-E below). This section requires that a conformity determination is required for each pollutant where the total of direct and indirect emissions in a non-attainment or maintenance area would equal or exceed the identified thresholds. These thresholds are addressed below in the impact analysis discussion. These levels are as follows for the South Coast Air Basin:

Table II-2-E
Federal Conformity Thresholds

Pollutant	Tons/year
ROC	10
NOx	10
CO	100
PM-10	70
SOx	**

** Air Basin is in Federal attainment, or designated as "unclassified"

Project Compliance with Existing Regulations

The Air Quality Management Plan (AQMP) for the SCAB establishes a program of rules and regulations directed at attainment of the State and Federal air quality standards. AQMP control measures and related emission reduction estimates are based on emissions projections for a future development scenario derived from land use, population, and employment characteristics defined in consultation with local governments.

SCAQMD rules and regulations that apply to this project include SCAQMD Rule 403, which governs emissions of fugitive dust. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application

of water or chemical stabilizers to disturbed soils, covering of haul vehicles, the restriction of vehicle speeds on unpaved roads to 15 mph, sweeping of loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishment a permanent, stabilizing ground cover on finished sites.

Design Considerations

In order to reduce impacts related to traffic circulation, biological resources, several major roadways and riparian areas will be tunneled or bored under during pipeline installation. Although the proposed boring/tunneling activities may produce slightly less PM-10 than open trenching, boring/tunneling is also likely to generate more diesel exhaust than trenching due to the type of equipment that will be required.

Environmental Impacts Before Mitigation

Threshold: Air quality impacts would be considered significant if project-generated emissions violate federal or state ambient air quality standards.

Air quality impacts can be divided into short-term and long-term impacts. Short-term impacts will occur during site grading and project construction. Long-term air quality impacts will occur once the project is in operation.

Short-term Impacts

Short-term impacts will include fugitive dust and other particulate matter, as well as exhaust emissions generated by earthmoving activities and operation of grading equipment during site preparation. Short-term impacts will also include emissions generated during tank and pad construction, installation of the connecting piping and roadway paving as a result of operation of equipment, operation of personal vehicles by construction workers, and asphalt off gassing.

Construction of the project has been divided up into eight pipeline segments titled Reaches A through H. Because the pipeline will be constructed in phases, two construction scenarios were chosen for analysis based on worst-case conditions. These two scenarios are construction of Reaches A and C. They were determined to be the worst-case scenario for short-term emissions because these portions of the project include tunneling or boring operations and the largest diameters of pipeline segments. Reach A also includes construction of a pump station. Of the remaining reaches, Reach B was eliminated from analysis because it does not include tunneling or boring operations, Reaches D through E were eliminated from analysis because they are of smaller diameter pipe, shorter lengths, and do not include tunneling or boring operations. Reach H was eliminated from consideration because it is of much smaller diameter and includes boring only under the Gage Canal in one location. Assumptions relevant to model input for short-term emissions estimates are calculated as follows:

Construction of Reach "A": Reach "A" of the project encompasses 8,000 lineal feet of 72-inch diameter pipeline that will be constructed from the southerly terminus of the San Bernardino Valley Municipal Water District Baseline South Feeder, at a point on the north side of the Santa Ana River near the City of Riverside's Rice Thorne Pipeline where it intersects with the Warm Creek Bypass maintenance road in the City of San Bernardino. From that point the pipeline is proposed to be constructed south under the Santa Ana River utilizing micro-tunneling techniques within a 92-inch casing pipe. South of the Santa Ana River, Reach A will continue south through a commercial business park parking lot, south within the right-of-way of Hunts Lane,

under Interstate 10, west on Steel Road to a point approximately 600 feet east of Interstate 215, south through an industrial park to Cooley Drive, south on Cooley Drive, southwesterly on Washington Street then east on Barton Road for approximately 1,100 feet where the pipeline will connect to the 100 CFS mainline meter facility on Barton Road located just east of Reche Canyon Road. The pipeline will be placed underground utilizing boring techniques where it will travel under Hospitality Lane, Interstate 10 and under the flood control facility located just west of Reche Canyon Road. Total micro-tunneling and conventional boring will encompass approximately 2,000 lineal feet. The remainder of the pipeline would be installed using conventional open trenching techniques. In addition, a proposed pump station will be constructed in a vacant lot near the intersection of Orange Show Road and Waterman Avenue in the City of San Bernardino as part of Reach "A." Micro-tunneling, excavation and conventional boring to install the pipeline will be done sequentially. The proposed pump station will be built concurrent with pipeline installation. The construction of the various components of Reach "A" can be summarized as follows:

If micro-tunneling techniques become infeasible due to geologic conditions under the Santa Ana River, open trench construction methods will be utilized for Reach A at the Santa Ana River crossing location.

Installation of Reach "A" Using the Micro-tunneling and Boring Methods: Micro-tunneling is a specific boring technique that utilizes a pit-launched rig to bore a hole and install the casing utilizing an auger spoil (excavated soils) removal system. This technique reduces surface disturbance to areas around the vertical jacking and receiving shafts at each end of the tunneling operation. Surface disturbance will include stockpiles of spoils, spoil removal activities, and equipment and materials storage. Ancillary equipment required by the operation includes an electric motor powered hydraulic pump, an articulating crane, diesel fueled electric generator sets, a front end loader, and haul trucks to remove the spoils. Work crews connected with tunneling operation typically work 24-hours a day until the operation is completed. Removal of the spoils can be limited to daylight hours provided there is room onsite to stockpile the spoils.

Reach "A" - Assumptions relevant to the tunneling/boring include:

- Tunneling will progress at an average rate of 20 to 30 lineal feet per day.
- Tunneling activities will disturb approximately 2.02 acres per day.
- Approximately 9,000 cubic yards of material will be removed during micro-tunneling operations necessitating approximately 600 truckloads of material being exported off-site over a two-month period or a maximum of 17 truckloads per workday.
- Plenty of sites exist within 10 miles of the project site to deposit clean fill material. Therefore, for modeling purposes each truck trip (two truck trips per truckload) is set at 10 miles.
- Two diesel fueled 500 hp electric generators will be used during boring/tunneling operations.
- Approximately 90 truckloads of pipe, casing, and other building materials will be transported to the construction site micro-tunneling operations or a maximum of 7 truckloads per day.
- Evaluating possible sources of pipe and construction materials in the vicinity, each truck trip will be approximately 60 miles or less.

- As many as 25 construction workers may be involved in excavation and pipeline installation activities at the site on the peak day of activities. As defined in the SCAQMD CEQA Handbook (Table A9-5-D) mileage for worker commutes is assumed to average 13.6 miles per trip.
- This study assumes that micro-tunneling activities will occur 24 hours per day. Other construction activities associated with the removal of spoils will occur over a 10 hour workday.

Installation of Reach "A" Using Typical Excavation Techniques: This analysis assumes that this portion of the pipeline will be constructed with standard trenching techniques. Excavation of trenches will depend on several factors including available right-of-way, condition of in-situ material, and groundwater levels. Whenever possible, native material will be used to backfill the remainder of the trench.

Reach "A" - Assumptions relevant to pipeline excavation and construction activities are:

- Trenching will progress at an average rate of 80 lineal feet per day.
- Approximately 0.07 acres per day will be disturbed during pipeline installation.
- Approximately 8 truckloads (heavy-heavy duty diesel trucks with a capacity of 15 cubic yards per truckload of material per day will be transported off-site for removal of asphalt and other miscellaneous materials at 10 miles per trip. Adequate sites exist within 10-mile radius of the project area to deposit waste material.
- Approximately 800 square feet or 0.02 acres of surface area will be covered in asphalt each day requiring approximately 3 truckloads of asphalt and base material. Adequate asphalt batch plants and gravel mining are found within a 10-mile radius of the project area.
- Approximately 300 pipe segments 72-inches in diameter and 20-feet long will be brought to the site (entire Reach A) requiring approximately 2 truckloads per day during approximately 100 workdays. Evaluating possible sources of pipe and construction materials in the vicinity, each truck trip will be approximately 60 miles or less.
- Approximately 5 truckloads of other miscellaneous construction material and equipment per day will be brought to the construction site at 60 miles per trip.
- As many as 25 construction workers may be involved in excavation and pipeline installation activities at the site on the peak day of activities. As defined in the SCAQMD CEQA Handbook (Table A9-5-D) mileage for worker commutes is assumed to average 13.6 miles per trip.
- This study assumes construction equipment is running 10 hours per workday.

Evaluation of Reach A assumes that the proposed pump station will be built at the same time as, either tunneling/boring activities or excavation activities.

Reach "A" - Assumptions relevant to construction of the proposed Pump Station:

- A maximum of ½ acre per day may be disturbed during construction of the pump station.

- Approximately 50 cubic yards of concrete will be used during construction with a maximum of approximately 5 truckloads of concrete in one day at 10 miles per trip.
- Approximately 5 truck trips per day (65 workdays) will occur to bring in construction material and equipment at 60 miles per trip.
- Approximately 2 truckloads of material per day will be transported off-site as a result of site grubbing and clearing at 10 miles per trip.
- As many as 25 construction workers may be involved in excavation and pipeline installation and pump station construction activities at the site on the peak day of activities. As defined in the SCAQMD CEQA Handbook (Table A9-5-D) mileage for worker commutes is assumed to average 13.6 miles per trip.
- A maximum of 2,000 square feet of paint coverage for a period of 10 workdays.
- This study assumes construction equipment is running 10 hours per workday.

Construction of Reach "C": Reach "C" of the project encompasses 29,000 lineal feet of 60-inch diameter pipeline. The easterly terminus of Reach "C" is located at the proposed Turnout No. 1 near the intersection of Rustin Avenue at Marlborough Avenue in the City of Riverside. From that point, construction of Reach "C" will progress west in Marlbourough Avenue, extend south in Chicago Avenue, then west again in Arlington Avenue to the proposed Turnout No. 2 located near the intersection of Arlington Avenue at Hawarden Drive in the City of Riverside. Conventional boring techniques will be utilized to construct under the paved right-of-ways of Iowa Avenue, Interstate 215/State Route 60, Third Street, University Avenue, Martin Luther King Boulevard, and Central Avenue, as well as the Union Pacific rail line located just east of Chicago Avenue. The remainder of Reach "C" will be constructed using typical excavation construction methods. Boring and excavation will be done sequentially.

Boring will be required along approximately 1,900 lineal feet of the pipeline in Reach "C." Casings 84-inches in diameter will be used to encase the pipeline. Boring techniques reduce surface disturbance to areas around each end of the operation. Surface disturbance will include stockpiles of spoils, spoil removal activities, and equipment and materials storage. Ancillary equipment required of the operation includes an electric motor powered hydraulic pumps, an articulating crane, electric generator sets, a front end loader, and haul trucks to remove the spoils. Work crews connected with boring operation typically work 24-hours a day until the boring operation is completed. Removal of the spoils can be limited to daylight hours provided there is room onsite to stockpile the spoils.

Reach "C" - Assumptions relevant to boring include:

- Boring will progress at an average rate of 20 to 30 lineal feet per day.
- Boring activities will disturb approximately 2.02 acres per day.
- Approximately 10,000 cubic yards of material will be removed during boring operations necessitating approximately 667 truckloads of material being exported off-site with a maximum of 18 truckloads per workday. Plenty of sites exist within 10 miles of the boring site to deposit clean fill material. Therefore, for modeling purposes each truck trip (two truck trips per truckload) is set at 10 miles.

- Two diesel fueled 500 hp electric generators will be used during boring operations.
- Approximately 64 truckloads of pipe, casing, and other building materials will be transported to the construction site tunneling operations or a maximum of 5 truckloads per day. Evaluating possible sources of pipe and construction materials in the vicinity, each truck trip will be approximately 60 miles or less.
- As many as 25 construction workers may be involved in excavation and pipeline installation activities at the site on the peak day of activities. As defined in the SCAQMD CEQA Handbook (Table A9-5-D) mileage for worker commutes is assumed to average 13.6 miles per trip.
- This study assumes construction equipment is running 10 hours per workday.

Installation of Reach "C" Using Typical Excavation Techniques: This analysis assumes that this portion of the pipeline will be constructed with standard trenching techniques. Excavation of trenches will depend on several factors including available right-of-way, condition of in-situ material, and groundwater levels. Whenever possible, native material will be used to backfill the remainder of the trench.

Reach "C" - Assumptions relevant to pipeline excavation and construction activities are:

- Trenching will progress at an average rate of 116 lineal feet per day.
- Approximately 0.09 acres per day will be disturbed during pipeline installation.
- Approximately 8 truckloads of material per day will be transported off-site for removal of asphalt and other miscellaneous materials at 10 miles per trip. Adequate sites exist within 10-mile radius of the project area to deposit waste material.
- Approximately 1,000 square feet or approximately 0.02 acres of surface area will be covered in asphalt each day requiring approximately 3 truckloads of asphalt and base material. Adequate asphalt batch plants and gravel mining are found within a 10-mile radius of the project area.
- Approximately 1,105 pipe segments 60-inches in diameter and 20-feet long will be brought to the site requiring approximately 3 truckloads per day. Evaluating possible sources of pipe and construction materials in the vicinity, each truck trip will be approximately 60 miles or less.
- Approximately 5 truckloads of other miscellaneous construction material and equipment per day will be brought to the construction site at 60 miles per trip.
- As many as 25 construction workers may be involved in excavation and pipeline installation activities at the site on the peak day of activities. As defined in the SCAQMD CEQA Handbook (Table A9-5-D) mileage for worker commutes is assumed to average 13.6 miles per trip.
- This study assumes construction equipment is running 10 hours per workday.

Tables II-2-F and II-2-G summarize the results from construction of Reach A as the project is proposed including tunneling under the Santa Ana River. Evaluation of Reach A includes two scenarios: 1) proposed tunneling under the Santa Ana River would occur simultaneously with

pump station construction and 2) excavation for pipeline installation will occur simultaneously with Pump Station Construction. Two scenarios were also evaluated for construction activities for Reach C: 1) emissions related to boring activities and 2) emissions related to excavation for pipeline installation. Evaluation results from construction of Reach "C" using excavation and boring techniques are summarized in Tables II-2-H and II-2-I respectively.

TABLE II-2-F
ESTIMATED SHORT-TERM EMISSIONS - REACH A
Scenario 1- Tunneling/Boring for Pipeline Installation and Concurrent Pump Station Construction

Pollution Source	NOx	CO	ROC	SOx	PM-10
Grading and Boring/Tunneling Activities	NG[1]	NG[1]	NG[1]	NG[1]	6.99
Mobile Off-road Construction Equipment	183.29	73.24	19.86	16.68	13.23
Heavy-duty Truck trips	65.13	48.73	5.88	0.72	1.64
Commuting Traffic	0.64	1.22	0.46	NG[1]	0.12
Stationary Equipment	480.02	293.71	53.46	52.52	26.73
Asphalt Paving	NG[1]	NG[1]	0.52	NG[1]	NG[1]
Architectural Coatings	NG[1]	NG[1]	9.76	NG[1]	NG[1]
Maximum Daily Emissions (lbs/day)	729.08	416.90	89.95	69.92	48.71
Emissions Totals[3] (tons/quarter)	23.70	13.55	2.92	2.27	1.58
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Notes: [1] Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
[2] CO emissions for stationary and mobile equipment were calculated from the CEQA Air Quality Handbook
[3] Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity.
See Appendix B for model output report.

TABLE II-2-G
ESTIMATED SHORT-TERM EMISSIONS – REACH A
Scenario 2-Excavation for Pipeline Installation and Concurrent Pump Station Construction

Pollution Source	NOx	CO	ROC	SOx	PM-10
Grading and Excavation	NG[1]	NG[1]	NG[1]	NG[1]	6.99
Mobile Off-road Construction Equipment	619.12	269.66	65.92	49.55	39.65
Heavy-duty Truck trips	61.72	45.01	5.45	0.68	1.56
Commuting Traffic	0.64	1.22	0.46	NG[1]	0.12
Stationary Equipment	113.91	70.34	12.91	11.03	6.48
Asphalt Paving	NG[1]	NG[1]	0.57	NG[1]	NG[1]
Architectural Coatings	NG[1]	NG[1]	9.76	NG[1]	NG[1]
Maximum Daily Emissions (lbs/day)	795.39	386.23	95.07	61.26	54.80
Emissions Totals[3] (tons/quarter)	25.85	12.55	3.09	1.99	1.78
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Notes: [1] Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
[2] CO emissions for stationary and mobile equipment were calculated from the CEQA Air Quality Handbook
[3] Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity.
See Appendix B for model output report.

TABLE II-2-H
ESTIMATED SHORT-TERM EMISSIONS – REACH C
Scenario 1-Boring For Pipeline Installation

Pollution Source	NOx	CO	ROC	SOx	PM-10
Grading and Excavation	NG[1]	NG[1]	NG[1]	NG[1]	27.25
Mobile Off-road Construction Equipment	76.19	32.14	8.78	6.63	6.04
Heavy-duty Truck trips	32.39	26.48	3.09	0.36	0.81
Commuting Traffic	0.64	1.22	0.46	NG[1]	0.12
Stationary Equipment	432.00	264.00	48.00	48.00	24.00
Maximum Daily Emissions (lbs/day)	541.22	323.84	60.33	54.99	58.22
Emissions Totals[3] (tons/quarter)	17.59	10.52	1.96	1.78	1.89
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Notes: [1] Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
[2] CO emissions for stationary and mobile equipment were calculated from the CEQA Air Quality Handbook
[3] Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity.
See Appendix B for model output report.

TABLE II-2-I
ESTIMATED SHORT-TERM EMISSIONS- REACH C
Scenario 2 - Excavation for Pipeline Installation

Pollution Source	NOx	CO	ROC	SOx	PM-10
Grading and Excavation	NG[1]	NG[1]	NG[1]	NG[1]	1.21
Mobile Off-road Construction Equipment	512.02	228.56	54.84	39.50	32.46
Heavy-duty Truck trips	36.13	26.29	3.20	0.40	0.91
Commuting Traffic	0.64	1.22	0.46	NG[1]	0.12
Stationary Equipment	65.89	40.63	7.45	6.51	3.75
Asphalt Paving	NG[1]	NG[1]	0.05	NG[1]	NG[1]
Maximum Daily Emissions (lbs/day)	614.68	296.70	66.00	46.41	38.45
Emissions Totals[3] (tons/quarter)	19.98	9.64	2.15	1.51	1.25
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Notes: [1] Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
[2] CO emissions for stationary and mobile equipment were calculated from the CEQA Air Quality Handbook
[3] Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity.
See Appendix B for model output report.

Evaluation of Tables II-2-F through II-2-I indicates that projected NOx emissions are above the SCAQMD recommended daily and quarterly thresholds in both Reaches "A" and "C" and ROC emissions are above the SCAQMD recommended daily and quarterly thresholds during construction of Reach A only. The primary sources of NOx and ROC emissions are the mobile construction equipment, diesel powered electric generator, and heavy-duty diesel trucks. Exceedance of these thresholds is considered significant without mitigation.

To determine the impacts that would result from open trenching across the Santa Ana River, a brief comparative analysis was made between the two possible construction methods. The air quality impacts that result from the 900-foot crossing constructed using micro-tunneling versus open cut excavation construction techniques are compared below. All applicable construction assumptions from the 2003 Air Quality Impact Analysis report were used for the following analysis.

Construction emissions were estimated using the tables for construction of Reach A found in Appendix A of the 2003 Air Study. Tables II-2-Ia and II-2-Ib summarize the daily and quarterly emissions from either microtunneling or excavation of the section of pipe described above.

Table II-2-Ia. Estimated Maximum Daily Construction Emissions – Tunneling vs Excavation of Santa Ana River

Emission Threshold	ROG	NO_X	CO	SO_X	PM-10
Daily Threshold (lbs/day)	**75**	**100**	**550**	**150**	**150**
Microtunneling	61.02	547.96	326.47	55.07	58.34
Excavation	66.10	614.27	295.80	46.41	38.39
Change [1]	+5.08	+66.31	-30.67	-8.66	-19.95

[1] The Air Quality Impact Analysis assumed this section of pipe would be constructed using microtunneling. Since the other construction assumptions used are still valid, the only difference in amount of emissions would be due to excavation of the 900 feet section of pipeline. Therefore, the change in emissions using excavation would represent the maximum amount of reduction or increase in the daily construction emissions.

Table II -2-Ib. Estimated Maximum Quarterly Construction Emissions – Tunneling vs Excavation of Santa Ana River

Emission Threshold	ROG	NO_X	CO	SO_X	PM-10
Quarterly Threshold (tons/qtr)	**2.5**	**2.5**	**24.75**	**6.75**	**6.75**
Microtunneling [1]	1.37	12.33	7.35	1.24	1.31
Excavation [2]	0.40	3.69	1.96	0.33	0.23
Change [3]	-0.97	-8.64	-5.39	-0.91	-1.08

[1] Microtunneling will occur at about 20' - 30' per day, therefore a 900' section of pipeline will take about 30 – 45 days to complete. Thus quarterly emissions were calculated using 45 days per quarter.

[2] Excavation will occur at about 80' per day, therefore a 900' section of pipeline will take about 12 days to complete. Thus quarterly emissions were calculated using 12 days per quarter.

[3] The 2003 Air Quality Impact Analysis assumed this section of pipe would be constructed using microtunneling. Since the other construction assumptions used are still valid, the only difference in amount of emissions would be due to excavation of the 900 feet section of pipeline. Therefore, the change in emissions using excavation would represent the maximum amount of reduction or increase in the quarterly construction emissions.

The maximum daily emissions of ROG and NO_X are higher for microtunneling, while maximum daily emissions of CO, SO_X, and PM-10 are higher for excavation. However, the maximum quarterly construction emissions for microtunneling are larger than for excavation due to the longer time required for microtunneling.

Comparison of project emissions from construction of the 900-foot Santa Ana River crossing (Table II-2-Ic, below) shows that even with the changes in amounts of emissions of excavation

versus microtunneling, the significance of air quality impacts have not changed with NOx remaining above threshold and all other constituent pollutants remaining below thresholds.

Table II-2-Ic. Estimated Maximum Daily and Quarterly Construction Emissions Overview – Tunneling vs Excavation of Santa Ana River

Emission Threshold	ROG	NO_X	CO	SO_X	PM-10
Daily Threshold (lbs/day)	**75**	**100**	**550**	**150**	**150**
Reach A Boring [1]	53.64	392.26	216.26	31.46	56.84
Exceeds Threshold?	*No*	*Yes*	*No*	*No*	*No*
Change resulting from Excavation Techniques[2]	+5.08	+66.31	-30.67	-8.66	-19.95
New Total	58.72	458.57	185.59	22.80	36.89
Exceeds Threshold?	*No*	*Yes*	*No*	*No*	*No*
Quarterly Threshold (tons/qtr)	**2.5**	**2.5**	**24.75**	**6.75**	**6.75**
Reach A Boring [1]	1.74	12.75	7.03	1.02	1.85
Exceeds Threshold?	*No*	*Yes*	*No*	*No*	*No*
Change resulting from Excavation Techniques[2]	-0.97	-8.64	-5.39	-0.91	-1.08
New Total	0.77	4.11	1.64	0.11	0.77
Exceeds Threshold?	*No*	*Yes*	*No*	*No*	*No*

[1] Data from Table 9 of 2003 Air Study.
[2] Data from Tables II-2-Ia and II-2-Ib above.

Long-term Impacts

Operation of the proposed pipeline will involve: long-term emissions of air pollutants from an increase in electrical demand, weekly test runs of the back-up diesel powered electric generator at the pump station, and vehicle trips generated by employees needed for operations and maintenance of the proposed project. Water District staff members that currently maintain and operate the existing water facilities in the project area will also maintain and operate the proposed facilities. It is estimated that approximately 5 new employees will be needed when the project is at full capacity. Each employee is expected to make 2 round-trips or 4 trips per day.

Assumptions relevant to long-term emissions estimates are:

- Approximately 20 vehicle commuter trips per day at 13.6 miles per trip
- Electric usage to power the pump station on Waterman Avenue and at up to 20 well sites.
- Weekly test runs of a back-up 600 kilowatt diesel powered electric generator at the proposed pump station.
- According to the CEQA Air Quality Handbook, Table A9-5-D, the average work related round trip is 17 miles in Riverside County. Table II-2-J, Estimated Long-Term Mobile

Emissions, presents emissions of each of the criteria pollutants as a result of motor vehicle trips at project build-out in the year 2010.

TABLE II-2-J

ESTIMATED LONG-TERM MOBILE EMISSIONS[1]

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	Sox (Lbs/Day)	PM-10 (Lbs/Day)
Worker Commutes	0.32	3.38	0.37	NG	0.04

Note: [1] Average speed of commuter trips is estimated at 35 MPH.
Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
See Appendix B for model output report.

The proposed pump station will be connected to the local electric utility for normal operations. Electric usage rates for the pump station and wells are presented in the Air Quality Report (Webb) (Appendix B). Table II-2-K, Estimated Emissions from Electrical Consumption, presents anticipated emissions of criteria pollutants from electrical consumption at project build-out.

TABLE II-2-K

ESTIMATED LONG-TERM EMISSIONS FROM ELECTRICAL CONSUMPTION

Pollution Source	NOx (lbs/day)	CO (lbs/day)	ROC (lbs/day)	SOx (lbs/day)	PM-10 (lbs/day)
Electrical Consumption	7.79	10.38	0.52	6.23	2.08

Note: See Appendix B for electrical usage emissions calculations.

On occasion, the back up generator associated with the proposed pump station on Waterman Avenue will emit diesel particulates. The back-up generator is anticipated to be approximately 600 hp and will be test run at full power once a week for 15 minutes. Estimated emissions for the back-up generators are presented in Table II-2-L, Estimated Emissions from Back-up Generator Tests.

Table II-2-L

ESTIMATED LONG-TERM EMISSIONS FROM BACK-UP GENERATOR TESTS

Emission Factor (gms/Hp hour)[1]						Hours per week	Daily Emissions (lbs/day)[2]				
NOx	CO	ROC	SOx	PM10	7Horsepower		NOx	CO	ROC	SOx	PM10
6.90	8.50	1.00	0.73	0.40	600	0.25	2.28	2.81	0.33	0.24	0.13

Notes: [1] Emission factors for all criteria pollutants except SOx are from SCAQMD BACT requirements effective January 1, 2000. The emission factor for SOx is estimated using emissions data from a 2000kv standby diesel generator.
[2] Emission factor is in grams per Hp hour assuming both emergency generators are running the same day. Daily emission total reflects conversion of grams to pounds (454 grams per pound).

Table II-2-M summarizes pollutant emissions for both mobile and stationary sources anticipated for daily long-term operations.

TABLE II-2-M
COMPOSITE LONG-TERM EMISSIONS

Pollution Source	NOx (lbs/day)	CO (lbs/day)	ROC (lbs/day)	Sox (lbs/day)	PM-10 (lbs/day)
Vehicle trips	0.32	3.38	0.37	NG	0.04
Electric Usage	7.79	10.38	0.52	6.23	2.08
Back-up Diesel	2.28	2.81	0.33	0.24	0.13
Total Emissions	10.39	16.57	1.22	6.47	2.25
SCAQMD Thresholds	55 lbs/day	550 lbs/day	55 lbs/day	150 lbs/day	150 lbs/day

Note: See Appendix B for electrical usage emissions calculations.

All of the long-term emissions projections are below the applicable SCAQMD thresholds for significance. The proposed project will not result in significant long-term air quality impacts related to project operations.

Threshold: Air quality impacts would be considered significant if the project contributes a cumulatively considerable net increase of a criteria pollutant in a non-attainment area.

The SCAB is designated a non-attainment area for ozone (secondary pollutant formed by a reaction of NOx in the presence of sunlight), carbon monoxide, and PM-10. The project-specific evaluation of emissions presented in the preceding analysis shows that emissions of NOx and ROC are above the recommended SCAQMD thresholds during construction of the improvements. NOx is a precursor pollutant to the formation of ozone. See further discussion of cumulative air quality impacts in Section III.1 of this document.

The project however, will not result in long-term exceedences of ozone producing pollutants because the proposed project is a pipeline and few automobiles that produce such pollutants will be used during project operation. Therefore, it would not contribute considerably to cumulative impacts. See further discussion of cumulative air quality impacts in Section III.1 of this document.

Threshold: Air quality impacts would be considered significant if project generated emissions expose sensitive receptors to substantial pollutant concentrations.

The California Air Resources Board (CARB) has designated particulates within diesel exhaust as a toxic air contaminant (TAC). The CARB's Scientific Review Panel has established 3.0 X 10-4 per µg/m3 as a unit risk value for diesel exhaust particulates. The unit risk value is a theoretical value of contracting cancer over a 70-year life span of exposure. SCAQMD uses a significance standard of 10 in one million as the maximum acceptable health risk. The back-up generator at the proposed pump station on Waterman Avenue may be diesel fueled. As part of the Air Study prepared for this project, the long-term exposure of diesel exhaust to residents immediately adjacent to the facility were analyzed. SCREEN3, a U.S. EPA computer model designed to estimate maximum ground-level concentrations of air contaminants, was used to evaluate potential ambient concentrations of diesel particulates at varying distances from the back-up generator. All of the individual cancer risks were determined to be below one in one million—well below the SCAQMD maximum threshold of 10 in one million. Therefore, long-term diesel

emissions from the proposed project will not pose any significant cancer health risk to the surrounding community.

The California Office of Environmental Health Hazards Assessment (OEHHA) established the chronic reference exposure level (REL) for particulate matter within diesel exhaust as 5 ug/m3. The exposure of particulate matter within diesel exhaust at concentrations equal to the REL represents a non-cancer chronic hazard index level of 1.0. Exposure above a hazard index of 1.0 is considered a significant impact. Diesel emissions can also result in chronic respiratory symptoms such as persistent cough and mucous, bronchitis, and reduced lung capacity. People with preexisting diseases, such as emphysema, asthma, and heart disease, may be more susceptible to the effects of diesel exhaust. Studies on mice have shown that exposure to diesel exhaust may also reduce our resistance to bacterial infection and/or result in a reduced level of activity and coordination. The health risk assessment concluded that non cancer chronic index levels would be substantially below the significance threshold of 1.0. Therefore, long-term diesel emissions from the proposed pump station will not pose any significant chronic non-cancer health risks to the surrounding community.

Federal Clean Air Act Conformity

Section 176(c) of the Federal Clean Air Act prohibits federal participation in any project that is in conflict with the State Implementation Plan (SIP). Participation includes funding, permitting or other non-direct involvement. An evaluation of project-related emissions in light of the Federal Conformity Thresholds established by 40 CFR Part 1 §51.853(b), as shown in Table II-2-N, Federal Threshold Conformity, demonstrates that the project scope is too limited to adversely affect the SIP. The project's air quality emissions from both short-term construction-related emissions and long-term operation-related emissions will not exceed any of the federal conformity thresholds. Therefore, the proposed project is consistent with Clean Air Act requirements.

TABLE II-2-N
FEDERAL THRESHOLD CONFORMITY

Pollution Source	ROG	NOx	CO	SO2	PM-10
Construction-related Emissions Totals (tons/yr)*	0.66	4.64	5.50	0.00	0.41
Operation-related Emission Totals (tons/yr)	0.0004	0.0049	0.0066	0.0040	0.0131
Federal Conformity Thresholds (tons/year)	**10**	**10**	**100**	**	**70**
Does Project Exceed Thresholds?	No	No	No	**	No

Notes: * Annual emission totals for all criteria pollutants reflect a total of 83 construction days for trenching and a total of 29 construction days for micro-tunneling and boring.
** Air Basin is in Federal attainment, or designated as "unclassified

Proposed Mitigation Measures

The following measures shall be implemented to eliminate or reduce significant impacts related to short-term emissions of NOx and ROC.

MM Air 1: Prior to construction of the proposed improvements, the project proponent will provide a traffic control plan that will describe in detail safe detours around the project construction sites and provide temporary traffic control (i.e. flag person) during earthen material transport and other construction related truck hauling activities (10% reduction)[1].

MM Air 2: During construction of the proposed improvements one of the following options must be used to supply the power needs for boring/tunneling operations: 1) use natural gas fueled generator sets; 2) use low emission, duel fueled generator sets; or 3) prior to construction of the proposed improvements, arrangements will be made with Southern California Edison to provide temporary construction power at the boring/tunneling sites (67% reduction)[1].

MM Air 3: During construction of the proposed improvements, all mobile and stationary construction equipment will be properly maintained at an offsite location including proper tuning and timing of engines (5% reduction)[1]. Equipment maintenance records and equipment design specification data sheets shall be kept on-site for the complete duration of construction.

MM Air 4: During construction of the proposed improvements, all contractors will be advised not to idle trucks on site for more than ten minutes (4% reduction)[1].

Summary of Environmental Effects after Mitigation Measures are Implemented

In an effort to reduce estimated short-term emissions, a range of mitigation measures listed above were considered. These emission reduction measures are anticipated to reduce all criteria pollutant emissions from mobile construction equipment by approximately nineteen percent, stationary equipment by five percent (traffic control and truck idling do not apply to stationary equipment), and electric diesel generators by sixty-seven percent. As shown in Table II-2-O, with these reductions the daily and quarterly emissions of NOx are still above the SCAQMD suggested daily and quarterly thresholds for both Reach "A" and Reach "C", and ROC emissions are above the daily and quarterly thresholds during excavation of Reach A in combination with the proposed pump station construction. The project results in significant short-term impacts that cannot be mitigated below level of significance with mitigation measures incorporated. The project will require adoption of a statement of overriding considerations prior to project approval.

NOx emissions will remain above SCAQMD significance thresholds during project construction even with mitigation measures incorporated. Therefore, the project will result in an unmitigable exceedance of short-term standards for air quality and will require a statement of overriding considerations prior to project approval.

[1] Reductions attributed to certain mitigation measures are based on personal communication with Charles Blankson, AQMD staff, and the AQMD CEQA Handbook.

TABLE II-2-O
MITIGATED SHORT-TERM EMISSIONS

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM-10 (Lbs/Day)
Reach A Boring/Tunneling—Pipeline Installation and Pump Station Construction					
Maximum Daily Emissions (lbs/day)	392.26	216.26	53.64	31.46	56.84
Emissions Totals (tons/quarter)	12.75	7.03	1.74	1.02	1.85
Significant Impact:	YES	NO	NO	NO	NO
Reach A Excavation—Pipeline Installation and Pump Station Construction					
Maximum Daily Emissions (lbs/day)	665.86	324.53	82.26	51.72	47.97
Emissions Totals (tons/quarter)	21.64	10.55	2.67	1.68	1.56
Significant Impact:	YES	NO	YES	NO	NO
Reach C Excavation—Pipeline Installation					
Maximum Daily Emissions (lbs/day)	480.92	225.12	48.00	34.28	29.17
Emissions Totals (tons/quarter)	15.63	7.32	1.56	1.11	0.95
Significant Impact:	YES	NO	NO	NO	NO
Reach C Boring—Pipeline Installation					
Maximum Daily Emissions (lbs/day)	236.89	139.95	26.65	21.57	40.93
Emissions Totals (tons/quarter)	7.70	4.55	0.87	0.70	1.33
Significant Impact:	YES	NO	NO	NO	NO
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

3. Biological Resources

It was determined in the Initial Study prepared for this project that the proposed project may result in significant impacts to biological resources (Appendix A). The focus of the following analysis is related to such potential impacts.

Biological resources are herein defined as native species of plants and animals (resident and migratory). Some species are endangered or threatened with extinction and require intensive management for their preservation, while others are relatively abundant and require only the application of general conservation practices for their continued existence.

The following discussion summarizes the Biological Assessment Report for the Riverside Corona Feeder Project, prepared by Pacific Southwest Biological Services (PSBS) in May 2003. This report is contained in its entirety as Appendix C of this document. The focus of the following discussion addresses potential impacts related to migratory corridors, riparian habitat, sensitive natural communities, wetlands and preservation policies, direct or indirect habitat modifications effecting endangered or threatened species and sensitive or special status species and habitat conservation plans.

Environmental Setting

The proposed project extends southwesterly from the City of San Bernardino to the City of Corona, very roughly paralleling the course of the Santa Ana River drainage. Elevation at the north end of the alignment on the north side of the Santa Ana River is approximately 990 feet above mean sea level and approximately 903 feet at the southern terminus in Corona. A high point of approximately 1,170 feet occurs at Little Pigeon Pass on Barton Road at the Grand Terrace escarpment.

Biogeographic Context and Potential Wildlife Corridors

The proposed project falls within the extreme southern portion of San Bernardino County and the north-central portion of Riverside County. The north-central portion of Riverside County is characterized as the Riverside Lowlands Bioregion by the Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The Santa Ana River, even though surrounded by urbanized uses and crossed by a number of bridges, still serves as an important riparian habitat that allows linear movement of local wildlife. The MSHCP identifies the downstream reach of Santa Ana River in Riverside County as a Core habitat because it generally supports the life history requirements of one or more Covered [i.e., protected] species. A similar condition applies to Reach A in the City of San Bernardino where the proposed project crosses the Santa Ana River.

The project's northeastern limit is on the north side of the Santa Ana River, just east of the intersection of I-215 and I-10, in the City of San Bernardino. South of the Santa Ana River, the proposed route runs south to the western margins of a series of low mountains and hills. Several major valleys lead out of these hills, into the greater Santa Ana River valley. These valleys generally trend from southeast to northwest. The valleys, with generally rural land uses, may serve as local corridors for the limited local movement of wildlife because they are relatively

undeveloped. These valleys include the following areas (from north to south, generally along the project route):

- Reche Canyon
- Spring Brook Arroyo
- Box Springs Canyon
- Mockingbird Canyon (near Van Buren Boulevard)
- Temescal Wash/Canyon.

The proposed pipeline terminates along Compton Avenue in the City of Corona, at the northeastern edge of a large bajada (alluvial fan) originating in the Santa Ana Mountains in the Cleveland National Forest. This bajada has been in intense agricultural use and residential development, for several decades.

The proposed project alignment generally follows the western edges of the local mountains and in-between hills, between the mountains and generally along the urbanized valley floor, as discussed above. The side canyons or valleys function only to a small degree as subregional or local wildlife movement areas. This is because these areas are urbanized and contain substantial barriers to wildlife movement and little usable habitat.

Due to reduced urbanization at some valley and canyon entrances, the following drainages may still allow some limited wildlife movement between the canyons and the margins of the greater Santa Ana River valley:

- Reche Canyon
- Spring Brook Arroyo
- South of Mockingbird Canyon (very localized movement because of urbanization north of Lincoln Avenue)
- Temescal Wash.

Existing urbanization, especially major highways and freeways, are substantial barriers to wildlife movement in the project area. These major barriers include the following:

- San Bernardino Freeway (U. S. Interstate Highway 10)
- Riverside Freeway (State Route 91); cross streets (generally aligned in an southeast to northwest direction)
- Combined Highway 60/215
- Alessandro Boulevard
- Van Buren Boulevard in Mockingbird Canyon
- Corona Freeway (U. S. Interstate Highway 15).

Vegetation Communities

Vegetation communities and habitats encountered along the proposed project include native Southern Willow Scrub, Mule-Fat Scrub, Riversidean Sage Scrub, non-native Grassland, ornamental plantings, and Orchards.

- Southern Willow Scrub is generally characterized by dense, broad-leafed riparian thickets dominated by one or more of arroyo willow (*Salix lasiolepis*), Goodding's black willow (*S. gooddingii*), and red willow (*S. laevigata*), with an occasional Fremont cottonwood (*Populus fremontii*) and Western sycamore (*Platanus racemosa*) present. Most stands are too dense to allow much understory development.
- Mule-fat Scrub is generally characterized as a depauperate, tall, herbaceous riparian scrub strongly dominated by mule-fat (*Baccharis salicifolia*), a shrub commonly found in canyon bottoms, moist streamsides, and irrigation ditches, often forming thickets. This is an early seral community maintained by frequent flooding.
- Riversidean Sage Scrub is characterized by stands that are fairly open with characteristic components of California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemisia californica*), California encelia (*Encelia californica*), and white sage (*Salvia apiana*).
- Non-native Grassland is characterized as a dense to sparse cover of annual grasses, often associated with numerous species of showy-flowered native annual forbs ("wildflowers"), especially in years of favorable rainfall. Typical species include slender wild oat (*Avena barbata*), ripgut grass (*Bromus diandrus*), soft chess (*B. hordeaceus*), red brome (*B. madritensis ssp. rubens*), filaree (*Erodium* spp.), California poppy (*Eschscholzia californica*), fascicled tarplant (*Hemizonia fasciculata*), a variety of lupines (*Lupinus* spp.), and a variety of phacelias (*Phacelia* spp.).
- Ornamental Plantings are characterized by introduced plant species in parks, along paved roadways, adjacent to residential, commercial, or industrial development that provide habitat for a minimum of native wildlife.
- Orchards are a form of extensive agriculture. Extensive Orange (*Citrus sinensis*)orchards occur in the project area.

Common Species

A list of common species expected to occur in the project alignment was compiled and based on Pacific Southwest Biological Services' more than 25 years of experience performing field surveys in southern California. Invertebrates likely to occur in the project area alignment include crawfish, multiple species of butterflies and moths, and several species of ants, wasps and bees. Fishes that may occur in the area include mosquitofish, sunfish, and bluegill. Amphibians include toads, treefrogs, and bullfrogs. Reptiles expected to occur in the project alignment include several species of lizards and snakes, such as fence lizards and skinks, whiptails, kingsnakes and rattlesnakes. Birds expected to occur in the project alignment include herons, hawks, falcons, owls, flycatchers, vireos, jays and crows, swallows, larks, wrens, thrushes, warblers, towhees and sparrows, blackbirds and orioles, and finches. Mammals likely to occur in the project alignment include opossums, bats, rabbits, squirrels, gophers, mice and rats, coyotes, raccoons, weasels, skunks, and bobcats.

Common flora and fauna observed or expected to occur along the alignment are listed in Appendices 2 & 3 of the Biological Assessment Report (Appendix C).

Sensitive Biological Resources

Plant Species of Special Status. Plant species that are classified as Endangered or Threatened, proposed for listing as Endangered or Threatened, are Candidate species for listing by federal or state resource agencies, or are considered federal species of concern are considered of special-status. In addition, plants included on Lists 1, 2, 3, or 4 of the California Native Plant Society (CNPS) Inventory are also considered of special-status. The potential for special-status plant species known from the project vicinity to occur along the proposed alignment is summarized in Appendix 4 of the Biological Assessment Report (Appendix C). No special status plant species have been encountered within the proposed project area. However, two listed plants have a low to moderate potential to occur within the project area. These are the Santa Ana River woolly-star (*Eriastrum densiflorum sanctorum*) and the slender-horned spineflower (*Dodecahema leptoceras*) both of which may occur in Reach A.

Wildlife Species of Special Status. Special-status wildlife species include those that are State or Federally listed as Threatened or Endangered, are proposed for listing as Threatened or Endangered, have been designated as State or Federal Candidates for listing, State or Federal Species of Concern, California Fully Protected, or considered a state Special Animal (those included in the CNDDB). State and Federal protection classifications are Endangered and Threatened. Species of Concern and California Fully Protected species are not considered "protected" under the State and Federal Endangered Species Acts but are considered in planning and management by the agencies. The County of Riverside has created a list of species considered for coverage (conservation) in the Multiple Species Habitat Conservation Plan (MSHCP). Covered species have an added level of protection under the management prescriptions set forth in the MSHCP but do not have additional legal protection under the Endangered Species Act (ESA) or the California Endangered Species Act (CESA).

The potential for special-status wildlife species known from the project vicinity to occur along the proposed alignment is summarized Appendix 5 of the Biological Assessment Report (Appendix C). No animal species of special-status were observed during the general zoological survey. However, some federal or state species listed as Threatened or Endangered may occur near, or on, one or more of the Reaches along the proposed alignment. Those federally-listed species with potential to occur include: arroyo toad (*Bufo californicus*), southwestern willow flycatcher (*Empidonax traillii extimus*), least Bell's vireo (*Vireo belii pusillus*), coastal California gnatcatcher (*Polioptila californica californica*), Stephens' kangaroo rat (*Dipodomys stephensi*) and San Bernardino kangaroo rat (*D. merriami parvus*).

Species covered in the County of Riverside MSHCP that have a high potential of occurrence in the area include: San Diego coast horned lizard (*Phrynosoma coronatum blainvilli*), Belding's orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*), coastal whiptail (*Cnemidophorus tigris stejnegeri*), white-tailed kite (*Elanus leucurus*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperi*), downy woodpecker (*Picoides pubescens*), loggerhead shrike (*Lanius ludovicianus*), California horned lark (*Eremophila alpestris actia*), Nashville warbler (*Vermivora ruficapilla*), MacGillivray's warbler (*Oporornis tolmei*), yellow-breasted chat (*Icteria virens*), grasshopper sparrow (*Ammodramus savannarum*), Lincoln's sparrow (*Melospiza lincolnii* (breeding)), coyote (*Canis latrans*), long-tailed weasel

(*Mustela frenata*), and bobcat (*Lynx rufus*). The following table summarizes the presence of biological resources along each Reach of the proposed project alignment.

Table II-3-A
Biological Resources and their Potential for Occurrence by Reach

Category	Resource	Status	Reach A	B	C	D	E	F	G	H
Vegetation										
	Southern Willow Scrub	Native Vegetation Community	X				X			X
Communities										
	Mule-Fat Scrub	Native Vegetation Community	X	X			X			X
	Riversidean Sage Scrub	Native Vegetation Community		X						
Sensitive Plant Species										
	Santa Ana Riverwoolly-star	FE/CE	Moderate							
	Slender-horned Spineflower	FE/CE	Low							
Wildlife										
	Least Bell's Vireo	FE/CE	High	Low			Moderate			Low
	Southwestern Willow Flycatcher	FE/CE	High	Low			Low			Low
	San Bernardino Kangaroo Rat	FE/CSC	High	Low						
	Arroyo Toad	FE/CSC	High	Low						
	Bald Eagle	FT/CT	Low	Low			Low			
	Cooper's Hawk	CSC	High	Moderate			Low			Moderate
	Downy Woodpecker	MSHCP covered	High	Low			Low			Moderate
	Wilson's Warbler	MSHCP covered	Moderate	Low			Low			Moderate
	Yellow-breasted Chat	CSC	High	Low			Low			Moderate
	White-tailed Kite	FSC/R, FP	High	Low			Low			Moderate
	Coastal California Gnatcatcher	FT/CSC/C		Low						
	Stephen's Kangaroo Rat	FE/CT		Low						
	San Diego Coast Horned Lizard	FSC/CSC		Moderate						
	Belding's Orange-throated Whiptail	FSC/CSC		Moderate						

Table II-3-A (con't)
Biological Resources and their Potential for Occurrence by Reach

	Coastal Whiptail	FSC		Moderate						
	Dulzura Kangaroo Rat	MSHCP covered		Moderate						
	Coyote	MSHCP covered	High	High	High					
	Long-Tailed Weasel	MSHCP covered	High							
	Northern Harrier	CSC								Low
	Ferruginous Hawk	CSC								Low
	Golden Eagle	CSC								Low
	Prairie Falcon	CSC								Low
	Loggerhead Shrike	FSC/CSC								Moderate
	California Horned Lark	CSC								Moderate
	Grasshopper Sparrow	MSHCP covered								Moderate
	Yellow Warbler	CSC								Moderate
California Department of Fish and Game (CDFG) Jurisdiction			X	X				X		
Army Corps of Engineers (Corps) Jurisdiction			X	X						
California Regional Water Quality Control Board (RWQCB)			X							
Designated Critical Habitat – San Bernardino kangaroo rat (SBKR)			X							
Designated Critical Habitat – Santa Ana sucker			X							

FE = Federally Listed, Endangered, FT = Federally Listed, Threatened, FSC = Federal Species of Concern, FP = Federally Proposed, CE = State Listed, Endangered, CT = State Listed, Threatened ,CSC = California Species of Special Concern, C = Candidate, R = Rare, MSHCP = County of Riverside Multiple Species Habitat Conservation Plan

Criteria for Determining Significance

Impacts on biological resources may be considered potentially significant if the proposed project would:

- Adversely affect any endangered or threatened species and any species identified as candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by the California Department of Fish and Game (CDFG) or U.S. Fish and Wildlife Service (USFWS).
- Have a substantial adverse effect on any, designated critical habitat (as identified by the USFWS), riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any resident or migratory fish or wildlife species; substantially diminish habitat for fish, wildlife, or plants or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Project Compliance with Existing Regulations

Federal

Endangered Species Act. The Federal Endangered Species Act (ESA) was promulgated to protect any species, plant or animal that is endangered or threatened with extinction. "Take" of and endangered species is prohibited under Section 9 of the ESA. "Take" as defined under ESA means to "harass, harm, pursue, hunt, wound, kill, trap, capture, collect, or attempt to engage in any such conduct" [16 U.S.C. § 1532(19)].

Section 7 of the Act requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) on proposed actions (actions authorized, funded, or carried out by federal agencies) which may affect threatened or endangered species or result in the destruction or adverse modification of critical habitat. Section 7 also requires federal agencies to confer with the USFWS if the agency determines that its action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat. Section 7 of the Act will only apply to the project when an approval is required from a federal agency.

Section 10 of the ESA provides the regulatory mechanism which allows the incidental take of a listed species by private interests and non-federal government agencies during lawful land, water, and ocean use activities. Under these conditions, habitat conservation plans (HCPs) for the impacted species must be developed, approved by the USFWS, and implemented by the permitted agency. It is the goal through the HCP to minimize impacts to the species and to develop viable mitigation measures to offset the unavoidable impacts. To receive a permit, the

applicant must submit an HCP that meets the criteria included in the ESA and its implementing regulations. Under section 10(a)(1)(B) of the ESA, the HCP must ensure that the permittee will minimize and mitigate the effects of the authorized incidental take to the maximum extent practicable, while also ensuring long term survival of covered species. Creativity, collaboration, and flexibility are required of all involved parties during the negotiations and development of HCPs.

Thus, if a listed species is present on the project site and take of the species cannot be avoided, the project proponent must obtain an incidental take permit, as issued by the USFWS, under Section 10 of the Act.

Migratory Bird Treaty Act (MBTA). The federal Migratory Bird Treaty Act (MBTA) makes it illegal to take, possess, import, export, transport, sell, purchase or barter any migratory bird, or the parts, nests, or eggs of a migratory bird. Under the MTBA, "take" means to pursue, hunt, capture, kill, or attempt to take, capture or kill. Implementation of the proposed project will be required to comply with the MTBA.

Clean Water Act, Section 404. The U.S. Army Corps of Engineers (ACOE) regulates discharges of dredged or fill material into waters of the U.S. These waters include wetlands and non-wetland bodies of water that meet specific criteria. ACOE may define "Waters of the U.S." as any body of water displaying an ordinary high water mark (OHWM). ACOE jurisdiction over non-tribal waters of the U.S. extends laterally to the OHWM or beyond the OHWM to the limit of any adjacent wetlands, if present. The OHWM is defined as "that line on the shore establishes by the fluctuations of the water and indicate by physical characteristics such as a clear natural line impressed on the bank, shelving, changes or debris, or other appropriate means that consider the characteristics of the surrounding areas'" Jurisdiction typically extends upstream to the point where the OHWM is no longer perceptible.

Clean Water Act, Section 401. The California Regional Water Quality Control Board is responsible for the administration of Section 401 of the Clean Water Act. The proposed project is within the jurisdiction of the Santa Ana Regional Board (Regional Board). Typically, the areas subject to jurisdiction of the Regional Board coincide with those of ACOE (i.e., waters of the United States including any wetlands). The Regional Board's responsibility is to ensure that the quality of down stream areas ("receiving waters") are not adversely impacted.

State of California

California Endangered Species Act. The California Endangered Species Act (CESA) (Fish and Game Code 2050 et seq.) establishes that it is the policy of the state to conserve, protect, restore, and enhance Threatened or Endangered species and their habitats. CESA mandates that state agencies should not approve projects which would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. CESA also requires that state lead agencies consult with the Department of Fish and Game (CDFG) during the CEQA process to avoid jeopardy to threatened or endangered species.

California Department of Fish and Game Code (CDFG), Section 1603. CDFG, through provisions of the California Fish and Game Code (Section 1603), is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be

adversely affected. Streams (and rivers) are defined by the presence of a channel bed and banks, and at least an intermittent flow of water.

CDFG regulates areas only to the extent that those wetlands are a part of a river, stream, or lake as defined by CDFG. While seasonal ponds are within the CDFG definition of wetlands, they are not part of a river, stream, or lake and are not subject to jurisdiction of CDFG under Section 1603 of the Fish and Game Code.

Local

City of San Bernardino. In the City of San Bernardino, special habitat areas are identified under various programs by several agencies. The Santa Ana River area is designated as a "Biological Resource Management Area" (BRM) and all development is reviewed in accordance with Policies 10.2 – 10.5 in the City General Plan.

The City of San Bernardino General Plan (CSBGP) Policy BI-5 requires long term comprehensive plans (Habitat Conservation Plans, also referred to as Mitigation Programs) for native species.

CSBGP Policy BI-6 requires monitoring programs be established, and that mitigation measures be monitored and modified, if necessary, unless a finding is made that such monitoring is not feasible.

City of Colton. City of Colton General Plan (CColGP) policies provide for the establishment and maintenance of an open space and conservation system which will ensure the conservation and wise utilization of valuable resources and will meet local and regional open space needs.

City of Grand Terrace. No specific regulations were identified in the City of Grand Terrace that provide for the protection of biological resources.

City of Riverside. The City of Riverside General Plan (CRivGP) provides policies to ensure compliance with CEQA. Policy ER 3 (Section IX Implementation) states that the City will continue to use mitigation monitoring programs for EIRs in order to ensure compliance and completion of mitigation measures required of development.

City of Corona. The conservation program of the City of Corona includes policies to protect canyons and creeks that exist adjacent to the Cleveland National Forest. The policy provides for the maintenance of creeks and channels in their natural state whenever feasible (Section 5.2.A. Corona General Plan).

County of Riverside. Riverside County Ordinance No. 663 establishes the fees and mitigation measures for appropriate development projects covered under the Stephen's Kangaroo Rat (SKR) Habitat Conservation Plan. According to Section 10 (f) of Riverside County Ordinance No. 663, public utility transmission facilities are exempt from paying fees. Therefore the pipeline portion of the project proposed within Riverside County will be exempt from paying mitigation fees for potential impacts to SKR habitat.

The Riverside County MSHCP is a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on the conservation of 146 species and their associated habitats in Western Riverside County. The Plan was approved by Riverside County on June 17, 2003 and is one of several large, multi-jurisdictional habitat-planning efforts in Southern California with the overall goal of maintaining biological and ecological diversity within a rapidly urbanizing region. The

MSHCP will serve as an HCP pursuant to Section 10 of the Federal Endangered Species Act of 1973, as well as a Natural Communities Conservation Plan (NCCP) under the NCCP Act of 2001. It will be used to allow the participating jurisdictions to authorize "Take" of the 146 plant and wildlife species identified within the MSHCP.

As a water district, Western Municipal Water District (WMWD), has the option of participating in the MSHCP. If WMWD decides to participate under the MSHCP, each reach of the RCF would be screened to determine if it affects a Criteria Area identified by the MSHCP for conservation. If a particular Reach of the proposed project is located within a Criteria Area, WMWD would have to negotiate with the Regional Conservation Authority (RCA) set forth by the MSHCP to see if their particular project footprint is an area the RCA would like to set aside for conservation.

If WMWD chooses to not participate in the MSHCP, any impacts to protected species as a result of the proposed project will need to be mitigated through the "regular" channels of the resource agencies. In other words, if the proposed project will result in impacts to a federally protected species, WMWD would need to secure a "take" permit from the U.S. Fish and Wildlife Service. Under the MSHCP, a "take" would be covered by participating in the Plan.

Design Considerations

Boring and micro-tunneling methods, if utilized, would avoid or reduce impacts to riparian areas.

Environmental Impacts Before Mitigation

Threshold – Have substantial adverse effects, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations or by the CDFG or the USFWS.

Santa Ana River woolly-star, Federally and State Endangered. The Santa Ana River woolly-star occurs along the Santa Ana River and Lytle and Cajon Creek flood plains from the base of the San Bernardino Mountains in San Bernardino County southwest along the Santa Ana River through Riverside County into the Santa Ana Canyon of northeastern Orange County.

The Santa Ana River woolly-star is considered to have a moderate potential of occurrence in Reach A, where the proposed project will cross the Santa Ana River floodplain. Micro-tunneling construction techniques are proposed for this crossing, to a depth of 40 feet below the surface. Both entrance and exit portals for the micro-tunneling are in highly disturbed locations, where the potential for Santa Ana River woolly-star to occur is nil. Therefore, no impacts to this sensitive species are anticipated.

However if micro-tunneling techniques become infeasible due to geologic conditions under the Santa Ana River, open trench construction methods will be utilized for Reach A at the Santa Ana River crossing location. If Santa Ana River woolly-star are located within the footprint of the pipeline alignment, trenching activities would result in significant impacts to the species through the removal and/or destruction of individual plants.

Slender-horned spineflower, Federally and State Endangered. Slender-horned spineflower is endemic to southwestern cismontane California, ranging from central Los Angeles County east to San Bernardino County, and south to southwestern Riverside County in the foothills of the

Transverse and Peninsular Ranges, at 200 to 700 meters elevation. Only eight areas are still known to support slender-horned spineflower, including two localities in Los Angeles County (Bee Canyon and Big Tijunga Wash), and two in San Bernardino County (the Santa Ana River wash and Cajon Wash). At the majority of sites, slender-horned spineflower is found in sandy soil in association with mature alluvial scrub. The species may once have occurred along the Santa Ana River near the San Bernardino County line (USFWS a).

The slender-horned spineflower is considered to have a low potential of occurrence in Reach A, where the proposed project will cross the Santa Ana River floodplain. Micro-tunneling construction techniques are proposed for this crossing, to a depth of 40 feet below the surface. Both entrance and exit portals for the micro-tunneling are located in highly disturbed locations, where the potential for the slender-horned spineflower to occur is nil. Given the low potential for occurrence and the disturbed area of project construction, no impacts to this sensitive species are anticipated.

However if micro-tunneling techniques become infeasible and open trench construction methods will be utilized the proposed project could result in significant impacts to slender-horned spineflower. Although the slender-horned spineflower has a low potential of occurrence in the river at Reach A, if plants are located within the footprint of trenching activities the project would result in significant impacts to the species.

Arroyo Southwestern Toad, Federally Endangered, California Species of Concern. Arroyo toads are found in foothill canyons and inter-mountain valleys where a river is bordered by low hills and the stream gradient is low (USFWS c). The arroyo toad is an extreme habitat specialist, restricted to riparian environments in the middle reaches of third order streams. Arroyo toads are known to either breed, forage, and/or aestivate in aquatic habitats, riparian, coastal sage scrub, oak, and chaparral habitats. The species is currently thought to be restricted to the headwaters of large streams with persistent water from March to mid-June that have shallow, gravely pools less than 18 inches deep, and adjacent sandy terraces. Breeding pools must be open and shallow with minimal current, and with a sand or pea gravel substrate overlain with sand or flocculent silt. Adjacent banks must provide open, sandy or gravely terraces with very little herbaceous cover for adult and juvenile foraging areas, within a moderate riparian canopy of cottonwood, willow, or oak. Adults use terraces in the 100-year flood zone, which may extend up to 100 m from the stream, however, they may move between 1 and 2 km into adjacent upland habitats to excavate. Adults excavate shallow burrows on the terraces where they shelter during the day when the surface is damp or during longer intervals in the dry season.

The Arroyo southwestern toad has a low potential to occur in Reach B and a high potential of occurrence in Reach A along the proposed project alignment (see Table II-3-A). The proposed project may have direct significant impacts on this species including physical damage to mature individuals and interference with breeding activities during the breeding season (mid-March through July 1) if they occur at the entrance and exit portals for the micro-tunneling. Indirect impacts could include adverse effects to the health of the hosting riparian habitat caused by the extraction of water prior to boring activities.

Trenching activities across the river channel, if required, could result in direct adverse impacts to the Arroyo southwestern toad including physical harm and interference with breeding and foraging activities, or indirect adverse impacts, including habitat disturbance or the displacement of animals from the area.

Least Bell's vireo, Federally and State Endangered. Suitable habitat is present in Reach A, Reach B, Reach E and Reach H. The least Bell's vireo is a highly specialized migratory bird whose breeding range in the southwestern United States has diminished in recent decades. Once widespread, this species could be found breeding in riparian habitats throughout the coastal plain and in desert riparian habitats across southern California. Habitat for the least Bell's vireo is composed mainly of willow and mule fat. The least Bell's vireo prefers willow thickets, 2 to 4 meters tall that occur in the more open areas of water channels in association with cottonwood, California sycamore, giant reed and salt cedar.

Least Bell's vireo has a low to high probability of occurrence at several locations along the proposed project alignment (see Table II-3-A). The proposed project may have indirect significant impacts on this species from extraction of water during micro-tunneling activities which may adversely affect the health of the hosting riparian habitat (Southern Willow Scrub and Mule-Fat Scrub). If micro-tunneling techniques become infeasible and open trench construction methods are utilized, removal of some hosting riparian habitat would result. The proposed project may have direct significant impacts on the species during its breeding season through construction noise from equipment used in micro-tunneling techniques or open trenching. Construction equipment associated with the proposed project will generate noise levels in excess of 60 dBA CNEL. It is generally asserted that noise-sensitive bird species cannot breed successfully in an environment that is subjected to noise levels in excess of exceed 60 dBA CNEL.

Southwestern willow flycatcher, Federally and State Endangered. This species was formerly a common summer resident in riparian habitat throughout California. It has now been extirpated as a breeding bird from most of its California range. The Southwestern willow flycatcher is a migratory bird, occurring in this region only during the breeding season (late May to early August). Willow flycatchers arrive later in the spring than most migrant birds, usually in mid to late May or early June; birds seen earlier in the migratory season are usually transient. Willow flycatchers breed in riparian habitats along rivers, streams, or other wetlands in floodplains and broader canyons, preferring dense riparian thickets near surface water, with open adjacent areas for foraging. They build nests in thickets of trees and shrubs in a fork or horizontal branch between three and 15 feet above the ground. Vegetation structure, composition, and extent vary widely but generally include extensive areas dominated by dense stands of willows, mule-fat, tamarisk, or other trees, usually with scattered cottonwood overstory. These riparian areas provide both nesting and foraging habitat. They will nest in areas with suitable habitat regardless of the elevation (from sea level to high mountains).

The southwestern willow flycatcher has a low probability of occurrence in Reaches "B", "E" and "H", and a high probability of occurrence in Reach A along the proposed project alignment (see Table II-3-A). The proposed project may have significant direct impacts on this species during the breeding season through construction noise from equipment used in micro-tunneling techniques or open trenching. The proposed project may have significant indirect impacts on the health of the hosting riparian habitat (Southern Willow Scrub and Mule-Fat Scrub) from extraction of water activities during micro-tunneling techniques or the removal of hosting riparian habitat during open trenching activities.

Coastal California Gnatcatcher, Federally Threatened, California Species of Concern. The coastal California gnatcatcher is a subspecies of the California gnatcatcher. The gnatcatcher is a non-migratory, resident bird species that is endemic to the coastal slopes of southern California

from southern Ventura County southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties and to approximately El Rosario, Baja California, Mexico.

The gnatcatcher breeding season extends from February 15 through August 31, with nest initiations peaking from mid-March through mid-May. The gnatcatcher typically occurs in or near sage scrub habitat, which is a broad category of vegetation that includes Riversidean sage scrub. The gnatcatcher occurs in high frequencies and densities in scrub with an open or broken canopy while it is absent from scrub dominated by tall shrubs and occurs in low frequencies and densities in low scrub with a closed canopy. The territory size increases as vegetation density decreases and with distance from the coast, probably due to food resource availability. Thus, gnatcatchers will use even sparsely vegetated coastal sage scrub for shelter and to forage for insects as long as perennial shrubs are available.

The coastal California gnatcatcher has a very low probability for occurrence at one site only – Reach B, where the alignment crosses the Spring Brook drainage along the Gage Canal siphon south of Spring Street in the City of Riverside. A narrow band of Riversidean Sage Scrub occurs at this location and creates minimal marginal nesting habitat for the species. This potential is severely limited by its relative isolation and the presence of adjacent citrus orchards to the north, non-native Grassland dominated by Rancher's Fiddleneck (*Amsinckia intermedia*) to the south, and industrial and residential development to the west and northwest. Due to the limited potential habitat for the gnatcatcher, the species is not expected to occur at this location and no project-related impacts are anticipated.

White-tailed Kite, California Rare and California Fully Protected Species. The white-tailed kite has a low to high probability of occurrence at several locations along the proposed project alignment (see Table II-3-A).

The white-tailed kite inhabits low elevation, open grasslands, savannah-like habitats, agricultural areas, wetlands, and oak woodlands. Riparian areas adjacent to open areas are also used. The white-tailed kite uses trees with dense canopies for cover and the specific plant associations seem to be unimportant with the vegetation structure and prey abundance apparently more important. In southern California, it roosts in saltgrass and Bermuda grass. It uses herbaceous lowlands with variable tree growth and dense population of prey. Substantial groves of dense, broad-leafed deciduous trees are used for nesting and roosting. It has extended its range and increased numbers in California in recent decades.

The proposed project may result in temporary indirect impacts to the white-tailed kite related to construction activities in or adjacent to habitat they may use. These impacts would not however, be considered to be significant due to their temporary nature.

Bald Eagle, Federally and State Threatened. The bald eagle has a low probability of occurrence at several locations along the proposed project alignment in Reaches A, B, and E (see Table II-3-A).

Range-wide, bald eagles occur primarily in or near seacoasts, rivers, swamps, and large lakes. It is considered a bird of aquatic ecosystems but within such areas, it must have an adequate food base, perching areas, and nesting sites to support them. Perching sites need to be composed of large trees or snags with heavy limbs or broken tops.

Within southern California, although birds are found in these same habitats, they are most often recorded at large deep inland bodies of water and are considered a winter resident that in the past

may have bred in the area. It is fairly common as a local winter migrant at a few favored inland lakes in southern California.

Given the limited project impacts on this species' habitat and its low potential for occurrence (only for forage) potential project impacts on the bald eagle are considered to be less than significant.

San Bernardino Kangaroo Rat, Federally Endangered, California Species of Special Concern. The San Bernardino Kangaroo Rat (SBKR), a subspecies of the Merriam's kangaroo rat (*Dipodomys merriami*), typically is found in Riversidean alluvial fan sage scrub and sandy loam soils, alluvial fans and flood plains, and along washes with nearby sage scrub. Sandy loam substrates allow for the digging of simple, shallow burrows. In most cases, SBKR scat and burrows are present but difficult to detect in disturbed habitat, indicating that the population occurs at very low or trace densities. High quality habitat supports California buckwheat, California croton, and deerweed as dominant species, and scattered Spanish bayonet (*Yucca whipplei*), cacti (*Opuntia* spp.) and a variety of native annual forbs such as phacelia (*Phacelia* sp.), lupine (*Lupinus* sp.), cryptantha (*Cryptantha* sp.), and popcorn flower (*Plagiobothrys* sp.).

The historic range of the subspecies SBKR lies west of the desert divide of the San Jacinto and San Bernardino mountains and extends from the San Bernardino Valley in San Bernardino County to the Menifee Valley in Riverside County. The subspecies currently occupies approximately 3,247 acres of suitable habitat in about seven general locations, including the Santa Ana River, Cajon Creek Wash, Lytle Creek Wash, City Creek, and upper Etiwanda Wash in San Bernardino County.

The SBKR has a high probability of occurrence in Reach "A" and a low probability of occurrence in Reach "B" (see Table II-3-A). At Reach A, where the proposed project crosses the Santa Ana River, the drainage of the river is within Designated Critical Habitat for the San Bernardino Kangaroo Rat. Tunneling is expected to occur at such a depth below the surface of the earth that no established impacts to burrowing rodents are expected at this time. Noise effects from tunneling may potentially affect such mammals, but there are no impact standards in this area. Project impacts to SBKR from micro-tunneling activities are considered to be less than significant.

However if micro-tunneling techniques become infeasible and open trench construction methods will be utilized the proposed project could result in direct and indirect adverse impacts to the SBKR. If SBKR are located within the footprint of trenching activities project adverse affects could include physical harm, disruption of normal activities such as breeding and foraging activities, habitat disturbance, or the displacement of animals from the area. Project impacts to SBKR from trenching activities are potentially significant.

Designated Critical Habitat for SBKR also covers territories south of the proposed pump station location near the intersection of Orange Show Road and Waterman Avenue. The location of the proposed pump station is approximately 2,500 feet north of the drainage, and approximately 14 feet elevated above the drainage. The SBKR is restricted to the drainage area. Therefore, no adverse effects are expected to occur to this species from construction or operation of the pump station.

Stephen's Kangaroo Rat, Federally Endangered and California Threatened. The Stephens' kangaroo rat (SKR) is found almost exclusively in open grasslands or sparse shrublands with

cover of less than 50% during the summer. Stephens' kangaroo rats avoid dense grasses (for example, non-native brome species and are more likely to inhabit areas where the annual forbs disarticulate in the summer and leave more open areas. Soil type also is an important habitat factor for Stephens' kangaroo rat occupation. As a fossorial (burrowing) animal, the Stephens' kangaroo rat typically is found in sandy and sandy loam soils with a low clay to gravel content, although there are exceptions where they can utilize the burrows of Botta's pocket gopher (*Thomomys bottae*) and California ground squirrel (*Spermophilus beecheyi*). The Stephens' kangaroo rat tends to use flatter slopes but may be found on steeper slopes in trace densities (i.e., < 1 individual per hectare). The highest abundances of Stephens' kangaroo rats occur on gentle slopes less than 15%.

The Stephens' kangaroo rat has a relatively small geographic range (about 1,108 sq miles) for a mammal species and is restricted to Riverside County and adjacent northern-central San Diego County. According to the Habitat Conservation Plan for the Stephens' Kangaroo Rat in western Riverside County, the estimated acreage in 1996 for the species rangewide was approximately 45,550 acres. It is estimated that another 3,400 acres of occupied habitat occur in the western County outside of the Stephens' kangaroo rat HCP area.

The SKR has a low probability of occurrence at one location along the proposed project alignment, Reach B (see Table II-3-A). Marginal potential habitat occurs in Reach B on the south bank of the Spring Brook arroyo, where the proposed project will cross. The native upland vegetation in the vicinity is of such limited extent and poor quality that although it is potential habitat for the Stephen's kangaroo rat, no significant impacts are expected.

Santa Ana sucker, Federally Threatened and California Species of Special Concern. The Santa Ana sucker is found in streams that are generally small and shallow with ranging currents. They seem to prefer cool, less than 22° Celsius, clear and unpolluted water, but tolerate seasonally turbid water. It is thought that historically, the Santa Ana sucker was native to the rivers and larger streams of the Los Angeles Basin, the Los Angeles, San Gabriel, and Santa Ana River drainage systems, in Los Angeles, Orange, Riverside and San Bernardino Counties. The species is now constrained to three non-connecting populations; lower Big Tujunga Creek (Los Angeles River drainage); the East, West, and North Forks of the San Gabriel River; and the lower and middle Santa Ana River. Santa Ana suckers occur in the lower portions of the Santa Ana River, with current records of occurrence near Weir Canyon Road in Anaheim to Riverside Avenue in Riverside, but are now apparently absent from the upper reach of the river in the San Bernardino Mountains (USFWS d). The Santa Ana sucker is not expected to occur in the Santa Ana River where the proposed project will occur, no significant impacts are expected.

Critical habitat was designated for the Santa Ana sucker in February 2004. The proposed project is located in Unit 1B: Santa Ana Wash of designated Critical Habitat for the Santa Ana River, which extends generally from the Riverside/San Bernardino County line in Colton upstream to the San Bernardino Mountains. Unit 1B (Santa Ana Wash) was determined essential for the conservation of the Santa Ana sucker because it provides the source for preferred spawning and feeding substrate (gravel and cobble), essential for the reproductive ability and development of the sucker. The upper reach of the Santa Ana River in Unit 1B has a greater extent of gravel and cobble substrate than the occupied areas downstream. Although generally dry in the summer winter flows replenish the substrate in downstream occupied areas originating from the upstream reaches. (USFWS e)

Micro-tunneling construction techniques are proposed for this crossing, to a depth of 40 feet below the surface. The work is expected to take approximately 45 days. Due to the depth of the disturbance of the river channel, impacts to the surface of the river channel, including those to surface flows and substrates, are not expected. Consequently, impacts to the gravel and cobble substrate source of the river are not expected.

However if micro-tunneling techniques become infeasible and open trench construction methods will be utilized the proposed project may affect Unit 1B: Santa Ana Wash of the designated Critical Habitat for the Santa Ana sucker. If trenching activities occur in the wet season construction activities may temporarily impede the natural transport of gravel and cobble substrate in this reach of the river. Impacts to the Santa Ana River channel, although temporary, may result in significant impacts to Santa Ana sucker Critical Habitat without proper mitigation measures incorporated.

Threshold - Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS.

Sensitive habitat types are vegetation communities that support concentrations of sensitive plant or wildlife species, are of relatively limited distribution, or are of particular value to wildlife. Although sensitive habitats are not necessarily afforded legal protection unless they support protected species, potential impacts to them may increase concerns and mitigation suggestions by resources agencies.

Sensitive riparian habitat has been identified in several locations along the proposed project alignment (see Table II-3-A).

Southern willow scrub and mule-fat scrub, which indicate riparian conditions, are present at Reaches A, B, E and H. At Reach A (Figure I-2a), where the proposed project crosses under the Santa Ana River this vegetation community is characterized by dense riparian thickets dominated by arroyo willow and red willow. At Reach E (Figure I-2e), on the west side of Van Buren Boulevard, the floodplain of Mockingbird Canyon Creek supports southern willow sage scrub and mule-fat scrub, although less developed. At Reach H (Figure I-2f), south of the Corona Landfill, a minor unnamed drainage supports the above vegetation communities, although they are sufficiently degraded by the major presence, in close proximity, of several mature Mexican fan palms and a Peruvian pepper tree. Mule-fat scrub is also present at Reach B, where the proposed project crosses the Spring Brook wash along the Gage Canal siphon south of Spring Street in the City of Riverside. However, this native vegetation is degraded at this location by the presence of non-native species, such as giant reed, Peruvian pepper tree and tree tobacco. Due to the low quality of the Southern Willow Scrub and Mule-fat Scrub habitats along Reaches B, E, H along the project alignment, impacts to these communities would be less than significant.

The proposed extraction of water prior to boring activities at the Santa Ana River where groundwater levels are currently high, may result in significant impacts to the health of existing riparian communities, the magnitude of which will depend on the seasonal timing of the activities.

Possible direct impacts to riparian habitat may occur at Springbrook wash in Reach B if open trenching construction methods are pursued. See further discussion of this issue on page II-3-16.

A narrow band of Riversidean sage scrub occurs adjacent to the proposed project on the steep south bank of Spring Brook drainage at the crossing location (Reach B). This vegetation extends to the east on this bank along the drainage. However, it is severely limited by its relative isolation and the presence of citrus orchards adjacent to the north, Non-native grassland adjacent to the south, and industrial and residential development to the west and northwest. Impacts to this community would be less than significant.

In the event that open-trenching techniques are utilized in lieu of micro-tunneling techniques at the Santa Ana River crossing in Reach A, the project would result in direct adverse impacts to the existing riparian vegetation. Trenching activities would involve temporary physical disturbance to the Santa Ana River channel and removal of existing riparian vegetation within the construction footprint. Impacts to the riparian community from trenching activities are considered significant.

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

A formal delineation for either state or federal wetland jurisdiction was not conducted for this analysis due to the programmatic level of the project. However, based on the preliminary field investigations by PSBS, United States Army Corp of Engineers (ACOE) "waters of the United States" per Sections 401-404 of the Federal Clean Water Act and "streambeds" per Section 1600-1603 of the California Fish and Game Code (CDFG) were observed along the proposed alignment. United States Geologic Survey (USGS) maps of the area identify several drainage courses or streams near the project alignment.

The Santa Ana River at the proposed crossing (Reach A) is under the jurisdiction of the CDFG, Corps, and California Regional Water Quality Control Board. (A summary of wetlands regulations is included as Appendix 6 of the Biological Resources Report (Appendix C)). Micro-tunneling techniques, in themselves, will result in no direct impacts to wildlife or vegetation. Dewatering may have adverse impacts to the riparian vegetation communities, the magnitude of which will depend on the seasonal timing of the activities. Impacts are anticipated to be minor and temporary, possibly involving stress, desiccation, and potential defoliation. Such impacts would be self-correcting once normal hydrology resumes. Open trenching techniques, if utilized in Reach A, would likely result in adverse impacts to the Santa Ana River. Trenching across the river for pipeline installation would result in excavation activities within the channel, within federally protected "waters of the United States."

Spring Brook drainage, a westward-flowing tributary of the Santa Ana River, along the Gage Canal siphon south of Spring Street (Reach B) supports native Mule-Fat Scrub vegetation. Boring techniques are planned for this crossing. However open cut trenching is proposed, where boring may not be feasible for this drainage crossing. This may involve direct significant impacts to jurisdictional riparian vegetation. At the time of writing this report, further technical analysis is in progress. If open cut technique is used a worst-case scenario for the area of impact is estimated to be a construction area 50 feet in width (50 feet of linear channel of Spring Brook) by 150 feet (length of crossing where boring is not feasible). The total area to be affected is 7,500 square feet of CDFG streambed habitat and ACOE non-wetland waters.

A minor unnamed northwest-flowing drainage, which downstream has been diverted to join the Riverside Canal, is crossed by the proposed project at Reach F. The crossing is at the southern portion of Lyon Street in a dip section structure. The drainage channel is jurisdictional under CDFG criteria because it has a soft bottom, but lacks wetland vegetation, and is therefore not jurisdictional under Army Corp criteria. Although impacts to this jurisdictional drainage will occur, based on disturbance and in-field review by the PSBS biologist, it is not anticipated that permits will be required.

South of the Corona Landfill (Reach H), a minor unnamed drainage carrying flows from the east side of Interstate Highway 15 to the large pond to the east of the Belair Street residential area supports Mule-Fat Scrub and Southern Willow Scrub. Both entrance and exit portals for the tunneling would be placed in non-native grassland locations. Dewatering may occur at this location, however impacts to the jurisdictional drainage are not anticipated to occur.

Micro-tunneling and boring activities under the Santa Ana River and all other drainages may result in the leakage of construction-related materials and subsequently degrade sub-surface flows and/or surface flows, which may result in significant impacts to the existing riparian habitat.

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

Wildlife movement corridors link together areas of suitable habitat for wildlife species. The combination of topography and other natural factors, in addition to urbanization, has fragmented or separated large open space areas. The fragmentation of natural habitat creates isolated 'islands' of vegetation that may not provide sufficient area to accommodate sustainable populations and can adversely impact genetic and species diversity. Wildlife corridors, therefore, provide for a beneficial accommodation of species, that otherwise would be separated by rugged terrain, changes in vegetation by human disturbance, or by the encroachment of urban development.

As described in the Setting section above, most of the proposed project site and surrounding lands are geographically located in areas that are highly degraded from industrial and residential development. However, the project will traverse across several local wildlife corridors.

Wildlife corridors, actual or potential, are found at the Santa Ana River crossing in Reach A, the Spring Brook arroyo crossing along the Gage Canal siphon in Reach B, Firethorn Avenue stretch of the alignment and the floodplain of Mockingbird Canyon Creek in Reach E, and the crossing of the minor unnamed drainage in Reach H.

Due to the existing patterns of urbanization within the project vicinity that exhibit very limited wildlife habitat, the subsurface nature of the proposed pipeline, and the small footprint of the construction zone, impacts on the movement of any resident or migratory fish or wildlife species or on established native resident or migratory wildlife corridors are expected to be less than significant.

Threshold – Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The City of Riverside General Plan 2010 contains a policy that recognizes and protects trees because of their cultural or historic importance. This policy is discussed further in the Cultural Resources and Aesthetics sections of this Program EIR (Sections VIII.D and VIII.A).

Most of the jurisdictions along the project alignment, including the Cities of San Bernardino, Colton, Riverside, and Corona and the County of Riverside, have policies regulating the removal of or injury to trees and other landscaping. However these policies protect trees as an aesthetic resource rather than a biological resource. These policies are discussed further under Aesthetics (Section A).

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

Riverside County has prepared and approved the Multiple Species Habitat Conservation Plan (MSHCP) which was designed to protect 146 species and their associated habitats throughout Western Riverside County, including its 14 member Cities. The proposed project is located within the jurisdiction of the MSHCP.

The MSHCP is set up by defining Criteria Area Cells roughly based on 160 acre squares. These Criteria Area Cells were established because they contain habitat and resources to support some of the 146 MSHCP protected species. The goal of the MSHCP is to conserve 153,000 acres of land set aside in these Criteria Area Cells throughout the County and cities within Riverside County. If a proposed development project is located within a Criteria Area Cell, then the Regional Conservation Authority (RCA) (set forth by the MSHCP) will review the proposed development, the site resources and any biological data pertaining to the site. If the RCA determines that the proposed development site support protected species and/or their habitat, they may offer to purchase the property as inclusion in the overall conservation area under the MSHCP. Additionally, all development projects within the County of Riverside, or within any of the 14 cities of the County, shall be required to pay an MSHCP mitigation fee which will set aside money for the purchase of additional lands for conservation.

As a water district, Western Municipal Water District (WMWD), has the option of participating in the MSHCP. If WMWD decides to participate, the RCF project would be screened for inclusion in a Criteria Area identified by the MSHCP for conservation. If a particular Reach of the proposed project were to be located within a Criteria Area, WMWD would negotiate with the Regional Conservation Authority set forth by the MSHCP, to see if their particular project footprint would be an area the RCA would like to set aside for conservation.

If WMWD chooses not to participate in the MSHCP, any impacts to protected species as a result of the proposed project will need to be mitigated through the "regular" channels of the resource agencies. In other words, if the proposed project will result in impacts to a federally protected species, WMWD would need to secure a "take" permit from the U.S. Fish and Wildlife Service. Under the MSHCP, a "take" would be covered by participating in the Plan.

Since the Riverside Corona Feeder project extends through primarily developed, urban areas, those areas are not included in a Criteria Area Cell under the MSHCP. Therefore, the project will not conflict with the MSHCP, regardless of whether or not WMWD decides to participate in the MSHCP.

Since there are no other HCP's that the proposed project would conflict with, impacts are considered less than significant.

Proposed Mitigation Measures

In order to avoid or minimize potential direct significant impacts on any species identified as a candidate, sensitive, or special status species and potential impacts to riparian habitat, the following Mitigation Measures are proposed:

MMBio 1: In Reach A, the dewatering activities should take place during the period from October 1 through the end of February. This is within the season when the dominant plant species of these riparian communities are dormant. Dewatering outside of this period would subject these communities to stress, desiccation, and potential defoliation. In addition, adherence to this suggested schedule avoids the generally accepted breeding chronology for nesting by the least Bell's vireo and southwestern willow flycatcher in southern California (USFWS b, Sogge *et al.*), obviating the need for focused surveys that may be required, due to the project's potential to have significant noise impacts to these two listed migratory species. This suggested schedule also avoids the breeding season of the federally listed arroyo toad, generally regarded as mid-March through July 1 (USFWS c), thereby avoiding potential impacts to this species as well. Impacts to the arroyo toad during the breeding season would be direct, including physical damage to mature individuals and interference with breeding activities. Should it not be feasible to adhere to this schedule, additional mitigation measures are required, as specified below.

MMBio 2: Should the construction occur during the breeding season for the arroyo toad (March 15 – July 1), a protocol-level survey shall be conducted at the Santa Ana River (Reach A), to determine presence/absence. If the arroyo toad is found to be present in the vicinity of Reach A, incidental take permits (through either Section 7 or Section 10) shall be applied for. The survey reports shall identify further measures to be taken to avoid or minimize adverse project effects to the protected species and their habitat.

MMBio 3: Should construction occur during the breeding season for the least Bell's vireo or southwestern willow flycatcher (March 15 through September 15), protocol-level surveys shall be conducted prior to construction at the following locations: the Santa Ana River (Reach A), Spring Brook wash (Reach B), the riparian vegetation along the Mockingbird Canyon alignment (Reach E), and the drainage located south of the Corona Landfill (Reach H). Should any of these species be detected, a temporary noise barrier shall be used during construction, at the appropriate location(s), in coordination with CDFG and the USFWS. The noise barrier shall attenuate noise levels to 60 dBA or less at the edge of breeding habitat. If surveys indicate these species are not present, this measure will not be required. Protocol-level surveys reports shall identify further measures to be taken to avoid or minimize adverse project effects to the protected species and their habitat.

MMBio 4: Should construction occur during the breeding season for the coastal California gnatcatcher (March 15 through September 15), a protocol-level survey shall be conducted prior to construction at Spring Brook wash (Reach B), in the vicinity of the proposed project. Should coastal California gnatcatcher be detected, a temporary noise barrier shall be used during construction, at the appropriate location(s), in coordination with CDFG and the USFWS. The noise barrier shall attenuate noise levels to 60 dBA or less at the edge of breeding habitat. These protocol-level survey reports shall identify further measures to be taken to avoid or minimize adverse project effects to the protected species and their habitat.

MMBio 5: In addition to use of the temporary noise barrier, a qualified on-site noise monitor (approved by the local jurisdiction and WMWD) shall be present during all construction activities conducted near habitat that has been identified in the surveys to host the arroyo toad, least Bell's vireo, southwestern willow flycatcher, or coastal California gnatcatcher. The noise monitor shall ensure through on-site noise meter readings that the temporary barriers are effective at reducing construction noise to 60 dBA or less. If 60dBA is exceeded, the noise monitor shall work with the Contractor to make adjustments in the barriers or construction activities to reduce noise to 60 dBA or less.

MMBio 6: Construction staging areas shall be located outside of riparian areas and away from (to the greatest distance feasible) riparian areas.

MMBio 7: Construction activities adjacent to riparian and/or wetland areas shall be minimized where feasible. If open cut trenching is used in the Spring Brook drainage crossing instead of boring, direct loss of wetlands may occur and permits and mitigation will be required. Such mitigation may include restoration on site, removal of invasive species, or off-site purchase. See MMBio 8, below.

MMBio 8: A formal jurisdictional delineation for potential State and Federal wetland impacts will be conducted at Reaches A and B.

MMBio 9: A project-wide 1602 Streambed Alteration Agreement prepared in accordance with CDFG requirements shall be secured by WMWD as the jurisdictional delineation warrants and shall include mitigation measures that are sufficient to reduce direct and indirect impacts to riparian habitat to a level below significant. The Agreement may include some or all of the following:

- Avoid impacts where possible by shifting the project location or construction timing.
- Minimize impacts.
- Remove invasive species.
- Purchase off-site habitat credits.
- Create and/or restore natural communities.
- Avoid sensitive habitats by placing construction staging areas as far away from them as is feasible.
- Limit construction activity to daylight hours to minimize potential impacts related to artificial lighting.
- Require the presence of a qualified biological monitor during all construction activities that are within or near sensitive habitats and areas that have been identified to host the arroyo toad, least Bell's vireo, southwestern willow flycatcher, coastal California gnatcatcher, Stephen's kangaroos rat, or San Bernardino kangaroo rat.

MMBio 10: An ACOE Section 404 permit shall be secured as the jurisdictional delineation warrants. The Nation-wide Section 404 Permit will apply to the project for linear utility projects. The Corps may require the implementation of measures similar to those listed for the Section 1602 Streambed Alteration Agreement as part of the Section 404 Permit approval process. Implementation of these measures will mitigate potential impacts to the bed and banks of the Santa Ana River and any other jurisdictional drainage.

Should open-trenching techniques be utilized to install the pipeline across the Santa Ana River, consultation with the US Fish and Wildlife Service will be initiated to determine whether or not the proposed project would result in significant impacts to Critical Habitat for the Santa Ana sucker. If warranted incidental take permits (through Section 7) shall be applied for. The US Fish and Wildlife Service shall identify further measures to be taken to avoid or minimize adverse project effects to the protected species and their habitat.

MMBio 11: In conjunction with the ACOE Section 404 Permit, a Section 401 Water Quality Certification from the California Regional Water Quality Control Board shall be secured.

MM Bio 12: Any discharge into navigable waters, or "waters of the United States" shall also comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Federal Clean Water Act. Compliance with these provisions shall result in certification from the Regional Board that verifies that the project complies with all water quality standards.

MMBio 13: California State Water Resources Control Board (SWRCB) dewatering Permits, submitted for dewatering activities associated with all boring and micro-tunneling, will be required and may specify typical mitigation measures required in a dewatering permit:

- Characterize the quality of the water that will be discharged
- Treat water to be discharged to SWRCB standards prior to discharge
- Delineate extent of contamination
- Specify contaminants
- Identify beneficial uses
- Identify treatment

MMBio 14: Should open-trenching techniques be utilized to install the pipeline across the Santa Ana River, a protocol-level survey shall be conducted at the Santa Ana River (Reach A), to determine presence/absence of the Santa Ana River woolly-star and slender-horned spineflower within the construction footprint. If Santa Ana River woolly-star or slender-horned spineflower are found to be present in the footprint, incidental take permits (through Section 7) shall be applied for. The survey reports shall identify further measures to be taken to avoid or minimize adverse project effects to the protected species and their habitat.

Summary of Environmental Effects after Mitigation Measures are Implemented

After the mitigation measures identified above are implemented, potential adverse impacts to sensitive species and their habitat will be reduced to less than significant levels. Potential impacts to jurisdictional wetlands shall also be reduced to less than significant levels.

4. Cultural Resources

Potential impacts to cultural resources resulting from the proposed project were addressed in the Notice of Preparation (NOP) and were determined to have significant impacts to historical and archeological resources, and less than potentially significant impacts to paleontological resources (NOP, Appendix A). In response to the NOP, a comment letter raised the issue of the potential loss of Luiseno Indian cultural resources as a potentially significant impact that could result from the proposed pipeline project.

The focus of the following discussion is related to Native American resources, historic resources, archaeological resources, and the project's potential to alter those resources through construction and operation. The following discussion is a summary of the Phase I Cultural Resources Investigation prepared for the proposed project by McKenna et al. in March 2003. This report is contained in its entirety as Appendix E of this document.

Environmental Setting

The project area is located in the western portion of Riverside County and a small portion of San Bernardino County. The route extends across six local jurisdictions, including the cities of San Bernardino, Colton, Grand Terrace, Riverside, Corona, and unincorporated portions of Riverside County. A pump station will be constructed near the intersection of Waterman Avenue and Orange Show Road. The route begins north of the Santa Ana River near the intersection of the Warm Creek Bypass maintenance road, in the City of San Bernardino. It then continues south across the Santa Ana River, along Barton Road, Mount Vernon Avenue (crossing into Riverside County), Spring Street, Palmyrita Avenue, Marlborough Avenue, and Spruce Street. The project then follows Chicago Avenue to Lincoln Avenue, Adams Street, and Cleveland Avenue. A lateral comes off Cleveland Avenue at Irving Street while the main alignment continues along White Avenue, Victoria Avenue, Fillmore Street, and Indiana Avenue. The southern reach of the alignment continues from Indiana Avenue, along Neece Street, Magnolia Avenue, and Compton Avenue.

Native American Cultural History – Pre-Historic

The general area of the proposed project is considered to have a low level of sensitivity for the presence of prehistoric archaeological resources and a moderate level of sensitivity for historic archaeological resources. The areas geographically closer to the nearby foothills are more sensitive for prehistoric resources and the flood plain area are more conductive to historic resources. Historic buildings may be located on the peripheries of the proposed project, on either side of the linear alignments.

Although several Native American populations may be represented in the project area, the geographical area associated with western Riverside County is generally considered to be within the traditional Luiseno territory. Many have argued that it is highly likely that the Norco-Corona area is Gabrielino, Juaneno, Cahuilla, or Serrano territory. However, given the language associations in the area it is most likely that the project area is associated with Gabrielino (Tongva) population.

The term “Gabrielino” is a reference to the direct association between the Native American population of the San Gabriel Valley and the Mission San Gabriel de Archangel. The Mission was originally located in the Whittier Narrows area but relocated shortly after its founding

because of unstable ground along Rio Hondo/San Gabriel River channels. The Mission San Gabriel serviced the entire San Gabriel Valley; ranging from the coast to the San Gabriel/San Bernardino Mountains and from northern Los Angeles County to just north of San Juan Capistrano. The northern and eastern extent of their territory included the San Gabriel and San Bernardino Mountains and areas generally associated with the Serrano of the mountain and desert regions.

The Gabrielino utilized numerous plants and animals for food shelter and medicines. Along the coast, the Gabrielino regularly exploited the wetlands and ocean resources. Prior to the Mission system, populations tended to live in larger villages with a series of "daughter" or "satellite" sites with lesser populations. Seasonal migration was practiced for the exploitation of resources and protection from seasonal weather conditions. Habitation structures were constructed of branches, grasses, and mud and interior hearths were used for heat.

History of the Area – Post-European Context

The earliest known records of European contact with Southern California Native Americans date to the mid- 1550s, representing minor contact during early explorations by the Spanish. Intensive contact was not established until the 1770s, when Father Garcia traversed the Mojave Desert and entered coastal Southern California through the Cajon Pass.

In the 1770s, the Spanish padres, under the direction of Junipero Sierra, began the process of establishing a series of missions throughout Alta California, as California was then known. The project area is within the boundaries of lands that were held by the Mission San Gabriel de Archangel. The Mission held large tracts of land until the Mexican government declared its independence from the Spain and issued orders for the secularization of the Missions. By 1833-34, the majority of Mission lands were taken from the Catholic Church and reissued to individuals who had served as either Spanish or Mexican soldiers, settlers, or financiers.

The proposed project area is within the historic Rancho La Sierra, Rancho San Bernardino, Rancho El Sobrante de San Jacinto, and just east of the Rancho Jurupa. Each of these areas were sparsely occupied during the Spanish/Mexican periods and used predominantly for cattle grazing.

The project area remained sparsely populated into the 1900s, when streets were established on a north/south and east/west grid. The relatively flat flood plain located south of the Santa Ana River provided ample agricultural and cattle land, eventually becoming a concentration of dairy farms in the Norco area.

Most of the jurisdictions that the proposed project traverses are old established communities (late 1800's). These communities were largely based on an agrarian economy, especially citrus production and packing. Some of these jurisdictions may have mature street trees, agricultural windrows, or other landscaping that is mature and not easily replaceable from a cultural standpoint. Some of these jurisdictions or areas still maintain their sense of identity and aesthetic value from the existing historic citrus landscape which includes the citrus trees themselves, windrows of eucalyptus trees and rows of palms that helped define the edges of groves and entries to home sites.

Landscapes can be identified as having cultural (historic) value and are categorized by the U.S. Secretary of the Interior in two broad groups, "historic designed landscape" and "historic vernacular landscape."

Historic Designed Landscape is a landscape that was consciously designed or laid out by a landscape architect, master gardener, architect, or horticulturist according to design principles, or an amateur gardener working in a recognized style or tradition. The landscape may be associated with a significant person(s), trend, or event in landscape architecture; or illustrate an important development in the theory and practice of landscape architecture. Aesthetic values play a significant role in designed landscapes. Examples include parks, campuses, and estates.

Historic Vernacular Landscape is a landscape that evolved through use by the people whose activities or occupancy shaped that landscape. Through social or cultural attitudes of an individual, family or a community, the landscape reflects the physical, biological, and cultural character of those everyday lives. Function plays a significant role in vernacular landscapes. They can be a single property such as a farm or a collection of properties such as a district of historic farms along a river valley. Examples include rural villages, industrial complexes, and agricultural landscapes.

Cultural Resources Known in the Project Vicinity- San Bernardino County

With respect to project alignments within San Bernardino County, a minimum of twenty-seven cultural resource investigations within one half mile of the alignments had been conducted prior to this project. As a result of the various investigations, a single prehistoric archaeological site was identified within the proposed project area (CA-SBR-SBR-2999). This site was identified by Smith in 1938 as a Native American habitation site associated with neophytes of the San Gabriel Mission – located within the Hunts Ranch complex. The site was reportedly destroyed by agricultural activities. A State historical marker has been placed in the general vicinity of the site (California Register of Historical Landmarks – P36002999, CHL-617). No new archaeological resources were identified as a result of the Phase 1 survey conducted by McKenna et al.

Five historic sites, seven pending sites, and ten possible historic structure locations were also reported. The historic sites include: CA-SBR-2999H (Hunts Ranch, etc.); CA-SBR-6099 (refuse scatter); CA-SBR-10330H (Union Pacific/Southern Pacific Railroad); CA-SBR-6847H (The Old Kite Route); and CA-SBR-7168H (The Gage Canal). The pending sites include P-1074-84H (the Hunt and Cooley Ditch); P-1074-88H (Rancheria Ditch/Vivienda Water Co.); P-1074-90H (Johnson Swamp Ditch; P-1074-99H (Whitlock Ditch); and P36-016417 (San Bernardino – Sonora Road). Of all of these resources, only the Gage Canal is located within the immediate project area.

The Gage Canal was constructed between 1885 and 1889 by Mathew Gage. Initially, it was 11.91 miles in length and it brought water from the Santa Ana River to Gage's property in Section 30 of Township 2 South, Range 4 West. It was later expanded another 8.22 miles into Riverside County, providing irrigation water for citrus crops. Portions of the alignment are now buried and not visible from the surface.

The proposed project crosses the historic alignment of the Gage Canal right-of-way (CA-SBR-7168H) at Barton Road (south of Washington Street in the City of Colton) and appears to be very close to the canal alignment at Mount Vernon Avenue at Van Buren Street (City of Grand

Terrace). The Gage Canal is not visible in either of these locations and, therefore, the relative significance of the canals has not been established in these areas.

Cultural Resources Known in the Project Vicinity - Riverside County

In Riverside County, a minimum of fifty-nine studies had been conducted within or adjacent to the current project area. A total of 33 archaeological sites and 39 historical properties are located within one half mile of the project alignments, but the project alignments abut or cross five resources, including: CA-RIV-4768h (the Gage Canal), CA-RIV-4791h (the Riverside Canal); CA-RIV-3832h (AT&SF Railroad Alignment), CA-RIV-9774 (Southern Pacific Railroad), and Victoria Avenue.

The proposed project crosses the historic alignment of the Gage Canal at Irving Street. The canal is open and visible at this point, and adjacent to the California State Historic Park.

Other resources include sensitive landscapes, including palm rows and citrus trees within the California Citrus State Historic Park and other streets within the City of Riverside Greenbelt area.

Criteria for Determining Significance

Impacts related to cultural resources may be considered significant if the proposed project would:

- Cause a substantial adverse change in the significance of a historical resource as defined in California Code of Regulations § 15064.5.
- Cause a substantial adverse change in the significance of a archaeological resource as defined in California Code of Regulations §15064.5.
- Disturb any human remains, including those interred outside of formal cemeteries.

Project Compliance with Existing Regulations

Sections 21083.2 and 21084.1 of the California Environmental Quality Act (CEQA) deal with the definition of a historical resource, unique archeological resource and non-unique archaeological resource. Section 21083.2 directs the lead agency to determine whether the project may have a significant effect on unique archaeological resources. If the lead agency determines that the project may have a significant effect on unique archaeological resources, the environmental impact report shall address the issue of those resources. Section 21084.1 directs the lead agency to determine whether the project may have a significant effect on historical resources, irrespective of the fact that these historical resources may not be listed or determined to be eligible for listing in the California Register of Historic Resources, a local register of historical resources, or they are not deemed significant pursuant to criteria set forth in subdivision (g) of Section 5024.1.

See Page 1.0-2 of the Intro-duction to the Final PEIR for added text.

The Secretary of the Interior is responsible for establishing professional standards and providing advice on the preservation of cultural resources listed in or eligible for listing in the National Register of Historic Places. In 1976, The Secretary of the Interior's Standards for Historic Preservation Projects were developed and have been in use by State Historic Preservation Officers and the National Park Service to ensure that projects receiving federal money or tax benefits were reviewed in a consistent manner nationwide. The principles embodied in the

Standards have also been adopted by hundreds of preservation commissions across the country in local design guidelines.

In 1992, the Standards were revised so that they could be applied to all historic resource types included in the National Register of Historic Places--buildings, structures, sites, objects, districts, and landscapes. Re-titled, The Secretary of the Interior's Standards for the Treatment of Historic Properties, this new, modified version addresses four treatments: preservation, rehabilitation, restoration, and reconstruction. The Guidelines for the Treatment of Cultural Landscapes illustrate how to apply these four treatments to cultural landscapes in a way that meets the Standards.

The City of San Bernardino General Plan requires that an environmental review be conducted on all applications including grading, earth-moving, building, or demolitions permit applications, or for archaeological resources discovered during construction, for sites designated as archaeologically significant in order to ensure that these sites are preserved and protected (Policy 3.6.4).

The City of Colton Ordinance 0-11-87, known as the "Historic and Scenic Preservation Ordinance of the City of Colton" establishes rules and regulations governing the designation, preservation ad perpetuation of historic and scenic properties. This Ordinance authorizes the Historic and Scenic Preservation Commission to make recommendations, decisions, and determinations concerning the designation, preservation, protection, enhancement and perpetuation of historic and cultural resources in the City of Colton.

The City of Grand Terrace General Plan provides for the inventory and protection of historic resources from harmful impacts (Section V, Cultural Resources), Implementation Policy).

The City of Riverside General Plan 2010 includes Historic Preservation goals and policies to "preserve Riverside's historic resources as physical reminders of the City's past and as unique focal points to shape the community's identity". Policy 23.3 addresses the City's commitment to preserve, to the extent feasible, historically and architecturally significant buildings and sites throughout the community. Policy 25.1 recognizes natural resources for their cultural and historic values and provides to the inventory of City's heritage trees and development of standards to ensure the significant trees are protected through the City's development review processes.

Design Considerations

The proposed and alternative alignments are primarily located within street rights-of-way. Since the exact location of the RCF pipe within any given street will be determined as construction documents are prepared, it is not known whether the pipe will impact historical and archaeological resources. The proposed project includes boring under the Gage Canal to avoid that historic resource and to limit disruption of water distribution through the canal.

Environmental Impacts before Mitigation

Threshold: The proposed project would result in significant impacts if it causes a substantial adverse change in the significance of a historical resource as defined in California Code of Regulations § 15064.5.

"A substantial adverse change in the significance of a historical resource" is defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired.

The proposed project will pass across, or in the vicinity of, a total of five historic sites including: the Gage Canal (CA-RIV-4768H, CA-SBR-7168H), the Riverside Canal (CA-RIV-4791H), AT&SF Railroad Alignment (CA-RIV-3832H) and the Southern Pacific Railroad (CA-RIV-9774) and Victoria Avenue listed in the National Register of Historic Places since 2000.

The Gage Canal is eligible for listing in both the National Register of Historic Places and the California Register of Historic Resources. In Riverside County, the proposed project will cross a portion where the Canal is open and intact, rendering the proposed project a significant resource that shall be protected from adverse impacts. In San Bernardino County the proposed project will cross the historic alignment of the Gage Canal at Barton Road (south of Washington Street) and will pass very close to the canal alignment at Mount Vernon Avenue at Van Buren Street in Grand Terrace. The Gage Canal is not visible in either of these locations and, therefore, the relative significance of the canal has not been established in these areas.

See page 1.0-1 of the Introduction to the Final PEIR for corrected text.

The Riverside Canal (CA-RIV-4791H) runs along the southern alignment of the proposed project area, but the proposed alignment does not involve the actual canal right-of-way. Rather, the proposed project parallels the Riverside Canal. The site has not been evaluated for eligibility on either the Federal or State level. Impacts to the Riverside Canal will be avoided by paralleling the canal and not involving specific portions of the canal.

The historic AT&SF Railroad Alignment (CA-RIV-3832H) is ineligible for listing in the National Register of Historic Places, but is eligible for listing on the California Register of Historic Places.

The Southern Pacific Railroad Alignment (CA-RIV-9774) has not been evaluated for eligibility on either the Federal or State level.

Neither railroad alignment will be adversely impacted by the proposed project alignment.

Riverside Highland Water Company Facilities (P-1074-87H) have been tentatively located on Barton Road (north of Palm Avenue) but no physical evidence of this feature has been identified to date, and therefore, the resource has not been evaluated.

The landscaping along Victoria Avenue within the City of Riverside is a sensitive resource that may be impacted by the proposed project. Victoria Avenue is listed on the National Register of Historic Places and is a local City Historic Landmark. The landscaping along this street is one of the primary reasons for its designation on the National Register of Historic Places. The proposed project alignment includes the portion of Victoria Avenue between Arlington Avenue and Lincoln Avenue (approximately 900 linear feet). Loss of the historic landscape along Victoria Avenue would be considered significant both aesthetically and historically (See the Aesthetic Resources Section II-1). If federal funding is involved in the RCF project, then the Federal Section 106 process for evaluating impacts to historic resources will be required. Local review and approval must also be acquired from the City of Riverside Cultural Heritage Board with or without federal involvement. As stated in the Project Compliance with Existing Regulations, the Secretary of the Interior is responsible for establishing professional standards and providing advice on the preservation of cultural resources listed in or eligible for listing in the National

Register of Historic Places, including historic landscapes. The Secretary's Guidelines for the Treatment of Cultural Landscapes are used by the City of Riverside to evaluate impacts and recommend project changes/mitigation for proposed projects that affect Victoria Avenue.

Other sensitive landscapes will include palm rows and citrus trees within the City of Riverside Greenbelt area streets and within the California Citrus State Historic Park. The State of California Department of Parks owns and operates the California Citrus State Historic Park. The primary goal of this park is to preserve the citrus industry-related landscape and interpret it for the public. This park borders Irving Street, within which the proposed project will be located. State permits and approvals would have to be granted if the proposed project requires the removal of the citrus and/or palm trees which line Irving Street

Due to the relative sensitivity of the project area (LOW for the presence of prehistoric archaeological resources and MODERATE for historic archaeological resources), the proposed construction activities may result in potentially significant impacts.

Threshold: The proposed project would cause a substantial adverse change in the significance of an archaeological resource as defined in California Code of Regulations §15064.5.

The proposed project will not impact known archaeological resources. However, due to the moderate level of sensitivity for the presence of historic archaeological resources within the project area, the project may impact unidentified resources in the area and therefore, may result in an adverse change in the significance of an archaeological resource.

Threshold: The proposed project would result in a significant impact if it disturbs any human remains, including those interred outside of formal cemeteries.

The California Native American Heritage Commission (NAHC) investigated the possibility for any Native American cultural resources within the Riverside Corona Feeder project area and has not indicated the presence of any Native American human remains within the project and/or in the immediate project area. There is low potential for adverse environmental impacts to human remains, including those interred outside of a formal cemetery. Nevertheless, human remains may be uncovered at any time, and the project may result in significant impacts if it disturbs those human remains.

Proposed Mitigation Measures

The following measures shall be implemented to eliminate or reduce potentially significant impacts to archaeological resources.

See page 1.0-2 of the Introduc-tion to the Final PEIR and the MMRP for revised mitiga-tion measures.

MM Cult 1: Full time archaeological monitoring during excavations shall be conducted in sensitive areas (e.g. near the Santa Ana River crossing), within undeveloped areas along the project alignment, near Riverside Highland Water facility site thought to be in the vicinity of Barton Road (north of Palm Avenue), at the Gage Canal crossing in the cities of Riverside and Grand Terrace, at the Railroad crossings (AT&SF Railroad Alignment and Southern Pacific Railroad), the Riverside Canal, at Victoria Avenue and Irving Street. The extent and duration of the archaeological monitoring shall be determined by a qualified archaeologist once the construction schedule is defined.

MM Cult 2: The archaeological monitoring program shall be executed in conjunction with Native American monitoring in sensitive locations where undisturbed soils will be excavated. The Native American monitor shall be of either Gabrielino or Luiseno descent.

MM Cult 3: Should any resources be identified at any time during excavations for the Riverside-Corona Feeder Project, the archaeological monitor shall be permitted to evaluate the resources in accordance with the Federal and State guidelines. Current standards require the archaeologist to curate materials in federally recognized repositories (e.g. the San Bernardino County Museum or the University of California, Riverside, Archaeological Research Unit).

MM Cult 4: If fossils are identified during excavation, a qualified paleontologist shall be contacted and permitted to recover and evaluate the find(s) in accordance with current standards and guidelines.

MM Cult 5: If human remains are uncovered at any time, the County Coroner shall be notified and all activities in the area of the find shall be halted. If the Coroner determines that the remains are of Native American origin, the Native American Heritage Commission shall be notified and consultation with the local Native American representatives shall be initiated to determine the disposition of the remains in accordance with State and County guidelines.

In addition to the above mitigation measures, the following mitigation measures (as previously outlined in the Aesthetics Section VIII-A, should also be implemented:

MM Cult 6: Plants and trees removed or damaged by the proposed project shall be replaced pursuant to the standards and requirements of each jurisdiction within which the loss or damage occurs.

MM Cult 7: The location of all existing trees, palms and other landscaping shall be noted on the construction drawings that will be prepared for this project to facilitate review and proper permitting by the affected jurisdiction.

See page 1.0-2 of the Intro-duction to the Final PEIR and the MMRP for revised mitiga-tion measures.

MM Cult 8: If construction activities that require digging are located closer than eight feet from a mature palm, a certified arborist shall evaluate the specific palm(s) to determine if the palm can remain in place, be relocated successfully or if project redesign may be warranted. If the palm must be removed, replacement shall be pursuant to the requirements of the jurisdiction within which the palm(s) is/are located.

MM Cult 9: If construction activities that require digging are located closer than thirty feet from the drip line of a mature tree, a certified arborist shall evaluate the specific tree(s). The arborist will recommend the course of action most likely to preserve the tree including but not limited to trimming to help with stability, no action and the tree remains in place as is, project redesign, or the means to achieve a successful relocation. If the tree must be removed, replacement shall be commensurate with the size and age of the tree being removed, pursuant to the requirements of the jurisdiction within which the tree(s) is/are located, and in no case shall replacement trees be less than 24-inch box size trees..

<u>Summary of Environmental Effects After Mitigation Measures are Implemented</u>

If the mitigation measures MM Cult 1 through MM Cult 9 are implemented, impacts to historical resources and to previously unknown potentially significant archaeological and paleontological resources will be less than significant.

5. Groundwater Levels

The proposed project was determined to have potential impacts related to groundwater levels during the Initial Study process. However, the proposed project's impacts were determined to be less than significant during the EIR process. The following section outlines the analysis and determination of significance.

Environmental Setting

Groundwater Generally

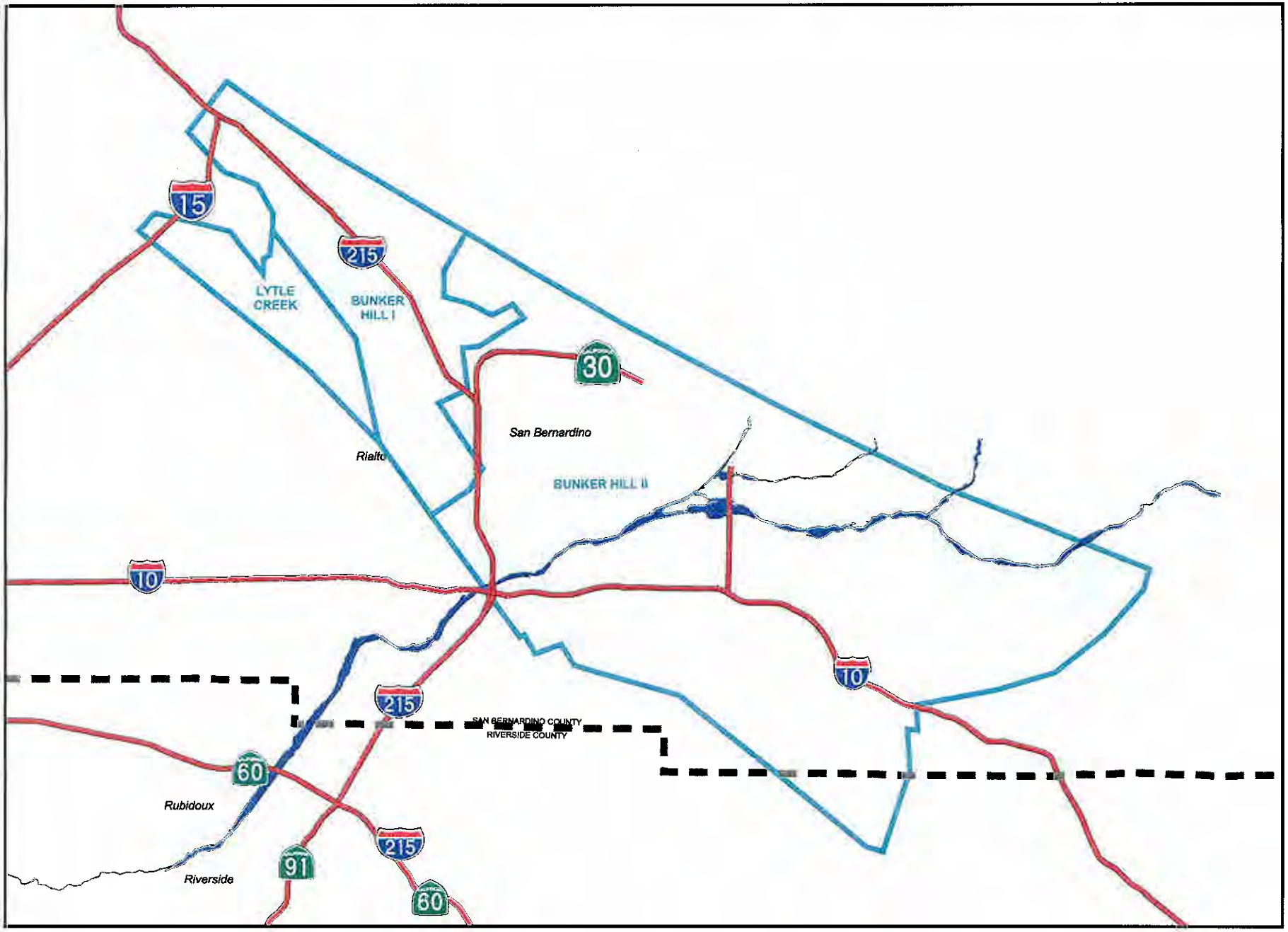
Groundwater is found underground in cracks and spaces in soil, sand and rocks. The area where water fills these spaces is called the saturated zone. The top of this zone is called the water table. The water table may be only a foot below the ground's surface or it may be hundreds of feet down. The water table may rise or fall depending on many factors. Heavy rains or melting snow may cause the water table to rise, or an extended period of dry weather or excessive groundwater extraction (pumping) may cause the water table to fall. Groundwater supplies are naturally replenished, or recharged, by rain and snow melt. Groundwater can also be artificially recharged utilizing water imported from other ground water basins.

Groundwater is stored in and moves slowly through layers of soil, sand and rocks called aquifers. The speed at which groundwater flows depends upon the slope of the water table and upon the size of the spaces in the soil or rock and how well the spaces are connected. Aquifers typically consist of gravel, sand, sandstone, or fractured rock, like limestone. These materials are permeable because they have large connected spaces that allow water to flow through. Where the water table meets the surface, water in aquifers emerges naturally through a spring or through discharges into lakes and streams.

Groundwater can also be extracted through mechanical means by drilling a well into the aquifer. A well is a pipe in the ground that fills with groundwater. This water then can be brought to the surface by a pump. Pumping water from a well or a group of wells in any particular area, may cause a drop in groundwater levels, locally or regionally, depending upon the amount of water extracted.

Characteristics of the San Bernardino Groundwater Basin.

The San Bernardino Groundwater Basin (Basin Area) is a sediment-filled trough situated between the San Andreas and San Jacinto Faults in the upper part of the Santa Ana River Basin near the base of the San Bernardino Mountains. This aquifer is divided into four primary sub-basins including: Lytle Creek Sub-basin, Bunker Hill Sub-basin I, Bunker Hill Sub-basin II and the Bunker Hill Pressure Zone (Figure II-5a). The Bunker Hill Pressure Zone is also referred to as the Area of Historic High Groundwater (AHHG). Groundwater within the Bunker Hill Basin generally flows west from recharge areas along the base of the San Bernardino Mountains towards the Bunker Hill Pressure Zone. Historically, groundwater discharged as upward flow to a freshwater marshland adjacent to the San Jacinto Fault (near Interstate 215), as flow rising into Warm Creek, or as underflow to the Rialto-Colton Basin through permeable materials in the



Not to Scale

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Figure II-5a

San Bernardino Groundwater Basin

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vicinity of the Santa Ana River. After 1945, increased ground water pumping near the San Jacinto Fault caused the water table to fall and the marshland became dry. Since then, water levels have increased and been routinely within 10 feet of land surface in some areas.

As illustrated in Figure (II-5b), the San Bernardino Groundwater Basin is also divided vertically by horizontal layers of impermeable soil and rock materials. These materials are referred to as "confining members". In general, the Basin is divided by two confining members creating the upper water-bearing unit, the middle water-bearing unit and the lower water-bearing unit. The upper and middle water-bearing units provide most of the water to municipal and agricultural wells in the San Bernardino Groundwater Basin. The middle confining member is as much as 300 feet thick in the AHHG, but thins and becomes less effective toward the margins of the basin at the base of the mountains (SBVMWD c).

Historical Groundwater Levels

The storage capacity of the Basin Area is estimated to be about 5,976,000 acre feet[1]. Historically the amount of groundwater in storage in the Basin Area has varied widely in response to natural hydrologic conditions. There have been prolonged periods of below average recharge and prolonged periods of above average recharge. Historic high groundwater levels were recorded between 1915 and 1920. This period was followed by a decline in water levels until 1935. From 1935-1945 water levels rose to near the 1915-1920 levels. Water levels declined between 1945 and 1969, resulting in a decline in storage of about 750,000 ac-ft. In 1970, water levels began to rise again and peaked around 1984. Between 1984 and 1991 water levels declined in the basin an average of 80 feet, resulting in a decline in storage of about 430,000 ac-ft.(SBVMWD a). Heavy rains recorded in 1993 raised water levels throughout the San Bernardino Basin area. From 1993 to 2000, the Bunker Hill Basin Pressure Zone, the Redlands area of the Bunker Hill Basin and the southern portion of the Lytle Creek Basin all had significant recoveries in groundwater levels. The groundwater levels in Yucaipa have dropped slightly since 1991 and most of the other areas in the Basin Area have generally remained the same since 1991 (SBVMWD b).

The San Bernardino Valley Municipal Water District has divided the Bunker Hill Basin into nine sub-areas to monitor and assess water levels. Two or three representative wells (index wells) were selected in each of these sub-areas. Historical data was compiled for these representative wells including high and low water levels. The index wells and the historic high and low water levels are shown in Figure II-5c.

In general, lower storage conditions tend to reduce concerns about water levels being too high in the AHHG but cause pumping problems for wells located up slope from the AHHG. High storage conditions have the opposite effect. Water agencies in the Basin Area have generally agreed on an approach whereby water levels in the forebay areas should be stabilized at acceptable elevations by management of recharge of local and imported water while water levels in the AHHG should be controlled to acceptable elevations by pumping, including, when necessary, pumping in excess of local water supply needs. The proposed project would help to implement that approach.

[1] San Bernardino-San Gorgonio Water Resources Management Investigation. CA DWR December 1986

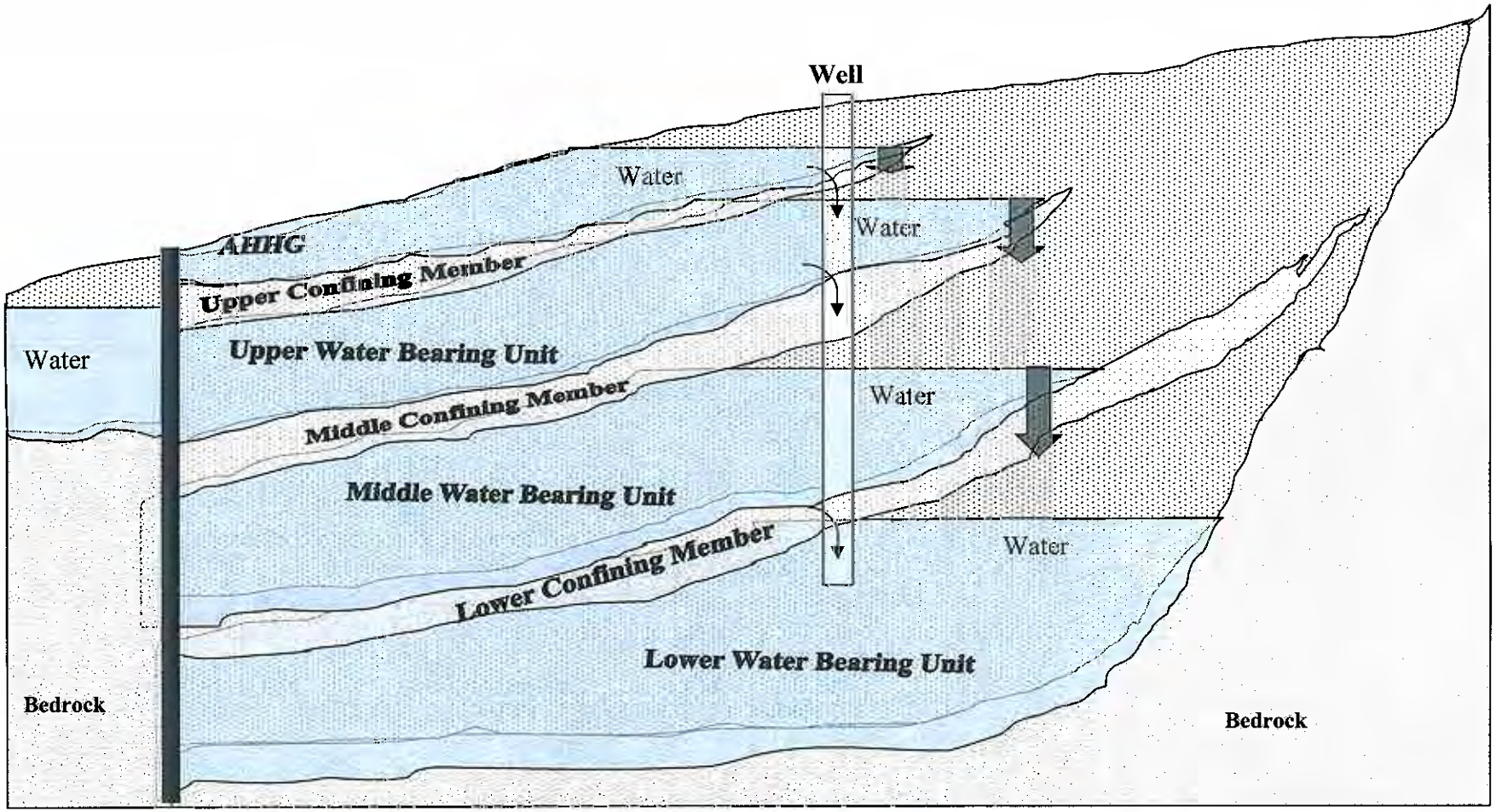

Figure II-5b
Cross-sectional View of the
San Bernardino Groundwater Basin
Riverside-Corona Feeder Project,
Riverside County and San Bernardino County
California

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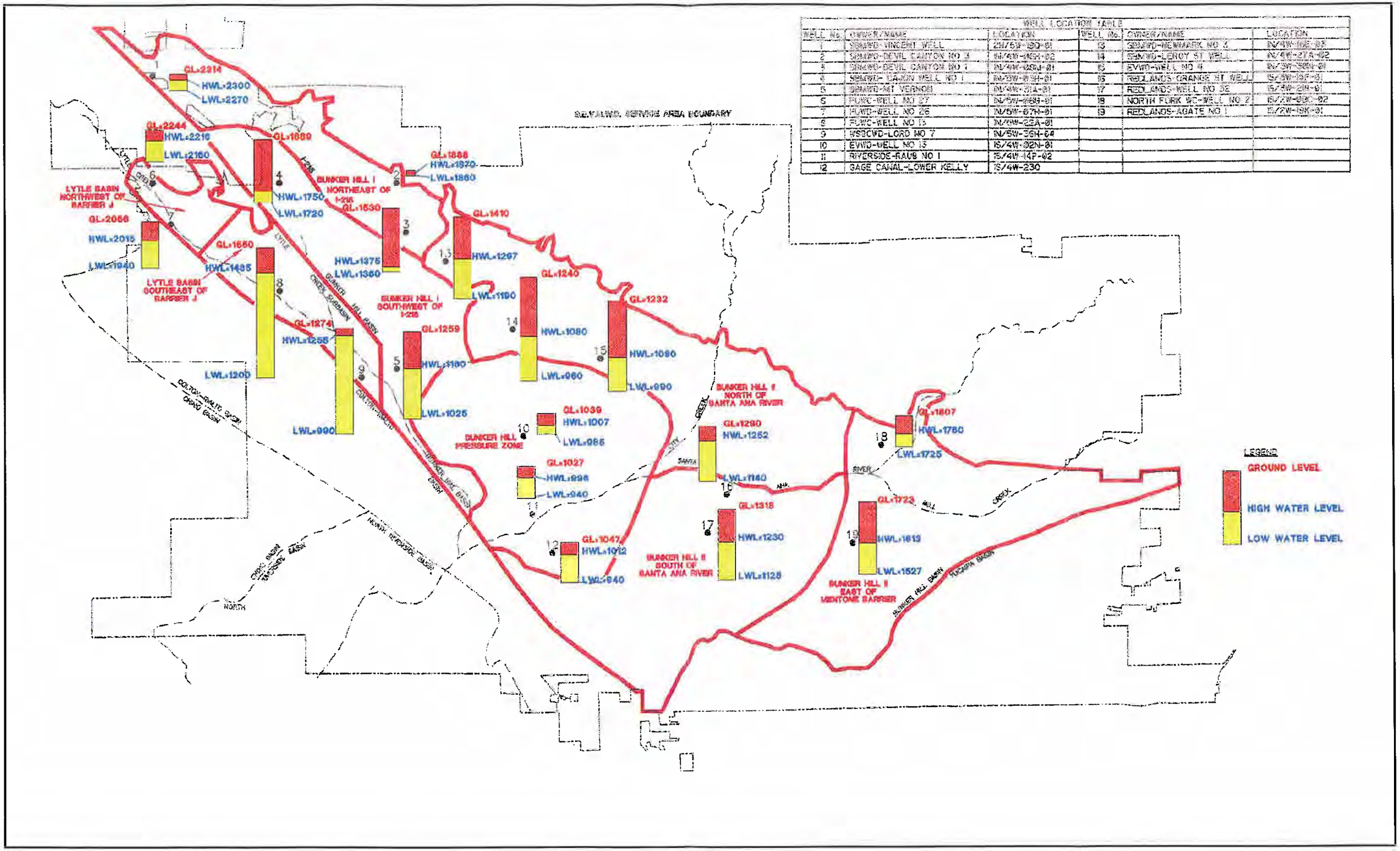

WELL LOCATION TABLE

WELL No.	OWNER/NAME	LOCATION	WELL No.	OWNER/NAME	LOCATION
1	SBMWD-VINCENT WELL	2N/5W-[illegible]-01	13	SBMWD-NEWMARK NO 2	IN/4W-[illegible]-01
2	SBMWD-DEVIL CANYON NO 3	IN/4W-[illegible]-02	14	SBMWD-LEROY ST WELL	IN/4W-27A-02
3	SBMWD-DEVIL CANYON NO 1	IN/4W-[illegible]-01	15	EVWD-WELL NO 4	IN/3W-[illegible]-01
4	SBMWD-LAGUN WELL NO 1	IN/5W-[illegible]-01	16	REDLANDS-ORANGE ST WELL	IS/2W-19F-01
5	SBMWD-MT VERNON	IN/4W-[illegible]-01	17	REDLANDS-WELL NO 32	IS/2W-20H-01
6	PUWC-WELL NO 27	IN/5W-[illegible]-01	18	NORTH FORK WC-WELL NO 2	IS/2W-[illegible]-02
7	PUWD-WELL NO 26	IN/5W-07H-01	19	REDLANDS-AGATE NO 1	IS/2W-19K-01
8	PUWC-WELL NO 15	IN/4W-22A-01			
9	WSSCWD-LORD NO 7	IN/5W-36H-04			
10	EVWD-WELL NO 15	IS/4W-32N-01			
11	RIVERSIDE-RAUB NO 1	IS/4W-14P-02			
12	SAGE CANAL-LOWER KELLY	IS/4W-230			

Source: SBVMWD
CDM Environmental Engineers
Scale: Not to Scale

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Figure II-5c

Groundwater Management Index Wells

Groundwater Recharge

Recorded recharge of natural runoff in the San Bernardino Groundwater Basin Area has been as high as 373,000 ac-ft per year (1969). The estimated average annual recharge of the Basin Area by water from local sources is about 165,000 acre-feet per year.[2] In addition to recharge of natural runoff and other local sources, the San Bernardino Groundwater Basin receives recharge of imported State Water Project water. The San Bernardino Valley Municipal Water District, and various cooperating entities, have the ability to recharge the Basin Area through water spreading at various locations in the project area. Historically the Basin has been directly recharged with up to 32,426 ac-ft per year[3] of State Water Project water.

Groundwater Extraction

The San Bernardino Basin serves as the primary source of water supply in the San Bernardino Valley. As summarized on page 45 of the Annual Report of the Western-San Bernardino Watermaster for Calendar Year 2001, total groundwater extraction in the entire basin averaged 262,082 acre feet per year for the 5-year period between 1996 and 2000. As a group, the plaintiffs named in the WMWD of Riverside County et al. vs. East San Bernardino County Water District case pumped an average of 69,752 ac feet per year and all of the "other" water users pumped an averaged 192,330 acre feet per year. (WSBWM a). Wells within the project area are numerous and widely dispersed.

Criteria for Determining Significance

The effects of the proposed project on existing or planned water supplies would be considered significant if the project:

- (1) Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there is a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells drops to a level which does not support existing land uses or planned uses for which permits have been granted) or (2) causes undesirably high groundwater levels in the area of historically high groundwater (AHHG).

Project Compliance with Existing Regulations

The 1969 Judgment

Production of groundwater from the Basin Area as well as recharge with imported water are regulated by a court judgment that was entered in 1969 in the case of Western Municipal Water District of Riverside County, et al., vs East San Bernardino County Water District, et al., Riverside County Superior Court No. 78426 ("Judgment").

[2] Bulletin No. 104-5: Meeting Water Demands in the Bunker Hill-San Timoteo Area. CA DWR December 1970
[3] San Bernardino-San Gorgonio Water Resources Management Investigation. CA DWR December 1986

The Judgment, among other provisions, determines the rights of certain Plaintiffs to extract groundwater from an area described in the Judgment as the San Bernardino Basin Area ("Basin Area"). This area includes the groundwater basins in San Bernardino County that are above the Bunker Hill Dike in the Santa Ana River Watershed, but excludes the Yucaipa, San Timoteo, Oak Glen and Beaumont Basins. The plaintiffs holding such rights are the City of Riverside including those rights acquired as successor to the Riverside Water Company and The Gage Canal Company; the Riverside Highland Water Company; the Elsinore Valley Municipal Water District as successor to the rights of the Agua Mansa Water Company and the Meeks & Daley Water Company; and the Regents of the University of California (collectively "Plaintiffs").

The Judgment provides for a Watermaster, consisting of a committee composed of two persons appointed by the Court, one nominated by San Bernardino Valley Municipal Water District (SBVMWD) and one by Western Municipal Water District of Riverside County (WMWD). The Watermaster is charged with the responsibility of administering the Judgment, and all subsequent orders of the Court made pursuant to the Court's continuing jurisdiction. The Watermaster is required to file with the Court annual reports which include, among other information, summaries of extractions by all parties pumping water from the Basin Area, groundwater level measurements, and an accounting of all credits and obligations in the groundwater basin.

The Judgment provides that extractions may be made in addition to those determined by the Judgment, pursuant to agreement between SBVMWD and WMWD. The Judgment-allowed extractions on an annual basis, of 167,238 acre-feet by parties other than the plaintiffs and 64,862 acre-feet by the plaintiffs, for a total of 232,100 acre-feet. The Judgment further provides that nothing therein shall preclude SBVMWD, WMWD or any other party from exercising such rights as they may have or obtain under law to spread, store underground and recapture imported water, provided that any such use of underground storage capacity of the Basin Area shall not interfere with any replenishment program of the Basin Area.

In addition to certain enumerated matters, the Judgment provides that the Court retains jurisdiction over other matters not specifically set forth which might occur in the future, and which would be of benefit to the parties in the utilization of groundwater within the Basin Area.

The Proposed Replenishment and Extraction Agreement

Pursuant to the Judgment WMWD and SBVMWD are proposing to enter into a Replenishment and Extraction Agreement (Appendix D) that sets forth the institutional arrangements for the purchase and delivery of imported water from MWD by WMWD, for replenishment of the Basin Area, and for extraction of amounts equal to the amounts of imported water purchased.

Design Considerations

As a part of the proposed project, Western shall cooperate and coordinate with other water agencies that replenish and extract water in the Basin so as not to interfere with other programs being implemented to manage and protect groundwater in the Basin, and, when possible, to assist in such programs.

Environmental Effects Before Mitigation

Threshold: (1) Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there is a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells drops to a level which does not support existing land uses or planned uses for which permits have been granted) or (2) causes undesirably high groundwater levels in the area of historically high groundwater (AHHG).

The San Bernardino Groundwater Basin serves as the primary source of water supply in the San Bernardino Valley. Total groundwater pumpage in the entire basin averaged 262,082 acre-feet per year between 1996 and 2000. As a group, the plaintiffs named in the WMWD of Riverside County et al. vs. East San Bernardino County Water District case pumped an average of 69,752 acre feet per year and all of the "other" water users pumped an averaged 192,330 acre feet per year (WSBWM a).

The proposed project includes additional replenishment of State Water Project water in amounts which are substantially less than the historical range of storage fluctuations in the Basin Area. Annual rates of recharge at any time by the proposed project will be limited by State Water Project water availability as well as coordinated efforts to manage the Basin. The replenished water would be extracted by wells located in or near the AHHG at a rate of up to 40,000 ac-ft per year, which is about 15% of the current rates of extraction in the Basin, with actual rates depending upon the need for the water as well as upon Basin Area conditions.

The project is in accord with the Western Judgment which provides that extractions may be made in addition to those determined by the Judgment, pursuant to agreement between SBVMWD and WMWD. The Judgment further provides that nothing therein shall preclude SBVMWD, WMWD or any other party from exercising such rights as they may have or obtain under law to spread, store underground and recapture imported water, provided that any such use of underground storage capacity of the Basin Area shall not interfere with any replenishment program of the Basin Area. The Watermaster is charged with the responsibility of administering the Judgment, and all subsequent orders of the Court made pursuant to the Court's continuing jurisdiction. The Watermaster is required to file with the Court annual reports which include, among other information, summaries of extractions by all parties pumping water from the Basin Area, groundwater level measurements, and an accounting of all credits and obligations in the groundwater basin. No significant effects related to groundwater levels are anticipated.

In addition to realizing the primary purposes of the proposed project, the combined recharge and extraction operations could help stabilize water levels in the upper part of the Basin Area, where recharge occurs, and help prevent undesirably high water levels in the AHHG. The proposed project will not result in significant adverse impacts to groundwater levels. No mitigation measures will be necessary.

Proposed Mitigation Measures

The proposed project will not result in significant adverse impacts to groundwater levels. No mitigation measures will be necessary. However mitigation measures developed to address potential impacts to groundwater quality (outlined in Section II.6 Groundwater Quality as well)

will also serve to ensure that potential impacts to groundwater levels from the proposed project would remain less than significant. The following mitigation measures shall be implemented as operating actions associated with this project.

MM GWL 1: Prepare operating strategies to be tested using the most current versions of the groundwater flow and groundwater quality model(s) available at the time. An operating plan consistent with any overall management plan adopted for the Basin Area shall be developed prior to commencing replenishment activities for the project that defines parameters of replenishment and extraction based on groundwater model(s) as evaluative tool(s).

MM GWL 2: As described in MM GWL 1, existing groundwater flow and groundwater quality model(s) shall be used to predict the effects of project operations pursuant to the operating plan developed as a requirement of MM GWL 1. If the model(s) suggest that the replenishment and pumping regime of the proposed project operation would result in significant impacts, the project operation shall be modified to reduce impacts or appropriate mitigation measures shall be developed as part of a subsequent CEQA compliance document (i.e. tiered negative declaration, EIR addendum, Supplemental EIR or Subsequent EIR).

Typical measures that could be implemented to maintain the safe yield of the basin include:

- Increased, decreased, or no replenishment
- Replenishment in an alternative location
- Increased, decreased or no extraction
- Extraction at targeted locations.

Summary of Environmental Effects after Mitigation Measures are Implemented

Impacts related to water levels would not be significant. No mitigation measures are necessary. However the mitigation measures required for potentially significant water quality impacts (outlined above) shall be implemented as operating actions associated with this project and will further ensure that potential impacts to groundwater levels (safe yield) from the proposed project would not be significant.

6. Groundwater Quality

The proposed project was determined to have potential impacts related to Groundwater Quality. However, the proposed project's impacts were determined to be less than significant during the EIR process. The following section outlines the analysis and determination of significance.

Environmental Setting

Groundwater Quality in General.

Groundwater can be contaminated by native or introduced pollutants. Man-made sources of pollutants can include landfills, septic tanks, leaky underground storage tanks, overuse of fertilizers and pesticides, and from fuels used in the defense industry. If groundwater becomes polluted, it may no longer be safe to drink without treatment to remove the contamination. Pollutants that contaminate groundwater may be some of the same pollutants that contaminate surface water. Compounds from the surface can move through the soil and end up in the groundwater. For example, pesticides and fertilizers used in agriculture and landscaping applications can find their way into groundwater supplies over time. Road salt, toxic substances from mining sites, and used motor oil also may seep into groundwater. In addition, it is possible for untreated waste from septic tanks and toxic chemicals from underground storage tanks to contaminate groundwater. Perchlorate and its salts (e.g., ammonium perchlorate) used in solid propellant for rockets, missiles, and fireworks is a widespread inorganic contaminant of drinking water. Results of monitoring by public water systems has show perchlorate in over 300 drinking water sources, primarily wells and mostly in the counties of Los Angeles, San Bernardino and Riverside. Perchlorate is also present in the Colorado River, an important source of water for drinking and contamination (CDHS).

Native or natural groundwater pollution occurs when minerals already existing within the soil leach into the groundwater, causing it to become unsuitable for drinking. Groundwater can remain in contact with minerals present in the soil and bedrock for extended periods of time and become saturated with dissolved solids from these minerals. Measurement of total dissolved solids (TDS) is a good indicator of the mineralized character and the quality of groundwater. Existing TDS levels throughout the Basin range from below 200 mg/l near the eastern mountains and Lytle Creek areas to over 600 mg/l in the Colton area.

Groundwater also has the potential to be contaminated through artificial recharge. Various cooperating entities have the ability to recharge the local groundwater basin through surface water spreading at various locations in the project area. If the water being recharged is significantly higher in TDS than levels currently in the receiving basin, then recharge activities can adversely affect the groundwater quality.

Groundwater Quality in the Project Area.

The San Bernardino Groundwater Basin serves as the primary source of water supply for the cities of Riverside, Redlands, Loma Linda, Highland, San Bernardino and adjacent areas. Data from wells in the Basin indicate the local groundwater resource has been contaminated by

manufacturing and military activities. Figure II-6a shows a generalized diagram of known pollution plumes in the Basin. Trichloroethylene (TCE) and tetrachloroethylene (PCE), both volatile organic priority pollutants, were first discovered in the Basin in 1980 (USGS a). A third chemical used in the production of solid rocket fuel, perchlorate, has impacted groundwater supplies in the Redlands area. Nitrates (NO3) and a pesticide, dibromochloropropane (DBCP), have been found in groundwater in the San Bernardino Basin area, the origin attributed to former agricultural activity.

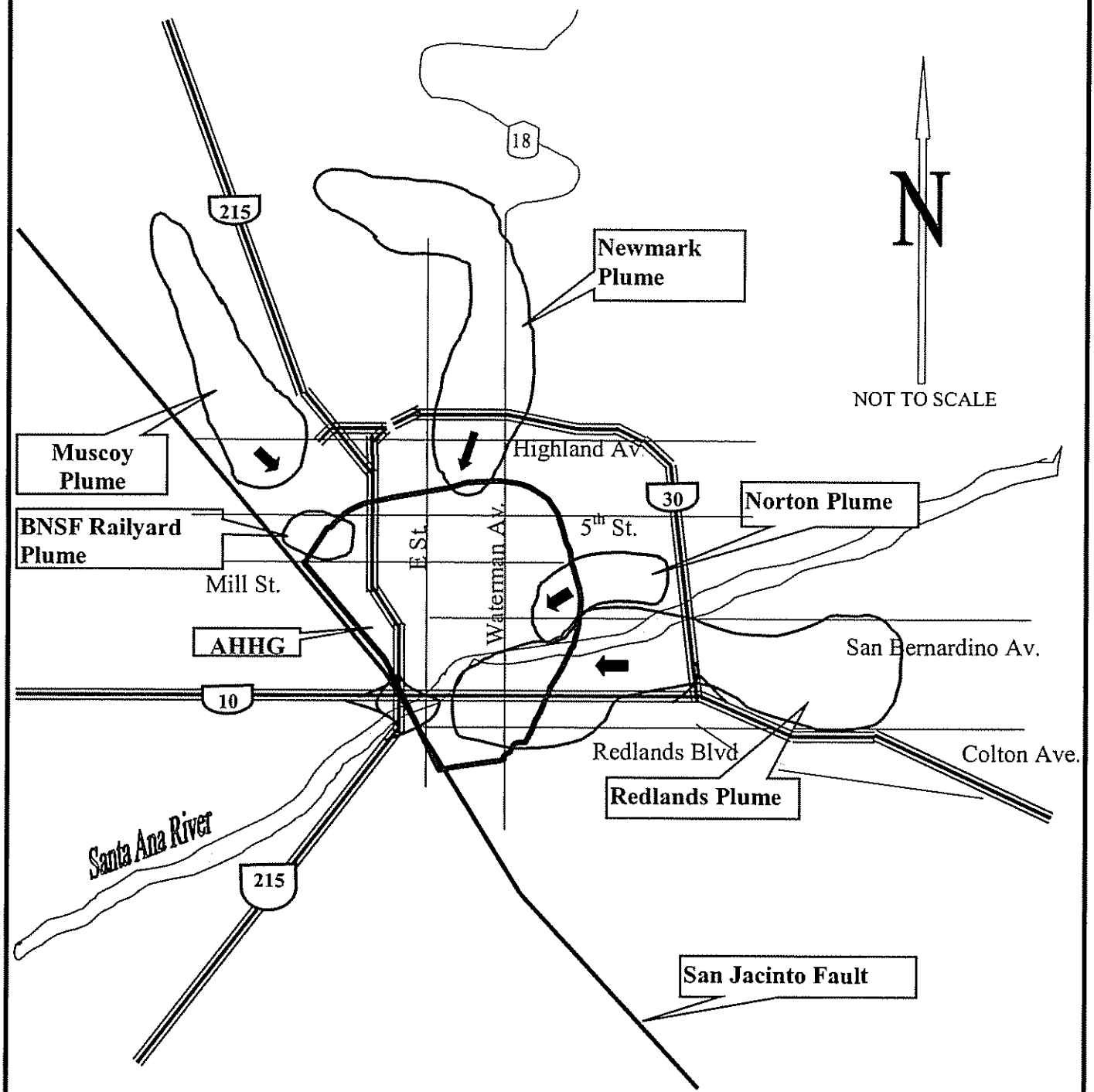


Figure II-6a
Existing Pollution Plumes in the
San Bernardino Groundwater Basin Area
Riverside-Corona Feeder Project,
Riverside County and San Bernardino County
California

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

Extensive groundwater quality sampling and analysis is ongoing in the San Bernardino Groundwater Basin to quantify and better understand groundwater contamination in the project area. As a result, five pollution plumes have been identified. As shown on Figure II-6a, the United States Environmental Protection Agency (EPA) has identified and designated two of the plumes, the Newmark plume and the Muscoy plume (each containing TCE and PCE contamination), migrating toward the Bunker Hill Pressure Zone from the north and northwest, as operable units of a federal superfund site (RWQCB a). Barrier wells have been constructed to stop the spread of the Newmark Plume and efforts are currently underway to remediate the groundwater, including the development of new wells to extract contaminated groundwater, followed by treatment at existing San Bernardino treatment plants.

Similar methods are proposed for the Muscoy plume; however, EPA is still investigating the extent of contamination and possible clean-up methods.

A third plume is located in the vicinity of the former Norton Air Force Base in the central part of the project area (TCE and PCE contamination). The Air Force is conducting a clean-up operation for this plume consisting of extraction and filtration. A portion of this plume, with weaker concentrations, is extending off-base. The Air Force is remediating this weaker plume utilizing wellhead treatment at existing wells, where necessary, through an agreement with the City of Riverside.

A fourth plume, sometimes referred to as the Redlands plume (TCE, perchlorate, NO_3, and DBCP contamination) is migrating toward, and has entered, the Bunker Hill Pressure Zone (also known as the Area of Historic High Groundwater) from the east. Lockheed plans to utilize existing City of Riverside wells in the Bunker Hill Basin to intercept and remove the contaminants utilizing wellhead treatment. Since there are no economically feasible methods for removing perchlorate, Lockheed is going to make monetary contributions to assist the City of Riverside in their effort to blend and dilute the contamination.

A fifth plume resides under the Burlington Northern and Santa Fe (BNSF) rail yard in the City of San Bernardino (TCE and PCE contamination). Limited on-site groundwater treatment using aeration, separation and evaporation (air sparging) is being conducted at the Burlington Northern and Santa Fe Rail yard site. Off-site migration is being observed and is not currently being remediated.

Several other smaller groundwater pollution plumes are present in the San Bernardino Basin. Impacts related to smaller plumes are addressed in the Hazards Section (II-7) of this Program EIR.

All of the existing pollution plumes that are mentioned above are currently undergoing remediation in accordance with State and Federal laws.

Imported Water Quality

State Water Project water is currently recharged in the Basin by SBVMWD. TDS levels at the Devil's Canyon Afterbay, where State Water Project water would most likely be delivered for this project, ranged between 239 and 373 milligrams per liter (mg/l) and averaged 312 mg/l during the 12-month period between July 2002 and June 2003 (www.omwq.water.ca.gov).

Groundwater Modeling in the Project Area.

Western plans to participate with other agencies responsible for recharge and extraction in the Basin Area in a groundwater management program that is intended to maintain mutually agreed upon groundwater levels and water quality conditions. Decisions regarding recharge and extraction will be made using the integrated surface water and groundwater models used by SBVMWD and WMWD in the Environmental Impact Report for the application to appropriate Santa Ana River water, as those models may be refined in the future.

San Bernardino Valley Municipal Water District is presently utilizing information from two groundwater models, one developed by Camp, Dresser & McKee, Incorporated (CDM), and another by the U.S. Geological Survey (USGS), for predicting the impacts that pumping could have on hydraulic gradients. Figure II-6a shows the location and direction of migration for each of the known pollution plumes.

USGS has developed a flow model for the San Bernardino Basin to evaluate six water management scenarios that were designed to solve specific water management issues and to demonstrate key hydrologic characteristics of the basin. The USGS model is useful for estimating flows and aquifer characteristics for which direct measurements are not available, and for simulating the aquifer under hypothetical conditions. The USGS model cannot be used to simulate the transport of chemical contaminants within the aquifer.

CDM utilized the USGS regional groundwater flow model to develop a contaminant transport model. The purpose of this model is to evaluate how additional pumping and/or groundwater recharge may affect existing groundwater quality in the basin. The path and rate of movement for each of the five contamination plumes discussed above are being evaluated under the different basin management options that were developed as part of the USGS groundwater flow model. Simulation results show that contamination of the basin is widespread both horizontally and vertically. Plans for cleanup will be aided by continued mapping of the hydro geologic units, which strongly influence groundwater flow paths. These modeling results are being prepared for other proposed projects in the SWP system but are not yet available.

Where water levels are high within the upper aquifer, downward gradients are created (Figure II-6a). This will tend to cause downward contaminant migration, particularly where there are local discontinuities, multiple screened wells, and other pathways that would facilitate contaminant migration. This is true even if existing pumping patterns continue. It is estimated to take 75 to 100 years for water recharged in the east end of the basin to percolate to the west end of the basin (SBVMWD a).

The models indicate that a number of wells in the San Bernardino Basin Area have already, or may in the near future, experience water quality which will not meet drinking water standards. This is particularly true for a number of wells in the western end of the Basin. Purveyors such as the City of Riverside and others in the near-term may have to continue to use selective pumping and blending to meet overall drinking water requirements (SBVMWD c).

Criteria for Determining Significance

Impacts to groundwater quality may be considered significant if:

- Construction or operation of the proposed project would violate water quality standards or otherwise substantially degrade water quality in the Basin Area as a whole or for any individual pumper.

Project Compliance with Existing Plans and Regulations

The California Regional Water Quality Control Plan for the Santa Ana River Basin (RWQCB b) has set water quality objectives for the protection of beneficial uses of water within the Basin. Beneficial uses are officially designated for all surface and groundwater resources to identify the various ways each particular surface water or groundwater sub-basin can be used for the benefit of people and/or wildlife. Examples include drinking, swimming, industrial and agricultural water supply, and the support of fresh and saline aquatic habitats. Four beneficial uses have been assigned to groundwater resources within the San Bernardino Basin Area – municipal and domestic, agricultural, industrial, and industrial process supply (Table II-6-A). Water quality objectives for the San Bernardino Groundwater Basin, including Bunker Hill Sub-basins I and II, Bunker Hill Pressure Zone, Lytle Creek Sub-basin, and the Rialto, Colton and San Timoteo sub-basins are shown in Table II-6-B. Implementation of the RCF will add State Water Project Water to the Basin. The imported water TDS levels (239 to 373mg/l) fall within the 200mg/l to 400mg/l range of the objectives.

Table II-6-A
CRWQCB (Santa Ana Region) Beneficial Uses for the Groundwater Within the District

Municipal and Domestic Supply (MUN)	Municipal and domestic supplies are used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.
Agricultural supply (AGR)	Agricultural supply waters are used for farming, horticulture or ranching. These uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
Industrial Service Supply (IND)	Industrial service supply waters, used for industrial activities that do not depend primarily on water quality. These uses may include, but are not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.
Industrial Process Supply (PROC)	Industrial Process Supply waters, used for industrial activities that depend primarily on water quality. These uses may include, but are not limited to, process water supply and all uses of water related to product manufacture or food preparation.

Table II-6-B
CRWQCB (Santa Ana Region) Water Quality Objectives

	Water Quality Objectives (milligrams/liter)					
Bunker Hill Sub-basins	**TDS**	**Hard**	**Na**	**Cl**	**NO_3-N**	**SO_4**
Bunker Hill I	260	190	15	10	1	45
Bunker Hill II	290	190	30	20	5	62
Bunker Hill Pressure Zone	300	160	30	20	1	62
Lytle Creek	225	175	15	10	1	30
Rialto Basin	200	95	35	35	2	40
Colton Basin	400	240	35	35	3	64
San Timoteo Basin	240	170	45	25	6	35

Plans and specifications for the proposed water facilities are subject to review and approval by the California Department of Health Services, Office of Drinking Water to insure that potable water distributed by the project will meet or exceed drinking water quality standards. Development of new wells will require a permit from the County of San Bernardino Department of Environmental Health. Well development design features required by the County Department of Environmental Health ensure that development of the well will not increase the probability of aquifer contamination.

Discharge of wash water resulting from cleaning and disinfection of the proposed pipelines and tanks may require a National Pollutant Discharge Elimination System (NPDES) permit from the California Regional Water Quality Control Board (RWQCB), Santa Ana Region. A state general NPDES permit for construction-period storm water discharges will also be required. Under current regulations, any construction site of one acre or more will also be subject to the Stormwater Pollution Prevention Plan requirements of the state general NPDES permit for construction-period storm water discharges. These permits require Best Management Practices that minimize the introduction of sediments and other pollutants into surface waters.

Design /Operations Considerations

Western proposes to operate the project (water replenishment and extraction), in order to assure that recharge and extraction operations maintain to the extent possible and do not exacerbate water level or water quality problems.

Environmental Impacts Before Mitigation

Threshold: Impacts to groundwater quality may be considered significant if construction or operation of the proposed project would violate water quality standards or otherwise substantially degrade water quality in the Basin as a whole or for any individual pumper.

The addition of water to the Basin Area through spreading and/or injection wells will not violate water quality standards or otherwise substantially degrade the water quality of the basin as a whole. By the nature of the project, no additional sources of contaminants such as TCE, PCE, DBCP and nitrates (NO_3) will be added by the RCF project. The imported water to be used for

recharge comes from the State Water Project. Total dissolved solids (TDS) levels are a good indicator of the mineralized character and overall quality of groundwater. As discussed in the Setting section above, existing TDS levels throughout the Basin range from below 200 mg/l near the eastern mountains and Lytle Creek areas to over 600 mg/l in the Colton area. TDS levels at the Devil's Canyon Afterbay, where State Water Project water would most likely be delivered, ranged between 239 and 373 milligrams per liter (mg/l) and averaged 312 mg/l during the 12-month period between July 2002 and June 2003 (www.omwq.water.ca.gov). Therefore, the recharge water to be used for this project is generally of an equal or better quality than that of the receiving water resulting in, through dilution, water within the Basin of generally equal or higher quality than presently exists. Therefore, no water quality standards will be exceeded by the proposed direct addition of the imported water.

The indirect effect of the proposed replenishment and extraction of water to/from the Basin is its potential effect on existing groundwater pollution plumes. Water added to the Basin (recharge) and extracted from the Basin has the potential to move the polluted groundwater depending on timing and location of recharge or extraction. For example, the project could alter the direction of a pollution plume and cause contamination in an individual well that did not previously exist. If an existing well is used as an extraction point for the RCF project, contamination might occur sooner than it would have without the project, but over time, contamination would likely have occurred at any given existing well with or without the project. Although project-related recharge and/or extraction may cause changes in the pollution plumes, it is not possible to predict where, when or to what extent those changes might occur due to the programmatic level of the project operations. Future unknowns such as natural recharge and extraction unrelated to this project would also have potential impacts on pollution plumes. Due to the lack of specific details concerning the amount and location of pumping and recharge activities associated with the project, it would be speculative at this time to try to predict how significant these activities may be for the water quality of the basin.

The location and number of new wells is not known at this time and direct potential siting impacts of new wells are not addressed in this Program EIR. The potential impacts that new well sites might have on the environment, including water quality through the movement of pollution plumes, will be addressed through normal well permitting procedures and subsequent CEQA compliance.

Proposed Mitigation Measures

Direct groundwater quality impacts that may result from the proposed importation of State Water Project water for replenishment are considered less than significant due to the equal or better quality of the imported water than existing Basin water quality. No mitigation measures are necessary.

Although a specific conclusion as to the significance of potential indirect groundwater quality impacts associated with pollution plumes would be speculative at this time, future studies, plans and modeling shall conform to §15168(c) of the CEQA Guidelines which states, "Subsequent activities in the program must be examined in the light of the Program EIR to determine whether an additional environmental document must be prepared." This may include, for example, sufficient hydrology studies, groundwater modeling or coordinated studies with other agencies

with jurisdiction over regional groundwater and related surface resources, in order to evaluate and address all potentially significant direct, indirect and cumulative impacts of the proposed actions under CEQA. The following mitigation measures shall be implemented as operating actions associated with this project.

MM GWQ 1: Prepare operating strategies to be tested using the most current versions of the groundwater flow and groundwater quality model(s) available at the time. An operating plan consistent with any overall management plan adopted for the Basin Area shall be developed prior to commencing replenishment activities for the project that defines parameters of replenishment and extraction based on groundwater model(s) as evaluative tool(s).

MM GWQ 2: As described in MM GWQ 1, existing groundwater flow and groundwater quality model(s) shall be used to predict the effects of project operations pursuant to the operating plan developed as a requirement of MM GWQ 1. If the model(s) suggest that the replenishment and pumping regime of the proposed project operation would result in significant impacts, the project operation shall be modified to reduce impacts or appropriate mitigation measures shall be developed as part of a subsequent CEQA compliance document (i.e. tiered negative declaration, EIR addendum, Supplemental EIR or Subsequent EIR). Typical mitigation measures that may be implemented to improve water quality may include but are not limited to:

- Appropriate Use. Contaminated water could be utilized for purposes that would allow or require lower water quality standards.
- Blend. Water that has poor quality can be blended and diluted until water quality standards are achieved.
- Move (Avoid). Choose another production area.
- Careful Management. Operate wells in a manner that will prevent or delay contamination. This may include installation of barrier wells or avoidance of strategies that would result in acceleration of the movement of contaminated water towards existing wells.
- Wellhead Treatment. Wellhead treatment can be utilized to bring water to acceptable water quality levels.

Summary of Environmental Effects After Mitigation Measures are Implemented

Direct project-related environmental effects to groundwater quality will be less than significant due to the quality of the water being used for recharge being similar or better than the quality of the receiving water.

Indirect project-related environmental effects to groundwater quality through changes in the location and/or speed of migration of pollution plumes cannot be addressed at this time due to the lack of specific operating information. Therefore, any attempt to predict the significance of

impacts or the effectiveness of mitigation measures related to such indirect impacts to ground water quality would be speculative. When modeling capability becomes available project operation will be subjected to analysis of various operating strategies to develop a viable plan.

7. Hazardous Materials

Potential environmental impacts related to the transport, use, or disposal of hazardous materials; release of hazardous materials into the environment, emission or handling of hazardous or acutely hazardous materials, substances, or waste; safety hazards for people residing or working within two miles of a public airport or public use airport were addressed in the Notice of Preparation (NOP) for this project and were determined to have no impact or a less than significant impact (Appendix A). The focus of the following analysis is related to the potential impacts associated with the list of hazardous materials sites compiled pursuant to Government Code section 65962.5, and the creation of significant hazard to the public or the environment.

Environmental Setting

Pursuant to Government Code 65962.5, environmental regulatory database lists were reviewed to identify and locate properties with known hazardous substance contamination within the proposed project area. Four state agencies are required to provide lists of facilities, which have contributed, harbor, or are responsible for environmental contamination within their jurisdiction. The four state agencies that are required to provide these lists to the Secretary for Environmental Protection include; Department of Toxic Substances Control (DTSC), State Department for Health Services (DHS), State Water Resources Control Board (SWRCB) and California Integrated Waste Management Board (CIWB). The Secretary for Environmental Protection then takes each of the four respective agency lists and forms one list, referred to as the Hazardous Waste and Substances List (List). The List is made available to every city and/or county in the state of California.

The DTSC maintains lists of: hazardous waste facilities subject to corrective action, land designated as hazardous waste property, sites on the Abandoned Site Assessment Program, and sites listed pursuant to Section 25356 of the Health and Safety Code. DTSC also maintains records of hazardous waste disposals on public land. The DHS maintains lists of all public drinking water wells that contain detectable levels of organic contaminants and wells that are subject to special water analysis. The SWRCB maintains lists of: unauthorized release reports for underground storage tanks, solid waste disposal facilities from which there is a migration of hazardous waste, all cease and desists orders issued after January 1, 1986 concerning hazardous waste discharges. The CIWB maintains lists of solid waste disposal facilities from which there is a known migration of hazardous waste.

The Hazardous Waste and Substances List (List) has been reviewed to identify hazardous sites that may affect the proposed project.

Four potentially hazardous sites are listed near a portion of the proposed project within the City of San Bernardino. Three of these facilities are listed as active special generators and/or handlers, holding permits for their activities and one facility is listed by the SWRCB as a Leaking Underground Storage Tank (LUST). California Regional Quality Control Board (RWQCB), Santa Ana Regional Office files were reviewed for this site. The facility listed is known as Truckomat and is located at 1955 Hunts Lane, in close proximity to the proposed project. Petroleum hydrocarbons have leaked into the surrounding soil and groundwater. According to the RWQCB GeoTracker Database, this facility has undergone soil and groundwater investigations for petroleum hydrocarbon contamination generated from a leaking

underground storage tank. A remediation plan has been developed and the site is currently under regulatory review.

According to the List, one facility address is listed adjacent to the proposed project alignment within the City of Grand Terrace. The facility known as USA Cleaners is listed as active special generator of hazardous materials, holding permits for their activity.

In the City of Colton, the facility known as Unocal #4238 located on 22483 Barton Road is in close proximity to the proposed project and is listed as a LUST. According to the RWQCB GeoTracker Database, this facility has undergone soil and groundwater investigations for petroleum hydrocarbon contamination generated from a leaking underground storage tank. A remediation plan has been implemented and the case is currently closed.

Seven facility addresses adjacent to the proposed project are listed in the GeoTracker Database within the City of Riverside. The facilities are listed as underground storage tanks, holding permits for their activities. No LUST facilities are listed within the City of Riverside.

According to the List, one facility address is listed adjacent to the proposed project within the City of Corona. The facility known as ED'S Auto Wrecking is located on 1480 Magnolia Avenue in close proximity to the proposed RCF and is listed as a LUST. According to the RWQCB GeoTracker Database, this facility has undergone soil and groundwater investigations for petroleum hydrocarbon contamination generated from a leaking underground storage tank. A remediation plan has been implemented and the case is currently closed.

No hazardous sites were identified near portions of the project located within the unincorporated County of Riverside.

Six additional databases have been analyzed for potential hazardous material sites:

- The National Priority List (NPL) ;
- The Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS);
- The Resource Conservation and Recovery Information System (RCRIS);
- The Emergency Response Notification System (ERNS);
- California Sites (CalSites);
- The Solid Waste Information System (SWIS);

National Priority List

The National Priority List (NPL) is maintained by the Unites States Environmental Protection Agency (US EPA). The NPL is the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories.

Three sites in Riverside County and four sites in San Bernardino County are listed on NPL. However, the proposed project will not cross any of the NPL sites.

Resource Conservation and Recovery Compensation Liability Information System

CERCLIS is a database of Conservation and Recovery Compensation Liability Act (CERCLA) and maintained by US EPA. This is a list of Superfund sites that have been listed in NPL. The CERCLIS database contains information about all potential Superfund sites, as well as "Proposed" and "Final" sites that have been listed on the NPL. In a sense, the NPL database is a subset of this database. However, the NPL database contains much more detail about individual sites than the CERCLIS database. The CERCLIS database contains records for about 44,000 sites, while the NPL only lists about 1,200.

The CERCLIS database contains four records for the City of San Bernardino. The proposed project will not cross any of these four sites. In the City of Colton there are eight sites listed within the vicinity of the proposed project. The project will not come across any of these eight listed sites.

No records have been found for the project's vicinity in the City of Grand Terrace.

The CERCLIS database contains twenty records for the City of Riverside. Out of those twenty sites, one site is located where the proposed project will be constructed, on 8095 Lincoln Avenue. The site's name is Riverside Public Utilities Department with the EPA ID CAD040502114. However, the site is not on the National Priority List and no remedial action is planned on site.

The CERCLIS database contains ten records for the City of Corona. Out of those ten sites, one site is located within 300 feet of the proposed project area, on 1375 Magnolia Avenue. The site's name is RICH MFG CO OF CA #3 with the EPA ID CAD982359820. However, the site is not on the National Priority List and no remedial action is planned on site.

Resource Conservation and Recovery Information System

RCRIS is a database of Resource Conservation and Recovery Act facilities maintained by US EPA. Under the Resource Conservation and Recovery Act (RCRA), generators, transporters, treaters, storers, and disposers of hazardous waste as defined by the federally recognized hazardous waste codes, are required to provide information concerning their activities to state environmental agencies, who in turn provide the information to regional and national US EPA offices.

RCRIS is primarily used to track handler permit or closure status, compliance with Federal and State regulations, and cleanup activities. Other uses of the data include program management, regulation development, waste handler inventorying, corrective action tracking, regulation enforcement, facility management planning, and environmental program progress assessment.

In the City of San Bernardino, sixty one (61) sites are listed in the project vicinity. The proposed project will not cross any of these listed sites.

The RCRIS database revealed forty nine (49) records for the City of Colton. The proposed project will not cross any of these listed sites.

The RCRIS database contains four records for the City of Grand Terrace. One of these four records, located on 22471 Barton Road is within 300 feet of the proposed project. The name of the site is Grand Terrace with the ID CAD981615362. This site does not have a generator status (large or small quantity generator), neither has it a Transporter, Storage or Disposal (TSD) status. Further research with the City of Grand Terrace and the EPA indicates that this address is an

erroneous entry on the RCRIS list. At the time this site was listed in 1987, it was a bank with subsequent users being an interior decorator showroom and a video rental store.

For the City of Riverside, the RCRIS database contains approximately 140 records on TSD of hazardous materials. Eleven facilities out of these 140 sites are located along the proposed project's alignment. All of these TSDs are Small Quantity Generators (SQG) with the exception of the Riverside City Department of Public Utilities, located on 8095 Lincoln Avenue, which is a Large Quantity Generator. This site is also listed in CERCLIS database (see above), CalSites database under "unconfirmed referrals" category and in The List.

No RCRIS records have been identified for the immediate vicinity of the project area in the City of Corona.

California Sites

California Sites is a Database used by the California Department of Toxic Substances Control. The Database contains information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. A search for all five jurisdictions (Cities of San Bernardino, Colton, Grand Terrace, Riverside, Corona and unincorporated County of Riverside) was conducted.

Twenty sites are located within the County of Riverside and eighteen sites are located within the County of San Bernardino. The proposed project will not traverse any of the CalSites listed for these regions.

Solid Waste Information System

SWIS database is provided by the California Integrated Waste Management Board and consists of both open as well as inactive landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

The SWIS database search revealed thirteen (13) facilities in the City of San Bernardino under various regulatory and operational status. The proposed project will pass in the vicinity of the Inland Regional T/P Facility located on Steel Road and Hunts Lane. This site is currently permitted by the City of San Bernardino to accept and separate recyclables. The San Bernardino County Health Services Department has received an application from this site for a permit to operate as a solid waste transfer facility (personal communication, County Health, 10/22/03)All of the other SWIS facilities in the City of San Bernardino are outside the area of impact of the proposed project.

For the City of Colton, there are three (3) records in the SWIS database, these being solid waste and waste tire facilities. The proposed project will not traverse any of the listed sites in City of Colton.

The SWIS database revealed eleven (11) open, inactive or closed landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, and waste tire sites in the City of Riverside. None of these facilities are located adjacent or in the vicinity of the proposed project alignment.

In the City of Corona, there are ten (10) facilities included in SWIS database. The proposed project will pass in the immediate vicinity of two out of these ten facilities.

Peat's Road Service (SWIS # 33-TI-0027) is located in 18640 South Compton Avenue. This is an active major waste tire facility permitted under the County of Riverside Health Service Agency, department of Environmental Health.

Corona Disposal Site (SWIS # 33-AA-0004) is located near Magnolia and Compton Avenues. The facility is a solid waste disposal site and it is currently closed.

Many of the proposed project wells do not have exact site locations identified and changes may occur to the proposed alignment prior to construction. Sites or alignments not evaluated in this document may currently be contaminated with hazardous waste or may be contaminated prior to facility construction.

Criteria for Determining Significance

For the purpose of this analysis, an impact to hazardous materials compliance is considered significant if the project:

- Is located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, creates a significant hazard to the public or the environment.

Project Compliance with Existing Regulations

Comprehensive Environmental Response, Compensation, and Liability Act

Discovery of environmental health damage from disposal sites, such as the Stringfellow acid pits in Western Riverside County, prompted the US Congress to pass the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund). The purposed of CERCLA is to identify and clean up chemically contaminated sites that pose a significant environmental health threat. The Hazard Ranking System is used to determine whether a site should be placed on the National Priority List (NPL) for cleanup activities. The Resource Conservation and Recovery Compensation Liability Information System is a database of CERCLA that includes Superfund sites that have been listed in NPL as well as all potential Superfund sites. If a proposed project impacts any of the listed sites, the Act would apply to the project.

Hazardous Materials Transportation Act

The Hazardous Materials Transportation Act is the statutory basis for the extensive body of regulations aimed at ensuring the safe transport of hazardous materials on water, rail, highways, though air, or in pipelines. It includes provisions for material classification, packaging, marking, labeling, place carding, and shipping documentation.

Resource Conservation and Recovery Act

The RCRA Subtitle C addresses hazardous waste generation, handling, transportation, storage, treatment, and disposal. It includes requirements for a system that uses hazardous waste manifests to track the movement of waste from its sites of generation to its ultimate disposition. The 1984 amendments to RCRA created a national priority for waste minimization. Subtitle D establishes national minimum requirements for solid waste disposal sites and practices. It requires states to develop plans for the management of wastes within their jurisdictions. Subtitle I requires monitoring and containment systems for underground storage tanks that hold

hazardous materials. Owners of tanks must demonstrated financial assurance for the cleanup of a potential leaking tank.

California Hazardous Waste Control Law

The Hazardous Waste Control Law (HWCL) is the primary hazardous waste statute in the State of California. The HWCL implements RCRA as a "cradle-to-grave" waste management system in the State of California. HWCL specifies that generators have the primary duty to determine whether their wastes are hazardous and to ensure their proper management. The HWCL also establishes criteria for the reuse and recycling of hazardous wastes used or reused as raw materials. The HWCL exceeds federal requirements by mandating source reduction planning, and a much broader requirement for permitting facilities that treat hazardous waste. It also regulates a number of types of wastes and waste management activities that are not covered by federal law with RCRA.

California Code of Regulations

Most state and federal regulations and requirements that apply to generators of hazardous waste are spelled out in the California Code of Regulations (CCR), Title 22, Division 4.5. Title 22 contains the detailed compliance requirements for hazardous waste generators, transporters, and treatment, storage, and disposal facilities. Because California is a fully authorized State according to RCRA, most RCRA regulations (those contained in 40 Code of Federal Regulations [CFR] 260 et seq.) have been duplicated and integrated into Title 22. However, because the Department of Toxic Substance Control (DTSC) regulates hazardous waste more stringently than the US EPA, the integration of California and federal hazardous waste regulations that make up Title 22 do not contain as many exemptions or exclusions as does 40 CFR 260. As with the California Health and Safety Code, Title 22 also regulates a wider range or waste types and waste management activities than does the RCRA regulations in 40 CFR 260. To aid the regulated community, California compiled the hazardous materials, waste and toxics-related regulations contained in CCR, Titles 3, 8, 13, 17, 19, 22, 23, 24, and 27 into one consolidated CCR Title 26 "Toxics". However, the California hazardous waste regulations are still commonly referred to as Title 22.

California Administrative Code

Section 64630, Title 22 contains the California Waterworks Standards which set forth the construction criteria for the installation of water mains and sewer lines to prevent contamination of the public water supplied from nearby sanitary sewers. These standards specify:

- The horizontal distance between pressure water mains and sewer lines shall be at least 10 feet.
- If crossing, pressure water mains shall be at least one foot above sanitary sewer lines where these lines must cross.
- Water mains and sewer lines must not be installed in the same trench.
- Water mains and sewers of 24 inches diameter or larger may create special hazards because of the large volume of flow. Therefore, installations of water mains and sewer lines 24 inches diameter or larger should be reviewed and approved by the health agency prior to construction.

- Special consideration shall be given to the selection of pipe materials if corrosive conditions are likely to exist. These conditions may be due to soil type and/or the nature of the fluid conveyed in the conduit, such as a septic sewage, which produces corrosive hydrogen sulfide.

City of San Bernardino General Plan

Policies I 13.4.1. - I 13.4.4 establish policies that promote inter-agency review and participation in water resource evaluation and mitigation programs with goals to protect surface and underground water quality from new contamination; to eliminate old sources of water contamination by hazardous materials and uses, and; to develop programs and incentives for prevention and clean-up.

According to the City of San Bernardino Ordinance MC-613 (1987), the City of San Bernardino designated the San Bernardino County Department of Environmental Health Services (DEHS) as the enforcement agency for the purpose of the Environmental Health Code and all state law pertaining to environmental health issues, such as the protection of the environmental public health, the issuance of permits and collection of fees, and providing penalties and remedies for the violation of such regulations. The required San Bernardino County permits or processes include Ministerial Permits from the San Bernardino County Department of Building and Safety for building, grading, flood control, etc. Section 5.3.3 and Table 5-4 of Chapter 5 of the San Bernardino County Hazardous Waste Management Plan contains a complete discussion of the local application review process.

City of Colton

Ordinance 1659 § 1 & 2, 1983 of the City of Colton adopted by reference Division 8 to Title 3 of the San Bernardino County Code which pertains to Underground Storage of Hazardous Substances and made it part of the City Development Code, with the Department of Environmental Health Services of the County of San Bernardino as the implementing agency.

Adopted Ordinance 3446 (1991) and amended Ordinance 3657 (1996) of County of San Bernardino provides for review procedures including State and County processes. The required San Bernardino County permits or processes include Ministerial Permits from the San Bernardino County Department of Building and Safety for building, grading, flood control, etc. Section 5.3.3 and Table 5-4 of Chapter 5 of the San Bernardino County Hazardous Waste Management Plan contains a complete discussion of the local application review process.

City of Grand Terrace

Implementation policies pertaining to Hazardous Materials in the City of Grant Terrace prohibit unlicensed dumping of toxic or hazardous materials into the ground or water and provide for meeting all applicable fire prevention regulations in the case of storage of industrial chemicals or other potentially hazardous substances (Chapter III of the City of Grand Terrace General Plan).

City of Riverside

With the goal to assist in the effective management of hazardous materials, the City of Riverside's policy is to identify and monitor the use, transportation and disposal of hazardous wastes and hazardous materials within its boundaries to minimize potential impacts on area residents, businesses, and the environment. (Policy 47.1, CRGP)

Ordinance 5569 § 1, (1987) and Ordinance 5134 § 1, (1983) provide for compliance with state laws relating to the establishment and implementation of requirements for the filing of business plans and hazardous materials inventories and the reporting of releases and threatened releases of hazardous materials by businesses handling hazardous materials within the city of Riverside.

City of Corona

Corona Hazardous Materials Ordinance 1815 § 1 (1986.) provides for compliance with state laws relating to the establishment and implementation of requirements for the filing of business plans and hazardous materials inventories and the reporting of releases and threatened releases of hazardous materials by businesses handling hazardous materials within the City of Corona.

Unincorporated Riverside County

Ordinance no. 615.3 of Riverside County relates to hazardous waste and provides that the Department of Environmental Health is designated to enforce the provisions of the Hazardous Waste Control Law of the State of California as set forth in the California Health and Safety Code, Chapter 6.5, Division 20, Sections 25100, et seq., and the Environmental Health Standards for the Management of Hazardous Waste as specified in Title 22 of the California Code of Regulations, Division 4.5, pertaining to the generation, storage, handling, disposal, treatment, and recycling of hazardous waste

Design Considerations

The proposed and alternative alignments are primarily located within street rights-of-way. None of the contaminated sites that have been identified are within the street rights-of-way, however, previously unknown contamination or off-site migration from known sites adjacent to the alignment could be impacted by project construction. The project will, however, traverse the Corona Landfill.

Environmental Impacts Before Mitigation

Threshold: Impacts related to hazardous materials compliance is considered significant if the project is located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, creates a significant hazard to the public or the environment.

The proposed project will pass across or be constructed within the vicinity of the hazardous materials sites listed in Table II-7-A, below:

Table II-7-A
Hazardous Materials Sites in the Vicinity of the Riverside Corona Feeder Project

	Jurisdiction	Site Name	Address	Type	Regulatory Status	Source
	City of San Bernardino					
1		Arrowhead Orthopedics	225 W. Hospitality Lane	Special Generator	Active	The List
2		USA Cleaners	228 W. Hospitality Lane	Special generator & Handler	Active	The List
3		Truckomat	1955 Hunts Lane	LUST	Regulatory Review	The List
4		Inland Regional T/P Facility	Steel Road and Hunts Lane	Large Volume Transfer/Processing facility	CEQA review	SWIS
	City of Colton					
5		Montecito MEM Park # 742	24145 Barton Road	Special Generator and Handler	Active	The List
	City of Grand Terrace					
6		USA Cleaners	22499 Barton Road	Special Generator	Active	The List
7		UNOCAL # 4238	22483 Barton Road	LUST	Closed	The List
8		Grand Terrace	22471 Barton Road	No status, not RCRA regulated		RCRIS
	City of Riverside					
9		Anheuser Bush, Inc.	1400 Marlborough Avenue	UST	Active	The List, RCRIS
10		Buy Rite # 203	3750 Chicago Avenue	UST	Active	The List
11		California Highway Patrol	8118 Lincoln Avenue	UST	Active	The List
12		Public Utilities Department	8095 Lincoln	UST, potential Superfund, LQD, "unconfirmed referrals"	Active, Not on NPL, "unconfirmed referrals" under CalSites	The List, CERCLIS, RCRIS, CalSites
13		Shipley Property	4455/4479 Chicago	UST	Active	The List
14		US Postal Service	4150 Chicago Avenue	UST	Active	The List
15		Burns Instruments	1960 Chicago Avenue	SQG	Active	RCRIS
16		Caddoc Electronics Inc.	1717 Chicago Avenue	SQG	Active	RCRIS
17		Caddoc Electronics Inc.	3127 Chicago Avenue	SQG	Active	RCRIS
18		MB Print and Silkscreenning Co	3215 Chicago Avenue	SQG	Active	RCRIS

	Jurisdiction	Site Name	Address	Type	Regulatory Status	Source
		Inc.				
19		Pacific Termographics	1660 Chicago Avenue	LQG	Active	RCRIS
20		University one hours photo	4010 Chicago	SQG	Active	RCRIS
21		Supreme Truck Bodies of California	7888 Lincoln Avenue	SQG	Active	RCRIS
22		Carpenter E R Co, Inc	7809 Lincoln Ave	SQG	Active	RCRIS
	City of Corona					
23		ED'S Auto Wrecking	1480 Magnolia Avenue	LUST	Case Closed	The List
24		RICH MFG CO of California	1375 Magnolia Avenue	Not on NPL,		CERCLIS
25		Peat's Roas Service	18640 S Compton Avenue	Active waste tire facility	Active	SWIS
26		Corona Disposal Site	Near Magnolia and Compton Avenues	Solid Waste Disposal site	Closed	SWIS

LUST – Leaking Underground Storage Tank SWIS – Solid Waste Information System
T/P – Transporting and Processing RCRA – Resource Conservation and Recovery Act
RCRIS – Resource Conservation and Recovery Information System
SQG – Small Quantity Generator LQG – Large Quantity GeneratorNPL – National priority List
CERCLIS - The Comprehensive Environmental Response Compensation and Liability Information System
CalSites - California Department of Toxic Substances Control Database

The proposed project will pass across or be constructed within the close vicinity of twenty six (26) hazardous materials sites under various regulatory status. Current conditions at these sites do not pose a threat to human health or the environment. With the exception of the currently closed Corona Disposal Site, the proposed project will not cross any of the above sites. Rather, it will be constructed in road rights-of-way, avoiding the hazardous materials sites.

Although no significant impacts related to these sites (Table II-7-A, above) are anticipated, common types of contamination could be encountered during construction of the project resulting from leaking underground storage tanks (LUST), poor chemical handling, and accidental or intentional unauthorized chemical releases. Also, many of the proposed project wells do not have exact site locations identified and changes may occur to the proposed alignment prior to construction. Sites or alignments not evaluated in this document may currently be contaminated with hazardous waste or may be contaminated prior to facility construction.

Proposed Mitigation Measures

If the proposed project is constructed on a site that is contaminated with hazardous materials, this may result in significant environmental effects. The following mitigation measures are recommended to reduce potential environmental impacts related to hazardous materials to a level below significance.

MM Haz 1: Avoid sites and alternative alignments on or near environmentally contaminated property. If avoiding a particular site compromises physical engineering requirements, then the

following mitigation measures shall be implemented to reduce environmental effects related to hazards as a result of the project to a level below significance.

MM Haz 2: Check potential sites for listing on the most recent Hazardous Waste and Substances List (List) provided by the San Bernardino County Division of Hazardous Materials and by the Riverside County Department of Environmental Health pursuant to Section 65962.5 of the Government Code. If a selected site is on the List, avoidance of that property will be the first consideration.

MM Haz 3: If the selected future alignment traverses a site listed on the List and avoidance is not feasible, or if there are other indications that a site could be contaminated (i.e. where pipeline alignment crosses railroad rights-of-way) a Phase 1 Environmental Site Assessment (ESA) will be prepared.

MM Haz 4: If the Phase 1 ESA identifies possible contamination on the pipeline alignment, then recommended subsurface investigation measures listed in the Phase I ESA will be implemented. Based on subsurface investigations characterizing subsurface contamination, remediation measures shall be implemented for the applicable site or an alternative alignment will be chosen.

MM Haz 5: All environmental investigation and/or remediation shall be conducted under a Workplan approved by jurisdictional regulatory agencies overseeing hazardous waste cleanups. For the cities of Corona and Riverside the local agencies are City of Corona Fire Department and City of Riverside Fire Department. For the Cities of San Bernardino, Colton and Grand Terrace the enforcement agency is the County of San Bernardino Department of Environmental Health Services. In the unincorporated Riverside County, the Department of Environmental Health administers a program for the purpose of monitoring establishments where hazardous waste is generated, stored, handled, disposed, treated, or recycled, and to regulate by the issuance of permits, the activities of establishments where hazardous waste is generated.

MM Haz 6: Prior to any excavation or soil removal action on known contaminated sites, or if contaminated soil (i.e. soil with a visible sheen or detectable odor) is encountered, complete characterization of the soil will be conducted. Appropriate sampling shall be conducted prior to disposal of the excavated soil. If the soil is contaminated, it shall be properly disposed of it according to Land Disposal restrictions. If site remediation involves the removal of contamination, then contaminated material will need to be transported off-site to a licensed hazardous waste disposal facility. This may incrementally decrease the volume available at a hazardous waste disposal site or incrementally increase the emissions of a hazardous waste incinerator. These impacts are not considered significant. If the proposed project plans on importing soils to backfill the areas excavated, proper sampling shall be conducted to make sure that the imported soil is free of contamination.

MM Haz 7: If during construction of the project, soil and/or groundwater contamination is suspected, construction in the area shall cease and appropriate Health and Safety measures shall be implemented. The project proponent shall contact the respective jurisdictional enforcement agency (see MM Haz 6) to obtain the necessary information on appropriate measures and their implementation.

Summary of Environmental Effects after Mitigation Measures are Implemented

With implementation of local, state and federal regulations, project design features, and mitigation measures listed above, potential significant environmental effects related to hazards will be reduced below a level of significance.

8. Transportation and Traffic

Potential transportation and traffic impacts resulting from the proposed project were addressed in the Notice of Preparation (NOP) and were determined to have a less than significant impact (NOP, Appendix A). In response to the NOP, a comment letter raised the issue of potentially significant impacts related to congestion that may occur due to project construction activities. Another letter that was received in response to the NOP raised the issue of potentially significant impacts to bus routes/users that could result from the proposed pipeline project. The focus of the following analysis is related to such potential impacts to public transportation and construction related traffic congestion.

Environmental Setting

Public transportation in this portion of the Inland Empire is provided by the Riverside Transit Agency (RTA) primarily within Riverside County and by Omnitrans in San Bernardino County. The proposed pipeline alignment alternatives will be located within streets along which buses travel and along which bus stops are located. According to RTA staff, 13 RTA bus routes are located along the same streets as the proposed project, including 10 miles of service routes and about 40 bus stops.

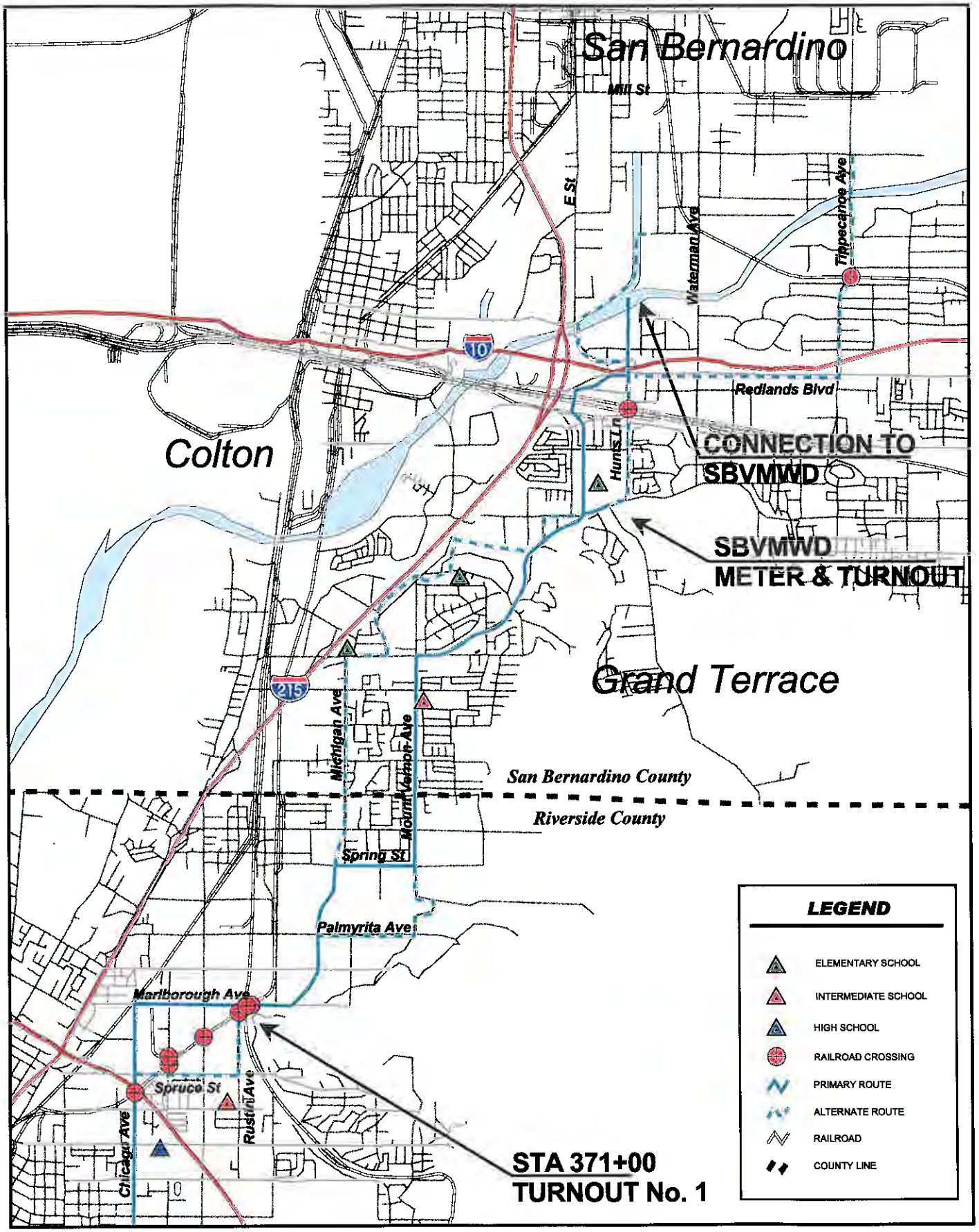
Omnitrans is the public transit agency serving the San Bernardino Valley. Omnitrans carries over 15 million passengers each year throughout its 480-square mile service area. The proposed project alternatives will be located in streets that may affect 3 bus routes, including a transfer point between the RTA and Omnitrans bus lines that use Barton Road.

Some land uses can also be sensitive to construction-related traffic and availability of public transit. Such uses include schools, hospitals, and fire stations. The proposed project alignments will be located adjacent to or near these types of sensitive uses. Schools, especially high schools, have students that arrive via public transportation as well as key times of day when construction equipment could pose traffic disruption and/or safety hazards. Hospitals and fire stations need continuous access to be able to provide emergency services. Figures II-8a, II-8b and II-8c show such traffic and transit sensitive uses near proposed alignments.

Criteria for Determining Significance

Impacts resulting from the proposed project would be considered significant if the project:

- Impacts traffic such as to cause a traffic hazard or safety issue.
- Causes an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system.
- Conflicts with adopted policies, plans or programs supporting alternative transportation.

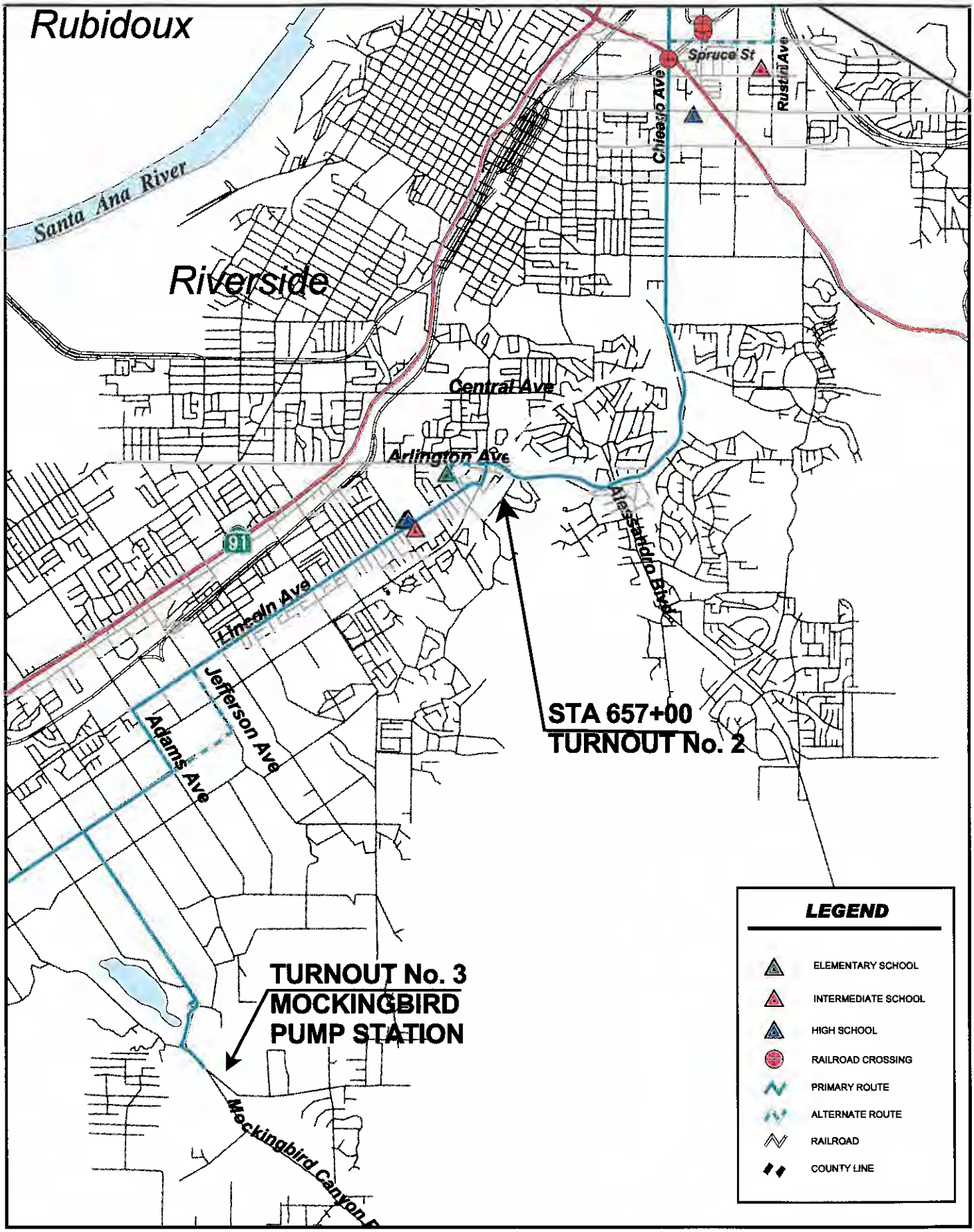


Not to Scale

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

Transit Sensitive Uses
Figure II-8a

Riverside-Corona Feeder



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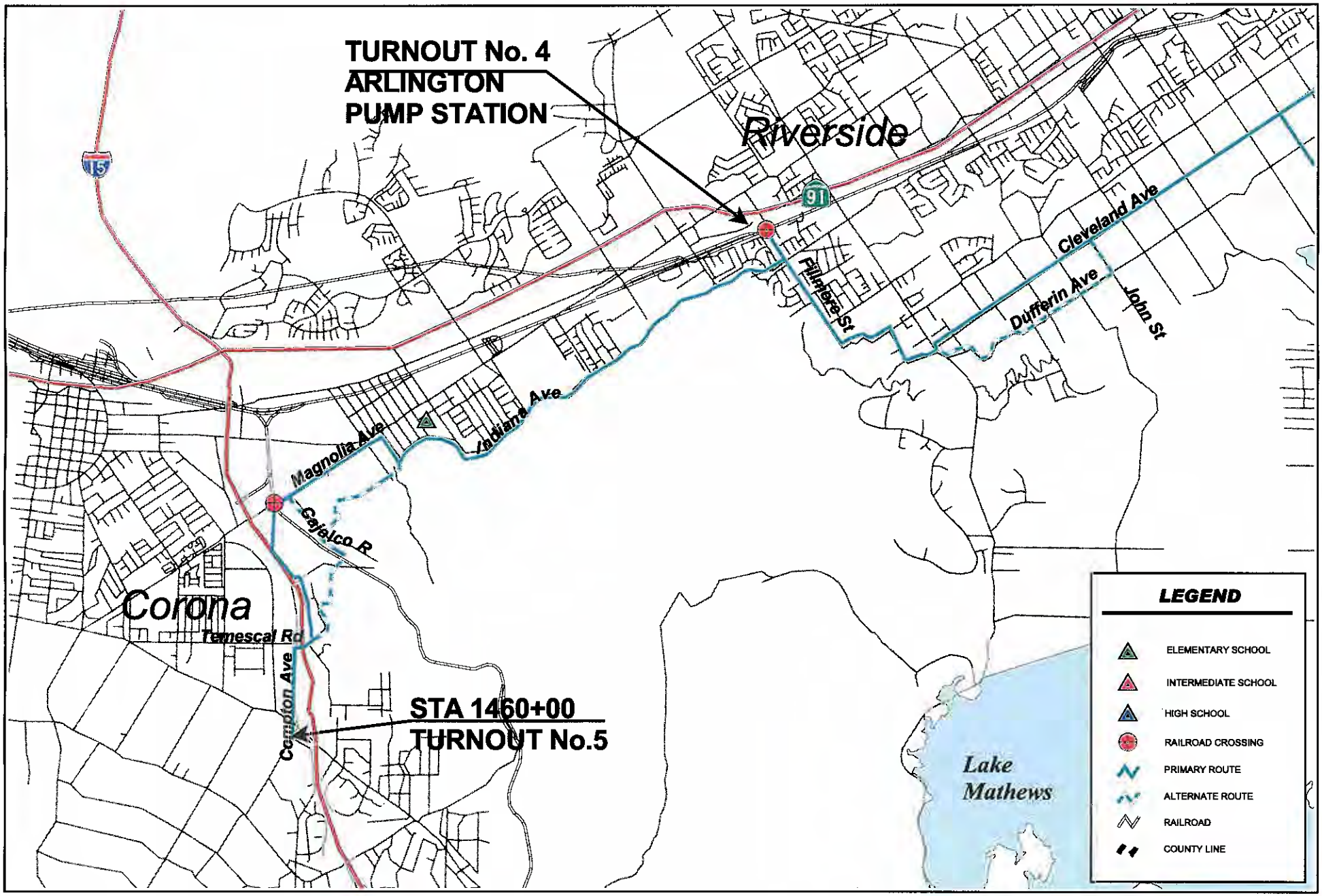
ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

Transit Sensitive Uses
Figure II-8b

Riverside-Corona Feeder



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ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

Transit Sensitive Uses
Figure II-8c

Riverside-Corona Feeder

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Project Compliance with Existing Regulations

WMWD's construction workers will be required by WMWD Standard Specifications documents to provide adequate and safe traffic control measures that will both accommodate local traffic and ensure the safety of drivers, pedestrians, and workers. Sections F-13 and F-15 of WMWD's Standard Specifications address Traffic and Access, and Street Closures, Detours, Barricades, respectively. The excerpts from WMWD Standard Specifications below illustrate the level of responsibility that will be required of the contractor for the construction of the RCF project with respect to traffic issues.

F-13 Traffic and Access

Traffic and access shall comply with Section 7-10 of the "Standard Specifications (W.A.T.C.H. Manual) as published by Building News, Inc. The Contractor's operations shall cause no unnecessary inconvenience. The access rights of the public shall be considered at all times. Unless otherwise authorized, traffic shall be permitted to pass through the work, or an approved detour shall be provided. At least one (1) lane on cross streets shall be available at all times for use of vehicles and emergency equipment. Safe and adequate pedestrian and vehicular access shall be provided and maintained to fire hydrants, commercial and industrial establishments of similar nature. Access to these facilities shall be continuous and unobstructed unless otherwise approved by Western.

Safe and adequate pedestrian zones and public transportation stops, as well as pedestrian crossings of the work at intervals not exceeding 300 feet, also shall be maintained unless otherwise approved by Western.

Vehicular access to driveways shall be maintained to the property line except when necessary construction precludes such access for reasonable periods of time. If backfill has been completed to such extent that safe access may be provided, and the area is opened to local traffic, the Contractor shall immediately clear the street and driveways and provide and maintain access.

The Contractor shall cooperate with the various parties involved in the delivery of mail and the collection and removal of trash and garbage to maintain existing schedules for these services.

F-15 Street Closures, Detours, Barricades

The Contractor shall comply with all applicable State, County and City requirements for closure of streets. The contractor shall provide barriers, guards, lights, signs, temporary bridges, flag persons and watchpersons, advising the public of detours and construction hazards. The contractor shall also be responsible for compliance with additional public safety requirements which may arise during constructions. The Contractor shall furnish and install, and upon completion of the work, promptly remove all signs and warning devises. At least 48 hours in advance of closing, or partially closing, of reopening, any street, alley, or other public thoroughfare, the Contractor shall notify the Police, Fire, Traffic and Engineering Departments of jurisdictional agencies involved, and comply with their requirements. Deviations must first be approved in writing by Western.

Additionally, encroachment permits will be required from applicable governing agencies for construction of the pipeline within their jurisdictional rights-of-way. Standard information included in these permits will also address issues associated with short-term traffic impacts. These governing agencies include, but may not be limited to, City of San Bernardino, Caltrans, City of Colton, City of Grand Terrace, County of Riverside, City of Riverside, the Gage Canal Company, and City of Corona. The excerpts below illustrate some of the measures included in Encroachment Permits issued by Riverside County that will need to be addressed by the contractors working on the RCF project with respect to traffic issues.

> G14. Protection of Traffic: All excavations and work areas shall be properly signed, lighted, and barricaded as deemed necessary by the District Road Maintenance Supervisor or Transportation Department Inspector and in accordance with County Improvement Standards and Specifications, Ordinance Number 461; Section 6 "Public Safety and Convenience" (6.01 through 6.06).
>
> C01. Road Closures: No street shall be closed without expressed approval by the Permit Engineer. A minimum of one lane traffic shall be maintained at all times to provide limited access for the adjoining property owners and emergency vehicles. In the event it is felt by the applicant that there is no alternative to closing a street in order to perform the work, a request by letter complete with detour plans and proposed closure dates must be submitted to MR. George A. Johnson, Director of Transportation, at least four (4) weeks in advance of the proposed road closure.
>
> C04. All businesses and property owners affected by the work performed under this permit shall be notified at least 24 hours prior to start of construction. Access to businesses shall be maintained at all times.
>
> C06. At a minimum, temporary traffic control during construction shall conform to the latest edition of the Work Area Traffic Control Handout (W.A.T.C.H.) manual and the requirements of the County Traffic Engineer.
>
> C08. All street crossings shall be cut in half-street sections to facilitate the flow of traffic. Under no circumstances shall work be performed on these crossings on Saturdays, Sundays, or holidays.

Design Considerations

The proposed and alternative alignments are primarily located within street rights-of-way. Since the exact location of the RCF pipe within any given street will be determined as construction documents are prepared, it is not known what exact encroachments permits will be required. However, boring and tunneling are proposed under the I-10 Freeway and under most major intersections which will reduce some traffic impacts at key intersections from what would have been expected if open trenching across the intersections were proposed.

Environmental Impacts before Mitigation

Threshold - Impact traffic such as to cause a traffic hazard or safety issue.

The proposed project alignments will be located adjacent to or near sensitive uses that may be especially sensitive to traffic disruption or construction hazards. Schools, especially high

schools, have students that arrive via public transportation as well as key times of day when construction equipment could pose traffic disruption and/or safety hazards. Bus stops in general are in locations where bus patrons might be put in danger during heavy construction activities within streets. Hospitals and fire stations need continuous access to be able to provide emergency services. Lack of coordination or consideration for these types of land uses and situations would be considered temporary but significant.

Threshold - Causes an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system.

Traffic increases due to the proposed project will consist of construction worker vehicles and trucks hauling dirt or delivering materials. The numbers of vehicles varies somewhat depending on the type of construction being performed, tunneling/boring or traditional trenching. Assumptions for the most extensive construction activities (Reach A and Reach C) are outlined in Section II-2, Air Quality, herein. They include up to 25 workers per day (50 trips), and up to 24 trucks (48 trips) per day, worst case. The workers and trucks will be headed toward a slightly different segment of the construction route each day as construction progresses; therefore no one street segment is impacted continuously for the duration of project construction.

The proposed 30-mile route of the RCF project is located in all types and sizes of streets from busy arterials like Chicago Avenue in Riverside to small two lane roads like Irving Street. Thus, the proposed project's traffic will represent a small increase in relation to the existing traffic in some areas and a larger increase in relation to existing traffic in other locations. In general, however, impacts to traffic from the project will consist of minor (less than 100 trips per day), short-term increases in vehicle trips which will result in a less than significant increase in traffic.

Threshold - Conflict with transportation plans and public transportation service.

The proposed project will be constructed primarily in road right-of-ways. Impacts to traffic from the project will consist of minor, short-term increases in vehicle trips and delays as a result of pipeline construction. Public transit services use some of the same roadways that will be impacted by project construction. Direct disruption or the need for temporary relocation of one bus route can indirectly affect many more routes. RTA has provided the following list of potential impacts caused by major pipeline construction:

- Bus lines often must be re-routed to other streets due to construction;
- Re-routings significantly affect published schedules. Public notices of changes need to be distributed well in advance so that buses are not missed;
- Construction-caused congestion and slower traffic affects schedules and route connections;
- The above difficulties can "domino" through much of the transit system'
- Bus benches, bus stops, etc. are closed, moved or otherwise made inaccessible and riders are unsure where to safely board the bus or step off the bus;
- Transit agency dispatchers will need to publish numerous driver bulletins as necessary to keep the crew informed of changes to routes and stops. [For example,] in a normal week, perhaps 10 are issued for the entire Western Riverside County RTA service area. A project such as the RCF could quadruple this number.

There are total of 16 bus lines that may be impacted by the proposed project, 13 RTA lines and 3 Omnitrans lines as listed below.

RTA Lines

- Route 25 Barton Road from Hunts Lane to Mount Vernon Avenue, in Colton and Grand Terrace
- Route 25 Intersection of Iowa Avenue and Marlborough Avenue to Martin Luther King Boulevard, in Riverside
- Route 25 Michigan Avenue and Barton Road at Omnitrans Transfer Point
- Route 13 Marlborough Avenue from Iowa Avenue to Chicago Avenue in Riverside
- Route 13 Chicago Avenue from Marlborough Avenue to Martin Luther King Boulevard in Riverside
- Route 1 Intersection of Chicago Avenue and 3rd Street in Riverside
- Route 14 Intersection of University Avenue and Chicago Avenue in Riverside
- Route 16 Intersection of University Avenue and Chicago Avenue in Riverside
- Route 25 Intersection of University Avenue and Chicago Avenue in Riverside
- Other Local trolley lines and shuttle buses at the intersection of University Avenue and Chicago Avenue
- Route 208 Intersection of Chicago Avenue and Martin Luther King Boulevard in Riverside
- Route 22 Chicago Avenue from University Avenue to Alessandro Boulevard in Riverside
- Route 20 Intersection of Alessandro Boulevard and Central Avenue in Riverside
- Route 20 Intersection of Chicago Avenue and Arlington Avenue in Riverside
- Route 10 Lincoln Avenue from Horace Street to Adams Street in Riverside
- Route 27 Intersection of Van Buren Boulevard and Cleveland Avenue in Riverside
- Route 1 Magnolia Avenue from Neece Street to Interstate 15 in Corona
- Route 3 Magnolia Avenue from Neece Street to Interstate 15 in Corona

Omnitrans Lines

- Route 2 Hospitality Lane at Hunts Lane
- Route 200 Barton Road from Waterman Avenue to Preston, and in Grand Terrace along Mt. Vernon and Michigan
- Route 19 Barton Road and Washington

Lack of coordination with or consideration for public transportation would be considered a temporary but significant impact.

Proposed Mitigation Measures

The following measures shall be implemented to eliminate or reduce potentially significant impacts resulting from temporary traffic disruption due to construction.

MM Trans 1: Bus stops and signs temporarily removed or closed by the proposed project shall be replaced and posted pursuant to the standards and requirements of the affected transit agency.

MM Trans 2: A Traffic Control and Safety Plan shall be prepared for each reach of construction. WMWD shall coordinate with affected transit agencies, schools, fire stations and other affected local jurisdictions on the preparation of each Traffic Control and Safety Plan. Traffic Control and Safety Plans may include, but not be limited to, such things as adjusted hours of construction in certain locations, signs, flagmen, adequate notice of construction schedules, and cones or barriers to detour traffic. The Traffic Control and Safety Plan for each Reach shall be completed and notice/information given to affected sensitive sites at lease 30-days prior to the anticipated disruption to be caused by construction.

Summary of Environmental Effects After Mitigation Measures are Implemented

After mitigation is implemented, potential temporary significant impacts to transportation services and sensitive uses will be reduced to less than significant levels.

III. Mandatory CEQA Topics

The CEQA Guidelines stipulate several general content requirements for EIRs. Those applicable to this project include cumulative impacts (Section 15130), growth inducing impacts (Section 15126(f)) and unavoidable adverse impacts (Section 15126(b)). The following addresses each of these general requirements.

1. Significant Cumulative Environmental Effects

CEQA requires that an EIR examine the cumulative impacts associated with a project. The range of projects to be included in the cumulative analysis encompasses "past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those outside of the control of the agency." A cumulative effect is deemed significant if the project's incremental contribution to a cumulative impact is "considerable". A cumulative impact is not considered significant if the impact can be mitigated to below the level of significance through mitigation, including providing improvements and/or contributing funds through fee-payment programs. The EIR must examine "reasonable options for mitigating or avoiding any significant cumulative effects of a proposed project" (CEQA Guidelines Section 15130).

CEQA Guidelines Section 15130 requires identification of related projects, both public and private, that together with the proposed project could have cumulative impacts on the environment.

Areas for which the project may contribute significantly to cumulative impacts are discussed below:

Air Quality

The SCAB is designated a non-attainment area for ozone (secondary pollutant formed by a reaction of NOx in the presence of sunlight), carbon monoxide, and PM-10. The project-specific evaluation of emissions presented in the preceding analysis shows that emissions of NOx and ROC are above the recommended South Coast Air Quality Management District (SCAQMD) thresholds during construction of the improvements. NOx is a precursor pollutant to the formation of ozone.

The project will contribute to short-term construction emission cumulative impacts. Due to the scale of the proposed project (length, pipe sizes, and necessary construction techniques) SCAQMD construction emission thresholds will be exceeded during construction of each reach of the proposed project and will be considerable (2.4 to 6.7 times the allowable threshold) even with the implementation of mitigation measures. Adoption of a Statement of Overriding Considerations will be required prior to project approval for cumulative short-term air quality impacts as short-term emissions contribute considerably to cumulative impacts.

As shown in the Air Quality Section of this DPEIR, the project will not exceed long-term operational emission thresholds of ozone producing pollutants. As stated above, the SCAB is designated a non-attainment area for ozone (secondary pollutant formed by a reaction of NOx in the presence of sunlight), carbon monoxide, and PM-10. The long-term emissions for these three constituents resulting from the project are not considerable (NOx, 81% below threshold; CO,

97% below threshold; and PM-10, 99% below threshold). Therefore, long term project emissions will not contribute considerably to cumulative impacts.

2. Alternatives to the Proposed Project

The CEQA Guidelines, Section 15126.6, identify the parameters within which consideration and discussion of alternatives to the proposed project should occur. As stated in this section of the guidelines, alternatives must focus on those that are reasonably feasible and which attain most of the basic objectives of the project. Each alternative must be capable of avoiding or substantially lessening any significant effects of the proposed project. The rationale for selecting the alternatives to be evaluated and a discussion of the "no project" alternative are also required, per section 15126.6.

Alternatives Considered But Not Carried Out Further for Analysis

An alternative for Reach B which would entail tunneling across the mountains located between Reche Canyon and Pigeon Pass Canyon, was developed during preliminary engineering design (Figure III-2a). This alternative would avoid the City of Grand Terrace and community of Highgrove which are congested with existing utility alignments. The alternative alignment would extend south from the intersection of Barton Road and Reche Canyon Road., then southwest through the mountains located between Reche Canyon and Pigeon Pass Canyon to Pigeon Pass Road and west to Palmyrita Avenue. Through preliminary analysis of this alternative, it was determined that tunneling would be at least 4 to 5 times as expensive as traditional trenching methods for pipeline construction. Environmental impacts were also determined to be higher than other proposed routes due to the large staging area needed for a tunnel of over a mile in length and the heavy equipment needed to tunnel through a mountain, the quantities of dirt that would have to be hauled away and equipment and materials hauled in (truck trips), the proximity to homes in Reche Canyon (air quality, noise and traffic), and potential sensitive biological resources on the Box Springs Mountain. This alternative was rejected due to the high economic and environmental costs that would be associated with the extensive tunneling that would be required.

Alternatives that do not meet the project objectives of reducing possible water shortages and reducing dependence upon the direct delivery of imported water during dry year conditions were not considered in this Program EIR.

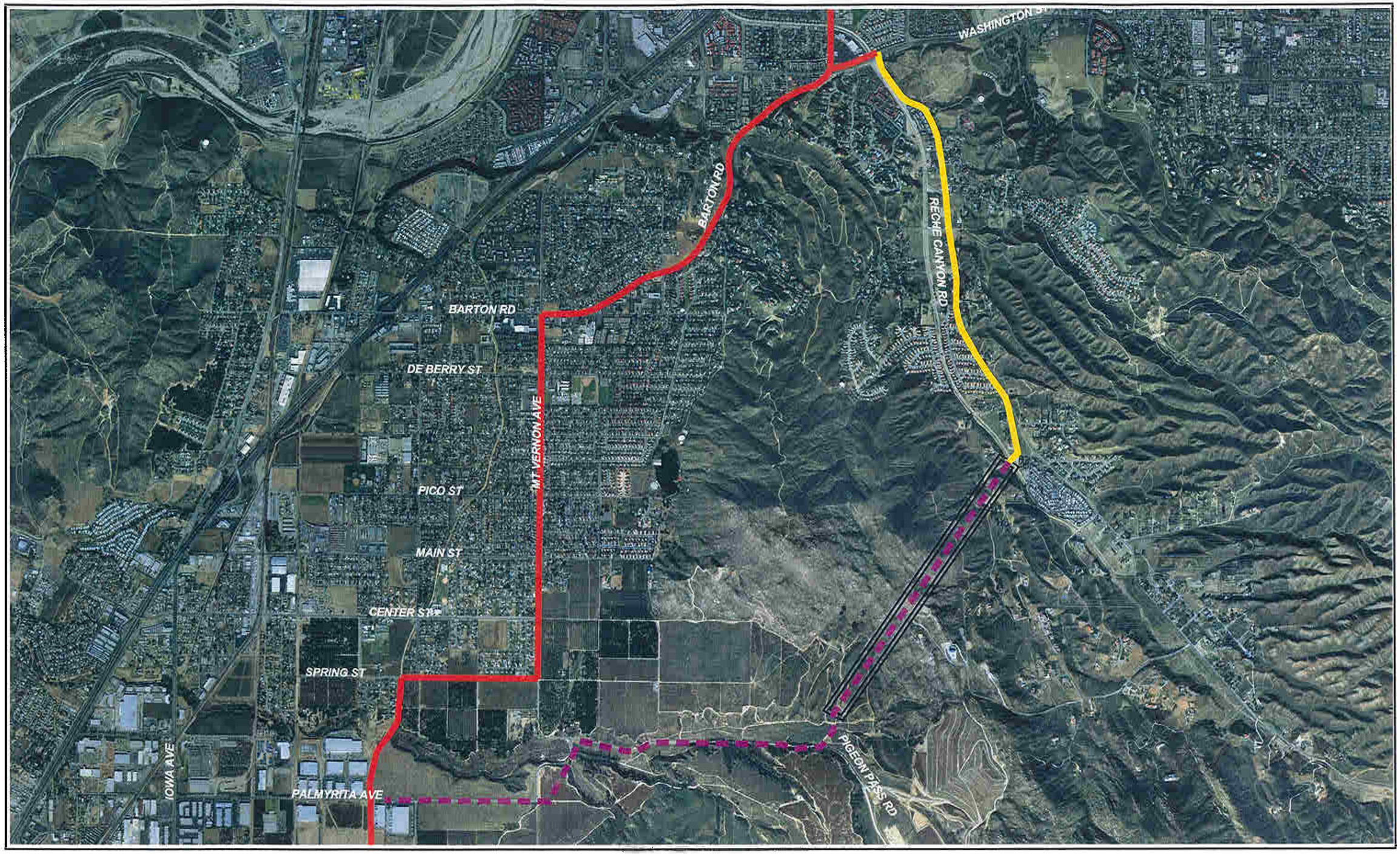
Alternatives under Consideration

CEQA requires that each alternative must in some way avoid or substantially lessen one or more of the significant effects created by the proposed project and meet most of the basic project objectives. Potential significant environmental effects associated with the proposed project include effects to: aesthetics, short term air quality, biological resources, cultural resources, hazardous materials and transportation/traffic circulation.

In addition to a No-Project Alternative, several of the alternatives that were considered during the preliminary engineering design phase were re-considered during the preparation of this Program EIR in an effort to find feasible alternatives that could avoid or reduce any of the above listed significant environmental effects associated with the proposed project.

Alternatives considered in this Program EIR include 1) a No Project alternative that assumes that WMWD will continue to operate as it does currently without the RCF project, 2) an alternative for Reach D that would reduce potentially significant impacts to aesthetics and cultural

resources; 3) an alternative alignment for Reach H that shares a shorter boundary with the Corona Landfill site(reducing hazardous materials impacts), and 4) an alternative alignment for Reaches A. B and E that would reduce project impacts to biological resources. Alternatives 2-4 are shown on Figures (Figures II-2b-f).



Source: AirPhoto USA
February 2002
Scale: 1" = 2,000'

ALBERT A WEBB ASSOCIATES
ENGINEERING CONSULTANTS

PROPOSED RIVERSIDE/CORONA FEEDER

RIVERSIDE/CORONA FEEDER - ALTERNATIVE

TUNNEL

PROPOSED SBVMWD PIPELINE/SOUTH END FEEDER

Figure III-2a

Reche Tunnel Alternative

Source: AirPhoto USA
February 2002
Scale: 1" = 1/8 Mile

ALBERT A WEBB ASSOCIATES
ENGINEERING CONSULTANTS

PROPOSED RIVERSIDE/CORONA FEEDER

RIVERSIDE/CORONA FEEDER - REACH D

Figure III-2b

Alternative 2

Anna Street Alternative

Source: AirPhoto USA
February 2002
Scale: 1" = 1/8 Mile

ALBERT A WEBB ASSOCIATES
ENGINEERING CONSULTANTS

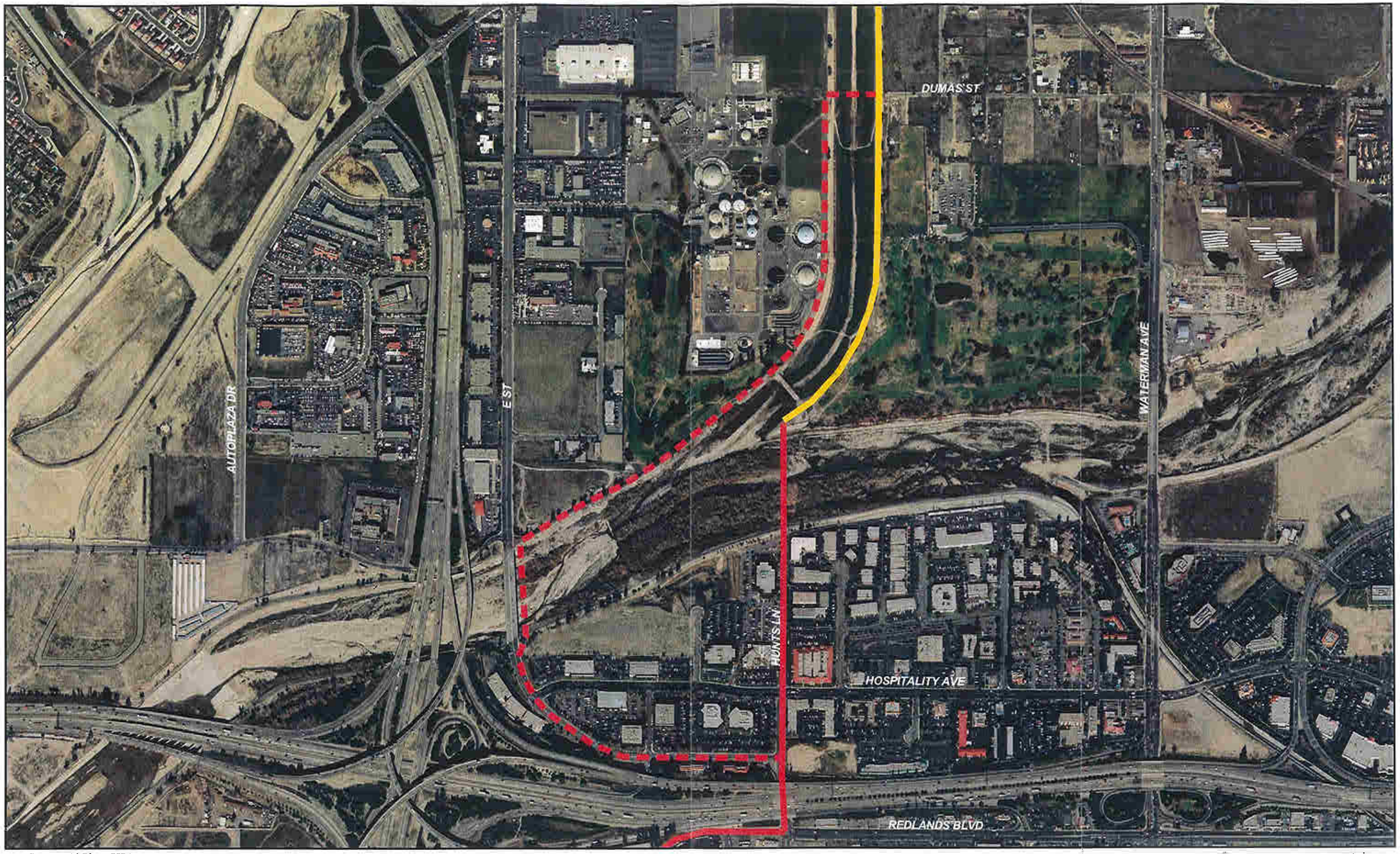
PROPOSED RIVERSIDE/CORONA FEEDER

RIVERSIDE/CORONA FEEDER - REACH H

Figure III-2c

Alternative 3

Short Corona Disposal Alternative



Source: AirPhoto USA
February 2002
Scale: 1" = 1/8 Mile

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

PROPOSED RIVERSIDE/CORONA FEEDER

RIVERSIDE/CORONA FEEDER - REACH A

Figure III-2d

Alternative 4

Reduced Biological Impacts , Reach A

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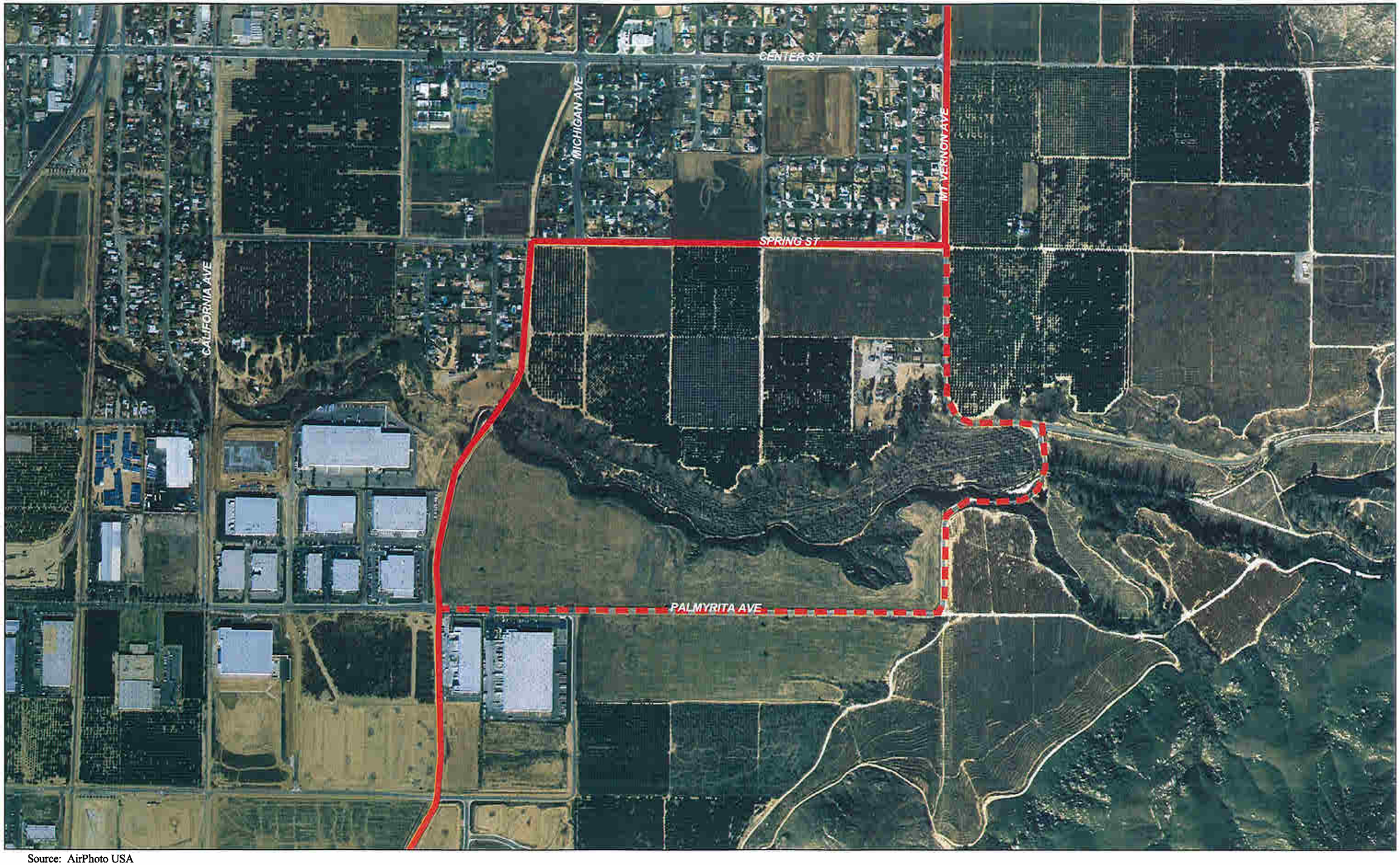


Source: AirPhoto USA
February 2002
Scale: 1" = 1/8 Mile

ALBERT A WEBB ASSOCIATES
ENGINEERING CONSULTANTS

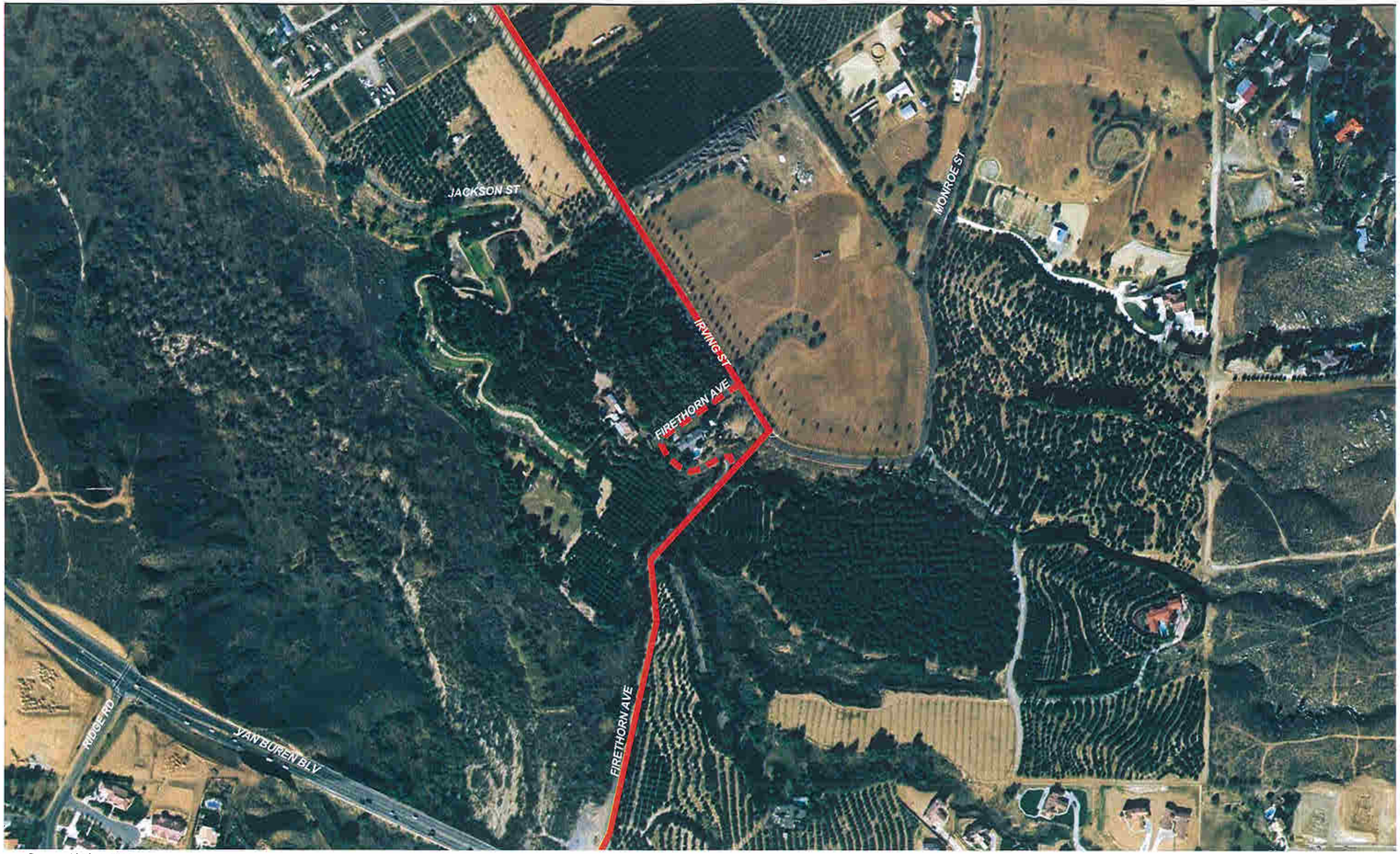
PROPOSED RIVERSIDE/CORONA FEEDER

RIVERSIDE/CORONA FEEDER - REACH B

Figure III-2e

Alternative 4

Reduced Biological Impacts, Reach B



Source: AirPhoto USA
February 2002
Scale: 1" = 300'

ALBERT A WEBB ASSOCIATES
ENGINEERING CONSULTANTS

PROPOSED RIVERSIDE/CORONA FEEDER

RIVERSIDE/CORONA FEEDER - REACH E

Figure III-2f

Alternative 4

Reduced Biological Impact, Reach E

Description of Alternatives

Alternative 1 - No Project Alternative

The No Project alternative includes continued use of current sources of water for WMWD needs and for other water purveyors within the WMWD service area. The water will not be extracted from San Bernardino Basin Area when it is needed. Instead, WMWD will continue to purchase water from State Water Project, and/or Colorado River. The No Project Alternative will hold WMWD dependent on the direct delivery of water from The Metropolitan Water District of Southern California (MWD) during dry hydrologic years.

Alternative 2 – Anna Street Alternative

For purposes of this analysis, the Anna Street Alternative (Figure III-2b) will reduce potential significant impacts to aesthetic and cultural resources by avoiding Victoria Avenue along Reach D, between Arlington Avenue and Lincoln Avenue. Reach D would continue west in Arlington Avenue from Turnout No. 2, across the Victoria Avenue intersection to Anna Street, south in Anna Street, southwest in Lincoln Avenue, southeast in Adams Street, southwest in Cleveland Avenue to the intersection of Cleveland Avenue and Irving Street to Turnout No. 3 which would be located near the intersection of Cleveland Avenue and Irving Street in the City of Riverside. Boring techniques will be utilized to construct the RCF under Victoria Avenue, Mary Street, Madison Avenue and a rail line northeast of St. Lawrence Street. Turnout No. 3 will have a capacity of 35 cfs (15,750 GPM), and will deliver water into the Reach E branch pipeline. Table III-2-A shows the comparison of the project to the Anna Street Alternative.

Table III-2-A Victoria Avenue Alternative (Reach C)

Component of Project	Proposed Project	Anna Street Alt.
Pipeline Footage for Reach C	24,000 feet	24,500 feet
No. of crossings by boring	3	4
Right off way required	0	0
Cultural Resources	Victoria Avenue Vernacular Landscape	None
Traffic Safety - schools	1	2

Alternative 3 – Short Corona Disposal Alternative (Reach H)

For purposes of this analysis, the Short Corona Disposal Alternative will lessen potential significant impacts to hazardous materials sites and to sensitive biological resources associated with riparian habitat by shortening the area of impacts where the proposed project will traverse adjacent to the Corona Landfill near Magnolia and Compton Avenue (Reach H). Rather than stretching for 3,100 feet along the western edge of the currently closed disposal site and crossing the jurisdictional drainage south of the landfill, Alternative 3 will only pass along the eastern side of the landfill for 900 feet (See Figure III-2c). Alternative 3 at Reach H would begin at the intersection of Fillmore Street and Indiana Avenue and will extend southwest on Indiana Avenue, northwest on Neece Street, southwest on Magnolia Avenue, and south on Sherborn

Street. The pipeline will traverse along the Sherborn Street right-of-way for approximately 900 feet along the eastern corner of the Corona Landfill until it reaches the southeastern end of the landfill. From this point, the pipeline will extend approximately 200 feet further east, then to the southwest through a hilly area for approximately 800 feet, then south parallel to the pond that drains into the Temescal Wash. At the southern end of the pond, the pipeline will turn west, entering Old Temescal Road, where it would continue westerly under Interstate 15 and south on Compton Avenue to the intersection of Compton Avenue and Ontario Avenue. The pipeline will be placed underground utilizing boring techniques where it will travel under the Temescal Wash channel and under the BNSF rail line.

Table III-2-B shows a comparison of the proposed project to the Short Corona Disposal Alternative.

Table III-2-B Short Corona Disposal Alternative (Reach H)

Component of Project	Proposed Project	Short Corona Disposal Alt.
Reach H Footage	32,000	32,600
Landfill impacts footage	1,300	900
Boring/micro-tunneling	6	4
Right of way required	3.100 feet	2,300 feet
Special-status biological resources	Riparian habitat, jurisdictional waters	Potential Coastal Sage Scrub supporting CCG

Alternative 4 – Reduced Biological Impacts Alternative (Reaches A, B, E)

For purposes of this analysis, the Reduced Biological Impacts Alternative will lessen potential significant impacts to biological resources by choosing different alignments for those Reaches where the project is expected to adversely affect special-status vegetation and wildlife (Reaches A, B, E).

At Reach A, Alternative 4 would be constructed from the SBVMWD Baseline Feeder Extension South, east of Twin Creek Channel where it intersects with Dumas Street in the City of San Bernardino (see Figure III-2-d). From that point, it would extend to the west underneath the Twin Creek Channel, then southwest within the Twin Creek Channel right-of-way to a point approximately 100-feet east of E Street. The pipeline would then turn south and cross under the Santa Ana River. The proposed pipeline would be installed under the river utilizing micro-tunneling techniques within a 92-inch casing pipe. The riparian vegetative cover is non-existent at this location. Therefore, fewer impacts to biological resources are anticipated. There is however, an old concrete road bed near the surface of E Street which would make construction of the pipeline within the road right-of-way exceedingly difficult and expensive, which marginalizes the feasibility of this alternative. Additionally, there is also a concrete weir located within the riverbed near the Alternative 4 river crossing. South of the river, the pipeline would re-enter the E Street right-of-way and continue in a southeasterly direction to Hunts Lane. The pipeline would continue within the right-of-way of Hunts Lane, under Interstate 10, west on Steel Road to a point approximately 600 feet east of Interstate 215, south through an industrial park to Cooley Drive, south on Cooley Drive, southwesterly on Washington Street then east on Barton Road for approximately 1,100 feet where the pipeline will connect to the 100 CFS mainline meter facility on Barton Road located just east of Reche Canyon Road. The RCF will

be placed underground utilizing boring techniques where it will travel under Hospitality Lane, Interstate 10 and under the flood control facility located just west of Reche Canyon Road.

Table III-2-C shows a comparison of the proposed project to the Reduced Biological Impacts Alternative (Reach A).

Table III-2-C Reduced Biological Impacts Alternative (Reach A)

Component of Project	Proposed Project	Reduced Biological Impacts Alt.
Reach A Footage	8,000	12,500
Boring/micro-tunneling	4	4
Right of way required	700 feet	-
Special-status biological resources	Riparian habitat, jurisdictional waters	Jurisdictional waters

At Reach B, in order to avoid potential significant impacts at the Spring Brook drainage, Alternative 4 will be constructed in Barton Road from its intersection with Washington Street, south in Mount Vernon Avenue, west on Palmyrita Avenue, south in the Gage Canal right-of-way, and west in Marlborough Avenue to Turnout No. I, which would be located near the intersection of Rustin Avenue and Marlborough Avenue in the City of Riverside. Boring techniques will be utilized where the RCF is proposed to cross under the Union Pacific rail lines just east of the intersection of Rustin Avenue and Marlborough Avenue (Figure III – 2e).

Table III-2-D shows a comparison of the proposed project to the Reduced Biological Impacts Alternative (Reach B).

Table III-2-D Reduced Biological Impacts Alternative (Reach B)

Component of Project	Proposed Project	Reduced Biological Impacts Alt.
Reach B Footage	29,000	30,200
Boring/micro-tunneling	2	1
Right of way required	450 feet	-
Special-status biological resources	Riparian habitat, jurisdictional waters	-

To lessen biological impacts at Reach E, Alternative 4 will be constructed from Turnout No. 3 southeast in Irving Street to then southwest in the Firethorn Avenue right-of-way. Boring techniques will be utilized to install a 36-inch pipeline that will cross under the open Gage Canal, southwest in rights-of-way of Firethorn Avenue (rather than downhill and crossing the drainage of Mockingbird Canyon Creek) and across Van Buren Boulevard, west to the Mockingbird Pump Station (Please, see Figure III-2f).

Table III-2-E shows a comparison of the proposed project to the Reduced Biological Impacts Alternative (Reach E).

Table III-2-E Reduced Biological Impacts Alternative (Reach E)

Component of Project	Proposed Project	Reduced Biological Impacts Alt.
Reach E Footage	11,000	11,400
Boring/micro-tunneling	2	2
Right of way required	200 feet	-

Special-status biological resources	Riparian habitat, jurisdictional waters Indirect (noise) impacts	Indirect (noise) impacts

Evaluation of Alternatives

The matrix approach to comparing the above described alternatives is used for ease of directly comparing the proposed project's significant effects with those of the alternatives, per CEQA Guidelines Section 15126.6 (d). Table III-2-F identifies the areas of potential environmental effects per CEQA and ranks each alternative as better, the same, or worse than the proposed project with respect to each area.

Environmentally Superior Alternative

The CEQA Guidelines, Section 15126.6(e)(2), requires the identification of the environmentally superior alternative. Of the alternatives evaluated above, Alternative 1, the No Project alternative, is the environmentally superior alternative with respect to reducing impacts created by the proposed project in shear number of Environmental Issue Areas, however, key potential environmental benefits of the proposed project related to groundwater levels and quality would not be affected and it would not meet the proposed project objectives. The CEQA Guidelines also require the identification of another environmentally superior alternative if the No Project alternative is the environmentally superior alternative.

Of the four project alternatives (Alternative 2 -5), the Shorter Corona Landfill alternative is environmentally superior to the proposed project. The Shorter Corona Landfill alternative proposed a different alignment, where the project would reduce the area of impacts at Corona Landfill by 400 meters. Impacts to riparian habitat would also be reduced by this alternative but would be off-set by increased impacts to sage scrub habitat. However, although impacts are reduced under the Shorter Corona Landfill alternative, no significant impacts are avoided.

Table III-2-F Comparison of Alternatives Matrix

Environmental Issue	Riverside Corona Feeder Project	Alternative 1 No Project	Alternative 2 Anna Street Alt.	Alternative 3 Short Corona Landfill	Alternative 4 Reduced Bio Impacts
Aesthetics	No significant effects with Mitigation	Same – No significant effects, trees would remain.	Better- Avoid disturbance of designated vegetation along and/or near Victoria Avenue	Same - No significant effects with Mitigation	Same - No significant effects with Mitigation
Air Quality	Significant – Exceeds thresholds for ROC and NOx. Health risks below significance levels. Cumulatively significant – contributes to existing exceedance of air quality significance levels.	Better – no additional impacts to air quality	Worse - additional emissions of ROC and NOx due to slightly longer alignment. Cumulatively significant – contributes to existing exceedance of air quality significance levels.	Same - Significant – Exceeds thresholds for ROC and NOx. Health risks below significance levels. Cumulatively significant – contributes to existing non-attainment area.	Worse - additional emissions of ROC and NOx due to longer alignment. Cumulatively significant – contributes to existing exceedance of air quality significance levels.
Biological Resources	Less than significant with mitigation	Better – no impacts on biological resources	Same – no additional significant impacts	Same – avoids riparian habitat and jurisdictional waters, but causes potential impacts to Coastal Sage Scrub	Better – avoids impacts to 3 crossings with riparian habitat, but still impacting riparian habitat at Reach H
Cultural Resources	Less than significant with mitigation	Better – no impacts on historic resources	Better – no impacts on Victoria Avenue	Same - Less than significant with mitigation	Same - Less than significant with mitigation
Hazards	Less than significant with mitigation	Better – no risk of hazardous sites	Same - Less than significant with mitigation	Better – lessens potential significant impacts to hazardous sites by 400 ft.	Same - Less than significant with mitigation
Groundwater Levels	Less than significant. Project can be used to help relieve historic high groundwater areas within the Basin.	Worse - Historic impacts on groundwater levels would exist with one less means to alleviate high water.	Same - Less than significant	Same - Less than significant	Same - Less than significant
Groundwater Quality	Direct Impacts – Less than significant. Indirect Impacts – Would have an effect on pollution plumes but impacts unknown. Further project definition and analysis required.	Same or Worse – It is the intent of the proposed project to maintain or improve ground water quality through coordinated replenishment and extraction operations.	Same	Same	Same

Environmental Issue	Riverside Corona Feeder Project	Alternative 1 No Project	Alternative 2 Anna Street Alt.	Alternative 3 Short Corona Landfill	Alternative 4 Reduced Bio Impacts
Traffic	No significant effects with Mitigation	Better – no temporary impacts related to construction	Worse - additional right-of-way required, will pass by an additional school	Same - No significant effects with Mitigation	Worse – additional disturbance to public transportation, streets
Environmentally Superior to Proposed Project?	Not Applicable	Yes in most Environmental Issues areas, however, key potential environmental benefits of the proposed project related to groundwater would not be affected.	No/similar – increased traffic and air quality impacts off-set reduced cultural impacts.	Yes/similar – reduced potential for hazardous impacts associated with the Corona Landfill would occur, however no change in the final level of significance for hazardous site would result.	No/similar – increased traffic and air quality impacts off-set reduced biological impacts.
Meets Project Objectives?	Yes	No	Yes	Yes	Yes

3. Unavoidable Adverse Impacts

This topic is intended to address any impacts that cannot be mitigated to below a level of significance (CEQA Guidelines Section 15126.2). Significant impacts which cannot be avoided or eliminated if the project is implemented have been discussed in detail in Section III of this document. A summary of the areas in which impacts could not be reduced to a level below significance is briefly presented below.

Air Quality

Impacts to air quality are considered significant if a project will violate an air quality standard, contribute substantially to an existing air quality violation or result in a cumulatively considerable increase in a criteria pollutant under non-attainment. Construction of the proposed project will generate short-term emission of NOx and ROC above the SCAQMD recommend thresholds even with mitigation measures incorporated, thereby indicating project emissions will violate an air quality standard and contribute substantially to an existing air quality violation. The four "alignment" alternatives would produce similar or worse impacts. Project construction impacts to air quality cannot be successfully mitigated to a level below significance, and therefore unavoidable adverse impacts remain during the construction period.

4. Growth Inducing Impacts

The California Environmental Quality Act (CEQA) Guidelines Section 15126.2(d), requires an EIR to include a discussion about potential growth inducing impacts associated with the proposed project. Growth inducing impacts could include such things as direct economic or population growth resulting from the construction of businesses or housing. Indirect impacts might include removing obstacles to growth or extending utilities or services into areas previously un-served. The following discussion presents the general factors that could result in growth inducing impacts related to the Riverside Corona Feeder (RCF) project.

Consistent with the stated purposes of the RCF, it is not the intent of this project to address or solve water supply problems within WMWD's service area, the Santa Ana River watershed, or California as a whole. The proposed project alignment and/or any alternatives presented herein are/is expected to result in water supply reliability for beneficial uses in WMWD's service area as well as other jurisdictions which may transport water via the RCF. Redundancy in WMWD's distribution system will be increased by the project. The project will facilitate the storage of water, when it is readily and inexpensively available, purchased from MWD from the State Water Project. The proposed project will also provide an additional outlet from the Bunker Hill Basin across the Santa Ana River which will also allow for better basin management of water levels and water quality, especially in years when the water table is too high.

Although such a water storage, conveyance, and distribution project may have the potential to remove obstacles to growth and/or provide water service to areas not previously served, it will not result directly in population or economic growth. Actual growth is approved at the local level where land use policies and decisions are made by local elected and appointed officials. This proposed project is not required for any specific development proposal or even a particular level of development in any given area.

Indirectly, however, water supply reliability or water table stabilization might encourage local decision-makers in some areas to approve more housing or businesses. At the programmatic level of analysis included in this EIR, it would be speculative to assume where and when such land use approvals might occur. Because there is not enough information at this programmatic level to determine with certainty the project's nexus to growth, it is assumed for the purposes of public disclosure that the improvement of water supply reliability and water table stabilization could stimulate growth somewhere within the WMWD Riverside/San Bernardino counties region over the lifetime of the project.

Growth is projected to occur throughout the region with or without this project. Table III-4-A indicates projected population growth in Riverside and San Bernardino Counties for the next 17 years in 5-year increments.

TABLE III-4-A
POPULATION PROJECTIONS

County	2000	2005	2010	2015	2020
Riverside	1,577,700	1,864,700	2,159,700	2,459,600	2,817,600
San Bernardino	1,742,300	1,980,000	2,231,600	2,487,700	2,800,900
TOTAL	3,320,000	3,844,700	4,391,300	4,947,300	5,618,500

SOURCE: EWA Draft EIS/EIR – July 2003. California Dept. of Finance figures.

Population and economic growth is not inherently negative. Growth can be beneficial, neutral, or cause adverse environmental impacts. Each local, state or federal agency responsible for future growth will have to address potential environmental impacts and how to mitigate them when more information is available. The types of impacts that population and economic growth could include impacts on water and air quality; water supply; transportation; loss of open space, biological or agricultural resources; and other resource areas addressed by CEQA.

When growth occurs, such environmental factors are considered within the framework of local land use and regulatory decisions. Future development in any jurisdiction is influenced by many factors, only one of which is the reliability of the water supply. Other factors include such things as General Plan policies and zoning ordinances; the availability of community services and infrastructure, such as sewers, streets and libraries; employment opportunities; and maintenance costs. There is no way that this Program EIR can determine the location or rate of growth, or the level of significance of any direct, indirect or cumulative impact that might result from the implementation of the RCF project.

See page 1.0-4 of the Final PEIR for text added as Section III-5, Irreversible Environmental Changes

IV. References and Supporting Information

1. References

The following documents were referred to as general information sources during preparation of this document. They are available for public review at the locations abbreviated after each listing and spelled out at the end of this section. Some of these documents are also available at public libraries and at other public agency offices.

AQMP	Air Quality Management Plan for SCAB. 1997. (*Available at SCAQMD*)
CColGP	City of Colton General Plan. 1987. (*Available at Colton Planning*)
CCorGP	City of Corona General Plan. 1976. (*Available at Corona Planning*)
CGTGP	City of Grand Terrace General Plan. 1988. (*Available at GT Planning*)
CRivGP	City of Riverside General Plan. 1994. (*Available at Riverside Planning*)
CSBGP	City of San Bernardino General Plan. 1991. (*Available at SB Planning*)
County Health	San Bernardino County Health Services. Personal Communication with Jackie Adams. October 22, 2003.
CoRivGP	County of Riverside General Plan. 2003. (*Available at Riv Co Planning*)
Encroachment Permit	Riverside County Transportation Department. Sample Encroachment Permit. 2002. (*Available at WMWD*)
Grand Terrace	City of Grand Terrace. Personal Communication with John Lampe. May 20, 2003.
MSHCP	Western Riverside County Multiple Species Habitat Conservation Plan. 2002. (*Available at www.rcip.org/draft_mshcp_2_toc.htm*)
RivCanal	City of Riverside Public Utilities, Cultural Resource Survey of the Riverside Canal (CA-RIV-4495H, CA-RIV-4491H, CA-SBR-7172H) Riverside and San Bernardino Counties. October 2001. *(Available at City of Riverside)*
RWQCB a	Regional Water Quality Control Board, Santa Ana Region. Investigation of Sources of TCE and PCE Contamination in the Bunker Hill Groundwater Basin. 1986. (*Available at RWQCB*)

RWQCB b — Regional Water Quality Control Board, Santa Ana Region. Water Quality Control Plan, Santa Ana River Basin (8). 1995. (*Available at RWQCB*)

San Bernardino — City of San Bernardino. Personal Communication with Mike Wolff. May 20, 2003.

SBVMWD a — San Bernardino Valley Municipal Water District. Regional Water Facilities Master Plan, Final Draft. Reference Documents. Prepared by Camp Dresser & McKee. August 15, 1995. (*Available at SBVMWD*)

SBVMWD b — San Bernardino Valley Municipal Water District, current groundwater records provided by Bob Tincher. 2000. (*Available at SBVMWD*)

SBVMWD c — San Bernardino Valley Municipal Water District. Regional Water Facilities Master Plan Water Quality Study. Prepared by Camp Dresser & McKee. May 1996. (*Available at SBVMWD*)

SCAQMD — South Coast Air Quality Management District. *CEQA Air Quality Handbook*. April, 1993, with November 1993 Update. (*Available at SCAQMD*)

Standard Specs — Western Municipal Water District of Riverside County, Riverside, California. Standard Specifications. 1997. (*Available at WMWD*)

Sogge *et al*. — Sogge, M.K., R.M. Marshall, S.J. Sferra, and T.J. Tibbits. A Southwestern Willow Flycatcher Natural History Summary and Survey Protocol. 1997. Technical Report NPS/NAUCPRS/NRTR-97/12. USGS Colorado Plateau Research Station. Northern Arizona University, Flagstaff, Arizona. 37 pp. (3-page revision added in 2000).

USFWS a — United States Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Endangered Status For *Eriastrum densifolium* ssp. *sanctorum* (Santa Ana River woolly-star) and *Centrostegia leptoceras* (slender-horned spineflower). 1987. Federal Register vol 52, no. 187. Pp. 36265-36270. (*Available at www.ecos.fws.gov*)

USFWS b — United States Fish and Wildlife Service. Draft Recovery Plan for the Least Bell's Vireo (*Vireo bellii pusillus*). 1998. U. S. Fish and Wildlife Service. Portland, OR. 139 pp. (*Available at www.ecos.fws.gov*)

USFWS c — U.S. Fish and Wildlife Service. Arroyo southwestern toad (*Bufo microscaphus californicus*) recovery plan. 1999. U.S. Fish and Wildlife Service. Portland, OR. 119 pp. (*Available at www.ecos.fws.gov*)

USFWS d — United States Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Threatened Status for the Santa Ana Sucker. 2000.

Federal Register vol 65, no. 71. Pp. 19686-19698. (*Available at www.ecos.fws.gov*)

USFWS e — United States Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Final Rule To Designate Critical Habitat for the Santa Ana Sucker (*Catostomus santaanae*). 2004. Federal Register vol 69, no. 38. Pp. 8839-8861. (*Available at www.ecos.fws.gov*)

USGS a — U.S. Department of the Interior, Geological Survey. USGS Professional Paper: Chemistry and Isotopic Composition of Ground Water Along a Section near the Newmark Area, San Bernardino County, California. Prepared by John A. Izbicki, Wesley R. Danskin, and Gregory O. Mendez. 1998. (*Available at http://ca.water.usgs.gov*)

WSBWM a — Western-San Bernardino Watermaster Report. 2001. (*Available at WMWD or at www.sbvmwd.com*)

Location:	Address:
AQMD	South Coast Air Quality Management District. 21865 East Copley Drive, Diamond Bar, CA 91765.
Colton Planning	City of Colton, Community Development, Planning Division. 650 N La Cadena Drive, Colton, CA 92324.
Corona Planning	City of Corona, Planning Department. 815 W Sixth Street, Corona, CA 92881.
GT Planning	City of Grand Terrace, Planning Department. 22795 Barton Road, Grand Terrace, CA 92324.
Riv Co Planning	County of Riverside Planning Department. 4080 Lemon Street, Riverside, CA 92502.
Riverside Planning	City of Riverside, Planning & Building Department, 3900 Main Street, 3rd Floor, Riverside, CA 92522.
RWQCB	Regional Water Quality Control Board, Santa Ana Region. 3737 Main Street, Suite 500, Riverside, CA 92501.
SB Planning	City of San Bernardino, Development Services Department, 300 N "D" Street, 3rd Floor, San Bernardino, CA 92418.

SBVMWD San Bernardino Valley Municipal Water District. 1350 South "E" Street, San Bernardino, CA 92412.

WMWD Western Municipal Water District. 450 Alessandro Blvd. Riverside, CA 92508.

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Ramona Band of Chuilla
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San Manuel Band of Mission Indians, Environmental Department
C/O Ms. Ann Brierty and Mr. Tony Mejia
2659 Community Center Drive
Highland, CA 92346

3. Glossary and Acronyms

ACOE	United States Army Corps of Engineers
AT&SF	Atchison, Topeka & Santa Fe Railroad
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CNEL	Community Noise Equivalent Level
DBCP	dibromochloropropane
DHS	Department of Health Services
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency
fps	feet per second
GPM	Gallons per Minute
HCP	Habitat Conservation Plan
HGL	Hydraulic Gradient Level
hp	horsepower
IWMB	Integrated Waste Management Board
MSHCP	Multiple Species Habitat Conservation Plan
MWDSC	Metropolitan Water District of Southern California
NOP	Notice of Preparation
OHWM	Ordinary High Water Mark
PCE	tetrachloroethylene
RCF	Riverside-Corona Feeder
RTA	Riverside Transit Agency
RWQCB	Regional Water Quality Control Board
SBKR	San Bernardino Kangaroo Rat
SBVMWD	San Bernardino Valley Municipal Water District

SCAQMD	South Coast Air Quality Management District
SKR	Stephen's Kangaroo Rat
TCE	trichloroethylene
TDS	Total Dissolved Solids
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WMWD	Western Municipal Water District

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FINAL PROGRAMATIC ENVIRONMENTAL IMPACT REPORT
FOR THE

WESTERN MUNICIPAL WATER DISTRICT
RIVERSIDE-CORONA FEEDER PROJECT

SCH Number 2003031121

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May 2005

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4.0 BOARD ACTION, FINDINGS, NOTICE OF DETERMINATION

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6.0 ANNOTATED DRAFT PEIR AND APPENDIX A

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A Notice of Preparation including Initial Study, Distribution List and Comments Received on Notice of Preparation

B Air Quality Impact Analysis Report

C Biological Assessment Report

D Storage and Extraction Agreement

E Phase I Cultural Resources Investigation

F Riverside-Corona Feeder Project – Phase I Groundwater Modeling Results

G Riverside-Corona Feeder Project Preliminary Design Report for Reach B-North

H Riverside-Corona Feeder School Flooding Study

1.0 INTRODUCTION

1.0 INTRODUCTION

The Final PEIR, as required pursuant to CEQA Guidelines Sections 15089 and 15132, must include the Draft PEIR or a revision thereof, comments and recommendations received on the Draft PEIR, a list of persons, organizations and public agencies commenting on the Draft PEIR and the responses of the Lead Agency to significant environmental points raised in the review and consultation process. A reporting or monitoring program (MMP) must also be prepared and approved to ensure compliance during project implementation (Public Resources Code Section 21081.6, CEQA Guidelines Section 15097).

RELATIONSHIP TO THE DRAFT PEIR

The Final PEIR, together with the July 2004 Draft PEIR (as annotated herein), the Mitigation Monitoring Program and the Findings constitute the environmental disclosure record that will serve as the basis for approval of the proposed project.

CORRECTIONS, ERRATA AND CHANGES FROM DRAFT TO FINAL PEIR

Corrections, errata and changes from the Draft to Final PEIR represent additional information, clarifications or corrections that do not change the project impacts and/or mitigation measures such that new or more severe environmental impacts result from the project. Such items are sometimes added as a result of comments received from responsible agencies, changes in the existing conditions at the site, revised public policies since the Draft PEIR was written, and minor errors or clarifications.

The following summary will present the location and types of additions, changes or corrections made within each section of the Final PEIR since the Draft PEIR was published. The Draft PEIR published herein has annotations in the margins identifying changes made in the Final PEIR process.

The City of Riverside, Planning Department, Letter dated September 23, 2004: The Cultural Resource Survey of the Riverside Canal (CA-RIV-4495H, CA-RIV-4791H, CA-SBR-7172H) Riverside and San Bernardino Counties California was obtained from Mr. Milligan at the City. This document will be added to the References section of the PEIR and page II-4-6, paragraph 4, of the Draft PEIR will be corrected to read:

> "The Riverside Canal (CA-RIV-4791H) runs along the southern alignment of the proposed project area in portions of Reaches F and H, but the proposed alignment does not involve the actual canal right-of-way. Rather, the proposed project parallels the Riverside Canal. The Riverside Canal was evaluated for cultural significance in the Cultural Resource Survey of the Riverside Canal (CA-RIV-4495H, CA-RIV-4791H, CA-SBR-7172H) Riverside and San Bernardino Counties California, October 2001. The report concludes that the canal has overall historic significance based on its role in the historic development of the region, but the integrity of the historic resource today only warrants designation in key locations, near the Santa Ana River and the Highgrove

Drop structure. The segments of the canal which will be paralleled by the Riverside-Corona Feeder Project are located southwest of Van Buren Boulevard and were identified as having poor to very poor historic integrity at this time. Potential impacts to the Riverside Canal will be avoided by paralleling the canal and not involving specific portions of the canal."

Page I-4-2, paragraph 3, of the Draft PEIR will be corrected to read

"Encroachment permits will be required for boring underneath the Santa Ana River and other drainage channels. ALicense Agreement might also be required from the San Bernardino Water Conservation District and such an agreement will require compensation for use of the District's right of way."

Page II-4-4 of the Draft PEIR, Project Compliance with Existing Regulations shall include the following text:

"Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertaking on historic properties and Native American sites of religious or cultural significance. Section 106 would apply to the proposed project if federal agencies are involved in the development or if federal money is used. The Section 106 process requires consultation with Native American representatives, local agencies, and the State Historic Preservation Officer. If in the future this project is awarded federal funds, the official NEPA process and Section 106 will be required."

In response to letters received from the Native American Heritage Commission and several tribes, the Cultural Resources mitigation measures have been revised to provide clarity and respond to comments raised by the Native American community. The mitigation measures located on pages II-4-7 and 8 in the Draft PEIR shall be replaced with the following:

MM Cult 1: In order to reduce potential significant impacts to historic and non-Native American archaeological and historic resources, full time archaeological monitoring during excavations shall be conducted in sensitive areas (e.g., near the Santa Ana River crossing), within undeveloped areas along the project alignment, near Riverside Highland Water facility site thought to be in the vicinity of Barton Road (north of Palm Avenue), at the Gage Canal crossing in the cities of Riverside and Grand Terrace, at the Railroad crossings (AT&SF Railroad Alignment and Southern Pacific Railroad), the Riverside Canal, at Victoria Avenue and Irving Street. The extent and duration of the archaeological monitoring shall be determined by a qualified archaeologist once the construction schedule is defined for each reach of project construction. In the event of an accidental discovery, the archaeological monitor will comply with State CEQA Guidelines section 15064.5.

MM Cult 1a: If non-Native American archaeological or historic resources are discovered, the local jurisdiction and land owner where the resources are found will be notified by WMWD. Depending on the nature of the resource, appropriate mitigation

and monitoring will be_developed by WMWD in conjunction with all affected parties and the on-site archaeologist, and may include such things as:

- Documentation, removal and curation at a local museum, federal repository or other appropriate steward agency.
- Documentation and retention in place.
- Further detailed archaeological studies to determine the nature and extent of the find.
- Retention by the land owner.
- Other measures agreed upon by the parties involved.

MM Cult 2: In response to comments from local tribes and to be sensitive to the cultural heritage of the tribes that have claimed an interest in the project area, the archaeological monitoring program shall be executed in conjunction with the tribes to assist in determining which areas of the project alignment are in sensitive locations where undisturbed soils will be excavated. Such areas will include, at a minimum: the Santa Ana River (San Bernardino County) and Springbrook Wash (Riverside County and City) crossings and a natural area near Irving and Firethorn Streets (Mockingbird Canyon area) in the City of Riverside.

Prior to grading, WMWD shall contact the Native American Heritage Commission (NAHC) to determine the Most Likely Descendent (MLD) within any given Reach where the pipeline is to be constructed. WMWD shall enter into a pre-excavation agreement for one paid monitor with the Native American tribe identified by the NAHC as the MLD for each Reach of project construction where undisturbed native soils will be affected and sensitive resources are likely. In the event of an accidental discovery, the archaeological monitor will comply with State CEQA Guidelines section 15064.5.

To respond to the expressed desire of each tribe to monitor construction in sensitive areas and in the spirit of interagency cooperation, the Pechanga, Ramona and San Manuel shall be notified by WMWD prior to excavation activities.

MM Cult 3: To ensure the proper disposition of cultural resources of interest to the tribes uncovered during excavation for the installation of the RCF Project, WMWD shall seek input from the tribes to develop a plan for such dispersal that encompasses the tribes' desired treatment and disposition of Native American cultural resources, including human remains. After considering the tribes' input and recommendations, WMWD shall approve and finalize such a plan prior to grading. WMWD shall agree to present the plan and encourage land owners to follow the plan if cultural resources of interest to the tribes are found on land not owned by WMWD.

MM Cult 4: No change.

MM Cult 5: If human remains are uncovered at any time, all activities in the area of the find shall be halted by WMWD or its contractor and the County Coroner shall be

notified immediately pursuant to CA Health & Safety Code Section 7050.5 and CA PRC Section 5097.98. If the Coroner determines that the remains are of Native American origin, the Native American Heritage Commission (NAHC) shall be notified by the Coroner. The NAHC will determine and notify the Most Likely Descendent (MLD). The MLD shall be allowed to inspect the site of the discovery. The MLD shall complete the inspection and make recommendations for treatment within 24 hours of notification by the NAHC.

MM Cult 5a: If a sacred site is encountered within the project alignment, WMWD will work with the tribes to avoid the site, if feasible.

To consolidate any discussions regarding irreversible changes to the environment and to respond to CEQA Guidelines Section 15126.2(c), the following text shall be added to the Draft PEIR following page III-4-2.

Irreversible Environmental Changes

CEQA Guidelines section 15126.2 (c) requires that the EIR discuss primary and secondary impacts of the proposed project that result in significant irreversible changes in the environment. Section 15126.2 (c) identifies as examples such things as use of nonrenewable natural resources, irreversible changes in land use, and irreversible damage to the environment resulting from environmental accidents associated with the project.

Consumption of non-renewable resources will result from construction and operation of the proposed project. Non-renewable resources such as sand, gravel, and steel will be consumed during project construction. Energy, fossil fuels, oils and natural gas will be irreversibly committed during construction. These same energy resources may be used for pumping equipment during operations. The continued use of these resources associated with project operations represents a long-term obligation.

Although water consumption may increase as a result of the proposed project, it is the purpose of the project to store and use water that is presently in excess of State Water Project needs. If additional consumption results, such additional consumption in this area will require a long-term commitment to providing water service. Conservation programs and mitigation measures will limit harmful effects to water sources but cannot completely prevent irreversible changes to the environment from the use of water for urban purposes.

Following completion of the proposed pipeline, the roads, parking lots, vacant and natural lands will be returned to their present state; since this is an underground project virtually no changes to surface conditions or land uses will remain for the long term. The only above-ground facilities that will be constructed as a part of this project will be up to 20 well heads and a pump station. Since the locations of the future well sites is speculative at this time, the environmental impacts of the future wells will be discussed in environmental analysis and documentation prepared pursuant to CEQA at the time

sites are identified. The pump station has been evaluated in this EIR and will use fuels for pumping as discussed in the previous paragraphs.

The proposed project should not result in future accidents or upset that will damage the environment. No hazardous chemicals are or will be stored or transported in association with this project's operations.

PUBLIC REVIEW SUMMARY

The EIR process typically consists of three parts – the Notice of Preparation, Draft EIR, and Final EIR. The Notice of Preparation (NOP) for the proposed project was circulated in March of 2003. The NOP was distributed directly to over 150 public agencies, property owners and interested parties. A notice advising the availability of the NOP was posted with both the Riverside County Clerk of the Board and San Bernardino County Clerk on March 28, 2003 and the State Clearinghouse on March 27, 2003 for a 30-day comment period. Copies of the NOP, the NOP distribution list, and comments received on the NOP are presented in Appendix A of the Draft PEIR for the Riverside-Corona Feeder Project, July 2004.

A Scoping meeting was held as recommended in Section 15083 of the CEQA Guidelines to which all NOP recipients were invited. Two responsible agencies, Riverside Transit Agency and Elsinore Valley Municipal Water District, attended the meeting held on April 9, 2003. Issues raised included impacts on public transportation and groundwater.

Western Municipal Water District (WMWD) as the Lead Agency circulated a Draft Environmental Impact Report (PEIR) for the Riverside-Corona Feeder project August 16 through September 29, 2004. Notices of Availability of the Draft PEIR were distributed directly to responsible agencies, trustee agencies, other interested parties, and local libraries. The Draft PEIR was distributed on CD to all responsible and trustee agencies in addition to hard copies. Documents were distributed via U.S. Mail and/or Overnight Express on August 15, 2004. The official State Clearinghouse review period began August 16, 2004 and ended September 29, 2004.

General public notice of availability of the Draft PEIR was given by publication on August 18, 2004 in *The Sun* and *The Press Enterprise*. Copies of the published notice are presented in Section 3.0, herein. As required by Public Resources Code Section 21092.3, a copy of the public notice was posted with the Counties of Riverside and San Bernardino on August 17, 2004 (see Section 3.0).

As provided in the public notice and in accordance with CEQA Section 21091(d), WMWD accepted written comments through September 29, 2004. Twelve letters were received during the comment period from: Native American Heritage Commission; Pechanga Band of Luiseño Indians; City of Calimesa; City of Grand Terrace; City of Riverside, Public Utilities; City of Riverside, Public Works; City of Riverside, Planning Department; Riverside Unified School District; City of San Bernardino Municipal Water Department; County of San Bernardino Department of Public Works; County of San Bernardino Department of Land Use Services and Orange County Water District. Subsequent to the close of the public review period, additional

comment letters were received from the Native American Heritage Commission (NAHC), Department of Toxic Substance Control, Ramona Band of Cahuilla Indians, and the San Manuel Band of Mission Indians. Responses to all letters are included in Section 2.0 of this Final PEIR and the letters are provided in their entirety in Section 2.0 following all responses.

In accordance with the provisions of Public Resources Code Section 21092.5, WMWD has provided a written response to each commenting entity no less than 10 days prior to the proposed certification date.

LIST OF PERSONS, ORGANIZATIONS AND PUBLIC AGENCIES THAT COMMENTED ON DRAFT PEIR

State Agencies
Native American Heritage Commission
Department of Toxic Substance Control

Native American Tribes
Pechanga Band of Luiseno Indians
Ramona Band of Cahuilla Indians
San Manuel Band of Mission Indians

Local Agencies
City of Calimesa
City of Grand Terrace
City of Riverside, Public Utilities
City of Riverside, Public Works
City of Riverside, Planning Department
Riverside County Flood Control and Water Conservation District
Riverside Unified School District
City of San Bernardino Municipal Water Department
County of San Bernardino Department of Public Works
County of San Bernardino Department of Land Use Services
Orange County Water District
Imperial County

Regional Agencies
Western Riverside Council of Governments

2.0 RESPONSE TO COMMENTS

2.0 RESPONSE TO COMMENTS

Pursuant to CEQA Guidelines Section 15088, the responses to comments presented in this section address specific, relevant comments on environmental issues raised in the submitted comment letters. Copies of the original letters, including all attachments, are presented in this section following the responses to all commenting entities.

RESPONSE TO COMMENTS

STATE AGENCIES

Comment #1:

Thank you for the opportunity to comment on the above-mentioned document. The Commission was unable to perform a record search of its Sacred Lands File for the project area due to the lack of specific location information. Please provide us with the U.S.G.S. quadrangles, townships, ranges, and section numbers for the project route, which will enable us to identify whether any Native American sacred sites could be impacted by this project.

Response #1:

The requested information was provided to the Native American Heritage Commission (NAHC). A Sacred Lands file search was completed, the results of which are expressed in the NAHC's November 2004 letter, herein. No new information was provided or issues raised by this comment that were not previously analyzed in the Draft Program Environmental Impact Report (PEIR).

Comment #2:

The Commission agrees with the comment letter submitted by the California Indian Legal Assistance Fund on behalf of the Pechanga Band of Luiseño Indians, requesting a pre-excavation agreement with the tribe for this project. Given the highly sensitive nature of the area being traversed by this project, such an agreement would help to prevent problems should unanticipated cultural resource discoveries occur, and would be advisable for each of the tribal territories being crossed. Similarly, we concur that any cultural resources discovered, including artifacts, human remains, and associated grave goods, be handled in accordance with all applicable state and federal laws, including the federal Native American Graves Protection and Repatriation Act (NAGPRA), California Health and Safety Code 7050.5, and Public Resources Code Section 5097.98 and 5097.995.

Response #2:

Western Municipal Water District (WMWD) met with representatives of the Pechanga and their attorneys on January 19, 2005. Two other tribes were represented at this meeting, the Ramona Band of Cahuilla Indians (Ramona) and the San Manuel Band of Mission Indians (San Manuel), as they had also expressed a tribal interest in the area of the project. Additional information has been provided to all parties and revised mitigation measures have been prepared for their consideration. WMWD is working, and will continue to work, with those tribes interested in the project area.

Any inadvertently discovered artifacts are the property of the land owner within whose ownership they are discovered. WMWD is not, and likely will not be, the land owner of any of the properties through which the proposed pipeline is to be installed. The pipe will be installed through the use of encroachment permits in public rights of way and through easements for utility purposes. Therefore, WMWD cannot commit to the disposal of artifacts in any particular way unless the property owners concur. WMWD has committed to encourage property owners, which will primarily be other public agencies, to handle Native American cultural resources in ways that the Pechanga and other tribes prefer. WMWD and any other owner or agency

involved must handle human remains and grave artifacts as required by law. No new information was provided or issues raised by this comment that were not previously analyzed in the Draft PEIR.

Comment #3:

It is unclear from this DEIR whether or not an effort has been made to conduct advance consultation with area tribes. If federal funds are involved in the completion of this project, consultation with tribes may be mandatory under the provisions of Section 106 of the National Historic Preservation Act. Early consultation with tribes is the best way to avoid unanticipated discoveries once a project is underway; therefor, I am enclosing a list of Native Americans individuals/organizations that may have knowledge of cultural resources in the project area. The Commission makes no recommendation of a single individual or group over another. Please contact all those listed; if they cannot supply you with specific information, they may be able to 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 or group. If you have not received a response within two weeks' time, we recommend that you follow-up with a telephone call to make sure that the information was received.

Response #3:

There are no federal funds currently allocated to this proposed project. In the future, however, such funds may become available and the proposed project will be subject to the Section 106 process and the National Environmental Protection Act (NEPA) process. As a result of your response and the list you provided, WMWD sent letters to all those representatives on your list and has begun consulting with the three tribes identified in Response #2, above.

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft PEIR.

Comment #4:

Lead agencies should include provisions for accidentally discovered archeological resources during construction per California Environmental Quality Act (CEQA) and Public Resources Code §15064.5 (f). Both Health and Safety Code §7050.5 and Public Resources Code §5097.98 mandate the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery and should be included in all environmental documents. If you have any questions, please contact me at (916) 653-6251.

Response #4:

The Draft PEIR includes a mitigation measure, MM Cult 5, which provides for the accidental discovery of human remains. It has been revised (additions underlined, deletions struck) to better describe the process required by law, as follows:

MM Cult 5: If human remains are uncovered at any time, all activities in the area of the find shall be halted by WMWD or its contractor and the County Coroner shall be notified immediately pursuant to CA Health & Safety Code Section 7050.5 and CA PRC Section 5097.98. ~~and all activities in the area of the find shall be halted~~. If the Coroner determines that the remains are of Native American origin, the Native American Heritage Commission (NAHC) shall be notified by the Coroner. The NAHC will determine and notify the Most Likely Descendent (MLD). The MLD shall be allowed to inspect the site of the discovery. The MLD shall complete the inspection and make recommendations for treatment within 24 hours of notification by the NAHC. ~~and consultation with the local Native American representatives shall be initiated to determine the disposition of the remains in accordance with State and County guidelines.~~

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft PEIR.

Comment #1:

Thank you for the opportunity to comment on the above-referenced document. The Commission was able to perform a record search of its Sacred Lands File for the project area, which failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the Sacred Lands File does not indicate the absence of cultural resources in any project area. We also recommend that you contact the California Historic Resources Information Center for a record search of the project area.

Response #1:

WMWD appreciates your efforts in the records search for Sacred Lands and understands that sites other than those within your records may exist within the project area. The archaeological survey report prepared for the project, and included as Appendix E of the Draft Program Environmental Impact Report (PEIR), included contact with the Historic Resources Information Centers at UC Riverside and San Bernardino County Museum. No new information was provided or issues raised by this comment that were not previously analyzed in the Draft PEIR.

Comment #2:

Lack of surface evidence of archeological resources does not preclude their subsurface existence. Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.

Response #2:

The Draft PEIR provided mitigation to address the possibility of inadvertently discovering subsurface archaeological resources. Mitigation measures MM Cult 1 through 3 address various aspects of this issue. Through consultation with the Pechanga, Ramona and San Manuel (the tribes), WMWD has revised these mitigation measures to clarify and better address Native American concerns.

MM Cult 1a: If non-Native American archaeological or historic resources are discovered, the local jurisdiction and land owner where the resources are found will be notified by WMWD. Depending on the nature of the resource, appropriate mitigation and monitoring will be developed by WMWD in conjunction with all affected parties and the on-site archaeologist, and may include such things as:

- Documentation, removal and curation at a local museum, federal repository or other appropriate steward agency.
- Documentation and retention in place.
- Further detailed archaeological studies to determine the nature and extent of the find.
- Retention by the land owner.
- Other measures agreed upon by the parties involved.

MM Cult 2: In response to comments from local tribes and to be sensitive to the cultural heritage of the tribes that have claimed an interest in the project area, the archaeological monitoring program shall be executed in conjunction with the tribes ~~Native American monitoring in~~ to assist in determining which areas of the project alignment are in sensitive locations where undisturbed soils will be excavated. Such areas will include, at a minimum: the Santa Ana River (San Bernardino County) and Springbrook Wash (Riverside County and City) crossings and a natural area near Irving and Firethorn Streets (Mockingbird Canyon area) in the City of Riverside.

Prior to grading, WMWD shall contact the Native American Heritage Commission (NAHC) to determine the Most Likely Descendent (MLD) within any given Reach where the pipeline is to be constructed. WMWD shall enter into a pre-excavation agreement for one paid monitor with the Native American tribe identified by the NAHC as the MLD for each Reach of project construction where undisturbed native soils will be affected and sensitive resources are likely. In the event of an accidental discovery, the archaeological monitor will comply with State CEQA Guidelines section 15064.5.

To respond to the expressed desire of each tribe to monitor construction in sensitive areas and in the spirit of interagency cooperation, the Pechanga, Ramona and San Manuel shall be notified by WMWD prior to excavation activities.

MM Cult 3: To ensure the proper disposition of cultural resources of interest to the tribes uncovered during excavation for the installation of the RCF Project, WMWD shall seek input from the tribes to develop a plan for such dispersal that encompasses the tribes' desired treatment and disposition of Native American cultural resources, including human remains. After considering the tribes' input and recommendations, WMWD shall approve and finalize such a plan prior to grading. WMWD shall agree to present the plan and encourage land owners to follow the plan if cultural resources of interest to the tribes are found on land not owned by WMWD.

~~Should any resources be identified at any time during excavations for the Riverside-Corona Feeder Project, the archaeological monitor shall be permitted to evaluate the resources in accordance with the Federal and State guidelines. Current standards require the archaeologist to curate materials in federally recognized repositories (e.g. the San Bernardino County Museum or the University of California, Riverside, Archaeological Research Unit).~~

Comment #3:

Lead agencies should consider avoidance, as defined in Section 15370 of the CEQA Guidelines, when significant cultural resources could be affected by the proposed project. Project mitigation plans should also include provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans, and for the discovery of Native American human remains and cemeteries. Health and Safety Code §7050.5, CEQA §15064.5 (e) and Public Resources Code §5097.98 mandate the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Response #3:

See Response #4 to the NAHC letter dated September 24, 2004 and Response #2, above.

Comment #4:

Early consultation with tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. We appreciate your efforts to consult with area tribes regarding the proposed project in order to address any cultural resource protection concerns that they may have.

Response #4:

See Response #3 to the NAHC letter dated September 24, 2004.

Comment #1:

1) Human health and the environment of sensitive receptors should be protected during the construction or demolition activities. A study of the site overseen by the appropriate government agency might have to be conducted to determine if there are, have been, or will be, any releases of hazardous materials that may pose a risk to human health or the environment.

Response #1:

The proposed project is a water pumping and conveyance system as described in Section I-2 of the Draft Program Environmental Impact Report (PEIR); the operation of which will not create or generate hazardous materials. Construction and demolition (removal of asphalt and concrete) activities associated with the proposed project are subject to the regulations of federal, state and local agencies to protect the public from any releases of hazardous materials that may pose a risk to human health. Regulations that deal directly with such issues as the distances of water pipes to other types of pipes, the transport or disturbance of hazardous materials, and the protection of surface and underground water quality are listed on pages II-7-5 through II-7-8 of the Draft PEIR. The proposed project must comply with these regulations. In addition, construction activities that might affect human health/sensitive receptors are also regulated by state and local agencies related to air quality, noise, water quality, etc. These issues and regulations are discussed in the related sections of this EIR.

In addition, the Draft PEIR identifies known hazardous sites within the vicinity of the project alignment and recommends avoidance as the first means of mitigation, thus avoiding possible disturbance and eliminating risks to human health/sensitive receptors. The mitigation measures listed on page II-7-11 identify what must be done if avoidance of such sites cannot be achieved due to engineering or other constraints. These mitigation measures include further site assessments, a workplan for cleanup and oversight by the appropriate jurisdictional regulatory agency, cleanup and post-cleanup sampling. Mitigation measure MM Haz 7 also requires that appropriate safety measures and cleanup be implemented if unknown contamination is discovered during construction/demolition.

Based on the nature of the proposed project and the analysis, regulations and mitigation measures provided in the Draft PEIR, no further oversight is required. Western has identified to the best of its ability the potential locations for releases of hazardous materials, will attempt to avoid high risk areas, will abide by federal, state and local regulations, and will mitigate prior to construction if known areas of hazardous soils must be encountered. Thus, there is no need for additional oversight by an "appropriate governmental agency" and risks associated with the release of hazardous materials have been reduced to less than significant levels.

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft EIR.

Comment #2:

2) If it is determined that hazardous wastes are, or will be, generated by the proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5).

Response #2:

The proposed project is a water pumping and conveyance system; the operation of which will not create or generate hazardous wastes. As stated in the Draft PEIR, pages II-7-5 and II-7-6, to the extent applicable, the project will abide by all requirements of California Health and Safety Code, Division 20, Chapter 6.5 and the California Code of Regulations, Title 22, Division 4.5. For clarification, the discussion of the Hazardous Materials Transportation Act on page II-7-5 will be amended to include the citation: "California Health and Safety Code, Division 20, Chapter 6.5."

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft EIR.

Comment #3:

3) If it is determined those hazardous wastes are or will be generated and the wastes are (a) stored in tanks or containers for more than ninety days, (b) treated onsite, or (c) disposed of onsite, then a permit from DTSC may be required. If so, the facility should contact DTSC at (818) 551-2171 to initiate pre application discussions and determine the permitting process applicable to the facility.

Response #3:

The proposed project is a water pumping and conveyance system; the operation of which will not create or generate hazardous wastes. Therefore, it is not anticipated that anything will be stored or disposed of on-site that would require permits through DTSC. See Response #1, above.

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft EIR.

Comment #4:

4) If it is determined that hazardous wastes will be generated, the facility should obtain a United States Environmental Protection Agency Identification Number by contacting (800) 618-6942.

Response #4:

The proposed project is a water pumping and conveyance system; the operation of which will not create or generate hazardous wastes. This comment does not apply to the proposed project.

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft EIR.

Comment #5:

5) Certain hazardous waste treatment processes may require authorization from the local Certified Unified Program Agency (CUPA). Information about the requirement for authorization can be obtained by contacting your local CUPA.

Response #5:

The proposed project is a water pumping and conveyance system; the operation of which will not include hazardous waste treatment processes. This comment does not apply to the proposed project.

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft EIR.

Comment #6:

There is no Comment numbered 6.

Comment #7:

7) The addresses, locations, cross streets and street boundaries should be clearly stated and easily identified if possible.

Response #7:

Although it is not clear from the comment, it is assumed that the comment relates to *Table II-7-A: Hazardous Materials Sites in the Vicinity of the Riverside-Corona Feeder Project*, page II-7-9, in the Draft PEIR. The address or cross streets for each site is/are included in the table along with the name of the facility and the type of hazardous materials site. From this information, each site could be easily located and identified.

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft EIR.

Comment #8 (not part of the numbered comments):

DTSC provides guidance for cleanup oversight through the Voluntary Cleanup Program (VCP). For additional information on the EOA or VCP, please visit DTSC's web site at www.dtsc.ca.gov. The letter also lists direct contact information for the project manager of these programs.

Response #8:

Western appreciates the information and will contact DTSC should any hazardous materials be encountered during the construction or operation of this project.

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft EIR.

RESPONSE TO COMMENTS

NATIVE AMERICAN TRIBES

The letter received from Miranda, Tomaras & Ogas, LLP on behalf of the Pechanga Band of Luiseno Indians (Pechanga) is divided with headings associated with different issues to which the comments relate. For ease of comparison and response, the following responses are discussed under the same headings.

Commenter's Heading: WMWD, AS LEAD AGENCY, DETERMINES PROJECT ENVIRONMENTAL IMPACTS AND DECIDES MITIGATION FOR SUCH IMPACTS

Comment #1:

On April 29, 2003, the Pechanga Tribe submitted comments on the EIR Initial Study requesting that certain mitigation measures be incorporated into the Program EIR for the Project. Unfortunately, the DPEIR indicates that WMWD will not be including any of the Pechanga Tribe's requested mitigation measures. The DPEIR states that the reason for this is that "WMWD was advised by McKenna et al. not to incorporate the mitigation measures and conditions of approval requested by the Pechanga Band of Luiseño Indians." The Pechanga Tribe has serious concerns regarding WMWD's failure to consider any of the Pechanga Tribe's requested mitigation measures.

Response #1:

The April 29, 2003 letter from California Indian Legal Services on behalf of the Pechanga specifically requested mitigation measures that provided for the Pechanga to have the ability to: 1) determine disposition of all found cultural resources and human remains, and 2) provide tribal monitors during all grading activities; 3) it was also requested that landowners agree to relinquish ownership of all cultural resources to the Pechanga.

The mitigation measures recommended by the Pechanga letter were not feasible in their recommended form and were not necessary in addition to mitigation measures included in the Draft EIR for the following reasons:

- Since the issue of concern to the Pechanga is how to deal with previously undiscovered cultural resources, the archaeologist indicated that portions of the project area would likely have been within the territories of other tribes in addition to the Pechanga so more general mitigation measures that could apply to multiple tribes seemed more appropriate. As stated in the Archaeological Survey Report for the Riverside-Corona Feeder (RCF) project:

  "NOTE: although McKenna et al. emphasizes an ethnographic association between the project area and the Gabrielino, the Luiseno claim to the area cannot be ignored. Evidence of either group, as well as others, may be present within the project area."

- With respect to the disposition of resources, many possible cultural resources may be encountered along the project pipeline route in addition to Native American cultural resources, such as artifacts related to the many known historic and historic archaeological resources known to be impacted/crossed by the pipeline. Since WMWD will likely own none of the property through which the pipeline will be installed, the archaeologist believes it is required that found resources be curated, if necessary, through a recognized federal repository. It seems like a good idea since owners of the land might be more likely to work with such an agency, and not all cultural resources which may be found would be of interest to the Pechanga.

- The alignment is primarily located within roads and parking lots, the soils under which have been replaced with fill dirt or previously disturbed during grading and construction. All areas within the project alignment, including exposed soils, have been significantly previously disturbed by natural phenomenon or human activity. The likelihood of finding resources in these areas was considered low, but an archaeologist will be consulted (pursuant to MM Cult 1 in the Draft EIR) to determine the level and extent of monitoring necessary once the construction schedule for each reach of the alignment has been determined. Areas of the proposed project alignment where native soils are exposed and there is a higher likelihood of finding archaeological resources were identified in the Draft EIR and mitigation measures MM Cult 1 and 2 in the Draft EIR, page II-4-7 and 8, were included to address the need for archaeological and Native American monitors. As stated in the Program Draft EIR, the project will be constructed within existing streets with the exception of three locations: the Santa Ana River (San Bernardino County) and Springbrook Wash (Riverside County and City) crossings and a natural area near Irving and Firethorn Streets (Mockingbird Canyon area) in the City of Riverside. The reaches of the project that include these areas (Reaches A, B and E) would require Native American monitoring. MM Cult 2 requires that the Native American monitor on site be of Gabrielino or Luiseno decent, thus a Pechanga monitor could be hired which WMWD thought would address the Pechanga request for monitoring.

- The discovery of human remains outside of a cemetery must follow the law and procedures outlined in California Public Resources Code, Section 5097 et seq., 7050.5. Following such procedures, if it is determined that the bones are Native American, then the Native American Heritage Commission will determine the Most Likely Descendent (MLD). Although the Pechanga have often been found to be the MLD for sites located within Riverside County, the MLD for sites located in or near San Bernardino County would likely be another tribe. Therefore, it did not seem appropriate to give the Pechanga sole involvement with respect to tribes for the entire alignment with respect to the disposition of Native American remains.

State CEQA Guidelines Section 15064 provides that WMWD, as lead agency, shall determine the project's potential environmental impacts and decide upon feasible mitigation measures to

address such impacts. "When evaluating a project's impacts, a lead agency need not take a myopic view and may weigh the significance of an impact by looking at its overall effect" (*Zeonoff v. Monterey County Board of Supervisors* (1990) 222 Cal App 3d 1337). State law also allows for a difference of opinion among experts and for a Lead Agency who does not have an in-house expert in a particular field to rely upon the recommendations of consulting experts to assist in making decisions and crafting mitigation measures. (*Laurel Heights Improvement Association v. Regents of University of California* (1988) 47 Cal. 3rd 376,408; *Association of Irritated Residents v. County of Madera* (2003) 107 Cal App 4th 1383,1397) The case of *National Parks & Conservation Association v. County of Riverside* (1995) 71 Cal. App. 4th 1341 found that the county had sufficient evidence to conclude the project's potential impacts would be mitigated to below levels of significance and WMWD had sufficient evidence to conclude that the mitigation measures proposed in the Draft PEIR for the Riverside Corona Feeder project would mitigate potential impacts to cultural resources to below a level of significance.

Comment #2:

As Lead Agency, the WMWD is required to independently review and analyze any report and issue draft documents that reflects its independent judgment. Ca. Pub. Res. Code 21081.1(c). It is clear that WMWD did not do this, but instead relied solely on the findings and determinations of McKenna, et al. The Pechanga Tribe is adamantly opposed to the WMWD allowing any project archeologist to make such findings and determinations. Findings on project impacts and appropriate mitigation measures are the sole authority of the Lead Agency (Cal. Pub. Res. Code 21083.2; CEQA Guidelines 15074.1, 15064, 15002, 15064.5). Such decisions should not be left to a project archeologist. Allowing such a practice/procedure is not allowable under the CEQA and would possibly be subject to a CEQA challenge if the WMWD continues to uphold this process in the approval of this Project. There is a general proposition in CEQA that decision making bodies of Lead Agencies cannot delegate decision making functions (Ca. Pub. Res. Code 21082.1(c); CEQA Guidelines 15084(e); *Kleist v. City of Glendale* (2d Dist. 1976), 56 Cal.App.3d 770, 779, 128 Cal.Rptr.781). Therefore, the Pechanga Tribe respectfully requests that the WMWD independently review all information concerning the cultural resources located on the Project property, including all archeological reports prepared in conjunction with this Project, and all comments/concerns by the Pechanga Tribe, and then make independent specific decisions and findings concerning the appropriate mitigation for all the sites contained on the Project property (Ca. Pub. Res. Code 21081; Ca. Pub. Res. Code 21082.1(c)(1). Such findings should include specific reasons and evidence as to why the Pechanga Tribe's requested mitigation measures are not feasible.

Response #2:

In view of the Pechanga's continued concern that WMWD has not adequately addressed the issue of cultural resources, WMWD has met with Pechanga representatives and provided information about known archaeological sites in an effort to cooperate. Please also see Response

#1, above, to see how WMWD made judgments about appropriate mitigation that was included in the Draft PEIR and that a difference of opinions among experts does not mean that an EIR is inadequate. Response #13, below, addresses WMWD's attempt to craft mitigation measures that address the Pechanga's requested mitigation measures and why some are infeasible.

Commenter's Heading: WMWD MUST INCLUDE INVOLVEMENT OF AND CONSULTATION WITH THE TRIBE IN ITS REVIEW PROCESS.

Comment #3:

It has been the intent of the Federal Government[1] and the State of California[2] that Indian tribes be consulted with regard to issues which impact cultural and spiritual resources, as well as other governmental concerns. The responsibility to consult with Indian tribes stems from the unique government-to-government relationship between the United States and Indian tribes. Thi arises when tribal interests are affected by the actions of governmental agencies and departments such as approval of Specific Plans and EIRs. In this case, it is undisputed that the project lies within the Luiseño tribe's traditional territory as noted in the Cultural Resource Study. Therefore in order to comply with CEQA and other applicable Federal and California law, it is imperative that the WMWD and applicant consult with the Tribe in order to guarantee an adequate basis of knowledge for an appropriate evaluation of the project effects, as well as generating adequate mitigation measures.

Response #3:

Throughout the process of research and writing the Draft PEIR and subsequent to its distribution, Western Municipal Water District (WMWD) has sought input, continued notification, consulted and provided information to Native American tribes. According to the Archaeological Survey Report, a Sacred Lands records search was completed through the NAHC in 2003 as a part of the Archaeological Survey Report. Letters were sent to all the tribal contacts provided by the NAHC. No tribes responded at that time. The Pechanga first responded with respect to this project to the Notice of Preparation of the Draft EIR. Again in 2004, at the urging of the NAHC, another Sacred Lands search was conducted and letters were sent to tribal representative contacts provided by NAHC in November of 2004 by Webb Associates on behalf of WMWD. The Ramona Band of Cahuilla (Ramona) and San Manuel Band of Gabrielino Indians (San Manuel) both responded with requests for onsite monitors. WMWD does not intend to allow for the destruction of significant sacred or cultural resources and is working with tribal representatives (Mr. Macarro and Ms. Miranda) to provide adequate mitigation acceptable to the Pechanga Band of Luiseño Indians. Other tribes (San Manuel and Ramona) have also requested monitors on site. WMWD has determined that funding three Native American monitors would be cost prohibitive, but understands that monitoring is needed.

WMWD met with representatives of the Pechanga and their attorneys on January 19, 2005. Two other tribes were represented at this meeting, the Ramona and the San Manuel, as they had also expressed a tribal interest and on-site monitors in the area of the project. Additional information has been provided to all parties and revised mitigation measures have been prepared for their consideration (sent April 1 and 5, 2005). WMWD is working, and will continue to work with, the Pechanga and other tribes interested in the project area.

There are no federal funds currently allocated to this proposed project. In the future, however, such funds may become available and the proposed project will be subject to the Section 106 process, federal government-to-government procedures, and the National Environmental Protection Act (NEPA) process. See also Response #1 and #2, above. No new information was provided or issues raised by this comment that were not previously analyzed in the Draft PEIR.

Comment #4:

In addition, the DPEIR indicates that the Project may require a 401 and 404 permit. The National Historic Preservation Act (16 U.S.C. §§ 470 *et. seq*) requires that a Section 106 review be performed for all Federal undertakings. (16 U.S.C. 470w(7); 36 CFR §800.16(y)) The issuance of permits such as a Section 401 or 404 permit are considered undertakings under Section 106. *Id.* As such, the Army Corps, and WMWD as applicant, must initiate the Section 106 review process, which includes consultation with, among others, federally-recognized Indian tribes. (*Id.* at §800.16(f) and (m)). Consultation is required whether the property in question is on or off tribal lands (*Id.* at §800.2(c)(2)(ii)).

Response #4:

The Draft PEIR is a programmatic level environmental impact report. Because it is early in the project planning and no specific designs or construction plans exist for the pipeline, as stated in the Draft PEIR, federal permits such as a 401 or 404 permits, may be necessary. It is acknowledged that historic resources listed on the National Register have the potential to be affected by the project. Although it is not certain at this time if federal resources will be impacted or permits required, the following text will be added as part of the Final PEIR.

Page II-4-4 of the Draft PEIR, Project Compliance with Existing Regulations:

Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertaking on historic properties and Native American sites of religious or cultural significance. Section 106 would apply to the proposed project if federal agencies are involved in the development or if federal money is used. The Section 106 process requires consultation with Native American representatives, local agencies, and the State Historic Preservation Officer. At the time this project is awarded federal funds, the official

NEPA process, and Section 106 will be initiated. WMWD has begun consultation with Native American representatives during the CEQA process to ensure involvement and input as early as possible.

Commenter's Heading: CURATION OF CULTURAL RESOURCES

Comment #5:

In addition to the lack of adequate consultation, and the apparent lack of independent judgment regarding cultural resources on WMWD's part, the Pechanga Tribe is deeply concerned with WMWD's refusal to include a mitigation measure requiring that all cultural resources be relinquished to the Pechanga Tribe, particularly given that WMWD's refusal to provide for such mitigation is based entirely on erroneous information provided by McKenna et al. regarding curation requirements.

The Cultural Resource Study conducted by McKenna et al states that the Pechanga Tribe's requested mitigation measure regarding the relinquishment of ownership of all cultural resources found on the Project area to the Pechanga Band of Luiseño Indians is not feasible because "current standards require the archeologist to curate materials in federally recognized repositories."[3] There are no current California laws or regulations which require curation of archaeological materials. Federal law provides guidelines and requirements for the curation of *Federal* collections (43 C.F.R. Part 79). However, such federal regulations are not applicable to this project, even if federal permitting approvals are required for portions of the project. Therefore, curation in a federal repository is not required.

Unfortunately, the mistaken conclusions of McKenna et al. regarding curation are reflected in WMWD's DPEIR in mitigation measure MM Cult 3, which states:

MM Cult 3: "Current standards require the archaeologist to curate materials in federally recognized repositories."

Given the cursory manner in which this alleged curation requirement is addressed by WMWD, it is clear that WMWD did not conduct an independent review of the curation requirements, but relied solely on McKenna's statements. Again, WMWD's reliance on the representations made by McKenna et al. in its Cultural Resources Study is inappropriate. As discussed in detail above, the WMWD, as the Lead Agency, is required to make such decisions based on its own judgment, not the judgment of a consultant. The WMWD's failure to independently review the alleged curation requirements is particularly troubling in light of the inaccuracy of McKenna's conclusion that curation is required for this Project. Therefore, it is imperative that WMWD independently review the applicable laws relating to this Project regarding the treatment and disposition of cultural resources and provide an appropriate mitigation measure to ensure the proper disposition of any cultural resources discovered during development of the Project.

Response #5:

Subsequent to the receipt of this comment, Webb Associates and WMWD contacted UC Riverside Eastern Information Center (EIC) (a federal repository) and the Federal Bureau of Reclamation (which would be a likely administrator of federal funds, should any come to this project).

Telephone communication was made with Dr. M.C. "Matt" Hall, Coordinator, EIC, to discuss the issue of resources being required to be curated at a federal repository. He said that most decisions about resources depend on the circumstance, that he was not aware of a requirement for non-federal projects to use a federal repository, and that he was under the impression that a federally funded project would likely qualify as a "federal project" which would require a federal repository be used. In the meeting with the Pechanga on January 19, 2005, this position was adamantly identified as incorrect by Pechanga legal counsel. At this point, Webb Associates contacted the Bureau of Reclamation, Ms. Laurie Perry, Museum Property, Lower Colorado Region, in Colorado and WMWD set up a meeting with the local Bureau of Reclamation Area Manager, Mr. William Steele. Ms. Perry indicated that for the purposes of archaeological resources, federal funding alone does not constitute a "federal project" that would require curation at a federal repository. This was corroborated by Mr. Steele. Based on the fact that the archaeologist and EIC do not agree and may be incorrect in their understanding of this issue, WMWD will rely upon the Bureau of Reclamation and the Pechanga, and MM Cult 3 will be revised. Please see Response # 13, below, for revised text.

No new information was provided or issues raised by this comment that would require recirculation of the Draft PEIR.

Commenter's Heading: PROJECT IMPACTS TO CULTURAL RESOURCES

Comment #6:

> The Pechanga Tribe is not opposed to this development project. The Pechanga Tribe's primary concerns stem from the project's likely impacts on Native American cultural resources as well as any potential impacts to the Reservation. The Pechanga Tribe is concerned about both the protection of unique and irreplaceable cultural resources, such as Luiseño village sites and archaeological items which would be displaced by ground-disturbing work on the project, and on the proper and lawful treatment of cultural items, Native American human remains and sacred items likely to be discovered in the course of the work.

Response #6:

WMWD appreciates the fact that the Pechanga do not oppose the project. WMWD does not intend to allow for the destruction of unique or irreplaceable cultural resources and is working

with the tribal representatives to provide adequate mitigation acceptable to all. It is also common and appropriate that the locations of Native American and other archaeological resources are not disclosed in public documents to help reduce vandalism and increase the likelihood that resources can be protected in place. No new information was provided or issues raised by this comment that were not previously analyzed in the Draft PEIR.

Comment #7:

The Pechanga Tribe agrees that the entire Project area may not be part of the Pechanga Tribe's aboriginal territory, as you can see on the enclosed map. Trade with their Serrano and even Gabrieleño neighbors is not in question. What is in question are the conclusions of project archaeologist, who bases some cultural-conclusions on faulty or antiquated information. The periphery of the Tribe's borders has painstakingly been established through Luiseño place names, rock-art pictographs, petroglyphs, and an extensive artifact record. In fact, a San Luis Rey style pictograph, undeniably attributed to the Luiseño Culture, is located in Reche Canyon (toward the Northeast of the project and between Colton and Grand Terrace). Given this threshold for scope of territory, the Pechanga Tribe is concerned about the potential impacts which may occur throughout large portions of the Project area. The Pechanga Tribe contends that the Project is rich in cultural resources due to the fact that approximately thirty-three recorded archeological sites are within one-half mile of the proposed Project. At least eighty percent of those sites are located within the Luiseño territory. Given all the information, there is a very strong likelihood of locating sub-surface resources during ground disturbing activities.

Moreover, although the DPEIR noted only one prehistoric archeological site (CA-SBR-SBR-2999) within the Project area, the cultural resource assessment was based only on a site records search through the Regional Information Center and a site walkover (Phase I survey). Nevertheless, the DPEIR acknowledged that at least the Riverside County area of the Project is considered to be traditional Luiseño territory and as such development may impact unidentified resources in the area. Consequently, it follows that development of this project area will have a direct and significant impact on archeological areas.

Response #7:

Thank you for the information about known Luiseno territory. A map of Luiseno territory was provided to WMWD at the January 19, 2005 meeting by Mr. Macarro. The map is included with this comment letter to ensure its inclusion in the Final PEIR. WMWD does not deny that the proposed project will be constructed within Pechanga's area of tribal interest. The Draft EIR noted that unidentified resources may be discovered and that the project was in Luiseno territory. As requested, WMWD has provided additional information regarding the location of known resources and revised mitigation measures so that the tribal representatives can give input about mitigation approaches and which reaches of the pipeline may be most likely to encounter Native American resources (see Response #13, below).

Map here: Luiseno Territory Map

Comment #8:

This is especially true where project construction will occur in and through current and historic creeks and waterways, which are known to have been preferred habitation areas. In addition, creek banks were known to be traditional areas for burials. The Pechanga Tribe's knowledge of the continuous occupation of the Luiseño people in this geographical area for thousands of years, through their stories and songs, are cultural evidence that subsurface sites may exist in this Project area. Therefore, the Pechanga Tribe requests that in the case of discovery of new or additional sites, that the WMWD re-evaluate the Project impacts to cultural resources and adopt appropriate mitigation measures to address such. The Pechanga Tribe intends to assert its legal rights with respect to additional finds of significant sites or cultural resources which are of sacred and ceremonial significance to the Pechanga Tribe.

Response #8:

The alignment is primarily located within roads and parking lots, the soils under which have been replaced with fill dirt or previously disturbed during grading and construction. All areas within the project alignment, including exposed soils, have been significantly previously disturbed by natural phenomenon or human activity. The Draft EIR identified areas of the proposed project alignment where native soils are exposed. These are all in or near creek or river areas as you suggest: the Santa Ana River (San Bernardino County) and Springbrook Wash (Riverside County and City) crossings and a natural area near Irving and Firethorn Streets (Mockingbird Canyon area) in the City of Riverside. The reaches of the project that include these areas (Reaches A, B and E) would require Native American monitoring. In an attempt to address the concern about the disposition of a new or additional cultural site of sacred or ceremonial significance, the mitigation measures have been revised for inclusion and implementation in the Mitigation Monitoring Program, see Response #13, below.

Comment #9:

Given that Native American cultural resources will likely be affected by the Project, the Pechanga Tribe must be allowed to be involved and participate with WMWD in developing all monitoring and mitigation plans for the duration of the Project. Further, given the significant potential for archaeological resources within the Project area, it is the position of the Pechanga Tribe that Pechanga tribal monitors should be required to be present during all ground-disturbing activities conducted in connection with the project, including any archeological testing performed. It is further the position of the Pechanga Tribe that an Agreement regarding appropriate treatment of cultural resources be drafted and entered into.

Response #9:

Due to the majority of the 30-mile pipeline being constructed under existing streets where many pipes are buried and the soils have been extensively excavated and refilled to the same depths that the RCF will be installed, there are many portions of the project alignment that will not disturb native soils and Native American monitoring on-site should not be necessary. To that end, the mitigation measures have been revised to allow for Pechanga involvement in the process of determining which reaches of the alignment (or portions of project reaches) warrant on-site monitoring by Native Americans in addition to an archaeologist and, to the extent that WMWD has control, the treatment of Native American cultural resources as the Pechanga and/or other tribes see fit, see Response #13, below.

Comment #10:

Further, the Pechanga Tribe believes that if human remains are discovered, State law would apply and the mitigation measures for the permit must account for this. According to the California Public Resources Code, § 5097.98, if Native American human remains are discovered, the Native American Heritage commission must name a "most likely descendant," who shall be consulted as to the appropriate disposition of the remains. Given the project's location in Pechanga territory, the Pechanga Tribe intends to assert its right pursuant to California law with regard to any remains or items discovered in the course of this project. And, accordingly, the Pechanga Tribe further requests that WMWD work with them to draft an agreement which would address any inadvertent discoveries of cultural resources, including human remains. Surveys and grading may reveal significant archaeological resources and sites which may be eligible for inclusion in the historic site register, and may contain human remains or sacred items. In addition, we request that the WMWD commit to evaluating Project environmental impacts to any cultural sites that are discovered during archeological testing and grading, and to adopt appropriate mitigation for such sites, in consultation with the Pechanga Tribe.

Response #10:

Although this issue was addressed in the Draft PEIR in MM Cult 5, it has been further clarified, see Response #13, below. WMWD will comply with state laws.

Commenter's Heading: MITIGATION MEASURES INADEQUATE

Comment #11:

The Pechanga Tribe's interpretation of this Project area differs on some major fundamental issues with the Project Archaeologist's conclusions thus far. As WMWD is aware, the Pechanga Tribe involves themselves in these matters because their contributions and knowledge of these natural/cultural resources is not couched in the archeological or scientific importance of the resources, but in the cultural and sociological significance of these sites and places. With that said, the Pechanga Tribe does not dispute that certain areas of this Project may be more likely to bear ceremonial and sacred cultural resources, and would thus, request that particular attention be paid to ensuring that areas with a likelihood to yield such resources, including Native American human remains be given more stringent protections, but the Pechanga Tribe nevertheless, contends that such items may be found throughout the development of this entire Project. As such, we request that WMWD take into account the Pechanga Tribe's cultural view of these resources, and consider that these sites much be treated as a whole when evaluating Project impacts to cultural resources and the uniqueness of those resources. As such, the Pechanga Tribe wishes to be included as a partner with the WMWD to ensure these cultural resources, affiliated with the Pechanga Tribe, are treated in accordance with state law and with proper dignity in accordance with Tribal customs.

Response #11:

See Response #13, below. WMWD will comply with state laws and work with the Pechanga and other tribes to assure proper respect and protections are given to cultural resources of importance to the Pechanga and other local tribes, as appropriate.

Comment #12:

Mitigation measures for the area should encompass the wishes and reflect the cultural traditions and practices of the Indian descendants of the original occupants of the complex. The current mitigation measures outlined in the DPEIR do not take Indian cultural concerns into account. That is, the proposed mitigation measures imply that the only worth or value of the complex is for scientific investigation. The proposed mitigation measures only "mitigate" in the archaeological sense, not in the human and cultural sense.

Response #12:

See Response #13, below. WMWD will comply with state laws and work with the Pechanga and other tribes to assure proper respect and protections are given to cultural resources of importance to the Pechanga and other local tribes, as appropriate.

Commenter's Heading: REQUESTED MITIGATION

Comment #13:

REQUESTED MITIGATION

For the reasons above, the Pechanga Tribe requests the following mitigation measures be adopted in place of the currently proposed measures MM Cult 1, 2, 3, and 5 to bring the Project in compliance with CEQA and the California Public Resources Code:

1. Prior to the issuance of grading permits, the WMWD is required to enter into a Pre-Excavation Agreement with the Pechanga Band of Luiseño Indians. This Agreement will address the treatment and disposition of cultural resources and human remains that may be uncovered during construction as well as provisions for tribal monitors.

2. Tribal monitors from the Pechanga Band of Luiseño Indians shall be allowed to monitor all grading, excavation and ground-breaking activities within native soils in the Tribe's aboriginal territory, including further surveys, to be compensated by WMWD.

3. Prior to any ground disturbance activities a qualified archaeological monitor will be present and will have the authority to temporarily stop and redirect grading activities, in consultation with the Pechanga Band of Luiseño Indians and their designated monitors, to evaluate the significance of any archaeological resources discovered on the property

4. The landowner agrees to relinquish ownership of all cultural resources, including all Luiseño sacred items, burial goods and all archeological artifacts, that are found on the Project area to the Pechanga Band of Luiseño Indians for proper treatment and disposition.

5. If human remains are encountered, no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to CA Health & Safety Code Section 7050.5 and CA PRC Section 5097.98. The County Coroner must be notified of the find immediately by WMWD. If the remains are determined to be Native American, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). The MLD will be allowed to inspect the site of the discovery. The MLD shall complete the inspection and make recommendations for treatment within 24 hours of notification of the NAHC.

5. All sacred sites within the Project area are to be avoided and preserved.

Response #13:

Requested mitigation measures in Comment #13 are addressed by number in the following paragraphs. Revisions to Draft PEIR mitigation measures follow.

1. As more tribes than the Pechanga could legitimately have cultural resources or sacred sites within the project area, WMWD will work with all interested Tribes to establish a mutually agreeable pre-excavation agreement. A revised set of mitigation measures have been developed to address concerns raised about the treatment and disposition of Native American cultural resources and human remains discovered during project construction. The provision of a Native American monitor is also addressed. (See Revised Mitigation Measures, below.)

2. The provision of a Native American monitor was addressed in the Draft PEIR mitigation measure MM Cult 2. Multiple tribes, including the Pechanga, have claimed an interest in the potential cultural resources or sacred sites within the project area. To address these interests, WMWD will work with all interested tribes to establish a mutually agreeable pre-excavation agreement. After meeting with the tribes in January 2005 and receiving additional input about this issue in April from the Pechanga's legal counsel, a monitor identified as the Most Likely Descendent by the NAHC will be used for this project. (See Revised Mitigation Measure MM Cult 2, below.)

3. Archaeological monitoring in conjunction with Native American monitoring was addressed in the Draft PEIR mitigation measure MM Cult 2. To the extent that the Pechanga are identified as the MLD for monitoring purposes, this requested mitigation measure has been incorporated into Revised Mitigation Measure MM Cult 2, below.

4. As stated previously in this response, WMWD does not, and likely will not, own any of the land within which the project will be constructed. Therefore, WMWD cannot require such a mitigation measure. Legally, land owners may retain cultural resources if they so choose. WMWD wishes to cooperate with the tribes to the extent possible and will encourage land owners of areas where any archaeological resources are discovered to relinquish them for proper treatment and disposition. (See Revised Mitigation Measure MM Cult 3, below.)

5. The disposition of human remains if found during construction activities was addressed in the Draft PEIR mitigation measure MM Cult 5. That mitigation measure has been revised to be clearer and to cite the code sections that apply. (See Revised Mitigation Measure MM Cult 5, below.)

6. [5.] Sacred Lands Searches by the NAHC identified no known sacred sites within the project area (November 4, 2004) and the Archaeological Survey Report discovered none

in the documentation previously recorded within the vicinity of the project. If a sacred site is encountered within the project alignment, WMWD will work with the tribes to avoid the site, if feasible. See revised mitigation measures below.

The mitigation measures suggested by the commenter have been incorporated, to the extent feasible, into the PEIR as described above. The following measures shall be implemented to eliminate or reduce potentially significant impacts to historic and archaeological resources. Please note that additions to mitigation measures already found within the Draft PEIR are "underlined" and deletions shown in "strike-through."

MM Cult 1: In order to reduce potential significant impacts to historic and non-Native American archaeological and historic resources, full time archaeological monitoring during excavations shall be conducted in sensitive areas (e.g., near the Santa Ana River crossing), within undeveloped areas along the project alignment, near Riverside Highland Water facility site thought to be in the vicinity of Barton Road (north of Palm Avenue), at the Gage Canal crossing in the cities of Riverside and Grand Terrace, at the Railroad crossings (AT&SF Railroad Alignment and Southern Pacific Railroad), the Riverside Canal, at Victoria Avenue and Irving Street. The extent and duration of the archaeological monitoring shall be determined by a qualified archaeologist once the construction schedule is defined for each reach of project construction. In the event of an accidental discovery, the archaeological monitor will comply with State CEQA Guidelines section 15064.5.

MM Cult 1a: If non-Native American archaeological or historic resources are discovered, the local jurisdiction and land owner where the resources are found will be notified by WMWD. Depending on the nature of the resource, appropriate mitigation and monitoring will be developed by WMWD in conjunction with all affected parties and the on-site archaeologist, and may include such things as:

- Documentation, removal and curation at a local museum, federal repository or other appropriate steward agency.
- Documentation and retention in place.
- Further detailed archaeological studies to determine the nature and extent of the find.
- Retention by the land owner.
- Other measures agreed upon by the parties involved.

MM Cult 2: In response to comments from local tribes and to be sensitive to the cultural heritage of the tribes that have claimed an interest in the project area, the archaeological monitoring program shall be executed in conjunction with the tribes ~~Native American monitoring in~~ to assist in determining which areas of the project alignment are in sensitive locations where undisturbed soils will be excavated. Such areas will include, at a minimum: the Santa Ana River (San Bernardino County) and Springbrook Wash (Riverside County and City) crossings and a

natural area near Irving and Firethorn Streets (Mockingbird Canyon area) in the City of Riverside.

Prior to grading, WMWD shall contact the Native American Heritage Commission (NAHC) to determine the Most Likely Descendent (MLD) within any given Reach where the pipeline is to be constructed. WMWD shall enter into a pre-excavation agreement for one paid monitor with the Native American tribe identified by the NAHC as the MLD for each Reach of project construction where undisturbed native soils will be affected and sensitive resources are likely. In the event of an accidental discovery, the archaeological monitor will comply with State CEQA Guidelines section 15064.5.

To respond to the expressed desire of each tribe to monitor construction in sensitive areas and in the spirit of interagency cooperation, the Pechanga, Ramona and San Manuel shall be notified by WMWD prior to excavation activities.

MM Cult 3: To ensure the proper disposition of cultural resources of interest to the tribes uncovered during excavation for the installation of the RCF Project, WMWD shall seek input from the tribes to develop a plan for such dispersal that encompasses the tribes' desired treatment and disposition of Native American cultural resources, including human remains. After considering the tribes' input and recommendations, WMWD shall approve and finalize such a plan prior to grading. WMWD shall agree to present the plan and encourage land owners to follow the plan if cultural resources of interest to the tribes are found on land not owned by WMWD.

~~Should any resources be identified at any time during excavations for the Riverside-Corona Feeder Project, the archaeological monitor shall be permitted to evaluate the resources in accordance with the Federal and State guidelines. Current standards require the archaeologist to curate materials in federally recognized repositories (e.g. the San Bernardino County Museum or the University of California, Riverside, Archaeological Research Unit).~~

MM Cult 4: No change.

MM Cult 5: If human remains are uncovered at any time, all activities in the area of the find shall be halted by WMWD or its contractor and the County Coroner shall be notified immediately pursuant to CA Health & Safety Code Section 7050.5 and CA PRC Section 5097.98. ~~and all activities in the area of the find shall be halted~~. If the Coroner determines that the remains are of Native American origin, the Native American Heritage Commission (NAHC) shall be notified by the Coroner. The NAHC will determine and notify the Most Likely Descendent (MLD). The

MLD shall be allowed to inspect the site of the discovery. The MLD shall complete the inspection and make recommendations for treatment within 24 hours of notification by the

NAHC. ~~and consultation with the local Native American representatives shall be initiated to determine the disposition of the remains in accordance with State and County guidelines.~~

MM Cult 6: If a sacred site is encountered within the project alignment, WMWD will work with the tribes to avoid the site, if feasible.

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft PEIR.

Comment #1:

The Ramona Band of Cahuilla Indians are not aware of specific cultural resources that may be impacted by the project. This does not mean that there is an absence of cultural resources in the project area.

Response #1:

Thank you for your input regarding known resources within the project area. It is understood that certain areas along the proposed pipeline alignment may be more likely to yield cultural resources of interest to yours and other tribes. The Draft Program Environmental Impact Report (PEIR) includes mitigation measures MM Cult 1 through 5 which deal with how various previously undiscovered cultural resources should be treated. Since it is expected that historic, historic archaeological and archaeological resources may be found during project construction activities, these mitigation measures have been revised and clarified to better address Native American resources separately from the historically-related archaeological resources. Please see the response to Comment #2, below, for the proposed revisions to mitigation measures MM Cult 1 through 3, and 5-6. MM Cult 4 deals with paleontological resources and has not been revised. No new information was provided or issues raised by this comment that were not previously analyzed in the Draft PEIR.

Comment #2:

We are aware that the project is within the traditional use area of the Cahuilla people and we are extremely concerned about Native American sites that may be in or near the project site. We are also concerned that extensive excavation could uncover Native American artifacts that may have significant sacred, religious and cultural value. We feel that it is necessary to have a Native American monitor, assigned by the Ramona Band, included in any further field study and during the construction phase. The cost of the monitor should be made a part of the construction development budget. Please provide a mitigation plan for the recovery and disposition of artifacts, that was developed in consultation with culturally affiliated Native Americans. The plan should include provisions for the discovery of Native American remains, if discovered during the development of the project, for our review. We are also requesting copies of the archaeological survey report and the records search report.

Response #2:

The Archaeological Survey Report (Appendix E of the Draft PEIR) indicates that the project area may be in the traditional territories of, or was occupied seasonally by, many Native American peoples including the Cahuilla. WMWD does not intend to allow for the destruction of

significant sacred or cultural resources and is working with tribal representatives (Mr. Largos and Ms. Kitchen) to provide adequate mitigation acceptable to the Ramona Band of Cahuilla. Other tribes (Pechanga and San Manuel) have also requested monitors on site. WMWD has determined that funding three Native American monitors would be cost prohibitive, but understands that monitoring is needed.

The alignment is primarily located within roads and parking lots, the soils under which have been replaced with fill dirt or previously disturbed during grading and construction. All areas within the project alignment, including exposed soils, have been significantly previously disturbed by natural phenomenon or human activity. The Draft PEIR identified areas of the proposed project alignment where native soils are exposed. These are all in or near creek or river areas as you suggest: the Santa Ana River (San Bernardino County) and Springbrook Wash (Riverside County and City) crossings and a natural area near Irving and Firethorn Streets (Mockingbird Canyon area) in the City of Riverside. The reaches of the project that include these areas (Reaches A, B and E) would require Native American monitoring. In an attempt to address the concern about the disposition of a new or additional cultural site of sacred or ceremonial significance, the mitigation measures have been revised for inclusion and implementation in the Mitigation Monitoring Program.

The following measures shall be implemented to eliminate or reduce potentially significant impacts to historic and archaeological resources. Please note that additions to mitigation measures already found within the Draft PEIR are "underlined" and deletions shown in "strike-through."

MM Cult 1: <u>In order to reduce potential significant impacts to historic and non-Native American archaeological and historic resources,</u> full time archaeological monitoring during excavations shall be conducted in sensitive areas (e.g., near the Santa Ana River crossing), within undeveloped areas along the project alignment, near Riverside Highland Water facility site thought to be in the vicinity of Barton Road (north of Palm Avenue), at the Gage Canal crossing in the cities of Riverside and Grand Terrace, at the Railroad crossings (AT&SF Railroad Alignment and Southern Pacific Railroad), the Riverside Canal, at Victoria Avenue and Irving Street. The extent and duration of the archaeological monitoring shall be determined by a qualified archaeologist once the construction schedule is defined <u>for each reach of project construction. In the event of an accidental discovery, the archaeological monitor will comply with State CEQA Guidelines section 15064.5.</u>

<u>**MM Cult 1a**: If non-Native American archaeological or historic resources are discovered, the local jurisdiction and land owner where the resources are found will be notified by WMWD. Depending on the nature of the resource, appropriate mitigation and monitoring will be developed by WMWD in conjunction with all affected parties and the on-site archaeologist, and may include such things as:</u>

- Documentation, removal and curation at a local museum, federal repository or other appropriate steward agency.
- Documentation and retention in place.
- Further detailed archaeological studies to determine the nature and extent of the find.
- Retention by the land owner.
- Other measures agreed upon by the parties involved.

MM Cult 2: In response to comments from local tribes and to be sensitive to the cultural heritage of the tribes that have claimed an interest in the project area, the archaeological monitoring program shall be executed in conjunction with the tribes ~~Native American monitoring in~~ to assist in determining which areas of the project alignment are in sensitive locations where undisturbed soils will be excavated. Such areas will include, at a minimum: the Santa Ana River (San Bernardino County) and Springbrook Wash (Riverside County and City) crossings and a natural area near Irving and Firethorn Streets (Mockingbird Canyon area) in the City of Riverside.

Prior to grading, WMWD shall contact the Native American Heritage Commission (NAHC) to determine the Most Likely Descendent (MLD) within any given Reach where the pipeline is to be constructed. WMWD shall enter into a pre-excavation agreement for one paid monitor with the Native American tribe identified by the NAHC as the MLD for each Reach of project construction where undisturbed native soils will be affected and sensitive resources are likely. In the event of an accidental discovery, the archaeological monitor will comply with State CEQA Guidelines section 15064.5.

To respond to the expressed desire of each tribe to monitor construction in sensitive areas and in the spirit of interagency cooperation, the Pechanga, Ramona and San Manuel shall be notified by WMWD prior to excavation activities.

MM Cult 3: To ensure the proper disposition of cultural resources of interest to the tribes uncovered during excavation for the installation of the RCF Project, WMWD shall seek input from the tribes to develop a plan for such dispersal that encompasses the tribes' desired treatment and disposition of Native American cultural resources, including human remains. After considering the tribes' input and recommendations, WMWD shall approve and finalize such a plan prior to grading. WMWD shall agree to present the plan and encourage land owners to follow the plan if cultural resources of interest to the tribes are found on land not owned by WMWD.

~~Should any resources be identified at any time during excavations for the Riverside-Corona Feeder Project, the archaeological monitor shall be permitted to evaluate the resources in accordance with the Federal and State guidelines. Current standards require the archaeologist to curate materials in federally recognized repositories (e.g. the San Bernardino County Museum or the University of California, Riverside, Archaeological Research Unit).~~

MM Cult 4: No change.

MM Cult 5: If human remains are uncovered at any time, all activities in the area of the find shall be halted by WMWD or its contractor and the County Coroner shall be notified immediately pursuant to CA Health & Safety Code Section 7050.5 and CA PRC Section 5097.98. ~~and all activities in the area of the find shall be halted~~. If the Coroner determines that the remains are of Native American origin, the Native American Heritage Commission (NAHC) shall be notified by the Coroner. The NAHC will determine and notify the Most Likely Descendent (MLD). The

MLD shall be allowed to inspect the site of the discovery. The MLD shall complete the inspection and make recommendations for treatment within 24 hours of notification by the NAHC. ~~and consultation with the local Native American representatives shall be initiated to determine the disposition of the remains in accordance with State and County guidelines.~~

MM Cult 6: If a sacred site is encountered within the project alignment, WMWD will work with the tribes to avoid the site, if feasible.

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft PEIR.

Comment #1:

I would like to take this opportunity to thank you for complying with the requirements of Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, 36 CFR part 800. The San Manuel Band of Serrano Mission Indians shares your concern over the treatment of Native American artifacts including funerary objects, ceremonial items, and items of cultural patrimony.

The proposed construction activitiy for the Draft Environmental Impact Report – Riverside-Corona Feeder Program, is in the area of known Serrano Cultural Resources. Hereby, we request that one of the San Manuel Band of Mission Indians (SMBMI) approved Native American Monitors be utilized throughout this project. A copy of the final reports upon completion would be greatly appreciated.

Attached is the SMBMI's approved list of Native American Monitors.

SMBMI - Native American Monitors

1. Native Grounds Monitoring and Research, Inc.
   Bennae Calac, President
   Phone # (760) 617.2872

2. Faye Roman Phone # (909) 790.1390

3. Pechanga Cultural Resources
   Amy Minniear, Consultant
   Phone # (909) 308.9295

4. Jeanette McKenna, Archeologist Consultant/Monitor
   Phone # (562) 696.3852

5. Agua Caliente Band of Mission Indians
   Dr. Nickson
   Phone # (760) 883.1313

Response #1:

Thank you for your response. The Archaeological Survey Report concurs with your knowledge that the proposed project area is located within an area considered the traditional territories of, or occupied seasonally by, many Native American peoples including the Serrano. WMWD does not intend to allow for the destruction of significant sacred or cultural resources and is working with tribal representatives (Mr. MeJia and Ms. Brierty) to provide adequate mitigation acceptable to the San Manuel Band of Serrano Mission Indians. Other tribes (Pechanga and Ramona) have also requested monitors on site. WMWD has determined that funding three Native American monitors would be cost prohibitive, but understands that monitoring is needed.

The alignment is primarily located within roads and parking lots, the soils under which have been replaced with fill dirt or previously disturbed during grading and construction. All areas within the project alignment, including exposed soils, have been significantly previously disturbed by natural phenomenon or human activity. The Draft EIR identified areas of the proposed project alignment where native soils are exposed. These are all in or near creek or river areas as you suggest: the Santa Ana River (San Bernardino County) and Springbrook Wash (Riverside County and City) crossings and a natural area near Irving and Firethorn Streets (Mockingbird Canyon area) in the City of Riverside. The reaches of the project that include these areas (Reaches A, B and E) would require Native American monitoring. In an attempt to address the concern about the disposition of a new or additional cultural site of sacred or ceremonial significance, the mitigation measures have been revised for inclusion and implementation in the Mitigation Monitoring Program.

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MM Cult 1a: If non-Native American archaeological or historic resources are discovered, the local jurisdiction and land owner where the resources are found will be notified by WMWD. Depending on the nature of the resource, appropriate mitigation and monitoring will be developed by WMWD in conjunction with all affected parties and the on-site archaeologist, and may include such things as:

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- Further detailed archaeological studies to determine the nature and extent of the find.
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MM Cult 2: In response to comments from local tribes and to be sensitive to the cultural heritage of the tribes that have claimed an interest in the project area, the archaeological monitoring program shall be executed in conjunction with the tribes ~~Native American monitoring in~~ to assist in determining which areas of the project alignment are in sensitive locations where undisturbed soils will be excavated. Such areas will include, at a minimum: the Santa Ana River (San Bernardino County) and Springbrook Wash (Riverside County and City) crossings and a natural area near Irving and Firethorn Streets (Mockingbird Canyon area) in the City of Riverside.

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To respond to the expressed desire of each tribe to monitor construction in sensitive areas and in the spirit of interagency cooperation, the Pechanga, Ramona and San Manuel shall be notified by WMWD prior to excavation activities.

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~~Should any resources be identified at any time during excavations for the Riverside-Corona Feeder Project, the archaeological monitor shall be permitted to evaluate the resources in accordance with the Federal and State guidelines. Current standards require the archaeologist to curate materials in federally recognized repositories (e.g. the San Bernardino County Museum or the University of California, Riverside, Archaeological Research Unit).~~

MM Cult 4: No change.

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MM Cult 6: If a sacred site is encountered within the project alignment, WMWD will work with the tribes to avoid the site, if feasible.

No new information was provided or issues raised by this comment that were not previously analyzed in the Draft PEIR.

Comment #1:

The San Manuel Band of Mission Indians have concerns regarding the proposed Riverside-Corona Feeder Project, in that the project location exists within documented Traditional Serrano Territory. This project may impact known Serrano Cultural Resources and Heritage; therefore, the Tribe is reaffirming its concerns stated in a previous letter dated November 19, 2004.

Based upon the data collected and analyzed by William Mason, Lowell Bean and Sylvia Brakke Vane as well as many others, it is apparent that the project extends through Traditional Serrano Territory. Consequently, the Tribe requests that the approved SMBMI Native American Monitors be utilized throughout this project and the cost of the monitor shall be made a part of the construction development budget.

Response #1:

Thank you for your continued interest in the proposed project. See responses to 11/19/04 comment letter from San Manuel Band of Serrano Mission Indians.

Comment #2:

Enclosed for your convenience is a CD ROM titled **A History of the Serrano The People of the Pines.**

Response #2:

The Archaeological Survey Report indicates that the project area falls within lands traditionally used by the Serrano people. The map that was provided as part of A History of the Serrano, The People of the Pines and is included herein as a part of this comment letter which will ensure its inclusion in the Final PEIR.

The Serrano Lands Map

RESPONSE TO COMMENTS

LOCAL AGENCIES

No comment provided. Correspondence served as notice that the addressee was no longer with this agency. Corrected mailing information has been included for future notifications.

Comment #1:

The project description notes that the project will require the construction of a water main through the City of Grand Terrace. The line begins in the City of San Bernardino and travels south through Grand Terrace eventually terminating in the City of Corona. The segment through Grand Terrace will be a 60-inch line. The proposed routing of the line starts at the northeast city limits with Colton traveling north within the existing Barton Road right-of-way. The line turns south at the Barton Road/Mt. Vernon Avenue intersection and travels south within the Mt. Vernon Avenue right-of-way to the southern city limits.

Response #1:

The commenter's description of the project to be located within the City of Grand Terrace is correct.

Comment #2:

The City's primary concerns focus on potential impacts resulting from the construction of the proposed water line. The eastern extension of Barton Road to the Colton city limit is a primary arterial for the traffic moving into and out of Grand Terrace. As traffic increases on I-215, more commuters from cities east of Grand Terrace use Barton Road as an alternate route. The only alternative to Barton Road is the northern extension of Mt. Vernon Avenue moving north into Colton. The northern extension of Mt. Vernon Avenue is a narrow two-lane section on a steep hillside. The segment is not suitable for a significant increase in traffic during the construction period.

Response #2:

After meeting with Grand Terrace officials and to adequately respond to this concern, Western Municipal Water District (WMWD) had engineering studies performed in the vicinity of Barton Road and the Colton city limit. The Riverside-Corona Feeder Project Preliminary Design Report for Reach B-North (Preliminary Design Report) is included in its entirety as Appendix G of the Final Program Environmental Impact Report (FPEIR) and is summarized in this response.

A preliminary alignment for a proposed 60-inch diameter pipeline has been determined for a 14,300 l.f. portion of the Riverside-Corona Feeder-Reach B from Washington Avenue in Colton to the Riverside County Line through the Cities of Colton and Grand Terrace. Right-of-way, underground utility interferences and traffic control measures have been reviewed. The proposed pipeline can be constructed with trenching/pipe laying activities taking a total of approximately 83 working days assuming adequate working area. Limited daytime road closures will be required along Barton Road from Walin to Glendora where the right-of-way narrows. Daytime traffic can be effectively re-routed onto Mt. Vernon and Washington during the

construction period through ample and early notification to commuters, residents and businesses. The construction period would significantly lengthen if the construction footprint is narrowed to allow additional traffic lanes during construction.

As part of the construction of this reach and as required in the Draft PEIR, MM Trans 2, the Contractor would be required to implement a detailed traffic control plan. Approval of the traffic control plan(s) would be required by both the City of Colton and the City of Grand Terrace within their respective jurisdictions. The traffic control plan can either be prepared by the design engineer and included as part of the bid documents or prepared by the Contractor as part of the construction contract under a specific bid item. Attachment 4 of Appendix F of the Final PEIR is a preliminary traffic control plan indicating by section the construction footprint and the number of lanes to be open during construction.

The Barton Road Reach is approximately 9,200 ft long, starting at Washington Street in the City of Colton and ending at the intersection of Barton Rd and Mt Vernon in the City of Grand Terrace. The right-of-way width varies from 50 ft to 100 ft. Barton Rd is used by commuters as a detour to Highway 215 and is the main entrance to the City from the east. The critical sections of Barton Road are from Walin to Honey Hill. This section is not wide enough to allow safe and efficient construction without closing the road during construction. Although the City would prefer to keep Barton Road opened during construction, it is important to recognize that reducing the available area for construction will at least double the time needed for pipe trenching/laying in the narrow sections of Barton Road from 25 days to 50 days. The following are suggested as alternatives that would help alleviate the impact on regular commuters, local residents and businesses while allowing for road closure:

- **Reroute Through Traffic through Washington St to Mt Vernon –** If early construction warnings and enough information is provided to commuters, traffic could be directed through Washington Street to Mt. Vernon and visa versa without major backups along Barton Road. This would allow the Contractor to close Barton Road during construction, which will significantly shorten the time necessary to finish construction. Local traffic would be accommodated. The road would be opened each night.
- **Restrict Construction activities to non-peak hours –** Construction activities can be allowed during non-peak hours only. While this alternative would help reduce traffic disruption, it would also increase the time needed for construction since mobilization and demobilization of equipment require a set amount of time. As a result, actual working time is increased by 29 working days on the Barton Road reach.
- **Use Center Drive as a detour for north/east bound traffic –** When construction occurs between Center Drive and Washington Street, Center Drive or Walin can be used to reroute the northbound traffic during peak and non-peak hours.

As mentioned before, the time necessary to build the pipeline though this or any section of the Barton Road reach is dependent on the available area provided for construction activities. The reasonable construction schedule assuming an adequate construction footprint and full working days is given below.

Barton Reach Preliminary Construction Duration

Item	Approximate Distance (ft)	Construction Rate (ft/day)*	Days to Complete (days)*
Washington to Walin	1,100	200	6
Walin to Hilltop	1,050	200	6
Hilltop to Honey Hill	2,600	200	13
Honey Hill to Palm	3,450	200	18
Palm to Mt Vernon	1,000	200	5
TOTAL			**48**

* The construction rate and numbers of days needed for completion are dependent on several factors, including the amount of workable space allowed for construction purposes, utility interferences and soil conditions.

The City of Grand Terrace concerns have been looked at thoroughly and road closure of a portion of Barton Road will be required for approximately 25 days through the narrowest sections. Such a closure will expedite construction and pose the least inconvenience to the City of Grand Terrace and commuters.

Comment #3:

A long term construction project on the east extension of Barton Road will have a significant impact on traffic movements within the City. This will be especially true for the easternmost segment traveling down the hill into Colton. This segment is a narrow two-lane section with a steep slope. Construction of a 60-inch water main would require complete closure of this two-lane segment during the entire construction this run.

Response #3:

See Response #2, above.

Comment #4:

Similar problems will occur for the Mt. Vernon Avenue run. Again, Mt. Vernon Avenue is a primary arterial for north/south traffic. The only alternative route is Michigan Street to the west. This is a two-lane improved section passing through a residential neighborhood that is not conducive to a significant increase in traffic volumes during a long term construction phase. The majority of Mt. Vernon Avenue south of Barton Road passes through established residential neighborhoods. Although most of the residences backup to Mt. Vernon Avenue, several between Van Buren Street and Main Street take access directly from Mt. Vernon Avenue. An evaluation should be made regarding potential impacts to property access to these units during construction.

Response #4:

The Draft PEIR addresses potentially significant impacts resulting from temporary traffic disruption and includes mitigation measure MM Trans 2, page II-8-9, to address such issues as are raised by this comment. The City of Grand Terrace will be consulted during the preparation of the required Traffic Control and Safety Plan so that hours of construction, access and detours can be worked out prior to construction of the portion of the pipeline to be built within Grand Terrace.

The Preliminary Design Report also addressed questions related to construction of the RCF in Mt. Vernon Avenue.

The Mt. Vernon reach starts at the intersection of Mt. Vernon Avenue and Main Street (Riverside County line) and extends northward to the Mt. Vernon Ave./Barton Road intersection which will take a total of approximately 35 days to construct. Through most of the Mt. Vernon reach, the road maintains an 88.0 ft wide right-of-way which will allow for two-way traffic flow during construction, one lane in each direction, minimum. However, there is a short segment of approximately 650 ft from Raven Way to Pico Street, where the existing right-of-way width is only 77.0 ft, with 33 ft on the east side of the centerline and 44 ft on the west. Construction of the proposed pipeline through this short section will remain on the east side of Mt. Vernon Avenue. For this section, traffic control measures will include leaving only the southbound slow lane open for traffic flow with the usage of a flag man to allow two way traffic with some delays, closing both bike lanes for increased safety, maintaining all construction activities during daytime, and providing daily trench cover. Traffic flow would be restored to a minimum of one lane in each direction at night throughout the entire Mt. Vernon reach, including this narrowest section.

The intersection of Mt. Vernon Avenue and Barton Road represents the end of the Mt. Vernon reach. This intersection is of concern due to its high vehicle volume during peak hours, as well as numerous existing utilities. Although trenchless methods such as Jack-and Bore may appear to be an appropriate solution, the large pits required for placing and receiving pipes would

disrupt traffic flow in a greater manner than a localized open cut trench. Construction is expected to last four working days through this intersection. Fortunately, both Barton Road and Mt. Vernon Avenue have wide right-of-ways at the intersection, thus allowing for adequate flexibility for traffic control plans and alignment design to be completed, pursuant to MM Trans 2, when project design if underway.

Comment #5:

An additional evaluation should be performed to assess potential impacts to residences along the entire route due to noise, dust, and vehicle emissions during the construction phase. Further analysis should be conducted if construction is proposed during evening through these residential neighborhoods.

Response #5:

As stated in the Initial Study for the project (Draft PEIR Appendix A), construction of the proposed project must comply with City of Grand Terrace Municipal Ordinance Section 8.108.050.G, related to construction noise. If it is determined that night time construction is the only way to avoid some of the traffic or safety issues discussed in Comments and Responses #2 and #4 above, then Western will work with the City to determine how to adequately address any potentially significant noise impacts that might result.

The Draft PEIR identifies federal, state and local regulations with which the project must comply. Southern California Air Quality Management District (SCAQMD) Rule 403 applies to this project, as stated on page II-2-12 of the EIR. Rule 403 specifically governs the emission of fugitive dust during construction activities and requires standard best management practices such as application of water or chemical stabilizers to disturbed soils, covering of haul vehicles, the restriction of vehicle speeds on unpaved portions of a site, sweeping loose dirt from paved access roadways, cessation of construction activities when winds exceed 25 mph and the establishment of permanent stabilizing ground cover on any unpaved areas. Compliance with Rule 403 will significantly reduce, but not eliminate, construction-related air quality impacts.

Section II-2 of the Draft PEIR evaluates air quality impacts related to the construction and operation of the proposed project. Air quality impacts associated with the long-term operations of the Riverside-Corona Feeder will be less than significant. Construction-related impacts which include vehicular and dust emissions will likely exceed SCAQMD thresholds. The portion of the project (Reach B) through Grand Terrace was not modeled for construction impacts specifically because it is not considered one of the "worst case" Reaches of the proposed project. Reach C was modeled, however, due to some tunneling and boring activities that will occur in that portion of the project. Since Reach B and Reach C both consist of the installation of 29,000 feet of 60-inch pipe, *Table II-2-I, Estimated Short-Term Emissions – Reach C, Scenario 2 – Excavation for Pipeline Installation*, represents similar results as could be expected during construction of Reach B through Grand Terrace. Emissions exceed thresholds and are considered significant short-term impacts without mitigation. Following the application of mitigation measures

included in the Draft PEIR, Table II-2-O shows that all criteria pollutants (e.g. NOx, CO, ROC, etc.) are reduced to less than significant levels except for Nox emissions. Thus, as stated on page II-2-25 of the Draft PEIR, "NOx emissions will remain above SCAQMD significance thresholds during project construction even with mitigation measures incorporated. Therefore, the project will result in an unmitigable exceedance of short-term standards for air quality and will require a statement of overriding considerations prior to project approval."

Comment #6:

Finally, an evaluation should be performed to determine potential conflicts with other existing underground utilities. Both Barton Road and Mt. Vernon Avenue are primary utility corridors. Major water and sewer lines are located within both rights-of-way. Special consideration should be given to those segments that are two-lane improvements to assure that adequate space is available to actually construct a 60-inch line without conflicts to existing facilities.

Response #6:

The Preliminary Design Report addressed utility conflicts in key areas and determined that the 60-inch pipeline could be constructed within existing rights of way (see Appendix G of the Final PEIR). The proposed project is being evaluated at the "programmatic" level in this EIR. Although many of the specific concerns related to exiting utilities have been identified and addressed in the Preliminary Design Report, WMWD recognizes that conflicts between the location of the proposed project and exiting underground utilities may arise at the final design stages of the project. In areas where conflicts are identified during design, WMWD will either redesign/relocate the RCF or relocate existing utilities at is own expense and in cooperation with the appropriate service provider and local jurisdiction. Should an alternative alignment be required, necessary environmental analysis will be prepared to ensure compliance with the California Environmental Quality Act.

Comment #7:

The City of Grand Terrace appreciates the opportunity to comment on this Draft EIR. We wish to be actively involved in the planning and design of this proposed improvement as it passes through our city. We wish to work with the district's staff to assure that this project poses a minimal impact to the City and its residents. Please feel free to contact me regarding any aspect of this project.

Response #7:

WMWD appreciates the information and cooperation provided by the City of Grand Terrace and will coordinate with the City during the construction and operation of this project.

Comment #1:

The Draft PEIR did not provide specific operational plans regarding proposed groundwater production. For example, the exact quantities of water to be lifted from Waterman system and San Bernardino Valley MWD into the RCF are to be determined at the time of project implementation. The identities of existing wells that may be utilized would be disclosed after certification of the PEIR (page I-1-9). Neither has the exact locations of the proposed new wells (up to 20) been determined (I-2-2, I-2-12). There were references that such wells are to be located in or near the area of historically high groundwater (AHHG) and in reasonable proximity to the pipelines connecting to the RCF.

Response #1:

The statements in Comment #1 are correct. See Responses 4 and 5, below.

Comment #2:

The draft PEIR proposed to conduct groundwater management operations in conjunction with other water agencies in accordance with the Judgment and to prevent degrading water quality (pages I-2-12, I-5-2). Riverside would expect to be directly involved in the process.

Response #2:

Western is committed to working with the City of Riverside directly as part of the coordinated effort to operate this project.

Comment #3:

The draft PEIR proposed that site-specific analysis would be included in supplemental EIRs (page I-1-26, I-3-1, II-6-8). Western MWD proposed to modify the plan if necessary to reduce impacts or develop appropriate mitigation measures. Riverside requests that it be provided copies of future supplemental EIRs.

Response #3:

The City of Riverside will be provided with all supplemental EIR's which may be prepared for this project in the future. The City of Riverside will also be included on all notification lists related to other types of environmental documentation associated with the Riverside-Corona Feeder (i.e., Negative Declarations, subsequent EIR's).

Comment #4:

Riverside is most concerned about the potential impacts of the proposed 20 new or existing wells to interfere with our wells primarily located in the AHHG. The PEIR suggested that the proposed project would not result in significant adverse impacts to groundwater levels (page II-5-8) nor quality (page II-6-5). Riverside is concerned that there is potential for adverse impacts to wells in the immediate vicinity in the form of well interference. Riverside requests that supplemental EIRs regarding new wells include analyses of the potential for well interference.

Response #4:

In response to the City of Riverside Public Utilities comments regarding modeling and water levels, Western Municipal Water District (WMWD) has prepared a hydrologic analysis (Geoscience) that shall be added as Appendix F of the Final Program EIR. At the time the Draft PEIR was prepared, models to predict effects on both water levels and water quality were not yet available for use in this project as described on page II-6-5 of the Draft Program EIR. This analysis is the initial output from the modeling efforts described in MMGWL 1, page II-5-9 of the Draft PEIR.

Since November of 2004, models have become available to be used for this Riverside-Corona Feeder (RCF) analysis which include the capability to predict groundwater flow and levels as well as groundwater quality through particle tracking and solute transport analysis. The same groundwater flow (MODFLOW), particle tracking (MODPATH), and solute transport (MT3DMS) models that were used for the analysis in the Muni/Western Santa Ana River (SAR) Water Right Applications DEIR (Water Right DEIR) were used to perform these analyses for the RCF Project. All modeling assumptions including extraction schedule and new well locations, and replenishment schedules are included in Appendix F. Generally, modeling is based on historic hydrologic data projected from 2001 through 2039, the same as those for the Water Right DEIR. Extraction and replenishment assumptions are based on a water availability forecast model developed by Metropolitan Water District (MWD) that includes implementation of the MWD Water Surplus and Drought Management Plan (WSDM). Appendix F, Table 1, shows the assumed RCF extraction and replenishment schedule for the Scenario 1 modeling analysis. The schedule is based on the WSDM predictions for change in storage in Diamond Valley Lake, change in storage for State Water project program, and MWD's interruption of replenishment services. Other factors include surplus remaining after WSDM action is taken and hydrology in southern California. This represents an operating scenario for the RCF project that maximizes the conjunctive use potential of the project based on a repeat of hydrology for the period 1961 to 2000.

With respect to the groundwater flow model results, the direction of flow and the fluctuations in water level over time are generally the same for this operating scenario as for the No Project condition. However, index well hydrographs (Appendix F, Figure 8) show that under the operating scenario analyzed for the RCF Project, water levels in the forebay or recharge area track generally above the No Project conditions, and levels in the Pressure Zone or area of Historic High Groundwater (AHHG) track generally below No Project.

Water levels are generally higher in the forebay as a result of the recharge of State Water Project water. The recharge creates mounding and the associated increase in levels is highest in the upper layer at the spreading basins. The maximum increase in level occurs in the Waterman spreading area in 2022 in the amount of over 150 feet. However by 2005 the increased difference in levels is about 100 feet and by 2030 the increase is less than 50 feet. Increase in level or mounding in the lower layer is much less significant (Appendix F, Figures 6 and 7).

Increased water levels in the forebay reduce the cost of pumping for forebay producers. On the average, water levels in the forebay increase about 9 feet during the 39-year model simulation period.

Water levels are generally lower in the Pressure Zone as a result of pumping under the Project operating scenario analyzed. Areas within the Pressure Zone where depth to water is less than 50 feet below ground surface were delineated using the model. These areas were delineated because of the higher potential for liquefaction during an earthquake.

Pumping associated with the RCF Project lowers water levels in the Pressure Zone and therefore decreases the area potentially subject to liquefaction. In the Pressure Zone where liquefaction potential is high during many of the forecast years under No Project conditions, the area subject to such impact is reduced by additional pumping.

Figures 2 and 4 of Appendix F show the area in acres where water levels are less than 50 for No Project and Project operation. The cumulative total area of potential liquefaction during the period 2001-2039 under No Project conditions is approximately 32,000 acres. With the RCF Project operating as defined in this analysis, the potential liquefaction area is reduced to about 25,000 acres.

Decreasing the potential for earthquake damage due to liquefaction by lowering the water table in the Pressure Zone increases the energy required to pump the water. There are currently two major areas of production by the City of Riverside in the Pressure Zone. One is centrally located along Warm Creek and is referred to herein as the Antil Area. The other is located along the Santa Ana River near the southwesterly boundary of the basin and is referred to as the South San Bernardino Area.

Projected water level hydrographs for two Riverside wells in the Antil Area and three Riverside wells in the South San Bernardino Area are shown in Appendix F on Figures 8(l) and 8(ai) through 8(al). The hydrographs indicate that the average increase in depth to water in these five City of Riverside wells located in the Pressure Zone is approximately 9 feet during the 39-year model simulation period.

Comment #5:

Western MWD proposed to develop a groundwater model that is to test operating strategies (page I-1-26, II-6-5, II-6-10). Riverside prefers that Western MWD initially perform preliminary analyses using existing groundwater models (quality & quantity) prior to any construction. Riverside requests that the proposed groundwater modeling include analyses of geochemical impacts and the potential for land subsidence from increased extractions in the AHHG.

Response #5:

The groundwater models that have been used to analyze operating strategies or scenarios have been developed jointly by Western and San Bernardino Valley Municipal Water District. Western will continue to use this model, including any improvements to the models, to evaluate additional operating scenarios under a variety of potential future conditions.

The existing models include solute transport models for PCE, TCE, Nitrate, TDS and perchlorate. Analyses of alternative operating scenarios will include forecasts of subsidence using the existing PRESS model utilized in the Muni/Western Water Right DEIR. The PRESS model is a modified version of a program initially developed by Helm for one-dimensional simulation of aquifer system compaction. Modifications include consideration of multiple aquifers.

Comment #1:

1. The proposed route includes Chicago Avenue. Approximately two years ago the City's Water Department installed a 60-inch water main in Chicago Avenue between Columbia Avenue and Linden Street. Public Works is concerned that another large diameter pipeline will not fit in the Chicago Avenue right-of-way with the existing 60-inch water line and the other existing utilities. Western Municipal Water District should be aware of the possibility of the need to revise the alignment during final design.

Response #1:

The proposed project is being evaluated at the "programmatic" level in this EIR. As such, the precise location of any particular piece of pipe in any given street is not known at this time. Western recognizes that conflicts between the location of the proposed project and existing pipes and other underground utilities may arise as design of the project proceeds. In areas where conflicts are identified during project design, Western will either redesign/relocate the Riverside-Corona Feeder or relocate existing utilities at its own expense and in cooperation with the appropriate service providers. Should an alternative alignment be required, necessary environmental analysis will be prepared to ensure compliance with CEQA.

Comment #2:

2. The proposed route includes Lincoln Avenue and Adams Street at and in the vicinity of their intersection. Again Public Works has concerns on the practicability of installing another utility pipeline in this vicinity due to conflicts with existing utilities.

Response #2:

See Response #1, above.

Comment #3:

3. This program level EIR has determined that there is no significant impact to traffic. Public Works does not concur with this assessment since the proposed route includes heavily traveled streets such as Chicago, Lincoln, and Arlington Avenue and an engineered alignment and traffic study has not been completed. During the final design of the project it will be necessary for a traffic impact study be completed to determine the construction related traffic impacts and mitigation measures. This study must be submitted to the City for review and approval.

Response #3:

The Draft PEIR addresses potentially significant impacts resulting from temporary traffic disruption and includes mitigation measure MM Trans 2, page II-8-9, to address such issues as are raised by this comment. The City of Riverside will be consulted during the preparation of the required Traffic Control and Safety Plan so that hours of construction, access and detours can be worked out prior to construction of the portion of the pipeline to be built within Riverside. To the extent that a focused traffic study is required to determine impacts on project streets or possible detour routes, if necessary, one will be completed and submitted to the City to ensure that traffic can be accommodated.

Comment #4:

4. Construction of the project must be coordinated with other nearby construction projects to minimize construction related traffic impacts.

Response #4:

Due to the programmatic level of the project at this time, future construction activities within the vicinity of the proposed alignment are too speculative to be analyzed at this time. CEQA does not require an analysis of speculative events (State CEQA Guidelines, Section 15145.). The Draft PEIR addresses potentially significant impacts resulting from temporary traffic disruption and includes mitigation measure MM Trans 2, page II-8-9, to address such issues as are raised by this comment. The City of Riverside will be consulted during the preparation of the required Traffic Control and Safety Plan to determine other construction projects in the vicinity that may have an impact on traffic at the time of proposed project construction.

Comment #5:

5. Prior to construction, Western Municipal Water district and their contractor must obtain the necessary permits from the Public Works Department.

Response #5:

Western shall acquire all necessary permits from the City of Riverside Public Works Department and all other jurisdictions affected by the proposed project.

Comment #1:

With regard to the above referenced Draft EIR, page II-4-6 states that the Riverside Canal has not been evaluated for eligibility on either the State or Federal level. The entire length of the canal was surveyed and evaluated in accordance with the California Environmental Quality Act as part of a repair project being completed by the City of Riverside Public Utilities Department. The results of this survey and previous survey projects are recorded in the *Cultural Resource Evaluation of the Riverside Canal* (EDAW Inc., September 2001). Copies of the report are available from Kevin Milligan, Principal Water Engineer, City of Riverside Public Utilities Department (826-5793).

Response #1:

The Cultural Resource Survey of the Riverside Canal (CA-RIV-4495H, CA-RIV-4791H, CA-SBR-7172H) Riverside and San Bernardino Counties California was obtained from Mr. Milligan at the City. This document will be added to the References section of the EIR and page II-4-6, paragraph 4, of the Draft PEIR will be corrected to read:

"The Riverside Canal (CA-RIV-4791H) runs along the southern alignment of the proposed project area in portions of Reaches F and H, but the proposed alignment does not involve the actual canal right-of-way. Rather, the proposed project parallels the Riverside Canal. The Riverside Canal was evaluated for cultural significance in the Cultural Resource Survey of the Riverside Canal (CA-RIV-4495H, CA-RIV-4791H, CA-SBR-7172H) Riverside and San Bernardino Counties California, October 2001. The report concludes that the canal has overall historic significance based on its role in the historic development of the region, but the integrity of the historic resource today only warrants designation in key locations, near the Santa Ana River and the Highgrove Drop structure. The segments of the canal which will be paralleled by the Riverside-Corona Feeder Project are located southwest of Van Buren Boulevard and were identified as having poor to very poor historic integrity at this time. Potential impacts to the Riverside Canal will be avoided by paralleling the canal and not involving specific portions of the canal."

Comment #1:

1. Several existing District facilities are located within the proposed project area and may be impacted. Any work that involves District right of way, easements or facilities will require an encroachment permit from the District. The construction of facilities within road right of way that may impact District storm drains should also be coordinated with us. To obtain further information on encroachment permits or existing facilities, contact Ed Lotz of the District's Encroachment Permit Section at 951.955.1266.

Response #1:

As stated on page I-4-2 of the Draft Program Environmental Impact Report (PEIR), encroachment permits will be required from the Riverside County Flood Control and Water Conservation District (the District). WMWD will seek all required permits and coordinate with the District wherever District facilities, rights of way and easements may be affected. No new information was provided or issues raised that were not previously addressed in the Draft PEIR for the Riverside-Corona Feeder project.

Comment #2:

2. The project is located within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Applicable MSHCP habitat assessments and surveys are required for potential habitats located within the proposed project area that involves District right of way, easements or facilities.

Response #2:

As described throughout the Biological Resources section of the Draft PEIR (Section II-3), the portion of the proposed project that is to be built within Riverside County will be subject to the provisions of the County's MSHCP. This will apply to areas owned or under the jurisdiction of the District. No new information was provided or issues raised that were not previously addressed in the Draft PEIR for the Riverside-Corona Feeder project.

Comment #1:

Riverside Unified School District is tasked with the education of students within our district in a safe environment. The California Department of Education (CDE) provides oversight and ultimately grants approval for school site acquisitions and expansion of school site capacity whenever state funding is requested for school building projects.

One of the criteria that is reviewed by CDE during a school site acquisition or expansion is the proximity of high pressure pipelines to the school site. The school district must either certify that there are no pipelines within 1,500 feet of any portion of the site, or if an easement containing a pipeline with a maximum allowable operating pressure at or above 80 psi is within 1,500 foot of the school site, a pipeline risk analysis must be prepared by a competent professional according to the California Code of Regulations, Title 5 in order to be considered for a setback exemption. These studies must determine whether in the case of a rupture of the line, whether there would be any subsidence of soil on the school site, or whether flooding would occur.

The proposed Riverside-Corona Feeder Project runs within 1500 feet of several existing and two proposed schools sites in the Riverside Unified School District. As an initial mitigation, Riverside Unified School District is requesting that the Western Municipal Water District perform a pipeline risk analysis to determine whether the threat of a pipeline rupture would pose a threat to the safety of the students or structures on a school site within 1500 feet of the pipeline. If an unacceptable level of threat is found to exist, Riverside Unified School District would be prevented from receiving any state funding for construction or future expansion of the sites, and further mitigation measures would need to be considered and discussed.

The school sites within the 1500 foot distance that would require study are the following:

Helen Keller Elementary School (proposed)
Spring Street, about 1400 feet east of Mount Vernon
Highgrove, CA 92507

Highgrove Elementary School
690 Center Street
Highgrove, CA 92507

John W. North High School
1550 Third Street
Riverside, CA 92507

Victoria Elementary School
2910 Arlington Ave.
Riverside, CA 92507

Gage Middle School
6400 Lincoln Ave.
Riverside, CA 92504

Educational Opportunity Center
6401 Lincoln Ave.
Riverside, CA 92504

Cleveland and Myers School Site (Proposed)
Southwest Intersection of Cleveland and Myers
Riverside, CA 92503

Response #1:

Western Municipal Water District (WMWD) has contracted with Webb Associates engineers to conduct a pipeline risk analysis with respect to flooding as requested by Riverside Unified School District (RUSD). The analysis is included in its entirety as Appendix H of the Final Program Environmental Impact Report (PEIR). Overall, the school sites evaluated are not at risk of flooding due a rupture of the Riverside-Corona Feeder (RCF). The following is a summary of the findings.

The seven existing and proposed school sites identified in the RUSD comment letter were evaluated. The Hellen Keller Elementary School site and Highgrove Elementary School are located sufficient distances and uphill from the proposed pipeline alignment such that no threat to students or structures would result from a rupture of the Riverside-Corona Feeder (RCF) pipeline in their vicinity.

Victoria Elementary is also located a distance from the proposed RCF, however it is downhill from the pipeline alignment. Depending on where a rupture occurred, water could flow past Victoria Elementary in either Arlington Avenue or Anna Street. Analysis shows that all water is carried within the street right of way in these locations, posing minimal threat to students or structures.

John W. North High School, Gage Middle School, Educational Opportunity Center and the Cleveland/Myers site are all located immediately adjacent to streets within which the RCF is proposed to be located.

The Cleveland and Myers school site is located uphill from the street and the topography falls away from the proposed school site to the north. Flows due to pipe rupture would be completely contained within the street right-of-way the proposed RCF poses minimal or no threat to students and structures at the adjacent school site.

Gage Middle School is located along the south side of Lincoln Avenue where the RCF is to be located and immediately across the street from the Educational Opportunity Center. If the pipe ruptured in this location, water would be contained with the right of way of Lincoln Avenue thus posing minimal threat to students or structures on the campuses.

John W. North High School is located along the east side of, and immediately adjacent to, Chicago Avenue where the RFC is to be located. Chicago Avenue slopes away from the school site with a slope of 0.8%. Thus, properties located along the west side of Chicago Avenue are lower than properties on the east side of the street. Should the proposed RCF rupture, the maximum flow would rise less than 1 inch above the existing street right of way. The high school's playing fields are located along the entire Chicago Avenue frontage. The existing topography falls away from the school site in a northwesterly direction. In addition, all major school facilities and buildings are elevated an additional 8 to 12 feet above the elevation of the street and a minimum of 300 feet east of Chicago Avenue. Since flows would generally travel away from the school site, less than 1 inch of water would enter the school property, existing buildings are located over 300 feet from the street/pipeline, and the open playing fields are located adjacent to Chicago Avenue, the proposed RCF poses minimal threat to students and/or structures at North High School.

Also mentioned in the comment letter is risk from "subsidence of soil on the school site." Telephone communication with Janet Dixon, Director of Planning and Development for RUSD, clarified that erosion of soil on a school site was what was meant by the comment. Erosion occurs when soil is washed or blown away by water or wind. Soils would be washed away in the immediate vicinity of the rupture, if one occurred, but since the pipe will be located beneath the street in all these locations, it is not expected that erosion would occur on properties outside of the street right of way.

No potentially significant environmental issues were identified as a result of this comment or the analysis performed to respond to the issues raised.

Comment #1:

As the Department outlined in its comments dated April 25, 2003 to Western's Notice of Preparation, the Department has grave concerns regarding Western's proposed project. Specifically, the Department believes that the cursory analysis applied to the proposal to spread water and then extract up to 40,000 acre feet per year (afy) from the Bunker Hill Basin is insufficient.

Still more specifically, the DEIR concludes that the project will not have significant environmental effects on either groundwater levels or groundwater quality, but then further concludes that "a specific conclusion as to the significance of potential … impacts … would be speculative." Therefore, Western proposes to use a groundwater flow model developed by San Bernardino Valley Municipal Water District in conjunction with its application to appropriate water from the Santa Ana River to analyze potential groundwater impacts and to develop management strategies as and when they arise.

The Department is informed and believes that the groundwater model referenced by Western does not, in fact, predict water quality impacts and should not, therefore, be relied upon as a potential mitigation measure or management tool for water quality impacts. Additionally, although the Department had an opportunity to review the groundwater model in its nascent stages many years ago, the Department has not since had the benefit of reviewing the model so as to determine if the model is a good tool for the purposes for which it is proposed (groundwater level management). Assuming that Western did, in fact, use this groundwater model as appropriate and the model is robust, with clearly supported model boundary conditions, then the Department's concerns would be ameliorated.

Response #1:

In response to the City of San Bernardino Municipal Water Department's (the City) concerns regarding the level of detailed analysis, Western Municipal Water District (WMWD) has prepared a hydrologic analysis (Geoscience) that shall be added as Appendix F of the Final Program EIR. At the time the Draft PEIR was prepared, models to predict effects on both water levels and water quality were not yet available for use in this project as described on page II-6-5 of the Draft Program EIR. This analysis is the initial output from the modeling efforts described in MMGWL 1, page II-5-9 of the Draft PEIR.

Since November of 2004, models have become available to be used for this Riverside-Corona Feeder (RCF) analysis which include the capability to predict groundwater flow and levels as

well as groundwater quality through particle tracking and solute transport analysis. The same groundwater flow (MODFLOW), particle tracking (MODPATH), and solute transport (MT3DMS) models that were used for the analysis in the Muni/Western Santa Ana River (SAR) Water Right Applications DEIR (Water Right DEIR) were used to perform these analyses for the RCF Project. All modeling assumptions including extraction schedule and new well locations, and replenishment schedules are included in Appendix F. Generally, modeling is based on historic hydrologic data projected from 2001 through 2039, the same as those for the Water Right DEIR. Extraction and replenishment assumptions are based on a water availability forecast model developed by Metropolitan Water District (MWD) that includes implementation of the MWD Water Surplus and Drought Management Plan (WSDM). Appendix F, Table 1, shows the assumed RCF extraction and replenishment schedule for the Scenario 1 modeling analysis. The schedule is based on the WSDM predictions for change in storage in Diamond Valley Lake, change in storage for State Water project program, and MWD's interruption of replenishment services. Other factors include surplus remaining after WSDM action is taken and hydrology in southern California. This represents an operating scenario for the RCF project that maximizes the conjunctive use potential of the project based on a repeat of hydrology for the period 1961 to 2000.

With respect to the groundwater flow model results, the direction of flow and the fluctuations in water level over time are generally the same for this operating scenario as for the No Project condition. However, index well hydrographs (Appendix F, Figure 8) show that under the operating scenario analyzed for the RCF Project, water levels in the forebay or recharge area track generally above the No Project conditions, and levels in the Pressure Zone or area of Historic High Groundwater (AHHG) track generally below No Project.

Water levels are generally higher in the forebay as a result of the related recharge of State Water Project water. The recharge creates mounding and the associated increase in levels is highest in the upper layer at the spreading basins. The maximum increase in level occurs in the Waterman spreading area in 2022 in the amount of over 150 feet. However by 2005 the increased difference in levels is about 100 feet and by 2030 the increase is less than 50 feet. Increase in level or mounding in the lower layer is much less significant. (Appendix F, Figures 6 and 7.)

Increased water levels in the forebay reduce the cost of pumping for forebay producers. On the average, water levels in the forebay increase about 9 feet during the 39-year model simulation period.

Water levels are generally lower in the Pressure Zone as a result of pumping under the Project operating scenario analyzed. Areas within the Pressure Zone where depth to water is less than 50 feet below ground surface were delineated using the model. These areas were delineated because of the higher potential for liquefaction during an earthquake.

Pumping associated with the RCF Project lowers water levels in the Pressure Zone and therefore decreases the area potentially subject to liquefaction. In the Pressure Zone where liquefaction potential is high during many of the forecast years under No Project conditions, the area subject to such impact is reduced by additional pumping.

Figures 2 and 4 of Appendix F show the area in acres where water levels are less than 50 for No Project and Project operation. The cumulative total area of potential liquefaction during the period 2001-2039 under No Project conditions is approximately 32,000 acres. With the RCF Project operating as defined in this analysis, the potential liquefaction area is reduced to about 25,000 acres.

Decreasing the potential for earthquake damage due to liquefaction by lowering the water table in the Pressure Zone increases the energy required to pump the water. There are currently two major areas of production in the Pressure Zone. One is centrally located along Warm Creek and is referred to herein as the Antil Area. The other is located along the Santa Ana River near the southwesterly boundary of the basin and is referred to as the South San Bernardino Area.

Projected water level hydrographs for wells in the Antil Area and wells in the South San Bernardino Area are shown on in Appendix F on Figures 8(l) and 8(ai) through 8(al). The hydrographs indicate that the average increase in depth to water in wells located in the Pressure Zone is approximately 9 feet during the 39-year model simulation period.

Comment #2:

However, the Department would continue to be concerned that, unless carefully managed, Western's project could substantially and adversely affect the movement of contaminate plumes in the Bunker Hill Basin. As clearly stated in our April 25, 2003 letter, the Department's responsibility for managing the Newmark Contamination Superfund Site dictates that it diligently protect the inhibitor wells that were designed and constructed at the Federal government's expense. A significant increase in spreading, or a significant increase in extraction, in certain areas of the Bunker Hill Basin could cause the spread of volatile organics into other areas of the Bunker Hill Basin outside of the known contaminated areas.

Response #2:

WMWD has joined with the City and other producers that could affect the effectiveness of inhibitor wells in preventing the spreading of volatile organics contamination to develop an Institutional Controls Groundwater Management Program (ICGMP). To respond to the City's concerns about the RCF Project substantially and adversely affecting the movement of the

contamination plumes in the Bunker Hill Basin, the MODPATH and MT3DMS models were run based on the same assumptions used for operations in the MODFLOW analysis.

MODPATH is a particle-tracking model that uses the output from MODFLOW to trace the path and rate of flow of water from recharge areas and from contaminant plumes within the basin. The results of the particle-tracking analysis indicate that the Project related recharge and extraction accelerates groundwater movement from the recharge areas toward the increased area of production. This acceleration is consistent with the MODFLOW results which show increased water levels in the forebay, decreased levels in the Pressure Zone and a general increase in the slope of the groundwater gradient (reference Appendix F, Figure 12).

Particle-tracking from within the contaminant plumes is performed in order to determine if the plume migrates differently with the RCF Project in operation than without. Results of particle-tracking from the Newmark and Muscoy plumes indicate that the path and rate of the PCE is the same under RCF Project operation as it is under No Project conditions. In both cases the particles from each plume were shown to be pumped from the barrier wells. Figure 13(i) in Appendix F shows that by 2039 neither the red traces from the No Project Condition nor the green traces from the RCF Project analysis extend past the yellow boxes which denote the barrier wells.

MT3DMS is a solute transport model used to simulate groundwater quality for PCE, TCE, perchlorate, TDS and nitrate. The transport model confirms the conclusions of the particle-tracking analysis regarding effectiveness of the Newmark and Muscoy barriers. In addition, it is capable of detecting differences in the rate at which clean-up occurs and determines the extent of lateral movement of the plume.

The results of the transport model analysis for PCE is shown for Layers 1 and 2 on Figures 15 and 16 in Appendix F. Plume boundaries for the Newmark and Muscoy plumes are shown on Figures 15 and 16 using the MCL of 5 µg/l. The analysis shows that the MCL plume boundary did not move past the barrier wells under the No Project condition or the operating scenario for the RCF Project. This confirms the conclusions reached through the particle-tracking analysis.

Due to the increased groundwater gradient resulting from RCF Project recharge and extraction, the rate of subsurface flow is increased and the Newmark and Muscoy plumes are cleaned up more quickly under RCF Project conditions than under No Project conditions. Evidence of this is most evident on Figure 16 in years 2030 through 2039 when the Newmark and Muscoy plumes disappear more quickly under Project (red line) than No Project (yellow line) conditions.

Lastly, the transport model analysis shows the area or footprint of the contaminated area and the extent to which the plume may migrate laterally as a result of RCF Project operations.

The footprint of the Newmark and Muscoy plumes was smaller at the end of the forecast period for the RCF Project operation than for the No Project condition. Table 5 in Appendix F shows that the average area of the plume over the 39 year forecast period was 1941 acres under No Project conditions and 1,925 acres under RCF Project operations.

The transport model results indicate that operation of RCF Project could result in a small lateral movement of the Newmark and Muscoy plumes which is different than for the No Project condition. The model predicts that such differences in movement would cause five additional wells for a brief period of time to degrade to values greater than 5 µg/l of PCE, and 7 additional wells to improve in quality to less than 5 µg/l (see Appendix F, Table 5).

Figures 17(a) through 17(e), Appendix F, show the model-predicted PCE concentrations through time for the five wells that degrade (see Figure 18 for well locations). For example, Figure 17(a) shows that the PCE concentration at Well 1N/4W-16E01 would increase from 4.9 µg/l to 5.5 µg/l (slightly above the 5 µg/l MCL) in 2006 (hydrologic year 1967) and from 4.7 µg/l to 5.1 µg/l in 2008 (hydrologic year 1969) due to Project implementation. Seven wells that would be contaminated under No Project Condition would avoid contamination due to Project implementation.

Comment #3:

The Department does not believe that the analysis of potential impacts to groundwater levels or groundwater quality should be "punted" to another environmental review. Until such review is conducted, the Department reserves its rights to challenge the proposed project.

Response #3:

It was Western Municipal Water District's intent to work with the City to assure that the RCF does not jeopardize the groundwater basin. See Responses 1 and 2, above.

Comment #1:

1. We have reviewed the Initial Study and it appears that the drainage concerns have been adequately identified.

Response #1:

Comment noted.

Comment #2:

2. We recommend that the proposed pipeline be constructed in a manner not to alter the direction, elevation, or capacity of any existing drainage facility, and that the line be placed below all drainage course scour depths.

Response #2:

The proposed project is being evaluated at the "programmantic" level in this environmental impact report. As such, the precise location of any particular piece of pipe in any given location is not known at this time. Western Municipal Water District (WMWD) will take into consideration these types of issues and facilities when the pipeline is being designed. No new information was provided or issues raised that were not previously addressed in the Draft PEIR for the Riverside-Corona Feeder project.

Comment #3:

3. It is assumed that the cities will establish adequate provisions for intercepting and conducting any accumulated drainage around or through the site areas in a manner which will not adversely affect adjacent or downstream properties.

Response #3:

As stated in the Draft Program Environmental Impact Report (PEIR) on page I-4-1, Regional Water Quality Control Board, Santa Ana Region (Regional Board) has jurisdiction over the project area. National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Discharge Permits will be required from the Regional Board for this project. Implementation of the Best Management Practices identified in the Stormwater Pollution Prevention Plan (SWPPP) associated with the permit will ensure that downstream properties are not adversely affected by drainage through or around the project construction site.

Comment #4:

4. The project should incorporate the most recent FEMA flood proofing regulations.

Response #4:

The proposed project will not be subject to nor cause flooding that would require the use of FEMA flood proofing techniques. This comment does not apply to the proposed project.

Comment #5:

5. Prior to any encroachment on San Bernardino County Flood Control District (District) right-of-way, a permit shall be obtained from the District's Flood Control Operations Division, Permit Section. Other off-site or on-site improvements may be required, which cannot be determined at this time.

Response #5:

As stated on page I-4-2 of the Draft Program Environmental Impact Report (PEIR), encroachment permits will be required from the San Bernardino County Flood Control District (the District). WMWD will seek all required permits and coordinate with the District wherever District facilities, rights of way and easements may be affected. No new information was provided or issues raised that were not previously addressed in the Draft PEIR for the Riverside-Corona Feeder project.

Comment #6:

6. U.S. Army Corps of Engineers' approval may also be required for work near the Santa Ana River. Information regarding this item can be obtained from the District's Flood Control Operations Division, Permit Section.

Response #6:

As stated on page I-4-1 of the Draft Program Environmental Impact Report (PEIR), a 404 permit from the U.S. Army Corp of Engineers (the Corp) may be required if the proposed project involves fill in the definable bed, bank or channel (as indicated by the ordinary high water mark) of the Santa Ana River or any other stream or drainage feature due to installation of the pipeline. WMWD will seek all required permits and coordinate with the Corp wherever Corp jurisdiction may be applicable. No new information was provided or issues raised that were not previously addressed in the Draft PEIR for the Riverside-Corona Feeder project.

Comment #7:

The Flood Control Operations Division's comments are as follows:

1. It appears that the proposed Riverside/Corona Feeder and SBVMWD Baseline feeder will be placed within District right-of-way in the segment next to the San Bernardino Golf Course, north of the Santa Ana River.

2. In addition to the permit for the construction, a License Agreement will be required for this reach of the feeder. The agreement will require that the District be compensated for the use of its right-of-way.

Response #7:

The proposed project is being evaluated at the "programmantic" level in this environmental impact report. As presently shown, the RCF preferred alignment is located adjacent to the San Bernardino Golf course located on the north side of the Santa Ana River. Due to the preliminary nature of the analysis and to reduce potential biological impacts, an alternative alignment and crossing point for the Santa Ana River were considered in the Draft PEIR (Alternative 4). This alternative would avoid the Golf Course area altogether.

As stated on page I-4-2 of the Draft Program Environmental Impact Report (PEIR), encroachment permits will be required from the San Bernardino County Flood Control District (the District). This statement will be expanded in the Final PEIR to include the possibility that a License Agreement might also be required from the District and that such an agreement will require compensation for use of the District's right of way. No new issues raised that were not previously addressed in the Draft PEIR for the Riverside-Corona Feeder project.

Comment #8:

The Environmental Management Division's comments are as follows:

1. The project proposes to cross the Santa Ana River, a District owned and maintained facility, along Reach "A" of the project. This section of the river is identified as having a moderate to high probability of occupancy by the least Bell's vireo, southwestern willow flycatcher, and arroyo toad, all afforded legal protection under the Endangered Species Act. The District has been required to conduct surveys for least Bell's vireo and southwestern willow flycatcher along this stretch of the Santa Ana River since 1999. Numerous pairs of least Bell's vireo have been documented to occupy this area every survey year. Additionally, southwest willow flycatcher have been detected in the vicinity of the Santa Ana River that borders the proposed project.

Response #8:

The Draft PEIR Biological Resources section, Section II-3, identifies the species mentioned by the District as federally listed species that have the potential to occur in the Santa Ana River reach of the project. Mitigation measures MM Bio 1 through 3 on page II-3-21 of the Draft PEIR, when implemented, will mitigate for potential impacts to these species. WMWD will keep in mind that the Department's Environmental management Division is required to survey for these species annually. No new issues raised that were not previously addressed in the Draft PEIR for the Riverside-Corona Feeder project.

Comment #9:

2. If it will be necessary for the project to encroach upon the District right of way, an encroachment permit will be required from the District's Operations Division, Permit Section. For the encroachment permit to be issued, the District would require the project to have obtained all regulatory clearances, which will include the U.S. Army Corps of Engineers, U.S. Fish & Wildlife Service, California Department of Fish & Game, and the Santa Ana Regional Water Quality Control Board.

Response #9:

As stated on page I-4-1 and 2 of the Draft Program Environmental Impact Report (PEIR), permits from the U.S. Army Corp of Engineers (the Corp), U.S. Fish & Wildlife Service, California Department of Fish & Game, and the Regional Water Quality Control Board may be required due to installation of the pipeline. WMWD will seek all required permits and coordinate with the these agencies as may be applicable. No new information was provided or issues raised that were not previously addressed in the Draft PEIR for the Riverside-Corona Feeder project.

Comment #10:

3. Storm water issues were not fully addressed in the CEQA process to date. The most potentially significant storm water impacts from the project are those associated with construction. These impacts are discussed in the Draft EIR. However, the Municipal NPDES Storm Water Permit (Order No. R8-2002-0012; NPDES No. CAS618036) that covers most of the project area specifically requires that the following issues "be considered during CEQA review:"

   a. Potential impact of project construction on storm water runoff.

   b. Potential impact of project's post-construction activity on storm water runoff.

c. Potential for discharge of storm water pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas.

d. Potential for discharge of storm water to affect the beneficial uses of the receiving waters.

e. Potential for significant changes in the flow velocity or volume of storm water runoff to cause environmental harm.

f. Potential for significant increases in erosion of the project site or surrounding areas.

Response #10:

As stated in Comment #10, the most potentially significant storm water impacts from the project are those associated with construction which have been addressed through permit compliance in the Draft PEIR. Due to the programmatic level of the project and its commensurate CEQA analysis in this document, specific construction impacts cannot be addressed at this time. Items a. through f. in Comment #10 are addressed below.

a. As stated in the Initial Study for the proposed project (Appendix A of the Draft PEIR), construction of the proposed project has the potential to result in the discharge of sediment and construction by-products. This will be minimized however, with the preparation and implementation of a National Pollutant Elimination System (NPDES) construction permit from the Regional Water Quality Control Board which requires that a storm water pollution prevention plan (SWPPP) be prepared prior to construction activities. The SWPPP will incorporate applicable Best Management Practices (BMPs).

b. As described in Section I-2 of the Draft PEIR, the proposed project consists of a pump station, up to 20 well sites and a 30-mile underground pipe. Surfaces around and above the pipe, wells and pump station will be returned to their current condition so the project will have minimal or no post-construction affect on storm water runoff.

c. As described in Section I-2 of the Draft PEIR, the proposed project consists of a pump station, up to 20 well sites and a 30-mile underground pipe. No areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance, waste handling, hazardous materials handling or storage, delivery areas of loading docks, or other outdoor work areas are proposed as a part of this project.

d. As stated in the Initial Study, and Draft PEIR sections I-2 and III-3, proposed pipeline installation will involve micro tunneling beneath the Santa Ana River and boring under other streams and drainage features. Even if no construction activities are performed within the definable bed, bank, or channel of the Santa Ana River, a Regional Water

Quality Control Board Dewatering Permit would be required for wastewater discharge resulting from ground dewatering activities associated with tunneling. WMWD is expected to comply with all waste discharge permit requirements, therefore, no significant impact related to waste discharge or beneficial uses of receiving waters is expected.

e. Infrastructure to be constructed as part of the project will not significantly alter any existing drainage patterns, flow velocity or volume of storm water runoff since the condition following installation of the pipeline will reflect conditions prior to pipeline construction. The portions of the proposed pipeline that will be constructed underneath the Santa Ana River and underneath several drainages will be required to comply with encroachment permit requirements of the County of San Bernardino Flood Control District and will be subject to Regional Water Quality Control Board discharge requirements. Therefore, impacts are considered less than significant. The proposed pump station may result in a small increase in runoff at the pump station site, but this increase will not result in flooding on or off site or other environmental harm. Runoff from the well sites would be negligible.

f. See Response 10a. and e., above.

No new information was provided or issues raised that were not previously addressed in the Draft PEIR for the Riverside-Corona Feeder project.

Comment #1:

1. If not already sent, the DPEIR should also be provided to the San Bernardino County Public Works (Transportation/Flood Control) Department and the San Bernardino County Regional Parks Department for review and comment. As a result of various roads, flood control, and regional trails (i.e. Santa Ana Regional Trail) projects occurring at this time, the Riverside-Corona Feeder Project should be coordinated with these San Bernardino County Departments. Encroachment permits will be required for crossing the Santa Ana River and other drainage locations, and for crossing county road/right-of-ways.

Response #1:

The Draft PEIR was sent to and comments have been received from, the San Bernardino County Public Works Department. Personal communication was made with Mr. Jeff Weinstein at San Bernardino County Regional Parks Department to determine potential issues associated with the project alignment and the Santa Ana River Regional Trail (PC Weinstein 10/19/04). The trail is expected to be complete by 2005 through this area. It will be located on the south side of the river on top of the levee with a ramp down and back up under the E Street bridge. There will be access to the trail from the parking lot next to the County Hall of Records at Sunset Court. This is very near the spot where the proposed alignment of the RCF would cross the southern side of the river. And may be the location of a proposed staging area and boring pit associated with tunneling under the river. If so, WMWD would be responsible for providing safe trail access and returning the access to the trail to its original condition when construction is complete. Mr. Weinstein also mentioned that the Wildlands Conservancy has purchased 4 acres of land near this location for a restored wetlands site to be maintained for habitat value and educational purposes. Assistance with or expansion of this wetlands area might provide mitigation opportunities for the impacts which may be caused by the RCF project construction. WMWD will coordinate with County Regional Parks and other agencies at the time of project design and construction.

As stated on page I-4-2 of the Draft Program Environmental Impact Report (PEIR), encroachment permits will be required from the San Bernardino County Flood Control District (the District) and other local agencies. No new potentially significant environmental impacts were raised that were not previously addressed in the Draft PEIR for the Riverside-Corona Feeder project.

Comment #2:

2. If no tunneling occurs across the Santa Ana River (and instead open-cut trenching is pursued), then it appears direct adverse impacts would occur to riparian vegetation, and very possibly the Santa Ana Wooly Star, the Slender-horned Spineflower, and/or the Santa Ana Sucker. Considering the Riverside-Corona Feeder Project in association with other San Bernardino County Projects (such as the Santa Ana Regional Trail), the cumulative direct adverse impacts to these biological resources should be discussed.

Response #2:

Based on personal communication with the Mr. Weinstein, as discussed in Response #1, above, the Santa Ana Regional Trail project construction will be completed long before the Riverside-Corona Feeder (RCF) project is initiated. The construction of the trail may result in permanent loss of habitat for the plant species while the potential impacts of the RCF will be temporary. The RCF project trenching alternative across the Santa Ana River may result in significant impacts to these plants and the Santa Ana Sucker (see Draft PEIR, Section !!-3, pages 11-17), however, effects of the RCF will ultimately be temporary since the surface of the riverbed will be returned to its condition at the time of project construction. Mitigation measures MM Bio 10 and 14 in the Draft PEIR address the potential impacts of the project on these species and the need for Section 7 consultation and possible take permits.

Comment #1:

Based on the project description in the EIR, OCWD does not have any comments on the draft EIR. OCWD requests to be notified of future environmental documents related to the proposed project. Please keep OCWD on the mailing list for future activities related to the proposed project.

Response #1:

Comment noted.

Comment #1:

WESTERN MUNICIPAL WATER DISTRICT

John V. Rossi
General Manager

Wayne H. Holcomb *President* | S.R. "Al" Lopez *Vice President* | Elizabeth L. Cunnison *Secretary/Treasurer* | Kevin D. Jeffries *Director* | Donald L. Schroeder *Director*

please return

RECD ICDSS
AUG 16 2004

August 12, 2004

STATE CLEARINGHOUSE NO.: 2003031121

PROJECT NO. AND NAME: Riverside-Corona Feeder Project

TO:
Imperial County
~~**2995 S. 4th Street, Suite 103**~~
El Centro, CA 92243

address is for Child Protective Services

FROM: Western Municipal Water District
450 Alessandro Avenue
P.O. Box 5286
Riverside, CA 92517-5286

TRANSMITTAL DATE: August 12, 2004

ALL COMMENTS MUST BE RECEIVED NO LATER THAN: September 30, 2004

Western Municipal Water District is currently reviewing the Riverside-Corona Feeder Project. Enclosed is a Notice of Availability of a Draft Program Environmental Impact Report prepared by Western Municipal Water District for the proposed project. The document can be reviewed at the Western Municipal Water District at the above address as well as at the Riverside Public Library (3581 Mission Inn Avenue, Riverside, CA 92501), the San Bernardino Public Library (555 West 6th street, San Bernardino, CA 92410), and at the Corona Public Library (650 South Main Street, Corona, CA 92882). CD copies and hard copies of the DEIR as well as the Technical Appendices are available upon request, from Albert A. Webb Associates, attention Cathy Perring (909) 686-1070.

Comments on the adequacy of the analysis and the appropriateness of the project may be made in writing, indicating the section of concern. Comments may include additional or alternative mitigation measures to those proposed in the document.

Comments should be sent to the Western Municipal Water District, to the attention of John Rossi, General Manager, at the above address, or to his email address: jrossi@wmwd.com.

Mail to: P.O. Box 5286, Riverside, California 92517-5286
450 Alessandro Boulevard, Riverside, California 92508
(909) 789-5000 • FAX (909) 780-3837
Email: western@wmwd.com

Response #1:

No comment provided. Correspondence served as notice that the addressee was not located at available address.

RESPONSE TO COMMENTS

REGIONAL AGENCIES

Comment #1:

Please submit all comments to:

Mr. John Rossi, General Manager
Western Municipal Water District
450 Alessandro Avenue
P. O. Box 5286
Riverside, CA 92517-5286
(951) 789-5042
email: jrossi@wmwd.com

WRCOG NO LONGER PERFORMS IGR'S on EIR'S or other impact reports

Response #1:

It is Western Municipal Water District's understanding that this responsibility for review now lies with Regional Conservation Authority (RCA). All future notifications will be sent to the RCA for MSHCP review.

ORIGINAL COMMENT LETTERS RECEIVED

3.0 DRAFT PEIR DISTRIBUTION LIST, STATE CLEARINGHOUSE CORRESPONDENCE AND PUBLIC NOTICING OF DRAFT PEIR

4.0 BOARD ACTION, FINDINGS, NOTICE OF DETERMINATION

5.0 MITIGATION MONITORING PROGRAM

6.0 ANNOTATED DRAFT PEIR

TECHNICAL APPENDICES

Draft Program

Environmental Impact Report

for the Western Municipal Water District

Riverside - Corona Feeder Project

SCH Number 2003031121

Prepared for

WESTERN MUNICIPAL WATER DISTRICT

As Lead Agency

Prepared by

Albert A. Webb Associates

Riverside, California

July 2004

TABLE OF CONTENTS
TECHNICAL APPENDICIES

A. Notice of Preparation including Initial Study, Distribution List and Comments Received on Notice of Preparation *(bound with Draft EIR under separate cover)*

The following are bound herein:

B. Air Quality Impact Analysis Report and Update Memorandum

C. Biological Assessment Report

D. Western Replenishment and Extraction Agreement

E. Phase I Cultural Resources Investigation

F. Phase I Groundwater Modeling Results

G. Preliminary Design Report for Reach B – North

H. School Flooding Study

Appendix A

Notice of Preparation including Initial Study, Distribution List and Comments Received on Notice of Preparation

NOTICE OF PREPARATION

TO:

FROM: Western Municipal Water District
450 Alessandro Boulevard
Riverside, California 92508

SUBJECT: Notice of Preparation of a Draft Program Environmental Impact Report for the Riverside Corona Feeder Project.

Western Municipal Water District (WMWD) will prepare a Draft Program Environmental Impact Report (EIR) for the project identified above. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description and location are contained in the attached materials. A copy of the initial study is attached. On the basis of an initial study, the following areas have been identified for further evaluation in the forthcoming Program EIR: air quality, biological resources, cultural resources, hazards, hydrology and water quality and cumulative impacts.

WMWD is currently seeking information from agencies and individuals who are potentially affected by the proposed project or who have knowledge about resources in the project area. Information received in response to the notice of preparation will be considered in determining the scope and content of the detailed environmental analysis that will be presented in the draft environmental impact report. Your response must be sent at the earliest possible date, but not later than 30 days after receipt of this notice.

Please send your response to Don Harriger at the address shown above. We will need the name for a contact person in your agency.

3/20/03
Date

Don Harriger, General Manager
Western Municipal Water District
(909) 789-5042

Notice of Completion and Environmental Document Transmittal Form

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 – 916/445-0613

See NOTE below

SCH # _____

1. Project Title: Riverside Corona Feeder (RCF) Project
2. Lead Agency: Western Municipal Water District
3. Contact Person: Don Harriger
3a. Street Address: 450 Alessandro Boulevard CA 92508
3b. City: Riverside
3c. County: Riverside
3d. Zip: 92508
3e Phone: (909) 789-5042

Project Location - Specific

4. County: Riverside and San Bernardino
4a. City/Community: San Bernardino, Colton, Grand Terrace, Riverside, Corona, Highland, Home Gardens
4b. Assessor's Parcel No.: Multiple
4c. Section Township and Range: T1SR4W, T3SR5W, T3SR4W, T3SR6W
5a. Cross Streets: Multiple
5b. For Rural, Nearest Community: _____
6. Within 2 miles: a. State Hwy No. I-15, I-10, SR 60, SR 91, SR 66 b. Airports: Riverside Municipal, San Bernardino International Airport
c. Railways: BNSF and Southern Pacific d. Waterways: Santa Ana River, Twin, Lytle/Warm and City Creeks, Mission Channel, San Timoteo, Gage Canal, Reche Canyon, E. Branch California Aqueduct, Riverside Canal Aqueduct, La Cadena Lake, Orange Show Lake, Tesquesquite Canyon, Sycamore Canyon, Metropolitan Water District Aqueduct, Arlington Channel, Temescal Wash, Main Street Wash, Joseph Wash

7. Document Type

CEQA:
01. n NOP
02. o Early Cons.
03. o Neg. Dec.
04. o Draft EIR
05. o Supplement/Subsequent EIR (Prior SCH No.: _____)
06. o NOE
07. o NOC
08. o NOD

NEPA:
09. o NOI
10. o FONSI
11. o Draft EIS
12. o EA

OTHER:
13. o Joint Document
14. o Final Document
15. o Other _____

8. Local Action Type

01. o General Plan Update
02. o New General Plan Element
03. o General Plan Amendment
04. o Master Plan
05. o Annexation
06. o Specific Plan
07. o Community Plan
08. o Redevelopment
09. o Rezone
10. o Land Division (Subdivision, Parcel Map, Tract Map, etc.)
11. o Use Permit
14. o Waste Management Plan
13. o Cancel Agricultural Preserve
14. n Other - Regional Water Distribution System

9. Development Type

01. o Residential: Units ____ Acres ____
02. o Office: Sq. ft. ____ Acres ____ Employees ____
03. o Commercial: Sq. ft.. ____ Acres ____ Employees ____
04. o Industrial: Sq. ft. ____ Acres ____ Employees ____
05. n Water Facilities: Type ____ Regional Water Distribution System
06. o Transportation: Type ____
07. o Mining: Mineral ____
08. o Power: Type ____ Watts ____
09. o Waste Treatment: Type ____
10. o OCS Related: ____
11. o Other: ____

10. Total Acres _____ **11. Total Jobs Created** _____

12. Project Issues Discussed in Document

01. n Aesthetic/Visual
02. n Agricultural Land
03. n Air Quality
04. n Archaeological/Historical
05. o Coastal Zone
06. o Economic
07. n Fire Hazard
08. n Flooding/Drainage
09. n Geologic/Seismic
10. n Jobs/Housing Balance
11. n Minerals
12. n Noise
13. n Public Services
14. n Schools
15. n Septic Systems
16. n Sewer Capacity
17. o Social
18. n Soil Erosion
19. n Solid Waste
20. n Toxic/Hazardous
21. n Traffic/Circulation
22. n Vegetation
23. n Water Quality
24. n Water Supply..
25. n Wetland/Riparian
26. n Wildlife
27. n Growth Inducement
28. n Incompatible Land Use
29. n Cumulative Effects
30. o Other

13. Funding (approx.) Federal $ _____ State $ _____ Total $ _____

14. Present Land Use and Zoning. . Current land uses near proposed improvement sites are rural residential, residential, commercial, industrial, agricultural, open space, habitat conservation, and public facilities.

15. Project Description. The RCF Project will extend approximately 30 miles and across six jurisdictions, including unincorporated portions of Riverside County and the Cities of San Bernardino, Colton, Grand Terrace, Riverside and Corona. Infrastructure proposed to be constructed as part of the Riverside Corona Feeder (RCF) Project will include: a 30 mile long feeder pipeline with one mainline meter and five metered turnouts, a 2,500 horsepower (hp) pump station designed to lift water from the City of Riverside's Waterman Pipeline into the RCF which operates at an hydraulic gradient level (HGL) of 1250± and 20-350 HP x 2,200 gallons per minute (GPM) new or existing groundwater production wells to be located within the San Bernardino Basin Area.

16. Signature of Lead Agency Representative [signature] for Don Harriger, General Manager WMWD **Date** 3-20-03

NOTICE OF PUBLIC SCOPING SESSION
FOR THE WESTERN MUNICIPAL WATER DISTRICT
RIVERSIDE CORONA FEEDER PROJECT
PROGRAM ENVIRONMENTAL IMPACT REPORT

Western Municipal Water District (WMWD) will prepare a Draft Program Environmental Impact Report (EIR) for the project identified above and is currently seeking information from agencies and individuals who are potentially affected by the proposed project or who have knowledge about resources in the project area. Information received in response to the notice of preparation will be considered in determining the scope and content of the detailed environmental analysis that will be presented in the draft environmental impact report.

In addition to receiving written comments during the 30-day Notice of Preparation review period, WMWD is conducting a public scoping meeting in accordance with Section 15083 of the CEQA Guidelines to allow for direct consultation.

The public scoping meeting will be held:

Wednesday, April 9, 2003 from 4:00-6:00 p.m.
Western Municipal Water District Administrative Offices
450 Allesandro Boulevard
Riverside, California 92508

If you have any questions concerning the scoping meeting please contact Roma Stromberg, Senior Environmental Specialist at Albert A. Webb Associates.
Phone: 909-686-1070.

Banning, City of
99 E. Ramsey Street
Banning, CA 92220

Beaumont, City of
550 East 6th Street
Beaumont, CA 92223

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235 North Broadway
Blythe, CA 92225

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801 "K" Street, MS 13-71
Sacramento, CA 95814-3500

CA Department of Fish and Game
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CA Department of Parks and Recreation
Office of Historic Preservation
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CA Department of Transportation
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Resources – Conservation Service
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Redlands, CA 92374

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Ecological Services – Carlsbad Office
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Carlsbad, CA 92009

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Conservation Service – Riverside Office
4500 Glenwood Drive
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Riverside, CA 92501

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Los Angeles, CA 90069

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Capital & Physical Planning
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Environmental Affairs
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Department of Anthropology
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Colton, CA 92324

Jurupa Unified School District
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Riverside, CA 92509

Corona Public Library
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Corona, CA 92882

Riverside Unified School District
3380 14th Street
Riverside, CA 92501

Mentone Library
1870 Mentone Boulevard
Mentone, CA 92359

San Bernardino
Unified School District
777 North "F" Street
San Bernardino, CA 92410

Riverside Public Library
3581 Mission Inn Avenue
Riverside, CA 92501

Colton Joint Unified School District
1212 Valencia Drive
Colton, CA 92324

San Bernardino County Library
Grand Terrace Branch
22795 Barton Road
Grand Terrace, CA 92313

San Bernardino County Library
Highland Branch
27167 Base Line
Highland, CA 92346

San Bernardino County Library
Loma Linda Branch
25581 Barton Road
Loma Linda, CA 92354

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San Bernardino, CA 92410

Tomas Rivera Library
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Bloomington, CA 92316

Meeks & Daily Water Company
Agua Mansa Water - c/o EVMWD
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San Bernardino, CA 92407

North Fork Water Company
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San Bernardino, CA 92410

Old Town Well Company
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Redlands, CA 92373

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Fountain Valley, CA 92708

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ATTN: Gary Vandorst
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San Bernardino, CA 92415-0831

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Omaha, NE 68102

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c/o Elsinore Valley Water District
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Lake Elsinore, CA 92530

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Office of Planning & Research
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Airport Land Use Commission
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Riverside Transit Agency
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Bill Dendy & Associates
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429 "F" Street, Suite 2
Davis, CA 95616

Best, Best & Krieger
ATTN: Art Littleworth
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Riverside, CA 92501

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Riverside, CA 92522

City of Riverside – Public Utilities
ATTN: Dan Randall
2911 Adams Street
Riverside, CA 92504

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ATTN: Walter J. Christensen, III
Project Manager
1630 West Redlands Blvd., Suite A
Redlands, CA 92373

Terrace Water Company
ATTN: Clyde Graham
1095 ½ Stevenson Street
Colton, CA 92324

INITIAL STUDY FOR THE RIVERSIDE CORONA FEEDER PROJECT

Prepared for: Western Municipal Water District
P.O. Box 5286
450 Alessandro Avenue
Riverside, CA 92517-5286

Contact: Don Harriger, General Manager
Western Municipal Water Distinct
(909) 789-5033

Prepared by: Albert A. Webb Associates
3788 McCray Street
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Contact: Roma Stromberg
Senior Environmental Specialist
(909) 686-1070

January 23, 2003

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I. INTRODUCTION

This Initial Study has been prepared pursuant to the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Sections 15000 et seq.). Western Municipal Water District (WMWD) will serve as the lead agency under the California Environmental Quality Act.

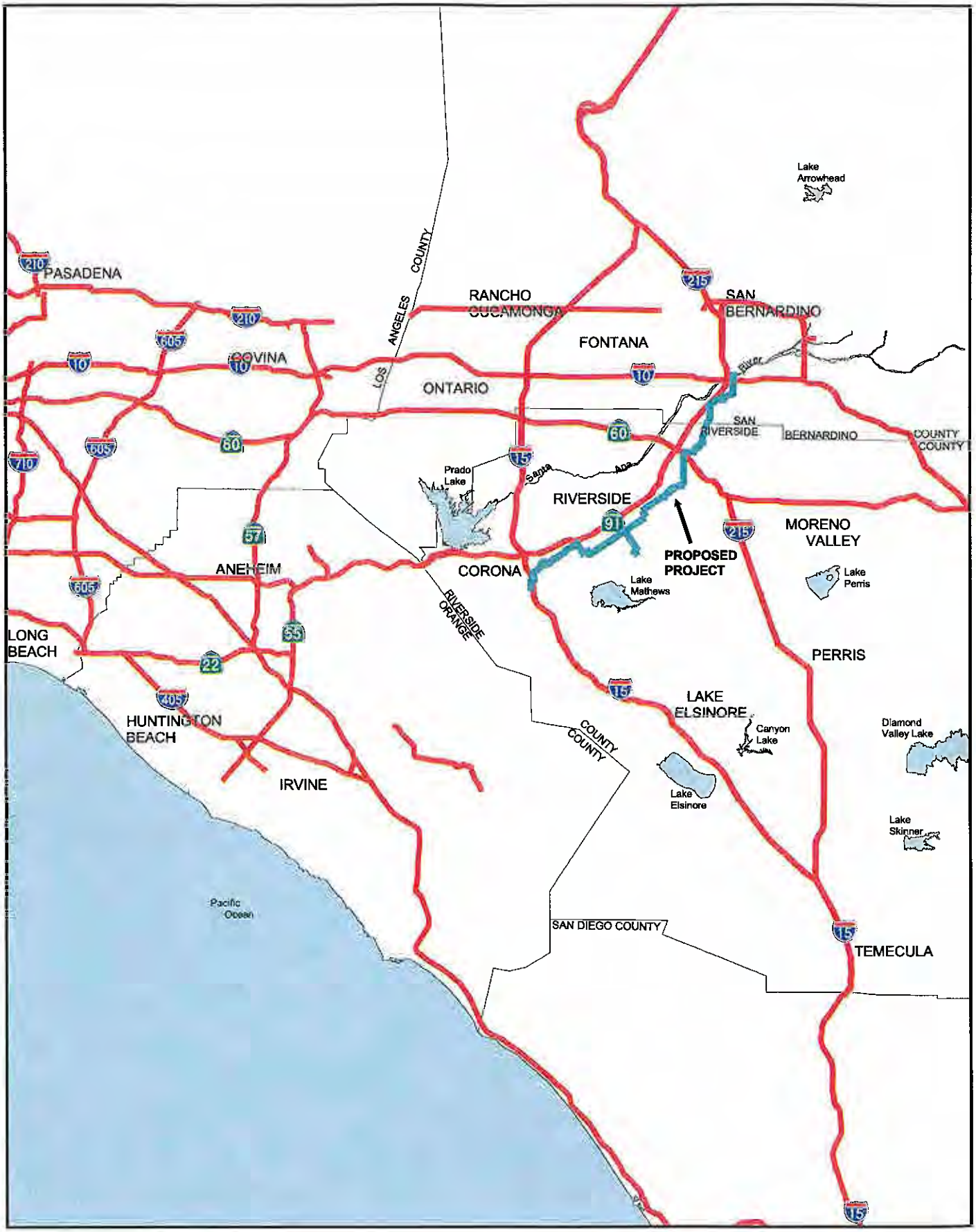
A. PROPOSED PROJECT/PROJECT LOCATION

Western Municipal Water District (WMWD) is proceeding with the planning of the Proposed Riverside-Corona Feeder (RCF) Project for the purpose of conveying potable water from the San Bernardino Basin Area to serve the needs of WMWD and other water purveyors within its service area. As shown in Figure 1, the RCF Project will extend across six jurisdictions, including unincorporated portions of Riverside County and the Cities of San Bernardino, Colton, Grand Terrace, Riverside and Corona.

The proposed infrastructure will allow WMWD to purchase and store water from the State Water Project in the San Bernardino Basin Area when it is available and to extract the water from the basin when it is needed. If appropriate agreements can be reached, native water may at times, also be available. The facilities may be used to convey native water pursuant to rights held by the City of Riverside and the Elsinore Valley Municipal Water District. This project will make WMWD less dependent on the direct delivery of water from The Metropolitan Water District of Southern California (MWD) during dry hydrologic years. The RCF Project will include approximately 30 miles of major feeder pipeline capable of delivering 100 cubic feet per second (cfs) (40,000 acre feet per year) of groundwater from the San Bernardino Basin Area to WMWD's customers and to water purveyors in the WMWD boundaries. Other project elements will include several turnouts along the major feeder, a 2,500 horsepower (hp) pump station and 20 new or existing wells.

Proposed RCF Project pipelines may be shared with other public agencies within the San Bernardino Basin Area. The San Bernardino Valley Municipal Water District (SBWMWD) currently has under design its proposed Baseline Feeder Extension North/South. WMWD and SBVMD have plans to connect RCF Project wells to SBVMWD's proposed Baseline Feeder Extension North/South. Approximately, fifty (50) cfs of water would then be distributed from the SBVMWD Baseline Feeder Extension North/South into the RCF Project near the intersection of Warm Creek Bypass maintenance road and the City of Riverside's Thorne Pipeline in the City of San Bernardino. This capacity may be made available on an interim basis to the City of Riverside for its use while the City makes improvements to its Waterman Avenue pipeline. WMWD also intends to seek capacity (50 cfs) in the City of Riverside's Waterman Avenue pipeline. Water from this line would enter the RCF near the intersection of Orange Show Road and Waterman Avenue. A 2,500 hp pump station will be necessary at this location to raise City of Riverside water to the RCF hydraulic gradient level (hgl) of 1250-feet.

From its connection with the Baseline Feeder Extension North/South pipeline the proposed pipeline will extend south across the Santa Ana River and then south and southwesterly through portions of the Cities of Colton, Grand Terrace, Riverside and Corona and unincorporated Riverside County (Figure 2). The proposed southerly terminus would be near the intersection of Ontario Avenue and Compton Avenue in the City of Corona.



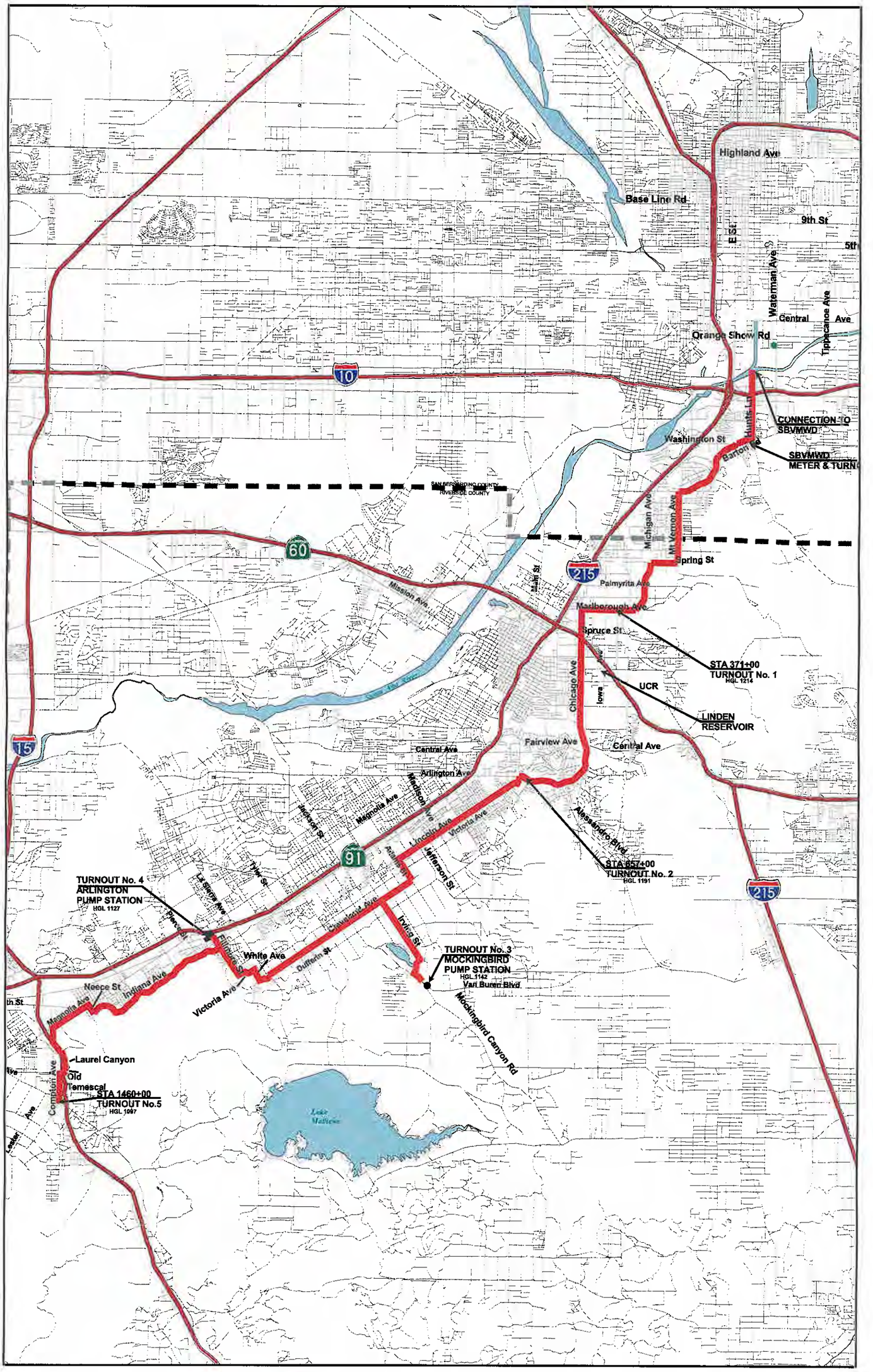
Not to Scale

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

Figure 1

Regional Location

G:\2000\00-0303\Gis\vicinity.apr\regional location



Scale : 1" = 2 Miles

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

■ PROPOSED PUMP STATION

PROPOSED RIVERSIDE/CORONA FEEDER

Figure 2

Proposed Project

G:\2000-00-0303\Gis\vicinity.aprf\feeder

B. PURPOSE OF THE PROJECT

The goal and purpose of the project is to improve the reliability of WMWD's water supply, to its own retail customers and to its wholesale purveyors; to reduce possible water shortages during dry years, and to reduce dependence upon the direct delivery of imported water during dry year conditions, and thereby to contribute to the Upper Santa Ana Watershed effort to become drought proof and self sufficient.

C. ENVIRONMENTAL SETTING

Land Use

The pipeline portion of the proposed project will be constructed across the Santa Ana River, through a commercial and industrial area parking lot, in road right of ways, under Interstate 10, in the Gage Canal right-of-way, in the right-of-way of proposed roads that are currently dirt roads used for agricultural activities, across the Arlington Flood Control Channel, across several rail lines and flood control easements, through the El Sobrante Land Fill within the City of Corona and under Interstate 15. The majority of the proposed pipeline would be constructed within road right-of-ways. The pump station will be constructed within the City of San Bernardino limits on a vacant lot near the intersection of Orange Show Road and Waterman Avenue. The exact location of the existing and/or proposed wells have not yet been determined. Existing land uses adjacent to the proposed alignment include industrial, commercial, residential, public and park uses.

The proposed project will affect properties in several planning jurisdictions with a variety of land use and zoning designations; including portions of unincorporated Riverside County, the City of San Bernardino, the City Colton, the City of Grand Terrace, the City of Riverside and the City of Corona. Land use designations of potentially affected properties are presented below.

City of San Bernardino Public/Quasi Publice (PCR), Publically Owned Flood Control Areas, Businesspark (CR3), Light Industrial (IL), and Residential Urban (RU-1).

City of Colton Specific Plan, Low Density Residential, Residential Estate, High Density Residential, General Commercial and Office/Business Park.

City of Grand Terrace Office Commercial, Public Facilities, General Commercial and Medium Residential.

City of Riverside Light Industrial, Low Rise Office, Public Facilities/Institutions, Low Density Residential, Steep Hillside Residential, Moderate Hillside Residential, High Density Residential, Retail Business Office, Medium High Density Residential, Natural Resources/Open Space, Public Parks, Other Recreation, Industrial Businesspark, Automotive Park, Agricultural/Rural Residential.

City of Corona Low Density Residential, General/Community Commercial, Light Industry, General Industry, Flood Control, Estate Residential.

Topography

The project area is characterized by several distinct topographic sites: floodplains, flat terraces and hilly areas with elevations that range from 650 feet to 1,190 feet (USGS 1-5).

The City of San Bernardino's northern limit is defined by an irregular line which runs along the lower elevations of the San Bernardino Mountains. On the south, the City is bounded by the Santa Ana River. The pipeline portion of the project is proposed to extend south from a point just north of the Santa Ana River between Interstate 215 and Tippecanoe Avenue, in the City of San Bernardino and across the Santa Ana River Floodplain.

Most of the City of Colton is flat with overall slopes of less than 5 percent. The southern portion is dominated by relatively steep hills and broadly terraced escarpments. The pipeline portion of the project will traverse and climb hilly areas in the City of Colton with elevations of up to 1,190 feet (USGS 1).

The City of Grand Terrace is situated on three distinct topographic regions; a small portion of the Santa Ana floodplain, a broad alluvial terrace, and a steep hilly area. The elevation varies from about 900 feet to 2,428 feet. The pipeline portion of the proposed project would a hill from the City of Colton and extend south through the alluvial terrace.

The pipeline portion of the proposed project will traverse through portions of Riverside County that can generally be characterized as having moderately sloped terrain, except in the drainage bottoms, which are fairly deeply incised. The pipeline portion of the proposed project will cross under some of these drainages.

Topography in the City of Riverside consists of alluvial plain and rolling hills. Principal areas of slope of 15% or greater include the Box Springs Mountains, Alessandro Heights and the Norco Hills. The proposed project will not encroach into any of these areas that may request special design attention. The pipeline portion of the proposed project will be constructed under several drainages.

Corona is situated at the base of an alluvial plain formed by the Santa Ana Mountains. With the exception of the extreme southern and northeastern sections of the City the topography included few significant variations. The City of Corona recommends areas with steep slopes in excess of 25% for permanent land use control. The proposed project is not expected to encroach into any such areas (CCoGP, Figure 2-1). The project will however, cross under a few drainages.

Seismic Hazards

Major faults in the project area that are capable of generating moderate to large earthquakes are related to the San Andreas system. The California Division of Mines and Geology had designated this system as part of the California Alquist-Priolo Special Studies Zones. Damaging earthquakes could also occur on many other faults in the region but their distance from the proposed project site or magnitude limitations suggest that the resulting ground shaking and related damage would be less than significant.

Hydrology

The proposed project is located within the Santa River Drainage Province and more specifically, the Santa Ana River Hydrologic Unit. The drainage province is subdivided into consecutively smaller drainage areas. The Santa Ana River Drainage Province is a group of connected inland basins and open coastal basins drained by surface streams flowing generally southwest to the Pacific Ocean. The proposed project will cross under the Santa Ana River and several smaller drainages.

Biology

The project area is primarily urban and residential. There are however, small areas of agriculture, nonnative grassland, coastal sage scrub, riparian and chaparral habitats present in the project vicinity (www.ecoregion.ucr.edu/maps). The majority of natural habitats in the proposed project area are highly to moderately disturbed by development.

The portions of the project are proposed within the Western Riverside County Multi-Species Habitat Conservation Plan (WR MSHCP) area. The purpose of the WR MSHCP is to provide for open space and to preserve natural resources, protecting some sensitive habitat areas, while permitting development and growth in other less sensitive areas. The WR MSHCP attempts to ensure habitat conservation, species protection and management, and development certainty to the following entities: the County of Riverside and municipalities; State and Federal wildlife agencies; development, agriculture, and environmental organizations; and the public at large.

Several sensitive plant species are known within the project area. A list of those plant species considered endangered, rare or sensitive is included in Table 1 of Attachment 1. Wildlife species identified as having been found in the vicinity of the proposed project are listed in Table 2 of Attachment 1. Out of those sensitive species, several have been listed in State and Federal lists of Threatened and Endangered species. Wildlife: arroyo southwestern toad (Bufo californicus), California red-legged frog (Rana aurora draytonii), California gnatcatcher (Polioptila californica californica), least Bell's vireo (Vireo bellii pusillus), Swainson's hawk (Buteo swainsoni), western yellow-billed cuckoo (Coccyzus americanus occidental), Santa Ana sucker (*Catostomus santaanae),* San Bernardino kangaroo rat *(Dipodomis merriami parvus)*, Stevens' kangaroo rat (Dipodomys stephensi). Plants: marsh sandwort (Arenaria paludicola), slender-horned spineflower (Dodecahema leptoceras), Gambel's watercress (Rorippa gambelli), Braunton's milk-vetch (Astragalus brauntoni), Munz's onion (Allium munzi), Santa Ana River woollystar (Eriastrum densifolium ssp. Sanctorum) (DFG, CNPS and UCR)).

Critical habitats have been designated by the United States Fish and Wildlife Service for the Munz's onion, California gnatcatcher, arroyo southwestern toad, California red-legged frog, least Bell's vireo, and Stevens' kangaroo rat.

Two fully protected species - golden eagle (Aquila chrysaetos canadensis) and the white-tailed kite (Elanus leucurus majusculus) have been recorded in the WR MSHCP planning area. There are no breeding location records for the golden eagle. However, it is known that breeding locations occur within the planning area of WR MSCHP in relatively low numbers. Because most of the records are likely to be observations of birds in flight, even the habitats recorded as residential for the record may be extant and may coincide with an overflight. The location database confirms that the species is present within the planning area, is at relatively low

numbers but is regularly observed. The location database for the white-tailed kite includes a total of 213 records. Six of these records represent recent surveys within the Lake Mathews area, which is in a 10-mile distance from the proposed project site. The rest of the data records are associated with such habitats as non-native grassland, sage scrub, oak woodland, chaparral, disturbed alluvial, riparian, alkali playa, and field croplands.

Wildlife common to the project area include species that are typically accustomed to human presence. Common birds such as crows, ravens, doves, mockingbirds and meadowlarks characterize the project area. Common small mammals expected to occur on or near the site include mice, squirrels and cottontail rabbits.

II. ENVIRONMENTAL CHECKLIST

Project Title:

Riverside-Corona Feeder Project

Lead Agency Name and Address:

Western Municipal Water District
P.O. Box 5286
450 Alessandro Avenue
Riverside, CA 92517-5286

Contact Persons and Phone Numbers:

Don Harriger, General Manager
Western Municipal Water Distinct
(909) 789-5042

Project Location:

See Figure 1, attached.

Project Sponsor's Name and Address:

Western Municipal Water District
P.O. Box 5286
450 Alessandro Avenue
Riverside, CA 92517-5286

General Plan Designation:

The proposed project will affect properties in several planning jurisdictions with a variety of land use and zoning designations; including portions of unincorporated Riverside County, the City of San Bernardino, the City Colton, the City of Grand Terrace, the City of Riverside and the City of Corona. Land use designations of potentially affected properties are presented below.

City of San Bernardino Public/Quasi Publice (PCR), Publically Owned Flood Control Areas, Businesspark (CR3), Light Industrial (IL), and Residential Urban (RU-1).

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City of Corona General Plan Low Density Residential, General/Community Commercial, Light Industry, General Industry, Flood Control, Estate Residential,

Description of Project:

Please see Section A, above.

Surrounding Land Uses and Setting:

Please see Section B, above.

Other Public Agencies Whose Approval May Be Required:

U.S. Army Corps of Engineers

- A 404 permit will be required if the proposed project involves fill in the definable bed, bank or channel (as indicated by the ordinary high water mark) of the Santa Ana River and any other stream or drainage feature due to installation of a pipeline crossing.

Regional Water Quality Control Board, Santa Ana Region (RWQCB)

- National Pollutant Discharge Elimination System (NPDES) Construction Permits will be required.
- A 401 Permit will be required if the proposed project involves fill in the definable bed, bank or channel of the Santa Ana River or any other drainage feature.
- A Waste Discharge Permit will be required if ground dewatering is necessary during tunneling activities.

California Department of Fish and Game

- A 1600 Streambed Alteration Agreement will be required.
- A California Endangered Species Act (CESA) permit will be required if the project results in the "take" of a state listed threatened or endangered species.

United States Fish and Wildlife Service

- Either a Section 7 or a Section 10(a) consultation (relative to federal involvement in the project) will be required if the project results in the "take" of a federally listed threatened or endangered species.

California Department of Transportation (Caltrans)

- Encroachment permits for crossings of State Route 60 and Interstate 10 will be required.
- Water Pollution Control Plans (WPCP) will also be required.

South Coast Air Quality Management

- The project will be required to comply with District Rule 403 requirements controlling construction related fugitive dust emissions.

Union Pacific and Burlington Northern Sante Fe Railways

- Encroachment permits will be required for rail line crossings.

San Bernardino and Riverside County Flood Control and Water Conservation Districts

- Encroachment permits will be required for boring underneath the Santa Ana River and other drainage channels.

County of Riverside and Cities of San Bernardino, Riverside, Grand Terrace, Colton, Corona

- Encroachment permits will be required to construct the pipeline in road/right-of-ways.

A. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	■ Air Quality
■ Biological Resources	■ Cultural Resources	☐ Geology / Soils
■ Hazards & Hazardous Materials	■ Hydrology / Water Quality	☐ Land Use / Planning
☐ Mineral Resources	☐ Noise	☐ Population / Housing
☐ Public Services	☐ Recreation	☐ Transportation / Traffic
☐ Utilities / Service Systems	■ Mandatory Findings of Significance	

B. DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

■ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature _____ Date _____

Printed Name _____ For _____

C. EVALUATION OF ENVIRONMENTAL IMPACTS:

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS				
Would the Project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	■	☐

On a clear day there are views of the San Bernardino and San Gabriel Mountains (northeast and northwest), San Jacinto Mountains (southeast), Santa Ana Mountains (southwest) and Box Springs Mountains (north) from the project area. The proposed improvements consist of the installation of underground pipeline, a pump station and the use of approximately 20 new or existing wells. These improvements will not permanently alter views, of or from, the project area.

Construction activities will create a temporary aesthetic nuisance for motorists and local residents. Exposed surfaces, construction debris, and construction equipment may temporarily impact the aesthetic quality of the immediate area. However, impacts will be short-term and will cease upon project completion and are, therefore, considered less than significant. This issue will not be discussed in the forthcoming Environmental Impact Report.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	■

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CRGP, CCoGP)

The proposed project will not disturb any of the landmarks in the City of San Bernardino, City of Colton and City of Grand Terrace. In Riverside, the pipeline portion of the proposed project will pass by historic buildings, but the project will not disrupt any of them. In the City of Corona, the pipeline portion of the proposed project will pass through a "sensitive areas" section of the Conceptual Community Design Framework (CCoGP, Figure 7-4). However, because the pipeline will be buried underground, it will not make a significant impact.

In summary, the proposed project will not significantly impact scenic resources. Therefore, this issue will not be discussed again in the forthcoming Environmental Impact Report.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	■

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CRGP, CCoGP)

Please see response to item 1.a., above.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?		☐	☐	■

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Source: Project Proposal)

Due to the nature of the project, nighttime lighting would not be included in the proposed project. This issue will not be discussed in the forthcoming Environmental Impact Report.

2. AGRICULTURE RESOURCES.

Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	❑	❑	❑	■
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	❑	❑	❑	■

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CRGP, CCoGP)

The California Land Conservation Act (CLCA) of 1965, also known as the Williamson Act allows owners of agricultural land to have their properties assessed for tax purposes on the basis of agricultural production rather than current market value. Agricultural preserves are designated as conservation areas and allow agriculture and associated uses (including limited commercial, industrial and single-family residential use) and open space.

The proposed water pipeline will be buried and will not impact agricultural resources. The proposed wells and pump station will not significantly affect the use of agricultural land. Therefore, this issue will not be discussed further in the forthcoming EIR.

c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	❑	❑	❑	■

(Sources: Project Proposal)

Construction and/or operation of the proposed project would not result in changes in the existing environment that may result in the conversion of farmland to non-agricultural uses. Hence, the forthcoming EIR will not cover this issue.

3. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?	❑	❑	■	❑

(Source:Project Proposal)

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

The proposed project site is within the South Coast Air Basin (SCAB) which is in the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD establishes the Air Quality Management Plan (AQMP) for the SCAB, which sets forth a comprehensive program that will lead the SCAB into compliance with all federal and state air quality standards. To achieve compliance with these standards, the AQMP establishes control measures and emission reductions based upon future development scenarios derived from land use, population, and employment characteristics defined in consultation with local governments. Accordingly, a project's conformance with the AQMP is determined by demonstrating that it is consistent with the local land use plans and/or population projections that were used in the AQMP.

Construction of the proposed project will not alter land use plans throughout the project area and will not conflict with nor obstruct implementation of the AQMP for the SCAB.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	■	❑	❑	❑

(Source: Project Proposal)

The proposed project will involve the construction of approximately 30 miles of pipeline, a pump station and the use of approximately 20 new or existing wells. Air quality impacts associated with the proposed project can be described in a short-term and long-term perspective. Short-term air emissions will occur during project construction. Long-term air emissions will occur once the project facilities are in use. A project-specific air quality analysis will be conducted for the proposed project and the project's consistency with air quality standards will be discussed in the forthcoming EIR.

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

(Source: Project Proposal)

The California Air Resources Board maintains records as to the pollutant standard attainment status of air basins throughout the state, for both state and federal criteria. The portion of the South Coast Air Basin (SCAB) within which the proposed project is located is designated as a non-attainment area for ozone and PM-10 under state standards, and as a non-attainment area for ozone, carbon monoxide, and PM-10 under federal standards.

A project specific Air Quality Study will be prepared for the proposed project. Projected emissions associated with construction of the proposed Master Plan facilities and their relationship to recommended SCAQMD thresholds will be discussed in the forthcoming EIR.

d) Expose sensitive receptors to substantial pollutant concentrations?	❑	❑	■	❑

(Source: Project Proposal)

Sensitive receptors include existing residential and school uses along the pipeline route and adjacent to the proposed pump station and well sites. However, emissions will only occur in the project area during project

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

construction. Long-term emissions are not expected to be significant and will be dispersed at electricity generating facilities. Local prevailing winds in the area travel from the northwest to the southeast. Considering the short-term duration and quantity of construction emissions in the project area, the project will not expose sensitive receptors to substantial pollutant concentrations. This issue will not be discussed in the forthcoming EIR.

e) Create objectionable odors affecting a substantial number of people?	☐	☐	■	☐

(Source: Project Proposal)

The project presents the potential for generation of objectionable odors during project construction. Recognizing the relative location and distance of the retirement housing and residential development, the short-term duration of construction, the quantity of estimated emissions, and the direction of prevailing winds, the project will not subject a substantial number of people to objectionable odors. Potential impacts are considered less than significant. This issue will not be addressed in the forthcoming Environmental Impact Report.

4. BIOLOGICAL RESOURCES

Would the Project:

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

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CRGP, CCoGP, DFG, CNPS, UCR)

Potential and confirmed habitat for several federally and state endangered species - arroyo southwestern toad (Bufo californicus), California red-legged frog (Rana aurora draytonii), California gnatcatcher (Polioptila californica californica), least Bell's vireo (Vireo bellii pusillus), Swainson's hawk (Buteo swainsoni), western yellow-billed cuckoo (Coccyzus americanus occidental), Stevens' kangaroo rat (Dipodomys stephensi), marsh sandwort (Arenaria paludicola), slender-horned spineflower (Dodecahema leptoceras), Gambel's water cress (Rorippa gambelli), Braunton's milk-vetch (Astragalus brauntoni), Munz's onion (Allium munzi) – and habitat for numerous special status species has been identified in the project area (WR MSHCP Interactive Species Map, CNPS On-line Inventory, DFG Natural Diversity Database). Construction of portions of the proposed pipeline could affect these habitats.

Potential impacts to candidate or special status species as a result of the proposed pipeline project will be discussed further in the forthcoming EIR.

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

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CRGP, CCoGP, DFG, CNPS, UCR)

The proposed project has the potential to affect riparian habitat, non-native grassland and coastal sage scrub communities. The forthcoming Environmental Impact Report will address this potential issue.

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

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CRGP, CCoGP, DFG, CNPS, UCR, USGS 1-5)

The proposed project has the potential to affect blue-line streams. This includes the portion of the pipeline that will be contructed under the Santa Ana River. The forthcoming EIR will address this potential issue.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	■	❑	❑	❑

(Sources: FWS, MSHCP)

With the exception of the proposed crossing of the Santa Ana River, the proposed project is essentially surrounded by existing development, and therefore it is highly unlikely that the subject site occupies an important location relative to regional wildlife movement. Additionally, the proposed project alignment is not located in an area under consideration as an important reserve or corridor under the ongoing Western Riverside Multiple Species Habitat Conservation Plan (WR MSHCP). Potential impacts to the Santa Ana River as a migratory wildlife corridor will be discussed further in the forthcoming EIR.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	■	❑	❑	❑

(Sources: CSBGP, CCoGP, CGTGP, CRGP)

The City of San Bernardino has designated the Santa Ana River as a Biological Resource Management Area (BRMA) and has a policy of restricting development within this area; however, the City's general plan permits necessary water supply projects within the BRMA (CSBGP, 1997).

While no conflicts are anticipated, local policies and ordinances of all jurisdictions within the project area will be reviewed during preparation of the forthcoming EIR.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	❑	❑	■	❑

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: CRGP, DOI)

The project site is within the Western Riverside County Multi-Species Habitat Conservation Plan (WR MSHCP). The purpose of the WR MSHCP is to provide for open space and to preserve natural resources, protecting some sensitive habitat areas, while permitting development and growth in other, less sensitive areas. The WR MSHCP attempts to ensure habitat conservation, species protection and management, and development certainty to following entities: the County of Riverside and municipalities; State and Federal wildlife agencies; development, agriculture, and environmental habitats; and the public at large. The proposed project's consistency with the WR MSHCP will be discussed further in the forthcoming EIR.

Portions of the project area are covered under the Habitat Conservation Plan for the Stephens Kangaroo Rat (SKR) of Riverside County. Riverside County Ordinance No. 663 establishes the fees and mitigation measures for appropriate development projects covered under this Habitat Conservation Plan. According to Section 10 (f) of Riverside County Ordinance No. 663, public utility transmission facilities are exempt from paying fees. Therefore the pipeline portion of the project proposed within Riverside County will be exempt from paying mitigation fees for potential impacts to SKR habitat.

5. CULTURAL RESOURCES

Would the Project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?	■	❑	❑	❑

(Sources: CSBGP, CGTGP, CCoGP, CRivGP, CRGP, CCGP)

In the City of San Bernardino, no historical or archaeological resources have been identified within the project area (CSBGP, Figure 8).

In the City of Colton, historic and archaeological resources are located within the project area (CCoGP). Local resource sensitivity mapping and known resources will be reviewed during preparation of the EIR.

In the City of Grand Terrace, the only structure considered to have local historic interest is the original Grand Terrace School on Barton Road, east of the Riverside Freeway. It has long been a City landmark.

The Cultural Heritage Board of the City of Riverside has identified a total of 84 landmarks, some of them being in the vicinity of the proposed pipeline, such as the Palm Grove (Iowa and Palm Avenues), Hartree Grove (Victoria Avenue), Horse Chestnut Tree (Victoria Avenue), Myrtle Street to City Limits (Exhibit 13 CRivGP).

For the scope of the Initial Study, no historical resources have been identified along the proposed project within the City of Corona (Cultural Resource Maps of GPs).

This issue will be discussed further in the cultural resource study that will be prepared as part of the forthcoming Environmental Impact Report.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	■	❑	❑	❑

(Sources: CSBGP, CGTGP, CCoGP, CRivGP, CRGP, CCGP)

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Please see response to item 5.a., above.				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	❑	❑	■	❑

(Sources: CSBGP, CGTGP, CCoGP, CRivGP, CRGP, CCGP)

The likelihood of finding paleontological resources is low, based upon cultural resource maps. It is possible that resources could be found during excavation, especially where earthwork disturbs sedimentary bedrock or other fossil bearing formations. Should construction/development activities uncover paleontological resources, work will stop and the lead agency will consult a qualified paleontologist. The project's specifications will include the following requirement: "Should any paleontological resources be accidentally discovered during construction shall be commoved to other parts of the project site and a qualified paleontologist shall be contacted to determine the significance of these resources. If the find is determined to be significant, avoidance or other appropriate measures shall be implemented." Incorporation of this requirement as part of the proposed project reduces potential impacts to below the level of significance.

d) Disturb any human remains, including those interred outside of formal cemeteries?	■	❑	❑	❑

(Sources: CSBGP, CGTGP, CCoGP, CRivGP, CRGP, CCGP)

The proposed project is not expected to disturb any human remains, including those interred outside of formal cemeteries. This issue will be discussed further in the cultural resource study that will be prepared as part of the forthcoming Environmental Impact Report.

6. GEOLOGY AND SOILS

Would the Project:

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

The California Division of Mines and Geology has designated the San Jacinto Fault system as an Earthquake Fault Zone under the 1972 Alquist-Priolo Earthquake Fault Zoning Act. Portions of the project pipeline will be constructed within this Zone. However, geotechnical studies, conducted as a standard component of engineering and design for the proposed improvements, provide for incorporation of site layout and facility design parameters to address potential fault rupture damage in accordance with building code criteria and professional engineering practice. This issue will not be discussed further in the forthcoming EIR.

ii) Strong seismic ground shaking?	❑	❑	■	❑

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: CSBGP, CRivGP, CCGP,CRGP, USGS 6)

Ground shaking, which can affect the integrity of structures, is an important consideration in Riverside and San Bernardino areas (including the cities of Colton, Grand Terrace and Corona) due to the proximity of several major faults, (i.e. San Jacinto Fault and Chino Fault) and the presence of alluvial soils of thick to intermediate thickness (10' - 2,000') (USGS 6). The primary seismic hazards from this fault are groundshaking and liquefaction. The proposed pipeline will pass through zone V (City of Colton), zone IV (San Bernardino and Grand Terrace), zone III (City of Riverside) and zone II (Riverside County and City of Corona). Higher numerical values correspond with higher shaking potential (CRivGP, Chapter III, B).

Geotechnical studies will be conducted as a standard component of the engineering and design for the proposed water pipeline, pump station and wells will assess site geologic properties, including seismic ground shaking and incorporate site layout and facility design parameters to address these issues in accordance with building code criteria and professional engineering practice. This issue will not be discussed further in the forthcoming EIR.

iii) Seismic-related ground failure, including liquefaction?	❑	❑	■	❑

(Sources: CSBGP, CRivGP, CCGP,CRGP, Geologic Maps of SB, SA)

Liquefaction refers to the transformation of soils to a liquid state during an earthquake, causing structural failure. The City of San Bernardino liquefaction susceptibility is summarized in the CSBGP for maximum credible earthquakes occurring in San Jacinto Fault. According to the City General Plan, the northern end of the proposed pipeline and the proposed pump station are situated in and area designated as having moderate to moderately high liquefaction susceptibility. Similar levels of susceptibility exist in the City of Grand Terrace and City of Colton due to their proximity to the San Jacinto and Loma Linda Faults.

The San Jacinto fault is within 20 miles east of Riverside. The primary seismic hazards in the City of Riverside from this fault are ground shaking and liquefaction. The proposed project pipeline traverses one zone of potential liquefaction in the City of Riverside with alluvium of thin to intermediate thickness soils in the southwestern part of the City of Riverside.

Liquefaction potential is moderately high in areas of shallow groundwater in the alluvium of the Temescal Wash in the southeastern parts of the City of Corona where the pipeline will pass.

Geotechnical studies conducted as a standard component of the engineering and design for the proposed water pipeline, pump station and wells will assess the potential for liquefaction and incorporate site layout and facility design parameters to address any site susceptibility to liquefaction. This issue will not be discussed further in the forthcoming EIR.

iv) Landslides?	❑	❑	■	❑

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: CSBGP, CRivGP, CCGP,CRGP, Geologic Maps of SB, SA)

There are no known or mapped geologic units or soils that are unstable, or could become unstable as a result of the pipeline proposed in the City of San Bernardino. The southern part of the City of Colton is dominated by relatively steep hills and broadly terraced escarpments. Landslides are a significant hazard in the City of Grand Terrace, as well, due to the proximity to two major fault zones; the San Andreas and the San Jacinto. These portions of the proposed pipeline, have the highest potential for landslides. In the City of Riverside, County of Riverside and City of Corona, landslides are a relatively minor problem because most of the bedrock is hard and firm, and because the clay-coated bedding or joint planes that are the usual cause of failure are limited. The pipeline portion of the proposed project is proposed within road right-of-ways through the City of Colton and the City of Grand Terrace, therefore, impacts are expected to be less than significant.

Geotechnical studies conducted as a standard component of the engineering and design for the proposed water pipeline, pump station and wells will assess the potential and incorporate site layout and facility design parameters to address possible site susceptibility to landslides. This issue will not be discussed further in the forthcoming EIR.

b) Result in substantial soil erosion or the loss of topsoil?	❑	❑	■	❑

Project implementation will involve grading, excavation, trenching, temporary stockpiling, and construction work. The WMWD's standard construction procedures provide for minimization of erosion through implementation of stormwater pollution prevention plans under the State NPDES General Permit for construction-period stormwater discharges. The proposed project is not expected to result in substantial soil erosion or the loss of topsoil. This issue will not be discussed further in the forthcoming EIR.

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

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CoCGP, CRGP,USDA a and b, SBGP)

Expansive soils by definition, contain significant amounts of clay which take in water causing them to shrink or swell. Soil Surveys for Southwestern San Bernardino County and the Western Riverside Area were reviewed to identify expansive soils that may affect the proposed project. No soils with high shrink/swell tendencies were identified at the proposed pump station site or along the proposed pipeline alignment. The San Bernardino County Soil Survey identifies only one type of soil in the San Bernardino area that has high shrink/swell tendencies. Since this soil is very limited in extant, it is highly unlikely that any of the proposed pump stations would be limited by expansive soils. The project is not expected to result in any risks to life and property related to expansive soils. For the scope of this study, the impact of the project due to expansive soils has been evaluated to be less than significant and will not be discussed further in the EIR.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	❑	❑	❑	■

(Sources: Project Proposal)

The proposed project will not include the construction or need for septic tanks for alternative wastewater disposal systems. This issue will not be discussed in the forthcoming Environmental Impact Report.

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

7. HAZARDS AND HAZARDOUS MATERIALS.

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	■

(Source: Project Proposal)

The project will not include the routine transport, use or disposal of hazardous materials. Therefore, there would not be a significant hazard to the public or environment from the proposed project. This issue will not be discussed in the forthcoming EIR.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	■

(Source: Project Proposal)

Please see item 7.a., above.

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

(Sources:Project Proposal)

There are no hazardous or acutely hazardous materials, substances or wastes will be emitted or handled as part of the project. Also see item 7.a., above. This issue will not be discussed in the forthcoming EIR.

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

Although the majority of the proposed project will be constructed within road right-of-ways, there is some potential that the proposed pipeline may encroach on a listed hazardous materials site. This issue will be addressed in the forthcoming Environmental Impact Report.

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

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CoCGP, CRGP)

The San Bernardino International Airport is located less than two miles from the northernmost end of the proposed project. The project will not result in the construction of new places of employment or new homes. This issue will not be discussed further in the forthcoming EIR.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	❑	❑	❑	■

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CoCGP, CRGP)

Infrastructure to be constructed as part of the project would include a pump station, a 30-mile long pipeline and the use of existing or construction of approximately 20 wells. The project will not cause any safety hazards related to private air strips for people residing or working in the project area. The project will not create any residential uses or employment opportunities that will result in the placement of people within two miles of a private air strip. This issue will not be discussed further in the forthcoming EIR.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	❑	❑	❑	■

(Sources: Project Proposal)

Implementation of the proposed project will not interfere with evacuation or emergency response plans. Road access will be maintained or detours will be provided during project construction. This issue will not be discussed further in the forthcoming EIR.

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

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CoCGP, CRGP)

The project area is located in a predominantly developed area within close proximity to freeways with little to no wildland areas present. The proposed project site is not located within a designated hazardous fire area. The project will not expose people or structures to a significant risk of loss, injury or death involving wildland fires. This issue will not be discussed in the forthcoming Environmental Impact Report.

8. HYDROLOGY AND WATER QUALITY

Would the Project:

a) Violate any water quality standards or waste discharge requirements?	❑	❑	■	❑

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: Project Proposal)

Construction of the proposed project has the potential to result in the discharge of sediment and construction by-products. This will be minimized however, with the preparation and implementation of a National Pollutant Elimination System (NPDES) construction permit from the Regional Water Quality Control Board which requires that a storm water pollution prevention plan (SWPPP) be prepared prior to construction activities. The SWPPP will incorporate applicable Best Management Practices (BMPs) to minimize the loss of topsoil or substantial erosion. This issue will not be addressed further in the forthcoming Environmental Impact Report

Proposed pipeline installation will involve micro tunneling beneath the Santa Ana River and boring under other streams and drainage features. Although no construction activities performed within the definable bed, bank, or channel, a Regional Water Quality Control Board Dewatering Permit would be required for wastewater discharge resulting from ground dewatering activities associated with tunneling. WMWD is expected to comply with all waste discharge permit requirements, therefore, no significant impact related to waste discharge is expected. This issue will not be discussed further in the forthcoming EIR.

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

(Sources: Project Proposal)

The source of water will be from approximately 20 new or existing wells in the San Bernardino Basin Area as available pursuant to agreements between San Bernardino Valley Municipal Water District, Western Municipal Water District and Metropolitan Water District. This issue will be discussed further in the forthcoming EIR.

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

(Sources:Project Proposal)

Infrastructure to be constructed as part of the project would include a pump station, a 30-mile long pipeline and the use of existing or construction of approximately 20 wells. These improvements will not significantly alter any existing drainage patterns. The portions of the proposed pipeline that will be constructed underneath the Santa Ana River and underneath several drainages will be required to comply with encroachment permit requirements of the County of San Bernardino Flood Control District and will be subject to Regional Water Quality Control Board discharge requirements. Therefore, impacts are considered less than significant. This issue will not be discussed in the forthcoming EIR.

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	❑	❑	■	❑

(Sources: Project Proposal)

The proposed pipeline would be constructed within road right of ways, under the Santa Ana River and other regional drainage facilities. Because these crossings will be underground in a pipeline, the project would not alter the course of any streams or drainages. The proposed pump station may result in a small increase in runoff at the pump station site, but this increase will not result in flooding on or off site. Runoff from the well sites would be negligible. This issue will not be discussed further in the Program Environmental Impact Report.

e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	❑	❑	■	❑

(Sources: Project Proposal)

Please see item 8.a., above.

f) Otherwise substantially degrade water quality?	■	❑	❑	❑

(Sources : SBVMWD Master Plan)

There are several groundwater pollution plumes in the San Bernardino Basin. Recharge and extraction of additional water into the San Bernardino Basin Area may result in significant impacts related to the movement of groundwater pollution plumes. This issue will be addressed in the forthcoming EIR.

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

(Sources: Proposed Project)

The proposed project is not a housing project. This issue will not be discussed further in the forthcoming EIR.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	❑	❑	❑	■

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: Proposed Project)

Please see Item 8.g., above. The proposed pipeline would be constructed underground primarily within road-right of ways, or underneath the Santa Ana 100-year flood hazard area. The proposed pump station will be constructed outside of the 100-year flood plain. The proposed well sites may be within the 100-year flood hazard area but these facilities are not expected to significantly impede or redirect flood flows. Any portion of the project proposed within the 100-year flood plain will be required to comply with encroachment permit requirements of the County of San Bernardino Flood Control District and any discharge activities will be subject to Regional Water Quality Control Board discharge requirements. Therefore, this issue will not be discussed further in the forthcoming EIR.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	❑	❑	❑	■

(Sources: USGS 1-5)

Construction and/or operation of the proposed project will not result in an increased exposure of people and/or structures to significant loss due to flooding, nor would the development of the pipeline, pump station or wells result in adverse conditions that could weaken or damage flood-control structures. This issue will not be discussed further in the forthcoming EIR.

j) Inundation by seiche, tsunami, or mudflow?	❑	❑	❑	■

(Sources: USGS 1-5)

The physical conditions associated with these phenomena are not present in the project vicinity. This issue will not be discussed further in the forthcoming EIR.

9. LAND USE AND PLANNING

Would the Project:

a) Physically divide an established community?	❑	❑	❑	■

(Source: Project Proposal)

The pipeline portion of the project will pass through two counties (San Bernardino and Riverside) and five municipalities (San Bernardino, Colton, Grand Terrace, Riverside and Corona. The proposed pipeline will be constructed across the Santa Ana River, through a commercial and industrial area parking lot, in road right of ways, under Interstate 10, in the Gage Canal right-of-way, in the right-of-way of proposed roads that are currently dirt roads used for agricultural activities, across the Arlington Flood Control Channel, across several rail lines and flood control easements, through the El Sobrante Land Fill within the City of Corona and under Interstate 15. The majority of the proposed pipeline would be constructed within road right-of-ways. The pump station will be constructed within the City of San Bernardino limits on a vacant lot near the intersection of Orange Show Road and Waterman Avenue. The exact location of the existing and/or proposed wells have not yet been determined. No established communities will be divided as a result of the proposed project. Therefore, the issue will not be discussed in the forthcoming EIR

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	❑	❑	❑	■

(Source: CSBGP, CGTGP, CCoGP, CRivGP, CRGP, CCGP, SOC)

The proposed project will affect properties in several planning jurisdictions with a variety of land use and zoning designations; including portions of unincorporated Riverside County, the City of San Bernardino, the City Colton, the City of Grand Terrace, the City of Riverside and the City of Corona. Land use designations of potentially affected properties are presented below.

City of San Bernardino General Plan Office Industrial Park, Public/Quasi Public, Publically Owned Flood Control Areas, Tri-City Commercenter and "Club" Areas, Light Industrial, and Residential Urban.

City of Colton General Plan Specific Plan (Truck Facilities and Industrial Park), Low Density Residential, Residential Estate, High Density Residential, General Commercial and Office/Business Park.

City of Grand Terrace General Plan Office Commercial, Public Facilities, General Commercial and Medium Residential.

Riverside County General Plan Low-Medium Residential, Conservation, Low-Very Low Density Residential

City of Riverside General Plan Light Industrial, Low Rise Office, Public Facilities/Institutions, Low Density Residential, Steep Hillside Residential, Moderate Hillside Residential, High Density Residential, Retail Business Office, Medium High Density Residential, Natural Resources/Open Space, Public Parks, Other Recreation, Industrial Businesspark, Automotive Park, Agricultural/Rural Residential.

City of Corona General Plan Low Density Residential, General/Community Commercial, Light Industry, General Industry, Flood Control, Estate Residential,

The above General Plans do not indicate that the proposed facilities would be inconsistent with existing General Plan land use designations, goals or policies. The majority of the proposed project will be underground with the exception of a pump station and several wells to be located in the City of San Bernardino. The proposed pipeline will be constructed within an area designated for conservation. However, the pipeline and all construction activities will be within the existing road right of way. The proposed project would be consistent with the existing General Plans. This issue will not be discussed further in the forthcoming EIR.

Section 53091 (c), (d) of California Code exempts public agency projects, such as the proposed project, from County zoning regulations. Zoning ordinances do not apply to the location of facilities for the transmission of water (Government Code, Section 53090 – 53097.5). This issue will not be discussed further in the forthcoming EIR.

d) Conflict with any applicable habitat conservation plan or natural community conservation plan?	❑	❑	■	❑

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: (Project Proposal)

Please refer to Item 4. f. above.

10. MINERAL RESOURCES

Would the Project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	❑	❑	❑	■

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CCoGP, CRGP)

In the City of San Bernardino, the proposed pipeline crosses a known Construction Aggregate Sector (sand and gravel) in the region of the Santa Ana River. According to the City of San Bernardino General Plan, this area contains aggregate resources which remain potentially available from a land use perspective (CSBGP, Figure 42). Any portion of the project that is within the paved right-of-way of public roads is not considered as an available resource for mineral mining. The City has requested the State to remove this sector among others) from designated Mineral Resources Zones of State-wide or regional importance because of their location in highly urbanized areas. Although the sector is within the river banks, the surrounding land uses are such that incompatibility of uses is a major concern. Mineral Resources in the City of Colton area of the proposed pipeline may not all be identified despite comprehensive research by the Division of Mines and Geology. With future geologic surveying, additional deposits may be discovered. However, the main resource is currently the limestone deposits in and around Slover Mountain. No Mineral Resources have been identified in the City of Grand Terrace. The City of Riverside General Plan does not identify any Mineral Resource Zone (MRS-2) in the vicinity of the proposed pipeline. Mineral extraction plays no role in the community at this time and is not anticipated to do so in future. Rock products and Limestone areas have been identified in the unincorporated County of Riverside and City of Corona portions of the proposed pipeline. However, the pipeline will be constructed either within road right-of-ways or landfill property in the Corona area and will not disturb any designated Mineral Resource Zone, therefore, the proposed project will not have any impact on mineral resources. This issue will not be discussed further in the forthcoming EIR.

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

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CCoGP, CRGP)

Please see item 10.a., above.

11. NOISE

Would the Project:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	❑	❑	■	❑

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: CSBGP, CSBMO, CCGP, CGTGP, CGTMO, CRivGP, CRivMO, CCoGP, CCoMO, CRGP,CRMO, Project Proposal,)

The proposed project will result in some short-term noise effects that may exceed county and city standards during the construction phase. The project's consistency with noise standards for each affected jurisdiction were reviewed and are summarized below. Construction of the proposed project will primarily involve large backhoes, excavators, cranes, water trucks, wheeled loaders, blades/road graders, tunnel/boring machines, dump trucks, submersible pumps and two generators for pump operation. Typical noise levels associated with construction activities are presented in Attachment 2.

City of San Bernardino

Objective 14.8 of the Noise Element of the City of San Bernardino General Plan proposes to, "Minimize the impacts of construction noise on adjacent uses" (1989).

Section 6-1-02 of the City of San Bernardino Municipal Ordinance states that "The Noise Level from the Contractor's operations between the hours of 9:00 p.m. and 6:00 a.m. shall not exceed 86 dbA at the distance of 50 feet" (1998).

Section 8.54.020 of the City of San Bernardino Municipal Ordinance states that, "The following acts, among others, are loud, unnecessary and excessive noises in violation of this Chapter, but said enumeration shall not be deemed to be exclusive, namely: (I.) The operation or use between the hours of ten p.m. and seven a.m. of any pile driver, steam shovel, pneumatic hammers, derrick, steam or electric hoist, power driven saw, or any other tool or apparatus, the use of which is attended by loud and excessive noise, except with the approval of the Mayor and Common Council (1998).

WMWD will comply with the above City of San Bernardino policies and ordinances and will not engage in construction activities between the hours of 9:00 p.m. to 7:00 a.m. No significant impacts related to construction noise in the City of San Bernardino are anticipated.

City of Colton

The City of Colton Engineering Department requires a standard specification in engineering drawings concerning noise and hours of operation, as follows: "Permitted work hours shall be 7:00 a.m. to 5:00 p.m. Monday through Friday. No work shall be done between the hours of 5:00 p.m. and 7:00 a.m., nor on Saturdays, Sundays or legal Holidays without the permission of the Engineer, except in case of an emergency. Contractor shall notify Engineer in writing of any emergency situations at his earliest convenience" (CHEN, 2003).

WMWD will comply with the above City of Colton standard construction specifications and will not engage in construction activities between the hours of 5:00 p.m. to 7:00 a.m. No significant impacts to related to construction noise in the City of Colton are anticipated.

City of Grand Terrace

Section 8.108.050.G. of the City of Grand Terrace Municipal Ordinance states that "The operation or use between the hours of ten p.m. and seven a.m. of any pile driver, steam shovel, pneumatic hammers, derrick, steam or electric hoist, power driven saw, fork lifts, milling equipment, other tools or apparatus the use of which is attended by loud and excessive noise, or the movement of tractors, tractor trucks, or large trucks on property adjacent to residences is prohibited" (1987).

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Project construction in the City of Grand Terrace will be limited to daytime hours as set forth in Section 8.108.050.G. of the Grand Terrace Municipal Ordinance. No significant impacts related to construction noise in the City of Grand Terrace are anticipated.

Riverside County

Riverside County Ordinance 457, Section 1.G.1 requires that "Whenever a construction site is within one-quarter mile of an occupied residence or residences, no construction activities shall be undertaken between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September and between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May" (1999).

Project construction in Riverside County will be limited to daytime hours as set forth in Ordinance 457. No significant impacts related to construction noise in Riverside County are anticipated.

City of Riverside

Section 7.36.010.A.5. of the City of Riverside Municipal Ordinance states that "Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, grading or demolition work between the hours of 7:00 p.m. and 7:00 a.m. on weekdays and between 5 p.m. and 8 a.m. on Saturdays or at any time on Sunday or Federal holidays such that the sound therefrom creates a noise disturbance across a residential or commercial property line or at any time exceeds the miximum permitted noise level for the underlying land use category, except for emergency work or by variance" (1968).

Project construction in the City of Riverside will be limited to daytime hours as set forth in Section 7.36.010.A.5 and construction equipment will be properly maintained with appropriate mufflers. Typical long-term operation of the facilities will not result in an increase in noise levels.

City of Corona

The City of Corona Noise Ordinance No. 2372 prohibits construction noise between the hours of 8:00 p.m. and 7:00 a.m. (Monday through Saturday) and 6:00 p.m. and 10:00 a.m. Sundays and Federal Holidays.

Project construction in the City of Corona will be limited to daytime hours as set forth in Ordinance No. 2372. No significant impacts related to construction noise in the City of Corona are anticipated.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	❑	❑	■	❑

(Sources: Project Proposal)

Construction of the proposed project will generate groundborne vibration and noise levels that are typical of utility installation activities. These vibrations may be a temporary nuisance to nearby offices and residences but will not be excessive. This issue will not be discussed further in the forthcoming Environmental Impact Report.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	❑	❑	■	❑

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: Project Proposal)

Operation of the pipeline, pumps and proposed pump station may slightly increase ambient noise levels but are not expected to generate a 5dBA increase in ambient noise levels which is considered to be a "readily audible change". Therefore, operation of the proposed project will not create a substantial permanent increase in ambient noise above levels which already exist without the project. There are no sensitive receptors in the vicinity of the proposed pump station. This issue will not be discussed further in the forthcoming EIR.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	❑	❑	■	❑

(Sources: Project Proposal)

Please see item 11.a., above.

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

(Sources: Project Proposal)

The proposed project will not involve placing people in a noisy environment surrounding an airport. Potential impacts are considered less than significant. Please see item 11.a. for additional information. This issue will not be discussed further in the forthcoming EIR.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	❑	❑	❑	■

(Sources: Project Proposal)

Please see item 11.e., above.

12. POPULATION AND HOUSING.

Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of road or other infrastructure)?	❑	❑	■	❑

(Sources: Project Proposal)

This project will not result in the provision of water to water-poor areas (which could result in population growth) but will provide local purveyors an alternative to the purchase of State Water Project water during summer months. The proposed project would not result in population growth.

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	❑	❑	❑	■

(Sources:Project Proposal)

The proposed project will not displace any existing homes. This issue will not be discussed further in the forthcoming EIR.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	❑	❑	❑	■

(Sources: Project Proposal)

Please see item 11.b., above.

13. PUBLIC SERVICES

Would the Project:

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

a) Fire protection?	❑	❑	❑	■

(Sources: Project Proposal)

The proposed project will not require additional services or extended response times for fire protection services. This issue will not be discussed further in the forthcoming EIR.

b) Police protection?	❑	❑	❑	■

(Sources: Project Proposal)

The proposed project will not require additional services or extended response times for police protection services. This issue will not be discussed further in the forthcoming EIR.

c) Schools?	❑	❑	❑	■

(Sources: Project Proposal)

The proposed project does not involve new housing or employment opportunities that would affect local school enrollment and does not directly affect any school facilities. This issue will not be discussed further in the forthcoming EIR.

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Parks?	❑	❑	❑	■

(Sources: CSBGP, CCGP, CGTGP, CRivGP, CCoGP, CRGP)

None of the proposed facilities of the proposed project will interfere with or have adverse impacts on the any parks. The proposed pipeline will not pass in the vicinity of any community park in the City of San Bernardino. The City of Colton has no parks in its sphere of influence. The Terrace Hills Community Park located in the central portion of the City of Grand Terrace will not be affected by the proposed pipeline, as it will pass approximately 1,500 feet west from the park. In the City of Riverside the proposed pipeline will pass several neighborhood and community parks across the entire city portion (CRivGP, Exhibit 41). In the City of Corona the proposed pipeline will not pass any local parks.

The issue of potential impacts on parks will be not be discussed further in the forthcoming EIR.

e) Other public facilities?	❑	❑	❑	■

(Sources: Project Proposal)

There are no other public facilities that would be adversely impacted by the construction and development of the proposed project. This issue will not be discussed further in the forthcoming EIR.

14. RECREATION

Would the Project:

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

(Sources: Project Proposal)

The proposed project does not involve new housing or employment opportunities which would increase the use of existing parks or recreational facilities. Therefore, the issue will not be further discussed in the forthcoming EIR.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which have an adverse physical effect on the environment?	❑	❑	❑	■

(Sources: Project Proposal)

The proposed project does not involve new residential housing or employment opportunities which would trigger the need for construction or expansion of recreational facilities. Therefore, the issue will not be further discussed in the forthcoming EIR.

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

15. TRANSPORTATION/TRAFFIC

Would the Project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	■	☐

(Sources: Project Proposal)

The proposed project will be constructed primarily in road right-of-ways. Impacts to traffic from the project will consist of minor, short-term increases in vehicle trips as a result of pipeline construction. Through traffic may experience slight delays or congestion as a result of pipeline construction. Encroachment permits will be acquired from applicable governing agencies for construction of the pipeline within their jurisdictional right-of-ways. Standard information included in these permits will address issues associated with short-term traffic impacts. Additionally, WMWD's construction workers will be required by WMWD standard contract documents to provide adequate and safe traffic control measures that will both accommodate local traffic and ensure the safety of drivers and workers, lessening potential impacts to a level below significant. This issue will not be discussed further in the forthcoming EIR.

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	■	☐

(Sources: Project Proposal)

Please see item 15.a., above.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	■

(Sources: Project Proposal)

The proposed project will not impact air traffic patterns. This issue will not be discussed further in the forthcoming EIR.

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

(Sources: Project Proposal)

Implementation of the proposed project will not change current roadway configurations nor alter area traffic volumes. Please see response in item 15.a. for additional information. This issue will not be discussed further in the forthcoming EIR.

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Result in inadequate emergency access?	❑	❑	❑	■

(Sources: Project Proposal)

The project will not reconfigure current roadways that would result in inadequate emergency access. Access will be maintained throughout the construction period. This issue will not be discussed further in the forthcoming EIR.

f) Result in inadequate parking capacity?	❑	❑	❑	■

(Sources: Project Proposal)

Adequate parking will be part of project design to accommodate employee and maintenance vehicles. This issue will not be discussed further in the forthcoming EIR.

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	❑	❑	❑	■

(Sources: Project Proposal)

The proposed project is not a people-producing project, therefore does not require the need for alternative modes of transportation. This issue will not be discussed further in the forthcoming EIR.

16. UTILITIES AND SERVICE SYSTEMS

Would the Project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	❑	❑	■	❑

(Sources: Project Proposal)

The proposed project would not generate waste water, and would not exceed wastewater treatment requirements of the RWQCB. This issue will not be discussed further in the forthcoming EIR.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	❑	❑	❑	■

(Sources: Project Proposal)

No new water or wastewater treatment facilities are required as a result of the proposed project. This issue will not be discussed further in the forthcoming EIR.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	❑	❑	❑	■

(Sources: Project Proposal)

The proposed project will not require the need for stormwater drainage facilities. This issue will not be

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

discussed in the forthcoming Environmental Impact Report.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	■

(Sources: Project Proposal)

The project will be used as a regional water transmission facility. The construction and/or operation of 20 wells in the City of San Bernardino are proposed as part of the proposed project. Sufficient water is available and entitlements to the water is currently being negotiated. These issues will be discussed in the forthcoming Environmental Impact Report.

e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	■	☐

(Sources: Project Proposal)

Please see responses to items 16.a. and b., above.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	■

(Sources: Project Proposal)

The nature of the proposed project does not present the potential generation of solid waste during project operations. This issue will not be discussed further in the forthcoming EIR.

g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	■

(Sources: Project Proposal)

See item 16.f., above.

17. MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	■	☐	☐	☐

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

(Sources: above checklist)

During construction, the project has the potential to reduce the number or restrict the range of a rare or endangered plant or animal. Several sensitive plant species are known within the project area, within all of the five jurisdictions traversed by the project. Out of those sensitive species, several have been listed in the State and Federal lists of Threatened and Endangered species. Wildlife: arroyo southwestern toad (Bufo californicus), California red-legged frog (Rana aurora draytonii), California gnatcatcher (Polioptila californica californica), least Bell's vireo (Vireo bellii pusillus), Swainson's hawk (Buteo swainsoni), western yellow-billed cuckoo (Coccyzus americanus occidental), Stevens' kangaroo rat (Dipodomys stephensi). Plants: marsh sandwort (Arenaria paludicola), slender-horned spineflower (Dodecahema leptoceras), Gambel's water cress (Rorippa gambelli), Braunton's milk-vetch (Astragalus brauntoni), Munz's onion (Allium munzi).

Critical habitats have been designated by the United States Fish and Wildlife Service for the following species known in the project area: Munz's onion, California gnatcatcher, arroyo southwestern toad, California red-legged frog, least Bell's vireo, and Stevens' kangaroo rat.

Two fully protected species - golden eagle (Aquila chrysaetos canadensis) and the white-tailed kite (Elanus leucurus majusculus) have been recorded in the WR MSHCP portion of the proposed project.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current project, and the effects of probable future projects.)	■	❑	❑	❑

(Sources: Project Proposal)

The proposed project may result in cumulatively considerable impacts to air quality, biological resources and air quality. These issues will be discussed further in the Cumulative Impacts discussion of the forthcoming EIR.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	❑	❑	❑	■

(Sources: above checklist)

The project does not present the potential for any direct or indirect substantial adverse impacts to human beings.

III. REFERENCES

The following documents were referenced as general information sources during the preparation of this document. They are available for public review at the locations abbreviated after each listing, with detailed information listed at the end of this section. These documents may also be available at public libraries and at other public agency offices.

CCGP — Final Preliminary General Plan of the City of Colton, May 1987. *(Available at City of Colton Planning Department).*

CCoGP — City of Corona General Plan, February 1994. *(Available at City of Corona Planning Department).*

CCoMO — City of Corona Municipal Ordinance, Chapter 15.04.060, Chapter 17.84.040. *Available at City of Corona Planning Department).*

CGC — California Government Code, Section 53091(c) and (d). *(Available at http://www.leginfo.ca.gov).*

CGTGP — General Plan City of Grand Terrace, December 1988. *Available at City of Grand Terrace Planning Department).*

CGMO — City of Grand Terrace Municipal Ordinance, Chapter 8.108 April 1987. *Available at City of Grand Terrace Planning Department).*

CHEN — Conversation with and fax from Denny Chen, Planning Assistant at the City of Colton, January 15, 2003

CNPS — California Native Plants Society *(Available at www.northcoast.com)*

CRGP — Riverside County Comprehensive General Plan, Fourth Edition. December 1989. *(Available at Riverside County, Planning Department).*

CRMO — County of Riverside Municipal Ordinance 457, February 1999. *(Available at http://www.co.riverside.ca.us/depts./brdofsup/ords.htm)*

CRivGP — City of Riverside General Plan 2010, September 1994. *(Available at City of Riverside Planning Department).*

CRivMO — City of Riverside Municipal Ordinance, Chapter 7.35. *(Available at City of Riverside Planning Department).*

CSBGP — City of San Bernardino General Plan, June 1989. *(Available at City of San Bernardino, Planning Department).*

CSBMO — City of San Bernardino Municipal Ordinance, Section 6-1.02, Section 8.54. *(Available at City of San Bernardino, Planning Department).*

DFG — Department of Fish and Game *(Available at http://www.dfg.ca.gov/whdab/TEAnimals.pdf)*

DOI — Department of the Interior, Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for the Coastal California Gnatcatcher, 50 CFR Part 17. Federal Register / Vol. 65, No. 206 / Tuesday, October 24, 2000. *(Available at http://www.access.gpo.gov/nara/)*

Department of the Interior, Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for the Coastal California Gnatcatcher, Federal Register / Vol. 65, No. 206 / Tuesday, October 24, 2000. *(Available at http://www.access.gpo.gov/nara/)*

Department of Interior, Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Quino Checkerspot Butterfly, Final Rule. Federal Register / Vol. 67, No. 72 / Monday, April 15, 2002. *(Available at http://www.access.gpo.gov/nara/)*

Department of Interior, Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the San Bernardino Kangaroo Rat, Final Rule Federal Register / Vol. 67, No. 78 / Tuesday, April 23, 2002. *(Available at http://www.access.gpo.gov/nara/)*

Department of Interior, Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Arroyo Toad, Final Rule. Federal Register / Vol. 66, No. 26 / Wednesday, February 7, 2001. *(Available at http://www.access.gpo.gov/nara/)*

U.S. Fish and Wildlife Service. 2002. Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon. viii + 173 pp. *(Available at http://carlsbad.fws.gov/Rules/CRL_Frog/RLF%20WEB%20080202.pdf)*

Department of Interior, Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Least Bell's Vireo, Federal Register / Vol. No. 22 / Wednesday, February 2, 1994. *(Available at http://ecos.fws.gov/tess/frdocs/1994/94-2304.pdf)*

Department of Interior, Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Threatened Status for the Santa Ana Sucker, Federal Register / Vol. 65, No. 71 / Wednesday, April 12, 2000. *(Available at http://www.access.gpo.gov/nara/)*

Department of Interior, Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status of the Stephen's Kangaroo Rat, Federal Register / Vol. 53, / No. 190 / Friday, September 30, 1988. *(Available at http://carlsbad.fws.gov/Rules/sbkr_documents/SBKR_Pdfs/sbkr_fch.pdf)*

Ord. No. 348 Riverside County Ordinance No. 348. Providing for Land Use Planning and Zoning Regulations and Related Functions. *(Available at Riverside County-Planning & Clerk of the Board)*

Ord. No. 663 Riverside County Ordinance No. 663. Establishing the Riverside County Stephens' Kangaroo Rat Habitat Conservation Plan Fee Assessment Area and Setting Mitigation Fees. *(Available at Riverside County -Planning & Clerk of the Board)*

WR MSHCP Western Riverside Multiple Species Habitat Conservation Plan, General Land Use and Vegetation Maps. *(Available at http://ecoregion.ucr.edu/maps.asp)*

SBVMWD San Bernardino Valley Municipal Water District Master Plan EIR, October 13, 2001. *(Available for viewing at San Bernardino Valley Municipal Water District).*

SKR	Riverside County Habitat Conservation Agency. Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County California. March 1996. *(Available at Riverside County. Planning)*
UCR	University of California Riverside *(Available at http://ecoregion.ucr.edu/list.asp).*
USDA	United States Department of Agriculture, Soil Conservation Service. Soil Survey, Western Riverside Area, California. November 1971. *(Available at USDA).*
USDA	United States Department of Agriculture, Soil Conservation Service. Soil Survey, San Bernardino County Southwestern Part, California. November 1977. *(Available at USDA).*
USGS 1	United States Geologic Survey. San Bernardino South, California. 7.5 Minute Series. 1967 photorevised 1980. *(Available at Albert A. Webb Associates)*
USGS 2	United States Geologic Survey. Riverside East, California. 7.5 Minute Series. 1967 photorevised 1980. *(Available at Albert A. Webb Associates)*
USGS 3	United States Geologic Survey. Riverside West, California. 7.5 Minute Series. 1967 photorevised 1980. *(Available at Albert A. Webb Associates)*
USGS 4	United States Geologic Survey. Corona North, California. 7.5 Minute Series. 1967 photorevised 1980. *(Available at Albert A. Webb Associates)*
USGS 5	United States Geologic Survey. Corona South, California. 7.5 Minute Series. 1997. *(Available at Albert A. Webb Associates)*
USGS 6	United States Geologic Survey. *(Available at Albert A. Webb Associates)*
WR MSHCP	Western Riverside Multiple Species Habitat Conservation Plan. *(Available at www.ecoregion.ucr.edu)*

Location:	Address:
Albert A. Webb Associates	3788 McCray Street, Riverside, CA 92506.
City of Colton - Planning	659 North La Cadena Drive, Colton, CA 92334
City of Corona - Planning	815 W. Sixth Street, Corona, CA 92882
City of Grand Terrace - Planning	22795 Barton Road, Grand Terrace, CA 92324
City of Riverside – Planning	3900 Main Street, Riverside, CA 92522
City of San Bernardino – Planning	300 North "D" Street, San Bernardino, CA 92418
Riverside County - Clerk of the Board	4080 Lemon Street, 14th Floor, Riverside, CA 92502.
Riverside County - Planning	4080 Lemon Street, 2nd Floor, Riverside, CA 92502.
San Bernardino Valley Municipal Water District.	1350 South "E" Street, San Bernardino, CA 92412
Western Municipal Water District	450 Alessandro Blvd. Riverside, CA 92508.

Location:	Address:
U.S. Department of Agriculture, *Natural Resource Conservation Service*	1299 Columbia Avenue, Suite E-5, Riverside, CA 92507.

IV. DOCUMENT PREPARATION STAFF

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ATTACHMENT 1

SENSITVE PLANT AND WILDLIFE SPECIES

Table 1
Sensitive Plant Species Known to Occur Within a 10-miles radius from the Proposed Project from Santa Ana River in the City of San Bernardino (between Interstate 215 and Tippecanoe Avenue) to the Corona Treatment Plant (near the intersection of Chase Drive and Fullerton Avenue)

Sources: WR MSHCP Interactive Species Map, CNPS On-line Inventory, DFG Natural Diversity Database

SCIENTIFIC	COMMON	FAMILY	HABITAT	R-E-D/ STATUS CODE
Centromadia pungens ssp. laevis	Smooth tarplant	Asteraceae	Chenopod scrub, meadows, playas, riparian woodland, valley and foothill grassland / alkaline	2-3-3/ NONE/NONE
Monardella macrantha ssp. hallii	Hall's monardella	Lamiaceae	Broadleafed upland forest, chaparral cismontane woodland, lower montane coniferous forest, valley and foothill grassland	2-1-3/ NONE/NONE
Myosurus minimus ssp. apus	Little mousetail	Ranunculaceae	Valley and foothill grassland, vernal pools (alkaline)	2-3-2/ NONE/NONE
Lycium parishii	Parish's desert-thorn	Solanaceae	Coastal scrub, Sonoran desert scrub	2-1-1/ NONE-NONE
Arenaria paludicola	Marsh sandwort	Caryophyllaceae	Bogs and fens, marshes and swamps (freshwater)	3-3-2/ CE/FE
Dodecahema leptoceras	Slender-horned spineflower	Polygonaceae	Chaparral, cismontane woodland, coastal scrub (alluvial fan) / sandy	3-3-3/CE/FE
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	Asteraceae	Marshes and swamps (coastal salt and freshwater)	*NONE/NONE
Ribes divaricatum var. parishii	Parish's sooseberry	Grossulariaceae	Riparian woodland	3-3-3/ NONE/NONE
Horkelia cuneata ssp. puberula	Mesa horkelia	Rosaceae	Chaparral, cismontane woodland, coastal scrub / sandy or gravelly	2-3-3/ NONE/NONE
Rorippa gambelii	Gambel's water cress	Brassicaceae	Marshes and swamps (freshwater or brackish)	3-3-2/CT/FE
Monardella pringlei	Pringle's monardella	Lamiaceae	Coastal scrub (sandy)	*NONE/NONE
Cupressus forbesii	Tecate cypress	Cupressaceae	Closed-cone coniferous forest, chaparral	3-3-2/ NONE/NONE

Astragalus brauntonii	Braunton's milk-vetch	Fabaceae	Chaparral, coastal scrub, valley and foothill grassland / recent burns or disturbed areas	3-3-3/NONE/FE
Calochortus plummerae	Plummer's mariposa lily	Liliaceae	Chaparral, cismontane woodland, coastal scrub valley and foothill grassland / granitic, rocky	3-3-2/ NONE/NONE
Allium munzii	Munz's onion	Liliaceae	Chaparral, cismontane woodland, coastal scrub pinyon and juniper woodland, valley and foothill grassland / mesic, clay	3-3-3/CT/FE
Abronia villosa var. aurita	Chaparral sand-verbena	Nyctaginaceae	Chaparral, coastal scrub / sandy	2-3-3/ NONE/NONE
Lepechinia cardiophylla	Heart-leaved Pitcher sage	Lamiaceae	Closed-cone coniferous forest, chaparral cismontane woodland	3-2-2/ NONE/NONE
Phacelia suaveolens ssp. keckii	Santiago peak phacelia	Hydrophyllaceae	Closed-cone coniferous forest, chaparral	3-1-3/ NONE/NONE
Chorizanthe xanti var. leucotheca	White-bracted spineflower	Polygonaceae	Mohavean desert scrub, pinyon, juniper woodland	2-2-3/ NONE/NONE
Dudleya multicaulis	Many-stemmed dudleya	Crassulaceae	Chaparral, coastal scrub valley and foothill grassland / often clay	1-2-3/ NONE/NONE
Calochortus weedii var. intermedius	Intermediate mariposa lily	Liliaceae	Chaparral, coastal scrub valley and foothill grassland / rocky	2-2-3/ NONE/NONE
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	Brassicaceae	Chaparral, coastal scrub	3-2-2/ NONE/NONE
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Asteraceae	Marshes and swamps (coastal salt), playas vernal pools	2-3-2/ NONE/NONE
Senecio aphanactis	Rayless ragwort	Asteraceae	Chaparral, cismontane woodland coastal scrub / alkaline	3-2-1/ NONE/NONE
Eriastrum densiflorum ssp sanctorum	Santa Ana River woollystar	Polemoniaceae	Coastal scrub, chaparral.	3-3-2 FE/SE
Ambrosia pumila	San Diego ambrosia	Asteraceae	Chaparral, coastal scrub, valley and foothill grassland, vernal pools / often in disturbed areas	3-3-2/ NONE/PE

Key to the R-E-D code:

Rarity (first digit)

1 – Rare, but found in sufficient numbers and distributes widely enough that the potential for extinction or extirpation is low at this time
2 – A limited number of occurrences in California, occasionally more if each occurrence is small
3 - One to several highly restricted occurrences, or present in such small numbers that it is seldom reported

Endangerment (second digit)

1 – Not very endangered in California
2 – Fairly endangered in California
3 – Seriously endangered in California.

Distribution (third digit)

1 – More or less widespread outside California
2 – Rare outside California
3 – Endemic to California

Status Codes

CE – State of California listed as endangered
FE – Designated Endangered under Federal Endangered Species Act
PE – Proposed Endangered under the Federal Endangered Species Act
SOC – A federally designated Species of Concern

Table 2
Sensitive Wildlife Species Known to Occur Within the Project Area
from Santa Ana River in the City of San Bernardino (between Interstate 215 and Tippecanoe Avenue)
to the Corona Treatment Plant (near the intersection of Chase Drive and Fullerton Avenue

Sources: WR MSHCP Interactive Species Map, DFG Natural Diversity Database

COMMON	SCIENTIFIC	HABITAT	STATUS FEDERAL/STATE
Arroyo southwestern toad	Bufo californicus	Riparian, coastal sage scrub, oak, and chaparral	FE/SOC
Bell's sage sparrow	Amphispiza belli belli	Dry chaparral and coastal sage scrub along the coastal lowlands, inland valleys, and in the lower foothills of local mountains	PFPBS SMC,/SOC
Black-tailed jackrabbit	Lepus californicus bennettii	Grassland, Riversidian sage scrub, alluvial fan sage scrub, Great Basin sagebrush, chaparral, disturbed habitat, and agriculture	NONE/SOC
Bobcat	Lynx rufus californicus	Chaparral	NONE/NONE
Burrowing owl	Speotyto (Athene) cunicularia hypugaea	Shortgrass prairies, grasslands, lowland scrub, agricultural lands (particularly rangelands), prairies, coastal dunes, desert floors, and some artificial	PFPBS, SMC/SOC
Cactus wren	Campylorhynchus brunneicapillus cousei	Coastal sage scrub	NONE/SOC
California gnatcatcher	Polioptila californica californica	Sage scrub	FT/SOC
California legless lizard	Anniella pulchra pulchra	Coastal dune, valley-foothill, chaparral, coastal sage scrub	NONE/NONE
California mountain kingsnake	Lampropeltis zonata	Valley-foothill hardwood, and hardwood-conifer, mixed and montane chaparral, valley-foothill riparian, coniferous forests, and wet meadows	NONE/SOC
California newt	Taricha torosa torosa	Grassland, woodland and forest	PE/SOC
California red-legged frog	Rana aurora draytonii	Deep water ponds with stands of overhanging willows	FT/SOC
California red-sided garter snake	Thamnophis sirtalis infernalis	Near marshes, meadows, sloughs, ponds and slow-moving water courses	NONE/SOC

Coast patch-nosed snake	Salvadora hexalepis virgultea	Desert scrub, coastal chaparral, washes, sandy flats, and rocky areas	NONE/SOC
Coastal rosy boa	Charina (Lichanura) trivirgata roseofusca	Rocky chaparral-covered hillsides and canyons, while in the desert it occurs on scrub flats with good cover	NONE/SOC
Coastal western whiptail	Cnemidophorus tigris multiscutatus	All habitats except yellow pine forest	NONE/SOC
Cooper's hawk	Accipiter cooperii	Riparian areas and oak woodlands	PFPBS/SOC
Coyote	Canis latrans clepticus	Grasslands, short-grass prairies, semiarid sagebrush, and broken forests	NONE/NONE
Desert woodrat	Neotoma lepida intermedia	Shrub and desert habitats, primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth	NONE/SOC
Downy woodpecker	Picoides pubescens turatie	Deciduous and mixed deciduous coniferous woodland, riparian woodland, second growth, parks, and orchards	NONE/NONE
Golden eagle	Aquila chrysaetos canadensis	Grasslands, brushlands, deserts, oak savannas, open coniferous forests, and montane valleys	PFPBS/SOC FP
Granite spiny lizard	Sceloporus orcutti orcutii	Rock outcrops	NONE/NONE
Grasshopper sparrow	Ammodramus savannarum perpallidus	Areas with shrub cover in the arid grassland	PFPBS, SMC/NONE
Horned lark	Eremophila alpestris actia	Shortgrass prairie, montane meadows, "bald" hills, opens coastal plains, fallow grain fields, and alkali flats	NONE/SOC
Least Bell's vireo	Vireo bellii pusillus	Southern willow scrub, cottonwood forest, mule fat scrub, sycamore alluvial woodland, coast lie oak riparian forest, arroyo willow riparian forest, wild blackberry	FE/SE
Lincoln's sparrow	Zonotrichia (Melospiza) lincolnii alticola	Willow-sedge swamp, scrub-meadow and flat land aspen	NONE/NONE
Loggerhead shrike	Lanius ludovicianus gambeli	Open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats	SOC, SMC/SOC

Long-tailed weasel	Mustela frenata latriostra	Brushland and open timber, brushy field borders, grasslands along creeks and lakes, and swamps	NONE/NONE
MacGillivray's warbler	Oporonis tolmiei tolmiei	Foothill riparian, coastal Douglas-fir, redwood, montane riparian and desert riparian habitats	NONE/NONE
Nashville warbler	Vermivora ruficapilla ridgwayi	Montane chaparral	NONE/NONE
Northern harrier	Circus cyaneus hudsonius	Open wetlands, wet and lightly grazed pastures, old fields, dry uplands, mesic grasslands, drained marshlands, croplands, shrub-steppe, meadows, grasslands, open rangelands, desert sinks	PFPBS/SOC
Orange-throated whiptail	Cnemidophorus hyperythrus beldingi	Chaparral, non-native grassland, (Riversidian) coastal sage scrub, juniper woodland and oak woodland	NONE/SOC
Purple martin	Progne subis subis	Grassland, wet meadow, and fresh emergent wetland	PFPBS/SOC
Red diamond rattlesnake	Crotalus ruber ruber	Dense chaparral in the foothills, cactus or boulder associated coastal sage scrub, desert slope scrub	NONE/SOC
Ringneck snake	Diadophis punctatus	Woodlands, forest, grassland, chaparral, farms, and gardens	NONE/SOC
Rufous-crowned sparrow	Aimophila ruficeps canescens	Grass-covered hillsides, coastal sage scrub	SOC/SOC
Santa Ana sucker	Catostomus santaanae	Sand-rubble-boulder bottoms, cool, clear water	FT/NONE
San Bernardino mountain kingsnake	Lampropeltis zonata parvirubra	Valley-foothill hardwood, and hardwood-conifer, mixed and montane chaparral, valley-foothill riparian, coniferous forests, and wet meadows	NONE/SOC
San Bernardino kangaroo rat	Dipodomys merriami parvus	Alluvial scrub vegetation on sandy loam substrates	FE/NONE
San Diego banded gecko	Coleonyx variegatus abbotti	Habitats ranging from cismontane chaparral and desert scrub to open sand dunes and arid tropical forests	NONE/SOC
San Diego pocket mouse	Chaetodipus fallax fallax	Coastal sage scrub, sage scrub/grassland ecotones, chaparral	NONE/SOC
Sharp-shinned hawk	Accipiter striatus velox	Ponderosa pine, black oak, riparian deciduous,	PFPBS/SOC
Southern sagebrush lizard	Sceloporus graciosus vandenburganus	Montane chaparral, hardwood and conifer habitats, juniper habitats, sage scrub habitats at higher elevations	NONE/SOC

Southwestern pond turtle	Clemmys marmorata pallida	Permanent or intermittent streams, small ponds, small lakes, reservoirs, abandoned gravel pits, permanent and ephemeral shallow wetlands, stock ponds, and sewage treatment lagoons	NONE/SOC
Stephens' kangaroo rat	Dipodomys stephensi	Open grasslands or sparse shrublands with cover of less than 50% during the summer	FE/ST
Swainson's hawk	Buteo swainsoni	Open desert, sparse shrub lands, grassland, or cropland containing scattered, large trees or small groves	PFPBS/CT
Turkey vulture	Cathartes aura meridionalis	Extensive open areas with protected nest and roost sites provided by large trees, snags, thickets, shrubs, and rock outcrops	SOC/NONE
Vaux's swift	Chaetura vauxi vauxi	Continuous mesic shrub association	PFPBS, SMC/SOC
Western spadefoot toad	Spea (Scaphiopus) hammondii intermontanus	Grasslands with vernal pools or mixed grassland/coastal sage scrub	NONE/SOC
Western yellow-billed cuckoo	Coccyzus americanus occidental	Dense, wide riparian woodlands with well-developed understories for breeding	PFPBS, SMC/CE
White-tailed kite	Elanus leucurus majusculus	Low elevation, open grasslands, savannah-like habitats, agricultural areas, wetlands, and oak woodlands, out of 213 records, six represent recent surveys within the Lake Mathews area	PFPBS, SMC/R, FP
Wilson's warbler	Wilsonia pusilla pileolata	Montane meadows and low, dense willow thickets often on steep slopes, thickets, second-growth saplings of clearings, in spruce-tamarack, balsam fir, and sphagnum bogs, or in alders and birches near streams and ponds	PFPBS/NONE
Yellow warbler	Dendroica petechia brewsteri	Lowland and foothill riparian woodlands dominated by cottonwoods, alders, or willows and other small trees and shrubs typical of low, open-canopy riparian woodland	PFPBS/SOC

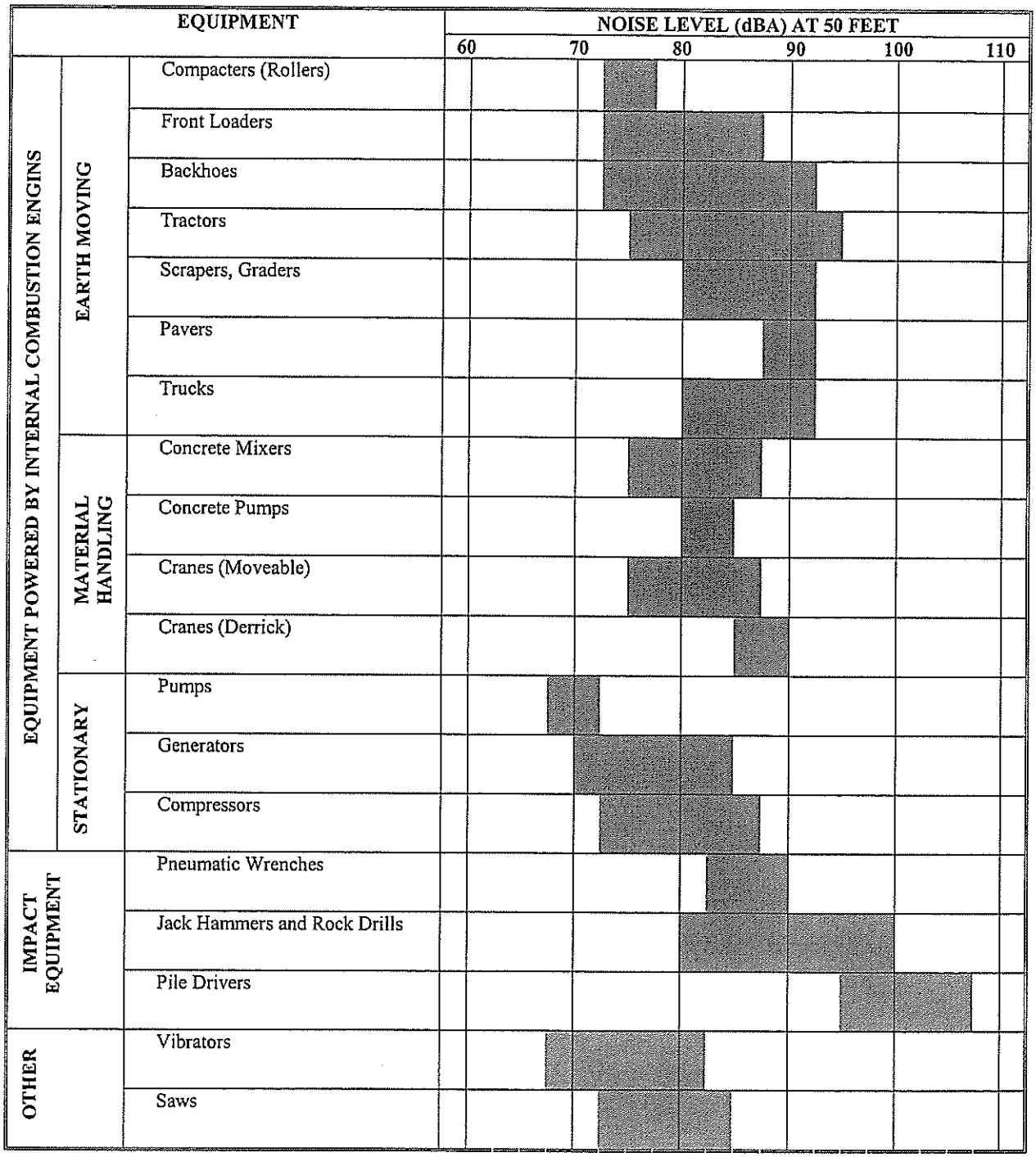
Status Codes

CE – State of California listed as endangered
CT – State of California listed as theatened
FE – Designated Endangered under Federal Endangered Species Act
PE – Proposed Endangered under the Federal Endangered Species Act
SOC – Species of Concern
SMC – Species of Management Concern
PFPBS – Partners in Flight Priority Bird Species
FT – Federally Threatened Species
FP – Fully Protected Species
R - Rare
PFPBS, SMC/SE

ATTACHMENT 2

TYPICAL CONSTRUCTION NOISE LEVELS

Typical Construction Equipment Noise Levels



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PLEASE REFER TO

April 22, 2003

RECEIVED
APR 25 2003
W. M. W. D.

VIA FAX AND MAIL

Don Harriger, General Manager
Western Municipal Water District
450 Alessandro Blvd.
Riverside, CA 92508

Re: Notice of Preparation of a Draft Program Environmental Impact Report for the Riverside Corona Feeder Project

Dear Mr. Harriger:

This office serves as General Counsel to the East Valley Water District ("EVWD").

Pursuant to the authority provided in the California Environmental Quality Act ("CEQA"), Public Resources Code ("PRC") Section 21000 et seq., and the Guidelines adopted thereunder, California Code of Regulations ("CCR") Section 15000 et seq., EVWD submits the following comments to the Notice of Preparation ("NOP") issued by Western Municipal Water District ("WMWD") on March 20, 2003, in connection with the above-referenced matter.

In this regard, CEQA requires that the preparation and review of an environmental impact report ("EIR") "should be coordinated in a timely fashion with the existing planning, review, and project approval process being used by each public agency." CCR Section 15004(c). To help facilitate inter-agency coordination, PRC Section 21080.3(a) requires that the lead agency consult with all responsible agencies and trustee agencies before preparation of an EIR.

The NOP is the procedural device used to initiate such interagency dialogue. PRC Sections 21080.4, 21092.2, 21092.3; CCR Section 15082(a). The NOP must be written so as to provide the agencies with sufficient information to enable them to make meaningful responses. At a minimum, the NOP must include a description of the project, its location on a map, and a statement of the project's probable environmental effects. CCR Section 15082(a)(1).

Here, EVWD is concerned that the proposed project as described in the Initial Study accompanying the NOP ("Project") appears to contemplate the extraction and exportation of up to 100 cfs of groundwater from the San Bernardino Basin Area for use by WMWD that (1) could result in serious water supply and water quality problems for those agencies, such as EVWD, that rely upon such groundwater for in-basin municipal use, and (2) is possibly inconsistent with the water-rights provisions and restrictions contained in the Judgment entered in Western Municipal Water District, et al. v. East San Bernardino County Water District, et al., Riverside County Superior Court Case No. 78426 ("the Western Judgment").

Therefore, EVWD requests that the scope of the EIR include a complete and detailed discussion and analysis of the operational plan for the Project, the application of the rights, duties, limitations, and responsibilities set forth in the Western Judgment, and the impact of the Project on all related environmental interests, including but not limited to existing water quality, water supply, contaminant plumes, and native species and habitat.

Further, EVWD requests that, pursuant to PRC Section 21091(d) and CCR Section 15002(j), a detailed written response to all comments previously submitted, all comments included herein, and all future comments subsequently added by EVWD with respect to the Project, be included in the environmental review record for the Project. EVWD expressly reserves the right to submit additional comments resulting from EVWD's review of the proposed EIR and EVWD's receipt of the responses to those comments provided by EVWD and/or to object to the approval of the Project based upon other areas of the law, including failure to the NOP to satisfy the requirements of CEQA and/or adequately correlate to the EIR.

Your anticipated consideration of these comments is greatly appreciated.

Very truly yours,

BRUNICK, BATTERSBY, McELHANEY & BECKETT

Steven M. Kennedy

cc: Robert E. Martin, EVWD General Manager

CALIFORNIA INDIAN LEGAL SERVICES

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Lise J. Cartoni
Deirdre Marie-Iha
Kathryn A. Ogas

April 9, 2003

Mr. Don Harriger
Western Municipal Water District
450 Allesandro Blvd.
Riverside, CA 92508

Sent via Facsimile and U.S. Mail

Re: Comments on WMWD Riverside-Corona Feeder Project EIR Initial Study

Dear Mr. Harriger:

The Pechanga Band of Luiseño Indians, a federally recognized Indian tribe and sovereign government, is formally requesting, pursuant to Public Resources Code §21092(b)(3), to be notified and involved in the CEQA environmental review process for the duration of the Riverside-Corona Feeder Project (hereinafter, "the Project").

On behalf of the Pechanga Band of Luiseño Indians (hereinafter, "Pechanga"), we submit the following comments on the Project. Additional comments will be submitted directly by Pechanga or through their attorneys. We request that all such comments be part of the official record for the approval of this project.

PROJECT GENERALLY

Pechanga is not opposed, at this time, to the approval of this Project. Pechanga is primarily concerned with the proposed and subsequent development of this area and its impact on Luiseño cultural resources. The Pechanga people have called this area home since time immemorial and can trace our ancestors to the areas that will be directly impacted by this Project. This land and its resources are an integral part of our present-day cultural values, and, as such, we have an evident interest in this project, both generally and legally. The Pechanga people are entrusted by our elders to protect and preserve all of our cultural resources for future generations. As such, the Pechanga Tribe is specifically concerned about the protection of unique and irreplaceable cultural resources, such as Luiseño archeological sites and cultural resources which may be displaced by ground-disturbing work on the project, and, above all, the proper and lawful treatment of Native American remains and sacred items that may be discovered in the course of work.

PROJECT IMPACTS ON CULTURAL RESOURCES

The Initial Study states that cultural resources impacts "will be discussed further in the cultural resource study that will be prepared as part of the forthcoming Environmental Impact Report" (½3/03 Initial Study pg. 16). Pechanga will have more specific comments regarding environmental impacts at that time, however, we are of the understanding that there are known archeological/Luiseño cultural sites within the area of the alignment, and request that WMWD adopt mitigation measures that will account for inadvertent discoveries pursuant the California Environmental Quality Act (CEQA Guidelines §15064.5).

REQUESTED MITIGATION MEASURES/CONDITIONS OF APPROVAL

For the reasons above we are requesting the mitigation measures to ensure the required protections for cultural resources under CEQA and the Public Resources Code:

1. Prior to the issuance of grading permits, the WMWD/Developer is required to enter into a Pre-Excavation Agreement with the Pechanga Band of Luiseño Indians. This Agreement will address the treatment and disposition of cultural resources and human remains that may be uncovered during construction as well as provisions for tribal monitors.

2. Tribal monitors from the Pechanga Band shall be allowed to monitor all grading, excavation and ground-breaking activities, including further surveys, to be compensated by WMWD/Developer.

3. The landowner agrees to relinquish ownership of all cultural resources, including all Luiseño sacred items, burial goods and all archeological artifacts, that are found on the Project area to the Pechanga Band of Luiseño Indians for proper treatment and disposition.

4. All sacred sites within the Project area are to be avoided and preserved.

Working together with the Pechanga Tribe on a government-to-government basis will ensure that this Project moves forward expeditiously. We appreciate this opportunity to assist WMWD in the preservation and protection of the invaluable Luiseño resources.

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Sincerely,
CALIFORNIA INDIAN LEGAL SERVICES

Laura Y. Miranda
Attorneys for the Pechanga Tribe

cc: Ms. Roma Stromberg, Albert A. Webb Associates

STATE OF CALIFORNIA - THE RESOURCES AGENCY

GRAY DAVIS, *Governor*

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
Eastern Sierra-Inland Deserts Region
4775 Bird Farm Rd.
Chino Hills, California 91709
Phone (909) 597-9823
Fax (909) 597-0067

April 21, 2003

Mr. Don Harriger, General Manager
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508
Fax (909) 780-3837

Re: **Notice of Preparation of a Draft Program Environmental Impact Report**
Riverside Corona Feeder Project

Dear Mr. Harriger:

The Department of Fish and Game (Department) appreciates this opportunity to comment on the Notice of Preparation (NOP) of the Draft Program Environmental Impact Report (PEIR) for the Riverside-Corona Feeder Project with regards to impacts to biological resources. The purpose of the proposed project is to convey potable water from the San Bernardino Basin Area to serve the needs of Western Municipal Water District and other water purveyors within its service area. From its connection with the Baseline Feeder Extension North/South pipeline the proposed pipeline will extend south across the Santa Ana River and then south and southwesterly through portions of the Cities of Colton, Grand Terrace, Riverside, and Corona, and unincorporated Riverside County. The proposed southerly terminus would be near the intersection of Ontario Avenue and Compton Avenue in the City of Corona. The proposed project is located in San Bernardino and Riverside Counties.

The Department is responding as a Trustee Agency for fish and wildlife resources [Fish and Game Code sections 711.7 and 1802 and the California Environmental Quality Act Guidelines (CEQA) section 15386] and as a Responsible Agency regarding any discretionary actions (CEQA Guidelines section 15381).

The proposed project has the potential to impact numerous sensitive plant and animal species. Therefore, focused surveys for sensitive species that have the potential to occur on-site need to be conducted by a qualified biologist and botanist. Surveys need to be conducted at the appropriate time of year. Surveys need to be conducted following Federal and/or State protocols, if available. The results of the surveys need to be included within the PEIR. If any sensitive species are found on the proposed project site, impacts to the sensitive species need to be evaluated and appropriate mitigation measures to avoid, minimize, and/or compensate need to be incorporated into the PEIR. Impacts to sensitive species are considered significant under CEQA and will require appropriate avoidance, minimization, and mitigation measures to reduce impacts to less than significant. Because this particular project has the potential to have significant environmental impacts on sensitive fauna resources including State and/or Federally-listed threatened or endangered species, critical aspects of the PEIR should include an alternatives analysis which focuses on environmental resources and measures to avoid, minimize, and compensate for impacts identified as significant.

To enable Department staff to adequately review and comment on the proposed project, we suggest that updated biological studies be conducted prior to any environmental or discretionary approvals. The following information should be included in any focused biological report or supplemental environmental report:

1. A complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and sensitive species and sensitive habitats.

   a. Conduct an updated (within the last 2 years) general biological study of the site to determine if any sensitive species or habitat (including, but not limited to, those mentioned above) may be potentially impacted by the proposed project. A complete assessment of sensitive fish, wildlife, reptile, and amphibian species should be included in the PEIR. Seasonal variations in use of the project area should also be addressed;

   b. If appropriate habitat for any listed species occurs on the site, have a qualified biologist conduct focused surveys according to U.S. Fish and Wildlife Service (USFWS) and/or Department protocol;

   c. Have a qualified botanist conduct a focused rare plant survey <u>during the appropriate time of year</u> following USFWS and/or Department protocols;

   d. The Department's California Natural Diversity Data Base in Sacramento should be contacted at (916) 327-5960 to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code.

   e. If any listed species will potentially be impacted by the proposed project, consultation with the Department and/or the USFWS will be required to establish appropriate mitigation measures to avoid, minimize, or compensate for impacts. An incidental take permit may be required pursuant to Fish and Game Code Section 2080 *et seq* and/or Section 7 or 10 of the Federal Endangered Species Act (ESA). Early consultation with the Department is recommended, since modification of the proposed project may be required to avoid or reduce impacts to listed species. Please refer to Item 4 below for more detailed information regarding compliance with the California Endangered Species Act (CESA).

   f. The Department requests that impacts to State- and Federally-listed species and potential avoidance, alternative and mitigation measures be addressed in the CEQA document and not solely in subsequent negotiations between the applicant and the agencies.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

   a. CEQA Guidelines, 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

   b. Project impacts should be analyzed relative to their effects on off-site habitats. Specifically, this should include nearby river, streams, or lakes located downstream of the project, public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.

   c. The zoning of areas for development projects or other uses that are nearby or adjacent to natural areas may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce these conflicts should be included in the environmental document.

d. A cumulative effects analysis should be developed as described under CEQA Guidelines, 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

e. The PEIR should include an analysis of the effect that the project may have on completion and implementation of regional and/or subregional conservation programs. Under 2800-2840 of the Fish and Game Code, the Department, through the Natural Communities Conservation Planning (NCCP) program is coordinating with local jurisdictions, landowners, and the Federal Government to preserve local and regional biological diversity. Coastal sage scrub is the first natural community to be planned for under the NCCP program. The Department recommends that the lead agency ensure that the development of this and other proposed projects do not preclude long-term preserve planning options and that projects conform with other requirements of the NCCP program. Jurisdictions participating in the NCCP should assess specific projects for consistency with the NCCP Conservation Guidelines.

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

   a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Off-site compensation for unavoidable impacts through acquisition and protection of high-quality habitat elsewhere should be addressed.

   b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts.

   c. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. A California Endangered Species Act (CESA) Incidental Take Permit must be obtained, if the project has the potential to result in "take" of species of plants or animals listed under CESA, either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit. For these reasons, the Department recommends including the following information:

   a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA Permit.

   b. A Mitigation Agreement and Mitigation Plan, approved by the Department, are required for plants listed as rare under the Native Plant Protection Act.

5. The Department opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent or perennial, should be retained and provided with substantial setbacks which preserve the riparian and aquatic values and maintain their value to on-site and off-site wildlife populations.

a. Under Section 1600 *et seq* of the Fish and Game Code, the Department requires the project applicant to notify the Department of any activity that will divert, obstruct or change the natural flow or the bed, channel, or bank (which includes associated riparian resources) of a river, stream or lake, or use material from a streambed prior to the applicant's commencement of the activity. Streams include, but are not limited to, intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams, and watercourses with subsurface flow. The Department's issuance of a Lake and Streambed Alteration Agreement for a project that is subject to CEQA will require CEQA compliance actions by the Department as a responsible agency. The Department, as a responsible agency under CEQA, may consider the local jurisdiction's (lead agency) Negative Declaration or EIR for the project. However, if the CEQA document does not fully identify potential impacts to lakes, streams, and associated resources (including, but not limited to, riparian and alluvial fan sage scrub habitat) and provide adequate avoidance, mitigation, monitoring and reporting commitments, additional CEQA documentation will be required prior to execution (signing) of the Streambed Alteration Agreement. In order to avoid delays or repetition of the CEQA process, potential impacts to a lake or stream, as well as avoidance and mitigation measures need to be discussed within this CEQA document. The Department recommends the following measures to avoid subsequent CEQA documentation and project delays:

(1) Incorporate all information regarding impacts to lakes, streams and associated habitat within the PEIR. Information that needs to be included within this document includes: (a) a delineation of lakes, streams, and associated habitat that will be directly or indirectly impacted by the proposed project; (b) details on the biological resources (flora and fauna) associated with the lakes and/or streams; (c) identification of the presence or absence of sensitive plants, animals, or natural communities; (d) a discussion of environmental alternatives; (e) a discussion of avoidance measures to reduce project impacts; and (f) a discussion of potential mitigation measures required to reduce the project impacts to a level of insignificance. The applicant and lead agency should keep in mind that the State also has a policy of no net loss of wetlands.

(2) Include in the PEIR a discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or urban pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts must be included.

(3) The Department recommends that the project applicant and/or lead agency consult with the Department to discuss potential project impacts and avoidance and mitigation measures. Early consultation with the Department is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources. To obtain a Streambed Alteration Agreement Notification package, please call (562) 590-5880.

Thank you for this opportunity to comment. Please contact me at (949) 458-1754 if you have any questions regarding this letter or need further coordination on these issues.

Sincerely,

Leslie MacNair

Leslie MacNair
Staff Environmental Scientist
Habitat Conservation Planning

cc: Doreen Stadtlander, USFWS, Carlsbad
State Clearinghouse, Sacramento

Department of Toxic Substances Control

Edwin F. Lowry, Director
5796 Corporate Avenue
Cypress, California 90630

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

April 16, 2003

RECEIVED
APR 21 2003
W. M. W. D.

Mr. Don Harriger
General Manager
Western Municipal Water District
450 Alessandro Boulevard
P.O. Box 5286
Riverside, California 92508

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE RIVERSIDE CORONA FEEDER (RCF) PROJECT (SCH #2003031121)

Dear Mr. Harriger:

The Department of Toxic Substances Control (DTSC) has received your Notice of Preparation (NOP) of a draft Environmental Impact Report (EIR) for the above-mentioned Project.

Based on the review of the document, DTSC's comments are as follows:

1) The draft EIR needs to identify and determine whether current or historic uses at the Project site have resulted in any release of hazardous wastes/substances at the Project area.

2) The draft EIR needs to identify any known or potentially contaminated site within the proposed Project area. For all identified sites, the draft EIR needs to evaluate whether conditions at the site pose a threat to human health or the environment.

3) The draft EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may require remediation, and the government agency to provide appropriate regulatory oversight.

4) Any hazardous wastes/materials encountered during construction should be remediated in accordance with local, state, and federal regulations. Prior to initiating any construction activities, an environmental assessment should be conducted to determine if a release of hazardous wastes/substances exists at the site. If so, further studies should be carried out to delineate the nature and

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at www.dtsc.ca.gov.

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extent of contamination. Also, it is necessary to estimate the potential threat to public health and/or the environment posed by the site. It may be necessary to determine if an expedited response action is required to reduce existing or potential threats to public health or the environment. If no immediate threats exist at the site, the final remedy should be implemented in compliance with state regulations and policies rather than excavation of soil prior to any assessments.

5) All environmental investigation and/or remediation should be conducted under a Workplan which is approved by a regulatory agency that has jurisdiction to oversee hazardous waste cleanups. Complete characterization of the soil is needed prior to any excavation or removal action.

6) The NOP states there is some potential that the proposed pipeline may encroach on a listed hazardous materials site. A Phase I Environmental Assessment may be sufficient to identify these sites. The results of this study should be included in the draft EIR. Following are the databases of some of the regulatory agencies should be verified for identifying contaminated sites:

- National Priority List (NPL): A list is maintained by the United States Environmental Protection Agency (U.S.EPA).
- CalSites: A Database primarily is used by the California Department of Toxic Substances Control.
- Resource Conservation and Recovery Information System (RCRIS): A database of RCRA facilities that maintained by U.S. EPA.
- Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS): A database of CERCLA sites that maintained by U.S.EPA.
- Solid Waste Information System (SWIS): A database provided by the California Integrated Waste Management Board consists of both open as well as closed and inactive solid waste disposal facilities and transfer stations.
- Leaking Underground Storage Tanks (LUST) / Spills, Leaks, Investigations and Cleanups (SLIC): A list that is maintained by Regional Water Quality Control Boards.

- Local County and City maintain lists for hazardous substances' cleanup sites and leaking underground storage tanks.

8) The proposed project construction may require soil excavation and soil filling in certain areas. Appropriate sampling is required prior to disposal of the excavated soil. If the soil is contaminated, properly dispose of it rather than placing it in another location. Land Disposal Restrictions (LDRs) may be applicable to these soils. Also, if the project is planning to import soil to backfill the areas excavated, proper sampling should be conducted to make sure that the imported soil is free of contamination.

9) If the subject property was previously used for vegetation or agriculture, onsite soils could contain pesticide residues. The site may have contributed to soil, and groundwater contamination. Proper investigation and remedial actions should be conducted at the site prior to its new development.

10) If any of the adjacent properties of the project site are contaminated with hazardous chemicals, and if the proposed project is within 2,000 feet from a contaminated site, then the proposed development may fall under the "Border Zone of a Contaminated Property." Appropriate precautions should be taken prior to construction if the proposed project is on a "Border Zone Property."

11) Investigate the presence of lead-based paints and ACMs in the currently existing building structures that plans to be demolished/renovated. If the presence of lead-based paints or ACMs are suspected, proper precautions should be taken during demolition activities. Additionally, the contaminants should be remediated in compliance with the California environmental regulations.

12) If during construction/demolition of the project, soil and/or groundwater contamination is suspected, construction/demolition in the area should cease and appropriate Health and Safety procedures should be implemented. If it is determined that contaminated soil and/or groundwater exist, the draft EIR should identify how any required investigation and/or remediation will be conducted, and the government agency to provide appropriate regulatory oversight.

DTSC provides guidance for the Preliminary Endangerment Assessment (PEA) preparation and cleanup oversight through the Voluntary Cleanup Program (VCP). For additional information on the VCP, please visit DTSC's web site at www.dtsc.ca.gov.

If you have any questions regarding this letter, please contact Mr. Johnson P. Abraham, Project Manager at (714) 484-5476.

Sincerely,

Haissam Y. Salloum, P.E.
Unit Chief
Southern California Cleanup Operations Branch
Cypress Office

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044

Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

DEPARTMENT OF TRANSPORTATION
DISTRICT 8
464 W Fourth Street, 6th Floor MS 726
San Bernardino, CA 92401-1400
PHONE (909) 383-6327
FAX (909) 383-6890

RECEIVED
APR 10 2003
W. M. W. D.

April 9, 2003

08-Riv-Various

Mr. Don Harriger
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

Dear Mr. Harriger:

Riverside Corona Feeder Project Initial Study

We have received Notice of Completion for the above referenced project. This project involves the construction of 30 miles of main waterline for the purpose of conveying potable water. This development crosses the jurisdictions of six different agencies from City of San Bernardino, traversing southwesterly to the City of Corona. Other elements include turnouts along the major feeder, a pump station, and twenty new or existing wells.

We do not foresee any adverse affects to State Transportation facilities. Please note that any work performed within State Right-of-Way (R/W), shall be consistent with applicable design criteria per State Highway Design and Traffic Manuals, and relevant construction policies and practices. For this reason we request copies of work-plans to be done within State R/W. Proposed alterations to existing improvements within State R/W may only be performed upon issuance of a valid encroachment permit. Information regarding permit application and submittal requirements may be obtained at:

Office of Permits
California Department of Transportation
464 W. Fourth Street, 6th Floor, MS 619
San Bernardino, CA 92401-1400
(909) 383-4536

Thank you for allowing us to comment on this waterline project. If you have any questions regarding this letter or require any other assistance, please contact Marc A. Centeno at (909) 383-6321.

Sincerely,

Linda Grimes

Linda Grimes, Chief
Office of Forecasting/IGR-CEQA Review
Transportation Planning Division

WESTERN MUNICIPAL WATER DISTRICT

Facsimile Transmittal Memo

DATE: 5/22/03

TIME:

TO: ROMA STROMBERG

COMPANY: A.A.WEBB ASSOC.
FAX: (909) 788-1256

FROM: **SONIA HUFF**

PHONE: (909) 789-5032
FAX:

SUBJECT: **CITY OF CORONA – DRAFT EIR – RIVERSIDE-CORONA FEEDER**

Number of pages, including cover: 3

Please contact BJ Carroll @ (909) 789-5064 if you do not receive all pages of this transmission.

If you do not receive all of this transmission or you encounter any problems, please contact this office at (909) 789-5000.

Western Municipal Water District of Riverside County
450 Alessandro Blvd., Riverside, CA 92508
P.O. Box 5286, Riverside, CA 92517-5286
Telephone: (909) 789-5000
FAX: (909) 780-3837

CITY OF CORONA –PLANNING

815 W. SIXTH STREET, CORONA, CA 92882-3238 - (909) 736-2262 FAX: (909) 279-3550
WEBSITE – www.discovercorona.org

April 16, 2003

RECEIVED
APR 18 2003
W. M. W. D.

Don Harriger
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

RE: Notice of Preparation of a Draft Program Environmental Impact Report for the Riverside Corona Feeder Project

Dear Mr. Harriger:

Thank you for the opportunity to respond to the above-referenced NOP. The comments being made on the behalf of the City of Corona are as follows.

1. ***Land Use, Pages 4 and 8*** – The text lists the various land uses of each jurisdiction that could be potentially affected by the pipeline project but does not elaborate in text or graphic form as to the nature or extent of potential effect on those land uses. It is anticipated that the EIR will disclose the details of the project that will create any disruption to those varying land uses with graphic depiction of pipeline alignment in relation to those land uses.

2. ***Land Use, Page 4*** - The Initial Study indicates the pipeline will traverse a landfill at the southeast corner of Magnolia Avenue and the I-15 Freeway. It is important to note that methane is being recovered from this closed landfill. Protection of the infrastructure used in the recovery of the methane must be included in the scope of this EIR.

3. ***Other Agencies, Page 9*** – Indicates CalTrans jurisdiction necessitating encroachment permits appling to State Route 60 and Interstate 10. The alignment of the feeder pipeline is indicated also as traversing under Interstate 15.

4. ***Transportation/Traffic, Pages 10 and 32*** – The Initial Study indicates the exclusion of transportation/traffic from the scope of the EIR. The Initial Study erroneously assumes that standard encroachment permit requirements and procedures are sufficient to mitigate disruptions to traffic. The pipeline alignment is shown along one of the busiest city thoroughfares which already has pre-

existing circulation challenges. This assumption cannot be made even for disruptions of short duration on Magnolia Avenue. Traffic/transportation must be included in the scope of the EIR.

5. ***References, Page 36*** – The document makes reference to the City of Corona General Plan and a date of February 1994. It should be clarified which element this is referring to because the last comprehensive update was not in 1994.

If you have any questions or need clarification on the content of this correspondence, please do not hesitate to contact me at (909) 736-2299.

Sincerely,

Terri Manuel, AICP
Senior Planner

C. Robert Morin, Public Works
Don Williams, DWP
Mir Fattahi, DWP

Elsinore Valley Municipal Water District

P.O. Box 3000
31315 Chaney Street
Lake Elsinore, CA 92531-3000
(909) 674-3146
Fax: (909) 674-9872

April 14, 2003

Mr. Don Harriger, General Manager
Western Municipal Water District
450 Alessandro Blvd.
Riverside, CA 92508

RECEIVED
APR 17 2003
W. M. W. D.

Subject: Draft Program EIR for the Riverside Corona Feeder Project

Dear Mr. Harriger:

We are in receipt of your letter dated March 20, 2003 regarding preparation of a Draft Program Environmental Impact Report (EIR) for the Riverside Corona Feeder (RCF) project.

As indicated in the Initial Study, the RCF project will allow Western Municipal Water District and other water purveyors to purchase and store water in the San Bernardino Basin area and extract the water from the basin when it is needed. The RCF project will include 30 miles of transmission pipeline, several turnouts, 20 new or existing wells, and a pump station located in the San Bernardino area.

As you are aware, the Elsinore Valley Municipal Water District (EVMWD) retains majority holdings in the Meeks & Daly Water Company, which in turn owns and operates several wells in the Bunker Hill groundwater basin, located adjacent to proposed RCF facilities in the San Bernardino area.

As such, quantity and quality of groundwater extracted through the existing Meeks & Daly wells may potentially be affected should additional RCF wells be installed and operated in the vicinity. We would recommend that potential groundwater impacts in the San Bernardino Basin area be considered as part of the Draft EIR document.

Please do not hesitate to contact me should you have any questions or comments.

Sincerely,

Phillip M. Miller
District Engineer

Cc: Ron Young, EVMWD
Joe Mouawad, EVMWD

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

RECEIVED
APR 28 2003
W. M. W. D.

April 22, 2003

FEDERAL EXPRESS

Mr. Donald Harriger
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

Dear Mr. Harriger:

Notice of Preparation of a
Draft Environmental Impact Report and Initial Study for Riverside Corona Feeder Project

The Metropolitan Water District of Southern California (Metropolitan) has received and reviewed a copy of the Notice of Preparation (NOP) of a Draft Environmental Impact Report (Draft EIR) and Initial Study for the Riverside Corona Feeder Project. Western Municipal Water District (WMWD) is the lead agency for this project. The proposed project would extend across six jurisdictions, including unincorporated portions of Riverside County and the cities of San Bernardino, Colton, Grand Terrace, Riverside, and Corona. The purpose of the project is to convey potable water from the San Bernardino Basin Area to serve the needs of WMWD and other water purveyors within its service area. The proposed infrastructure will allow WMWD to purchase and store water from the State Water Project (SWP) in the San Bernardino Basin Area when it is available and to extract the water from the basin when it is needed. The project will include approximately 30 miles of major feeder pipeline capable of delivering 100 cubic feet per second (cfs) (40,000 acre feet per year) of groundwater from the San Bernardino Basin Area to WMWD's customers and to water purveyors in the WMWD boundaries. This letter contains Metropolitan's response to the NOP and Initial Study as a potentially affected agency.

Metropolitan notes that the proposed infrastructure is intended to allow WMWD to purchase and store water from the SWP in the San Bernardino Basin Area. However, WMWD is not a state water contractor, but is a member agency of Metropolitan, which is a state water contractor. Deliveries of SWP water into Metropolitan's service area are arranged through Metropolitan. The institutional arrangements for such deliveries should be summarized in the project description in the Draft EIR.

Metropolitan owns and operates a facility within the boundaries of the proposed project site. Based on a review of Figure 2, it appears that the proposed Riverside Corona Feeder alignment would cross Metropolitan's Upper Feeder pipeline in the city of Riverside. The Riverside

Corona Feeder would extend along Cleveland Avenue from Adams Street to White Avenue. The Upper Feeder, which extends in a generally north-south direction in the proposed project vicinity, extends across Cleveland Avenue between Van Buren Boulevard and Jackson Street.

Metropolitan is concerned with potential impacts to the Upper Feeder that may occur from implementation of the proposed project. Metropolitan requests that WMWD consider the Upper Feeder pipeline during its project planning. It is necessary that the WMWD identify and avoid potential impacts to Metropolitan's facilities that may occur as a result of implementation of the proposed project, including any restrictions on Metropolitan's day-to-day operations. In addition, WMWD should identify whether pipeline protection or relocation would be required as a result of project implementation.

Metropolitan must be allowed to maintain its rights-of-way and access to the Upper Feeder and any other Metropolitan facilities at all times in order to repair and maintain the current condition of those facilities. In order to avoid potential conflicts with Metropolitan's rights-of-way, we require that any design plans for any activity in the area of Metropolitan's pipelines or facilities be submitted for our review and written approval.

Detailed prints of drawings of Metropolitan's pipelines and rights-of-way may be obtained by calling Metropolitan's Substructures Information Line at (213) 217-6564. To assist the applicant in preparing plans that are compatible with Metropolitan's facilities and easements, we have enclosed a copy of the "Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easements of The Metropolitan Water District of Southern California." Please note that all submitted designs or plans must clearly identify Metropolitan's facilities and rights-of-way.

In addition, the California Department of Water Resources Santa Ana Valley Pipeline, which delivers SWP water to Metropolitan's Henry J. Mills Filtration Plant, is in the proposed project vicinity. The alignment of the proposed Riverside Corona Feeder would cross the Santa Ana Valley Pipeline at a point along Barton Road, east of Mt. Vernon Avenue and south of Interstate 215 in the city of Grand Terrace in San Bernardino County. This pipeline should also be taken into consideration during project planning and in environmental analysis in the Draft EIR.

In the Environmental Checklist, under letter "b" of the Hydrology and Water Quality subsection, (page 22), the document states, "The source of water will be from approximately 20 new or existing wells in the San Bernardino Basin Area as available pursuant to agreements between San Bernardino Valley Municipal Water District, Western Municipal Water District, and Metropolitan Water District. This issue will be discussed further in the forthcoming EIR." Metropolitan recommends that a statement be added to the discussion of this topic in the Draft EIR that indicates the San Bernardino Basin Area is an adjudicated basin, subject to a 1969 court decision.

On pages 8 and 9 of the Initial Study, a list of public agencies whose approval may be required for the project is included. The list of public agencies whose approval is required should be revised in the Draft EIR to include Metropolitan. The document should indicate that design plans for any construction activity in the area of Metropolitan's pipelines or facilities must be submitted for Metropolitan's review and written approval.

We appreciate the opportunity to provide input to your planning process and we look forward to receiving future environmental documentation on this project. If we can be of further assistance, please contact Mr. John Vrsalovich of the Environmental Planning Team at (213) 217-6066.

Very truly yours,

Delaine W. Shane

(for) Laura J. Simonek
Manager, Asset Management
and Facilities Planning Unit

JAH/rdl
(Public Folders/EPU/Letters/23-APR-03A.doc – Donald Harriger)
Enclosure: Planning Guidelines

Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easements of The Metropolitan Water District of Southern California

1. Introduction

a. The following general guidelines should be followed for the design of proposed facilities and developments in the area of Metropolitan's facilities, fee properties, and/or easements.

b. We require that 3 copies of your tentative and final record maps, grading, paving, street improvement, landscape, storm drain, and utility plans be submitted for our review and written approval as they pertain to Metropolitan's facilities, fee properties and/or easements, prior to the commencement of any construction work.

2. Plans, Parcel and Tract Maps

The following are Metropolitan's requirements for the identification of its facilities, fee properties, and/or easements on your plans, parcel maps and tract maps:

a. Metropolitan's fee properties and/or easements and its pipelines and other facilities must be fully shown and identified as Metropolitan's on all applicable plans.

b. Metropolitan's fee properties and/or easements must be shown and identified as Metropolitan's with the official recording data on all applicable parcel and tract maps.

c. Metropolitan's fee properties and/or easements and existing survey monuments must be dimensionally tied to the parcel or tract boundaries.

d. Metropolitan's records of surveys must be referenced on the parcel and tract maps.

3. Maintenance of Access Along Metropolitan's Rights-of-Way

a. Proposed cut or fill slopes exceeding 10 percent are normally not allowed within Metropolitan's fee properties or easements. This is required to facilitate the use of construction and maintenance equipment, and provide access to its aboveground and belowground facilities.

b. We require that 16-foot-wide commercial-type driveway approaches be constructed on both sides of all streets crossing Metropolitan's rights-of-way. Openings are required in any median island. Access ramps, if necessary, must be at least 16-feet-wide. Grades of ramps are normally not allowed to exceed 10 percent. If the slope of an access ramp must exceed 10 percent due to the topography, the ramp must be paved. We require a 40-foot-long level area on the driveway approach to access ramps where the ramp meets the street. At Metropolitan's fee properties, we may require fences and gates.

c. The terms of Metropolitan's permanent easement deeds normally preclude the building or maintenance of structures of any nature or kind within its easements, to ensure safety and avoid interference with operation and maintenance of Metropolitan's pipelines or other facilities. Metropolitan must have vehicular access along the easements at all times for inspection, patrolling, and for maintenance of the pipelines and other facilities on a routine basis. We require a 20-foot-wide clear zone around all above-ground facilities for this routine access. This clear zone should slope away from our facility on a grade not to exceed 2 percent. We must also have access along the easements with construction equipment. An example of this is shown on Figure 1.

d. The footings of any proposed buildings adjacent to Metropolitan's fee properties and/or easements must not encroach into the fee property or easement or impose additional loading on Metropolitan's pipelines or other facilities therein. A typical situation is shown on Figure 2. Prints of the detail plans of the footings for any building or structure adjacent to the fee property or easement must be submitted for our review and written approval as they pertain to the pipeline or other facilities therein. Also, roof eaves of buildings adjacent to the easement or fee property must not overhang into the fee property or easement area.

e. Metropolitan's pipelines and other facilities, e.g. structures, manholes, equipment, survey monuments, etc. within its fee properties and/or easements must be protected from damage by the easement holder on Metropolitan's property or the property owner where Metropolitan has an easement, at no expense to Metropolitan. If the facility is a cathodic protection station it shall be located prior to any grading or excavation. The exact location, description and way of protection shall be shown on the related plans for the easement area.

4. Easements on Metropolitan's Property

a. We encourage the use of Metropolitan's fee rights-of-way by governmental agencies for public street and utility purposes, provided that such use does not interfere with Metropolitan's use of the property, the entire width of the property is accepted into the agency's public street system and fair market value is paid for such use of the right-of-way.

b. Please contact the Director of Metropolitan's Right of Way and Land Division, telephone (213) 250-6302, concerning easements for landscaping, street, storm drain, sewer, water or other public facilities proposed within Metropolitan's fee properties. A map and legal description of the requested easements must be submitted. Also, written evidence must be submitted that shows the city or county will accept the easement for the specific purposes into its public system. The grant of the easement will be subject to Metropolitan's rights to use its land for water pipelines and related purposes to the same extent as if such grant had not been made. There will be a charge for the easement. Please note that, if entry is required on the property prior to issuance of the easement, an entry permit must be obtained. There will also be a charge for the entry permit.

5. Landscaping

Metropolitan's landscape guidelines for its fee properties and/or easements are as follows:

a. A green belt may be allowed within Metropolitan's fee property or easement.

b. All landscape plans shall show the location and size of Metropolitan's fee property and/or easement and the location and size of Metropolitan's pipeline or other facilities therein.

c. Absolutely no trees will be allowed within 15 feet of the centerline of Metropolitan's existing or future pipelines and facilities.

d. Deep-rooted trees are prohibited within Metropolitan's fee properties and/or easements. Shallow-rooted trees are the only trees allowed. The shallow-rooted trees will not be permitted any closer than 15 feet from the centerline of the pipeline, and such trees shall not be taller than 25 feet with a root spread no greater than 20 feet in diameter at maturity. Shrubs, bushes, vines, and ground cover are permitted, but larger shrubs and bushes should not be planted directly over our pipeline. Turf is acceptable. We require submittal of landscape plans for Metropolitan's prior review and written approval. (See Figure 3).

e. The landscape plans must contain provisions for Metropolitan's vehicular access at all times along its rights-of-way to its pipelines or facilities therein. Gates capable of accepting Metropolitan's locks are required in any fences across its rights-of-way. Also, any walks or drainage facilities across its access route must be constructed to AASHTO H-20 loading standards.

f. Rights to landscape any of Metropolitan's fee properties must be acquired from its Right of Way and Land Division. Appropriate entry permits must be obtained prior to any entry on its property. There will be a charge for any entry permit or easements required.

6. <u>Fencing</u>

Metropolitan requires that perimeter fencing of its fee properties and facilities be constructed of universal chain link, 6 feet in height and topped with 3 strands of barbed wire angled upward and outward at a 45 degree angle or an approved equal for a total fence height of 7 feet. Suitable substitute fencing may be considered by Metropolitan. (Please see Figure 5 for details).

7. <u>Utilities in Metropolitan's Fee Properties and/or Easements or Adjacent to Its Pipeline in Public Streets</u>

Metropolitan's policy for the alinement of utilities permitted within its fee properties and/or easements and street rights-of-way is as follows:

a. Permanent structures, including catch basins, manholes, power poles, telephone riser boxes, etc., shall not be located within its fee properties and/or easements.

b. We request that permanent utility structures within public streets, in which Metropolitan's facilities are constructed under the Metropolitan Water District Act, be placed as far from our pipeline as possible, but not closer than 5 feet from the outside of our pipeline.

c. The installation of utilities over or under Metropolitan's pipeline(s) must be in accordance with the requirements shown on the enclosed prints of Drawings Nos. C-11632 and C-9547. Whenever possible we request a minimum of one foot clearance between Metropolitan's pipe and your facility. Temporary support of Metropolitan's pipe may also be required at undercrossings of its pipe in an open trench. The temporary support plans must be reviewed and approved by Metropolitan.

d. Lateral utility crossings of Metropolitan's pipelines must be as perpendicular to its pipeline alinement as practical. Prior to any excavation our pipeline shall be located manually and any excavation within two feet of our pipeline must be done by hand. This shall be noted on the appropriate drawings.

e. Utilities constructed longitudinally within Metropolitan's rights-of-way must be located outside the theoretical trench prism for uncovering its pipeline and must be located parallel to and as close to its rights-of-way lines as practical.

f. When piping is jacked or installed in jacked casing or tunnel under Metropolitan's pipe, there must be at least two feet of vertical clearance between the bottom of Metropolitan's pipe and the top of the jacked pipe, jacked casing or tunnel. We also require that detail drawings of the shoring for the jacking or tunneling pits be submitted for our review and approval. Provisions must be made to grout any voids around the exterior of the jacked pipe, jacked casing or tunnel. If the piping is installed in a jacked casing or tunnel the annular space between the piping and the jacked casing or tunnel must be filled with grout.

g. Overhead electrical and telephone line requirements:

1) Conductor clearances are to conform to the California State Public Utilities Commission, General Order 95, for Overhead Electrical Line Construction or at a greater clearance if required by Metropolitan. Under no circumstances shall clearance be less than 35 feet.

2) A marker must be attached to the power pole showing the ground clearance and line voltage, to help prevent damage to your facilities during maintenance or other work being done in the area.

3) Line clearance over Metropolitan's fee properties and/or easements shall be shown on the drawing to indicate the lowest point of the line under the most adverse conditions including consideration of sag, wind load, temperature change, and support type. We require that overhead lines be located at least 30 feet laterally away from all above-ground structures on the pipelines.

4) When underground electrical conduits, 120 volts or greater, are installed within Metropolitan's fee property and/or easement, the conduits must be incased in a minimum of three inches of red concrete. Where possible, above ground warning signs must also be placed at the right-of-way lines where the conduits enter and exit the right-of-way.

h. The construction of sewerlines in Metropolitan's fee properties and/or easements must conform to the California Department of Health Services Criteria for the Separation of Water Mains and Sanitary Services and the local City or County Health Code Ordinance as it relates to installation of sewers in the vicinity of pressure waterlines. The construction of sewerlines should also conform to these standards in street rights-of- way.

i. Cross sections shall be provided for all pipeline crossings showing Metropolitan's fee property and/or easement limits and the location of our pipeline(s). The exact locations of the crossing pipelines and their elevations shall be marked on as-built drawings for our information.

j. Potholing of Metropolitan's pipeline is required if the vertical clearance between a utility and Metropolitan's pipeline is indicated on the plan to be one foot or less. If the indicated clearance is between one and two feet, potholing is suggested. Metropolitan will provide a representative to assists others in locating and identifying its pipeline. Two-working days notice is requested.

k. Adequate shoring and bracing is required for the full depth of the trench when the excavation encroaches within the zone shown on Figure 4.

l. The location of utilities within Metropolitan's fee property and/or easement shall be plainly marked to help prevent damage during maintenance or other work done in the area. Detectable tape over buried utilities should be placed a minimum of 12 inches above the utility and shall conform to the following requirements:

1) Water pipeline: A two-inch blue warning tape shall be imprinted with:

"CAUTION BURIED WATER PIPELINE"

2) Gas, oil, or chemical pipeline: A two-inch yellow warning tape shall be imprinted with:

"CAUTION BURIED _____ PIPELINE"

3) Sewer or storm drain pipeline: A two-inch green warning tape shall be imprinted with:

"CAUTION BURIED _____ PIPELINE"

4) Electric, street lighting, or traffic signals conduit: A two-inch red warning tape shall be imprinted with:

"CAUTION BURIED _____ CONDUIT"

5) Telephone, or television conduit: A two-inch orange warning tape shall be imprinted with:

"CAUTION BURIED _____ CONDUIT"

m. Cathodic Protection requirements:

1) If there is a cathodic protection station for Metropolitan's pipeline in the area of the proposed work, it shall be located prior to any grading or excavation. The exact location, description and manner of protection shall be shown on all applicable plans. Please contact Metropolitan's Corrosion Engineering Section, located at Metropolitan's F. E. Weymouth Softening and Filtration Plant, 700 North Moreno Avenue, La Verne, California 91750, telephone (714) 593-7474, for the locations of Metropolitan's cathodic protection stations.

2) If an induced-current cathodic protection system is to be installed on any pipeline crossing Metropolitan's pipeline, please contact Mr. Wayne E. Risner at (714) 593-7474 or (213) 250-5085. He will review the proposed system and determine if any conflicts will arise with the existing cathodic protection systems installed by Metropolitan.

3) Within Metropolitan's rights-of-way, pipelines and carrier pipes (casings) shall be coated with an approved protective coating to conform to Metropolitan's requirements, and shall be maintained in a neat and orderly condition as directed by Metropolitan. The application and monitoring of cathodic protection on the pipeline and casing shall conform to Title 49 of the Code of Federal Regulations, Part 195.

4) If a steel carrier pipe (casing) is used:

(a) Cathodic protection shall be provided by use of a sacrificial magnesium anode (a sketch showing the cathodic protection details can be provided for the designers information).

(b) The steel carrier pipe shall be protected with a coal tar enamel coating inside and out in accordance with AWWA C203 specification.

n. All trenches shall be excavated to comply with the CAL/OSHA Construction Safety Orders, Article 6, beginning with Sections 1539 through 1547. Trench backfill shall be placed in 8-inch lifts and shall be compacted to 95 percent relative compaction (ASTM D698) across roadways and through protective dikes. Trench backfill elsewhere will be compacted to 90 percent relative compaction (ASTM D698).

o. Control cables connected with the operation of Metropolitan's system are buried within streets, its fee properties and/or easements. The locations and elevations of these cables shall be shown on the drawings. The drawings shall note that prior to any excavation in the area, the control cables shall be located and measures shall be taken by the contractor to protect the cables in place.

p. Metropolitan is a member of Underground Service Alert (USA). The contractor (excavator) shall contact USA at 1-800-422-4133 (Southern California) at least 48 hours prior to starting any excavation work. The contractor will be liable for any damage to Metropolitan's facilities as a result of the construction.

8. Paramount Right

Facilities constructed within Metropolitan's fee properties and/or easements shall be subject to the paramount right of Metropolitan to use its fee properties and/or easements for the purpose for which they were acquired. If at any time Metropolitan or its assigns should, in the exercise of their rights, find it necessary to remove any of the facilities from the fee properties and/or easements, such removal and replacement shall be at the expense of the owner of the facility.

9. Modification of Metropolitan's Facilities

When a manhole or other of Metropolitan's facilities must be modified to accommodate your construction or reconstruction, Metropolitan will modify the facilities with its forces. This should be noted on the construction plans. The estimated cost to perform this modification will be given to you and we will require a deposit for this amount before the work is performed. Once the deposit is received, we will schedule the work. Our forces will coordinate the work with your contractor. Our final billing will be based on actual cost incurred, and will include materials, construction, engineering plan review, inspection, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount.

10. Drainage

a. Residential or commercial development typically increases and concentrates the peak storm water runoff as well as the total yearly storm runoff from an area, thereby increasing the requirements for storm drain facilities downstream of the development. Also, throughout the year water from landscape irrigation, car washing, and other outdoor domestic water uses flows into the storm drainage system resulting in weed abatement, insect infestation, obstructed access and other problems. Therefore, it is Metropolitan's usual practice not to approve plans that show discharge of drainage from developments onto its fee properties and/or easements.

b. If water must be carried across or discharged onto Metropolitan's fee properties and/or easements, Metropolitan will insist that plans for development provide that it be carried by closed conduit or lined open channel approved in writing by Metropolitan. Also the drainage facilities must be maintained by others, e.g., city, county, homeowners association, etc. If the development proposes changes to existing drainage features, then the developer shall make provisions to provide for replacement and these changes must be approved by Metropolita in writing.

11. Construction Coordination

During construction, Metropolitan's field representative will make periodic inspections. We request that a stipulation be added to the plans or specifications for notification of Mr. _____ of Metropolitan's Operations Services Branch, telephone (213) 250-____, at least two working days prior to any work in the vicinity of our facilities.

12. Pipeline Loading Restrictions

a. Metropolitan's pipelines and conduits vary in structural strength, and some are not adequate for AASHTO H-20 loading. Therefore, specific loads over the specific sections of pipe or conduit must be reviewed and approved by Metropolitan. However, Metropolitan's pipelines are typically adequate for AASHTO H-20 loading provided that the cover over the pipeline is not less than four feet or the cover is not substantially increased. If the temporary cover over the pipeline during construction is between three and four feet, equipment must restricted to that which

imposes loads no greater than AASHTO H-10. If the cover is between two and three feet, equipment must be restricted to that of a Caterpillar D-4 tract-type tractor. If the cover is less than two feet, only hand equipment may be used. Also, if the contractor plans to use any equipment over Metropolitan's pipeline which will impose loads greater than AASHTO H-20, it will be necessary to submit the specifications of such equipment for our review and approval at least one week prior to its use. More restrictive requirements may apply to the loading guideline over the San Diego Pipelines 1 and 2, portions of the Orange County Feeder, and the Colorado River Aqueduct. Please contact us for loading restrictions on all of Metropolitan's pipelines and conduits.

b. The existing cover over the pipeline shall be maintained unless Metropolitan determines that proposed changes do not pose a hazard to the integrity of the pipeline or an impediment to its maintenance.

13. Blasting

a. At least 20 days prior to the start of any drilling for rock excavation blasting, or any blasting, in the vicinity of Metropolitan's facilities, a two-part preliminary conceptual plan shall be submitted to Metropolitan as follows:

b. Part 1 of the conceptual plan shall include a complete summary of proposed transportation, handling, storage, and use of explosions.

c. Part 2 shall include the proposed general concept for blasting, including controlled blasting techniques and controls of noise, fly rock, airblast, and ground vibration.

14. CEQA Requirements

a. When Environmental Documents Have Not Been Prepared

1) Regulations implementing the California Environmental Quality Act (CEQA) require that Metropolitan have an opportunity to consult with the agency or consultants preparing any environmental documentation. We are required to review and consider the environmental effects of the project as shown in the Negative Declaration or Environmental Impact Report (EIR) prepared for your project before committing Metropolitan to approve your request.

2) In order to ensure compliance with the regulations implementing CEQA where Metropolitan is not the Lead Agency, the following minimum procedures to ensure compliance with the Act have been established:

a) Metropolitan shall be timely advised of any determination that a Categorical Exemption applies to the project. The Lead Agency is to advise Metropolitan that it and other agencies participating in the project have complied with the requirements of CEQA prior to Metropolitan's participation.

b) Metropolitan is to be consulted during the preparation of the Negative Declaration or EIR.

c) Metropolitan is to review and submit any necessary comments on the Negative Declaration or draft EIR.

d) Metropolitan is to be indemnified for any costs or liability arising out of any violation of any laws or regulations including but not limited to the California Environmental Quality Act and its implementing regulations.

b. <u>When Environmental Documents Have Been Prepared</u>

If environmental documents have been prepared for your project, please furnish us a copy for our review and files in a timely manner so that we may have sufficient time to review and comment. The following steps must also be accomplished:

1) The Lead Agency is to advise Metropolitan that it and other agencies participating in the project have complied with the requirements of CEQA prior to Metropolitan's participation.

2) You must agree to indemnify Metropolitan, its officers, engineers, and agents for any costs or liability arising out of any violation of any laws or regulations including but not limited to the California Environmental Quality Act and its implementing regulations.

15. <u>Metropolitan's Plan-Review Cost</u>

a. An engineering review of your proposed facilities and developments and the preparation of a letter response

giving Metropolitan's comments, requirements and/or approval that will require 8 man-hours or less of effort is typically performed at no cost to the developer, unless a facility must be modified where Metropolitan has superior rights. If an engineering review and letter response requires more than 8 man-hours of effort by Metropolitan to determine if the proposed facility or development is compatible with its facilities, or if modifications to Metropolitan's manhole(s) or other facilities will be required, then all of Metropolitan's costs associated with the project must be paid by the developer, unless the developer has superior rights.

b. A deposit of funds will be required from the developer before Metropolitan can begin its detailed engineering plan review that will exceed 8 hours. The amount of the required deposit will be determined after a cursory review of the plans for the proposed development.

c. Metropolitan's final billing will be based on actual cost incurred, and will include engineering plan review, inspection, materials, construction, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount. Additional deposits may be required if the cost of Metropolitan's review exceeds the amount of the initial deposit.

16. <u>Caution</u>

We advise you that Metropolitan's plan reviews and responses are based upon information available to Metropolitan which was prepared by or on behalf of Metropolitan for general record purposes only. Such information may not be sufficiently detailed or accurate for your purposes. No warranty of any kind, either express or implied, is attached to the information therein conveyed as to its accuracy, and no inference should be drawn from Metropolitan's failure to comment on any aspect of your project. You are therefore cautioned to make such surveys and other field investigations as you may deem prudent to assure yourself that any plans for your project are correct.

17. Additional Information

Should you require additional information, please contact:

Civil Engineering Substructures Section
Metropolitan Water District
of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
(213) 217-6000

JEH/MRW/lk

Rev. January 22, 1989

Encl.

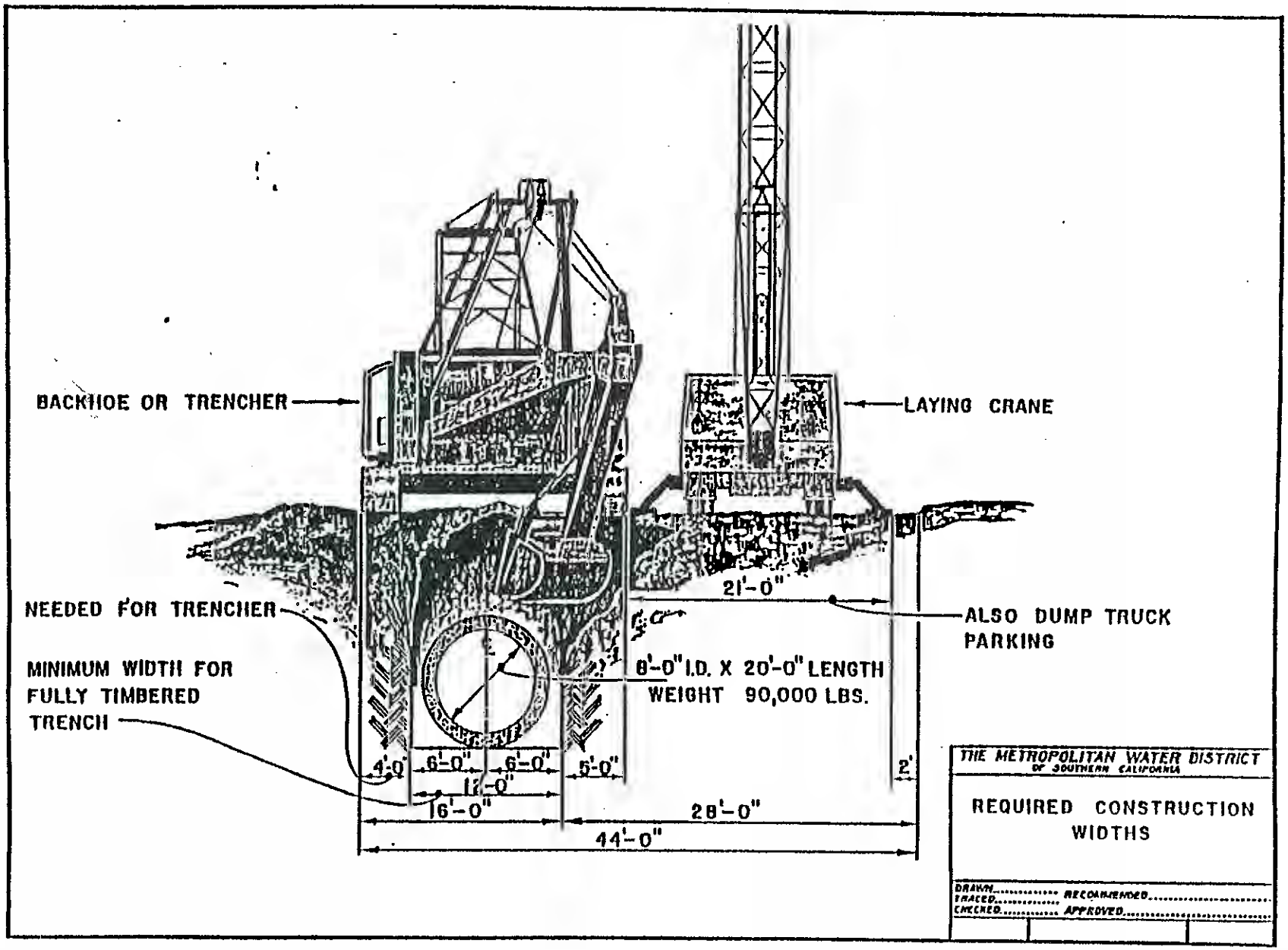
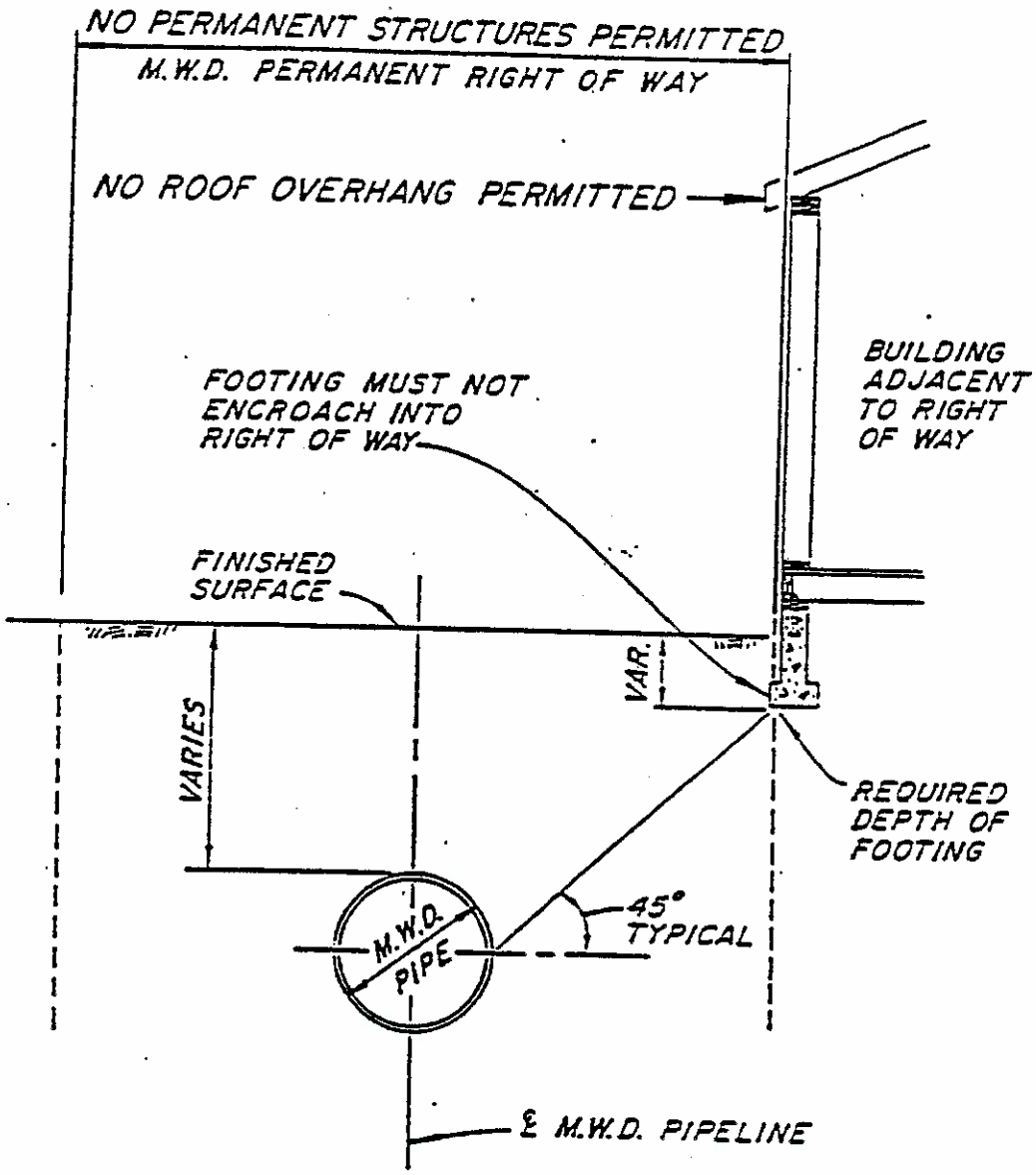


FIGURE 1

FORM NO 39 9 1000 11-68 P.O. NO. 68-5907



NOTE: M.W.D. PIPELINE SIZE, DEPTH, LOCATION AND WIDTH OF PERMANENT RIGHT OF WAY VARIES.

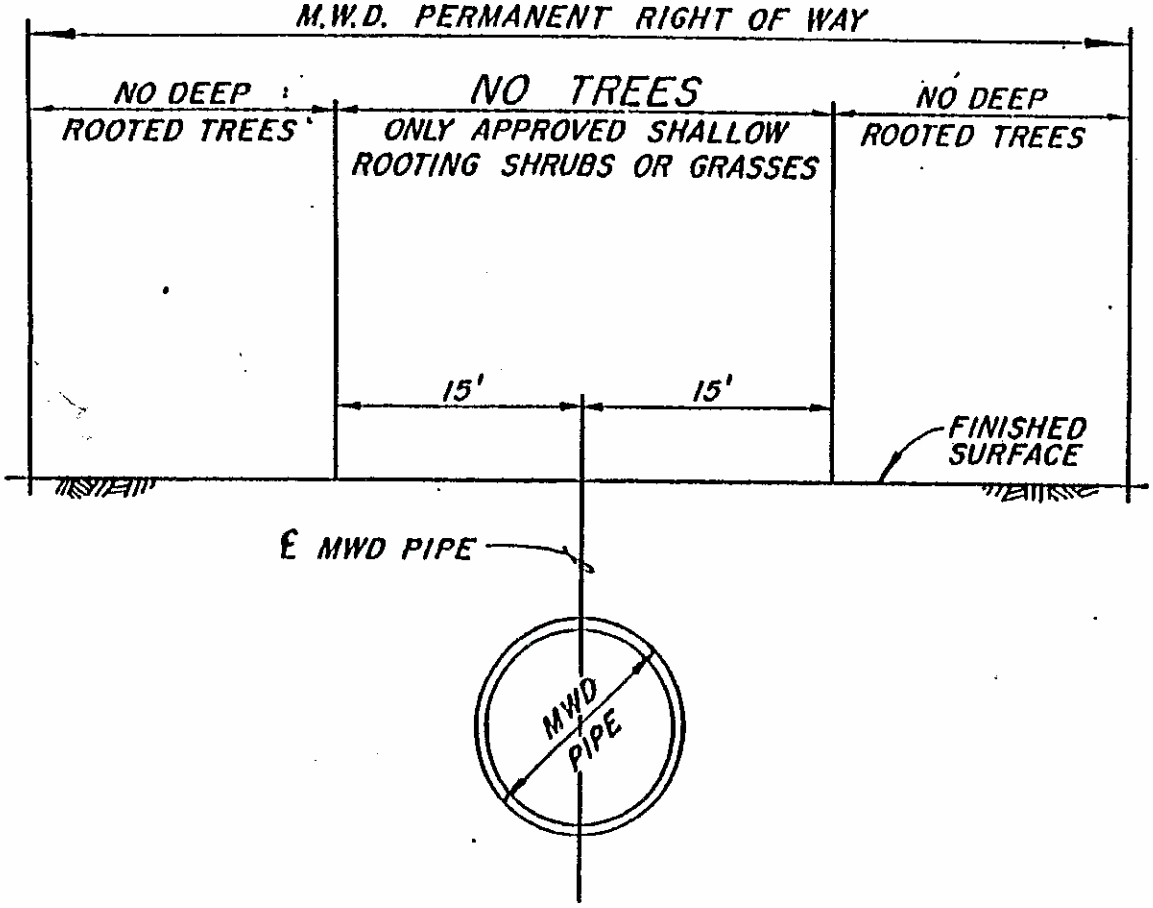
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

REQUIREMENTS FOR BUILDINGS AND FOOTINGS ADJACENT TO M.W.D. RIGHT OF WAY

DRAWN ____ RECOMMENDED ____
TRACED ____
CHECKED ____ APPROVED ____

FIGURE 2

11-67 BIETERICH-POST CLEARPRINT 1023

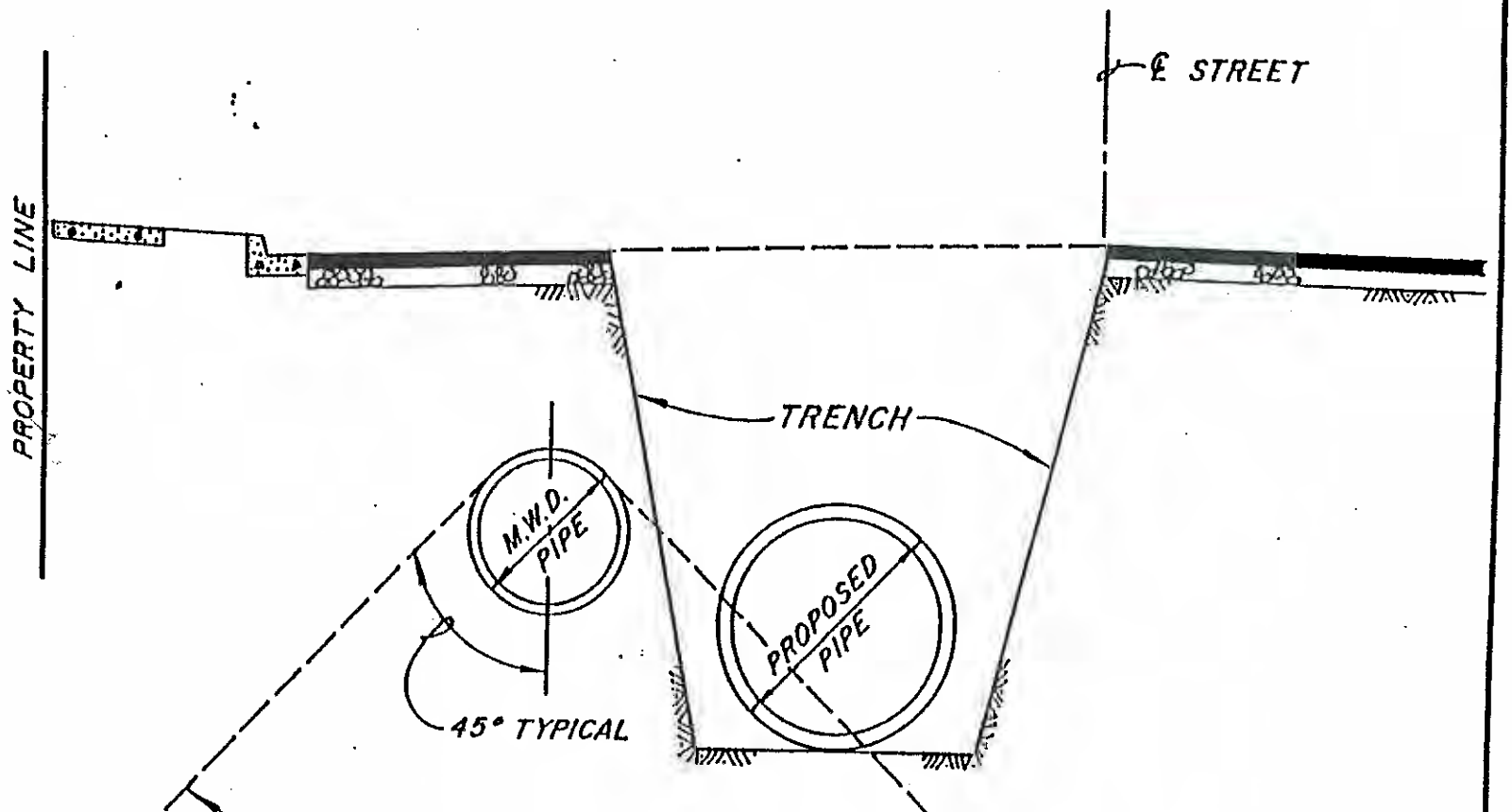


THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

LANDSCAPE GUIDELINES FOR M.W.D. RIGHT OF WAY

DRAWN..... RECOMMENDED.....
TRACED.....
CHECKED..... APPROVED.....

FIGURE 3



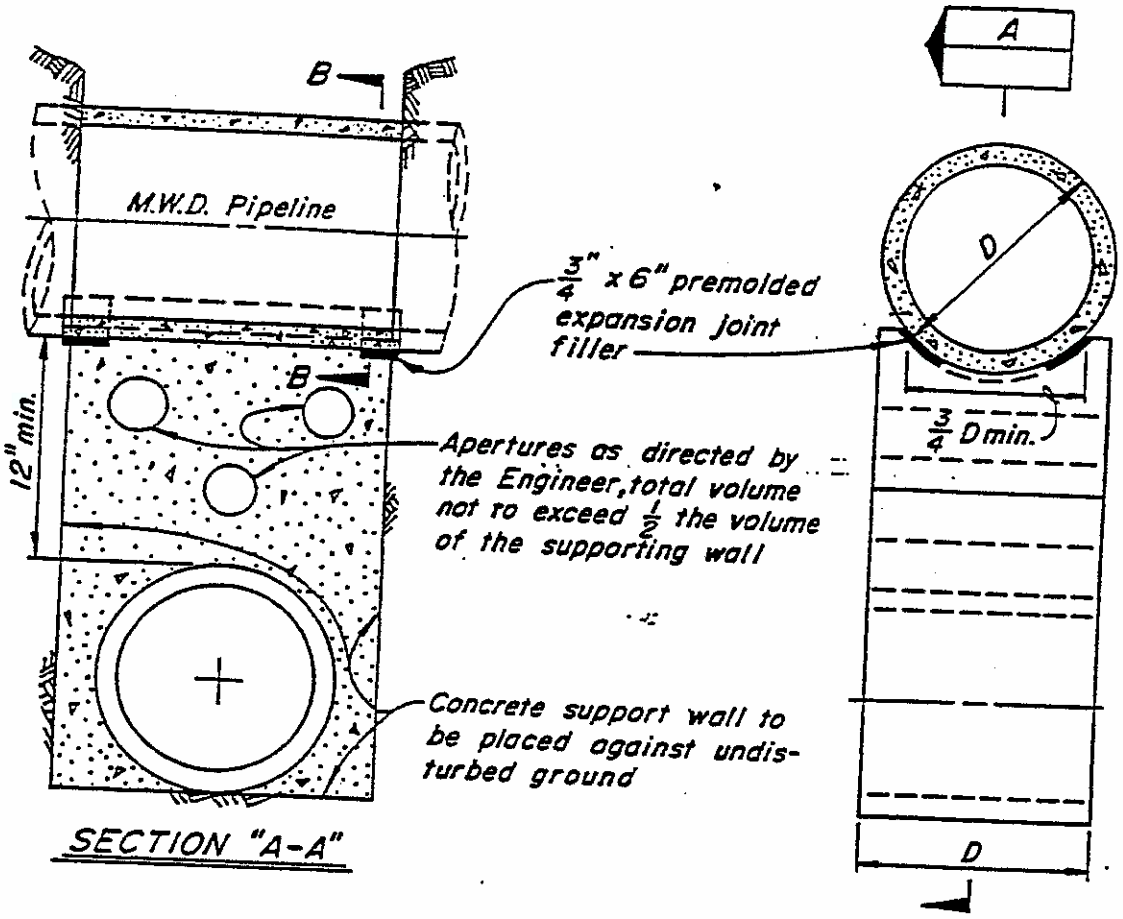
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

SHORING AND BRACING REQUIREMENTS

DRAWN..... RECOMMENDED.....
TRACED.....
CHECKED..... APPROVED.....

FIGURE 4

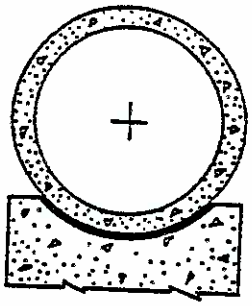
FORM NO. 3P 9 1000 11-49 P.O. NO 48-4407



SECTION "A-A"

CROSS SECTION

1. Supporting wall shall have a firm bearing on the subgrade and against the side of the excavation.
2. Premolded expansion joint filler per ASTM D-1751-73 to be used in support for steel pipe only.
3. If trench width is 4 feet or greater, measured along centerline of M.W.D. pipe, concrete support must be constructed.
4. If trench width is less than 4 feet, clean sand backfill, compacted to 90% density in accordance with the provisions of ASTM Standard D-1557-70 may be used in lieu of the concrete support wall.



SECTION "B-B"

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

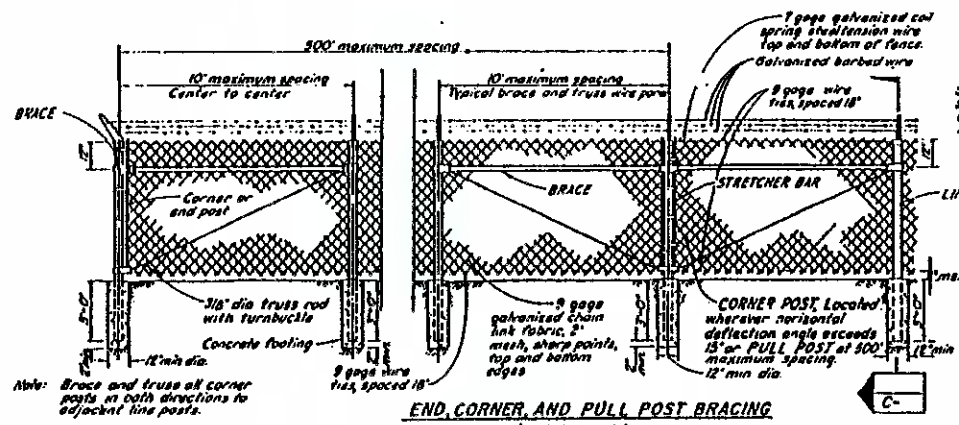
TYPICAL SUPPORT FOR M.W.D. PIPELINE

DRAWN
TRACED
CHECKED
RECOMMENDED
APPROVED

C-9547

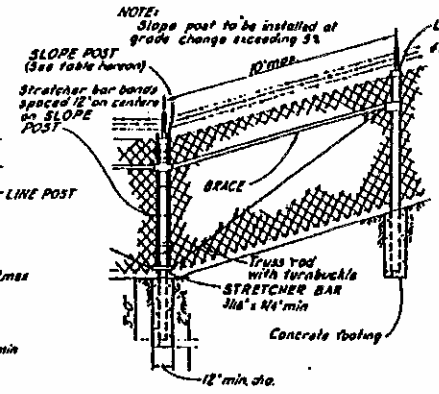
FORM NO. 88-B 1000 11-67 P.O. 67-8714

11-67 DIETERICH-POST CLEARPRINT 1025

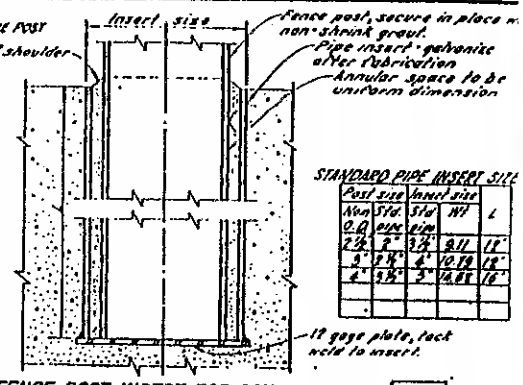


Note: Brace and truss all corner posts in both directions to adjacent line posts.

END, CORNER, AND PULL POST BRACING
(Not to scale)



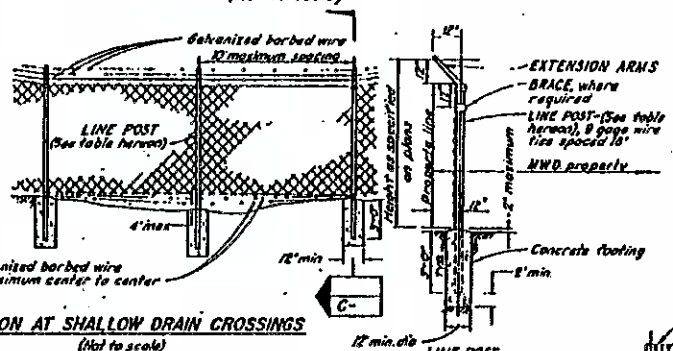
TYPICAL FENCE ON SLOPE
(Not to scale)



STANDARD PIPE INSERT SIZE

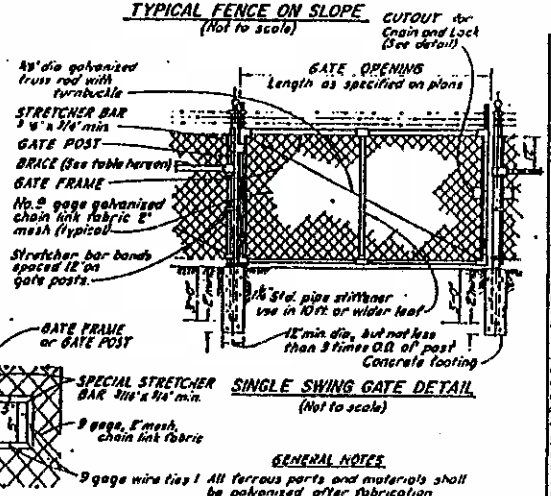
Post size	Insert size			
Nom. O.D.	Std. pipe	Std. pipe	Wt	L
2½"	2"	3½"	9.11	12"
3"	2½"	4"	10.79	12"
4"	3½"	5"	14.88	16"

FENCE POST INSERT FOR CONCRETE WALL AND CONCRETE CURB
(Not to scale) 1



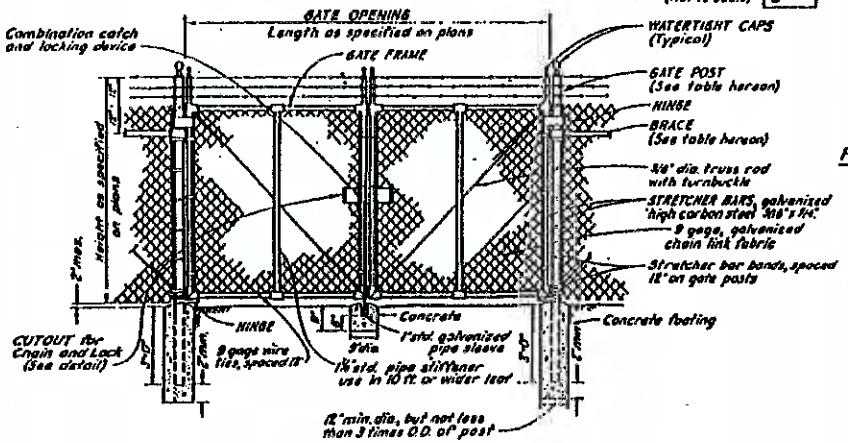
ELEVATION AT SHALLOW DRAIN CROSSINGS
(Not to scale)

LINE POST SECTION
(Not to scale) C-



SINGLE SWING GATE DETAIL
(Not to scale)

Use	Type	Nominal Size (inches)	Actual O.D. (inches)	Weight per foot
End, corner, slope, pull and gate posts (for single gates 6 feet or less in width and double gates 12 feet or less in width) for chain link fabric 72 inches or higher	Pipe	2½	2.875	5.7
End, corner, slope, pull and gate posts (for single gates 8 feet or less in width and double gates 16 feet or less in width) for chain link fabric less than 72 inches height	Pipe	2	2.375	3.6
Gate posts for single swing gates over 8 feet but not over 13 feet in width and double swing gates over 12 feet but not over 26 feet in width.	Pipe	3½	4.000	9.1
Gate posts for single swing gates over 13 feet but not over 18 feet in width and double swing gates over 26 feet but not over 36 feet in width.	Pipe	6	6.625	18.1
Gate posts for single swing gates over 18 feet in width and double swing gates over 36 feet in width	Pipe	8	8.625	
Line posts for chain link fabric 72 inches or higher	Pipe H-Section	2 2 1/4 x 1 7/8	2.375	3.6 4.1
Line posts for chain link fabric less than 72 inches in height	Pipe H-Section	1½ 1 7/8 x 1 7/8	1.900	2.7 2.1
Braces	Pipe H-Section	1½ 1 7/8 x 1 7/8	1.900	2.7 2.1
Frame for gates	Pipe	1½	1.900	2.7
Stiffeners for gates	Pipe	1½	1.900	2.7



DOUBLE SWING GATE DETAIL
(Not to scale)

DETAIL OF CUTOUT FOR CHAIN AND LOCK
(Not to scale)

GENERAL NOTES

1. All ferrous parts and materials shall be galvanized after fabrication
2. Adjustable tighteners shall be turnbuckle or equivalent, having minimum 6" take-up
3. Extension arms for barbed wire shall be steel, malleable iron or wrought iron and shall be attached to the top of the post with a ⅜ inch round head rivet. The extension arms shall carry three wires each at approximately 5 inch centers in a plane approximately 45° from the vertical.
4. All gate hinges shall be heavy duty malleable iron or steel, industrial service type, 270 degree swing, of approved quality and design.
5. Secure cap to post with ⅜ inch round head rivet

NO.	DATE	DWN.	CKD.	REVISION	REC.	APP.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
DISTRIBUTION SYSTEM

CHAIN LINK FENCE DETAILS

DESIGNED
DRAWN
CHECKED
WORK ORDER NO.
RECOMMENDED
APPROVED
LOS ANGELES

REVISION COORDINATION CHECK
ORIGINAL RELEASE | MECH. | STRUCT. | ELEC. | CIVIL | SPECS. | DATE
INTERSECTIONAL COORDINATION CHECK

FIGURE

County of Orange
Planning & Development Services Department

LARRY M. LEAMAN
INTERIM DIRECTOR

300 N. FLOWER ST.
SANTA ANA, CALIFORNIA

MAILING ADDRESS:
P.O. BOX 4048
SANTA ANA, CA 92702-4048

NCL 03-042

April 23, 2003

RECEIVED
APR 28 2003
W. M. W. D.

Don Harriger, General Manager
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

SUBJECT: NOP of a DEIR for the Riverside Corona Feeder Project

Dear Mr. Harriger:

Thank you for the opportunity to respond to the above referenced project. The County of Orange has reviewed the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) and has no comment at this time. However, we would appreciate being informed of any further developments.

If you have any questions, please contact Charlotte Harryman at (714) 834-2522.

Sincerely,

for Ronald Egnet
Timothy Neely, Manager
Environmental/Planning Services Division

ch

RIVERSIDE HIGHLAND WATER COMPANY
1450 E. Washington St. • Colton, CA 92324-4696 • (909) 825-4128 FAX (909) 825-1715

April 22, 2003

Ms. Roma Stromberg
Senior Environmental Specialist
Webb & Associates
3788 McCray Street
Riverside, CA 92506

Re: Pipeline Through Grand Terrace

Dear Roma;

I have printed three separate routes from our computerized mapping system. Routes I and II are your original choices. I have added a third route that would have less utilities, streets and traffic.

Routes I and II both have traffic problems. At Barton Road and Mt. Vernon Avenue, we have a 24" ACP water main that goes south and west, a 24" steel pipeline that goes east and a 12" ACP line that goes north.

In 1986, we installed the 24" ACP and the 12" ACP that are about twelve feet deep. Your pipeline would need to be deeper than ours. Barton Road at Vivienda Avenue and Michigan Street will have the same problem.

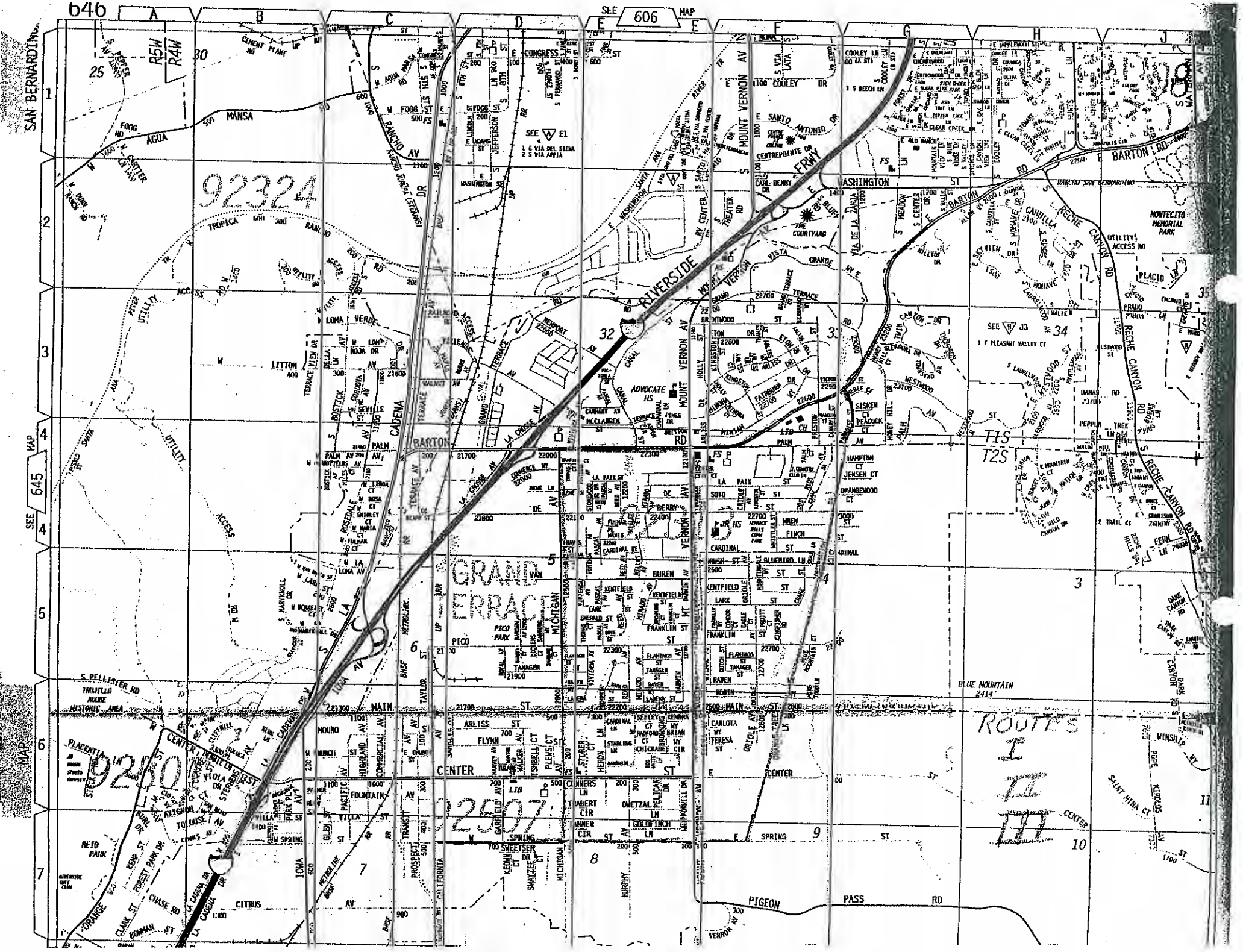
If you have any questions regarding this matter, please call me at (909) 825-4128. Thank you.

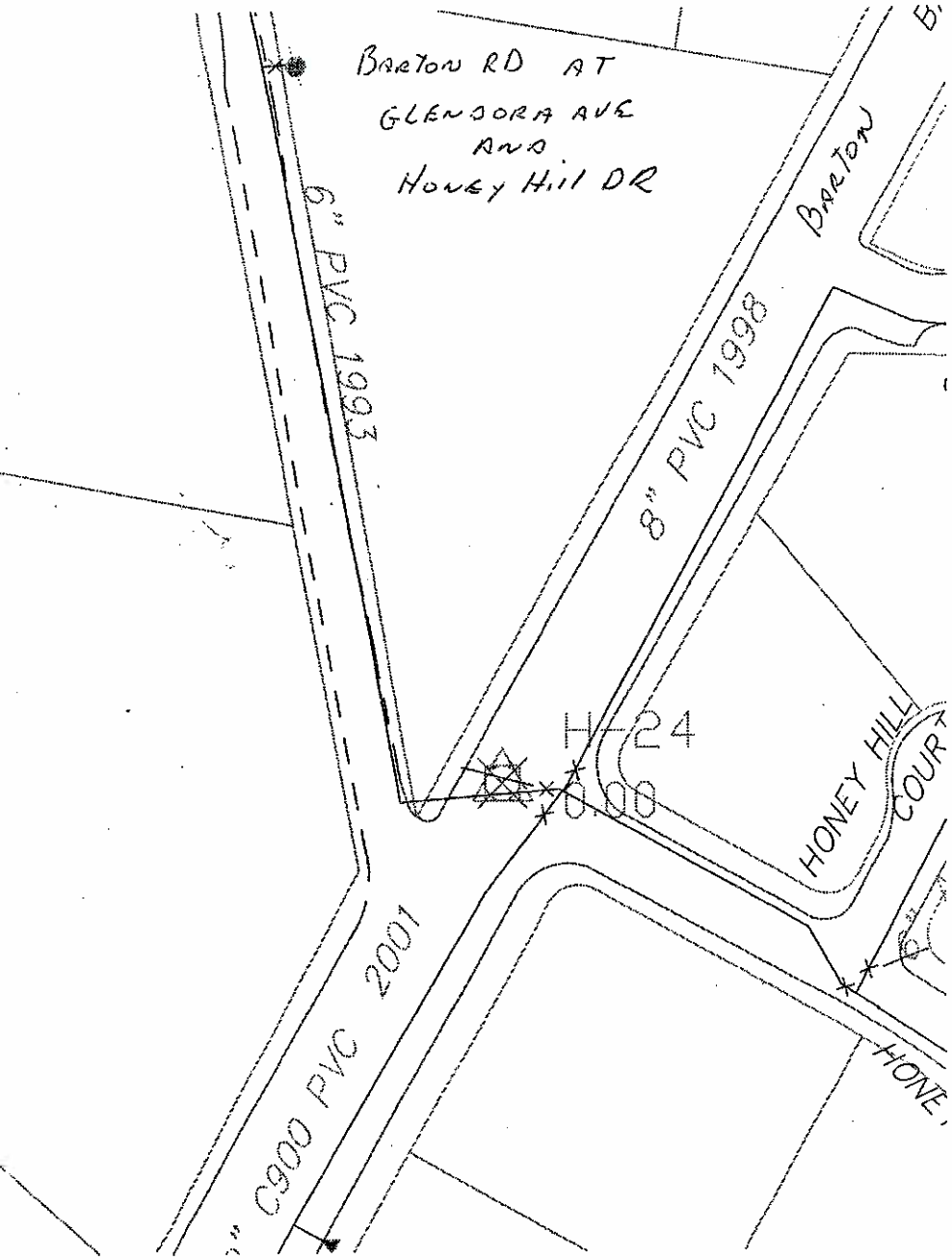
Sincerely,

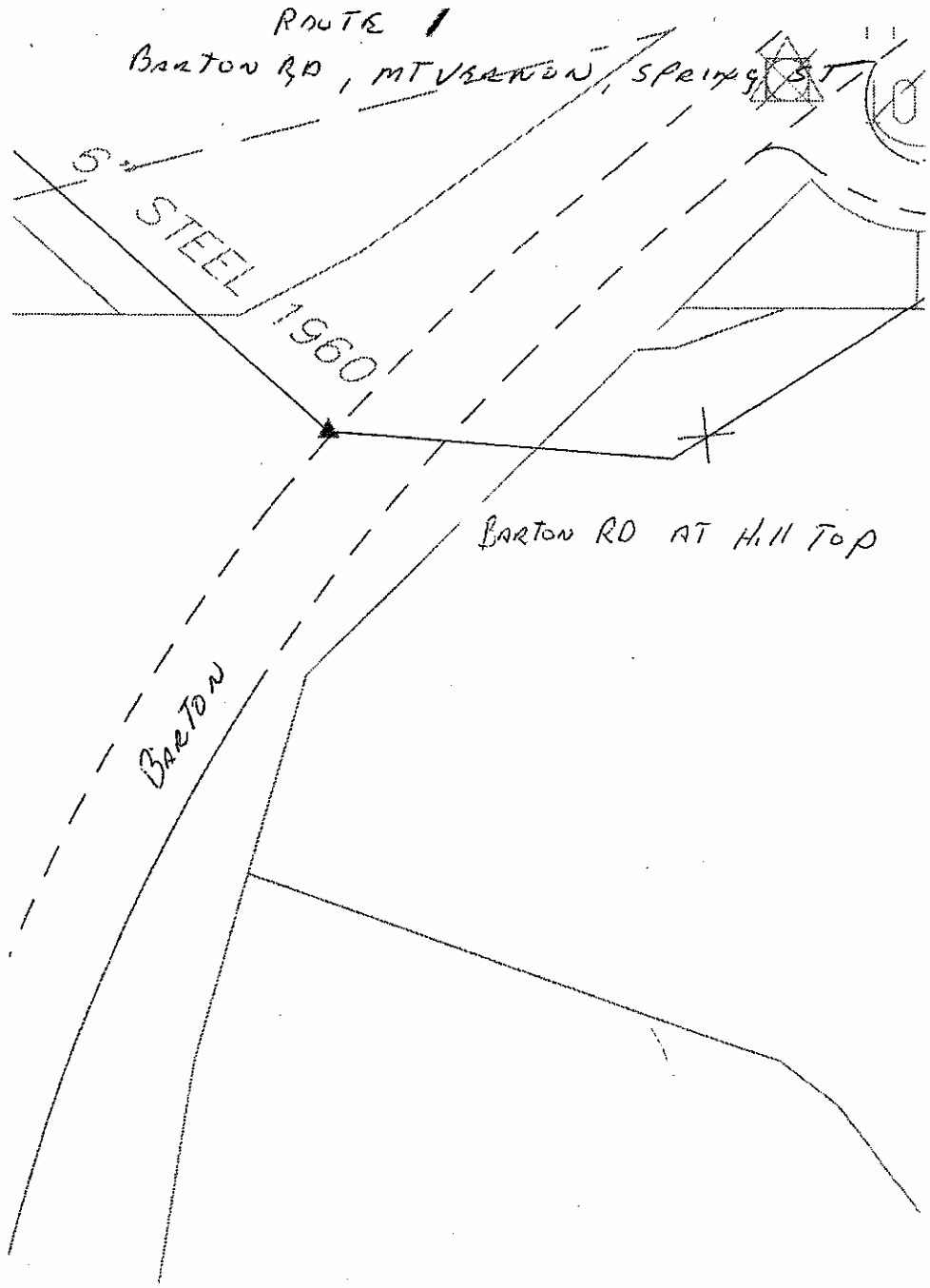
Rich Haubert
Distribution Superintendent

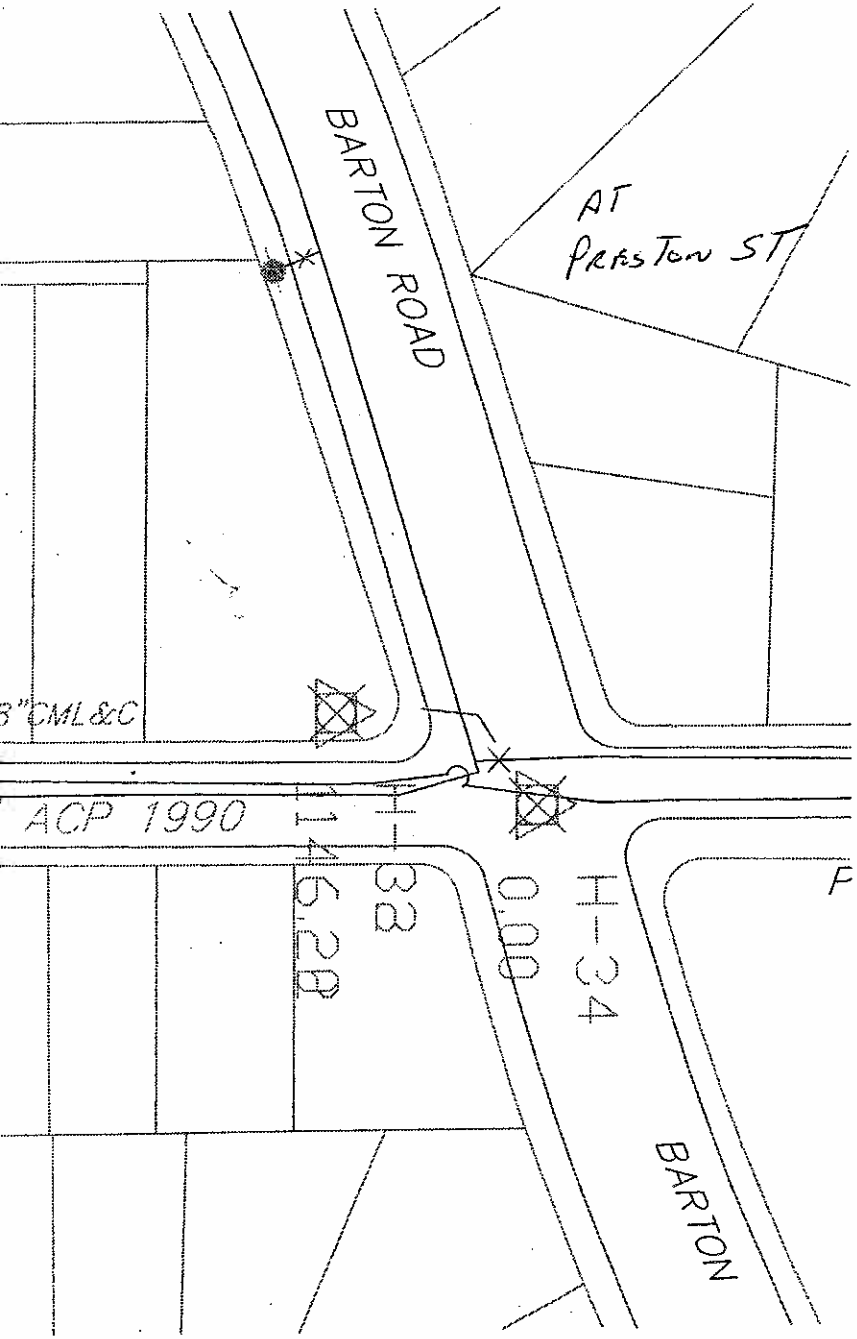
RNH/ss

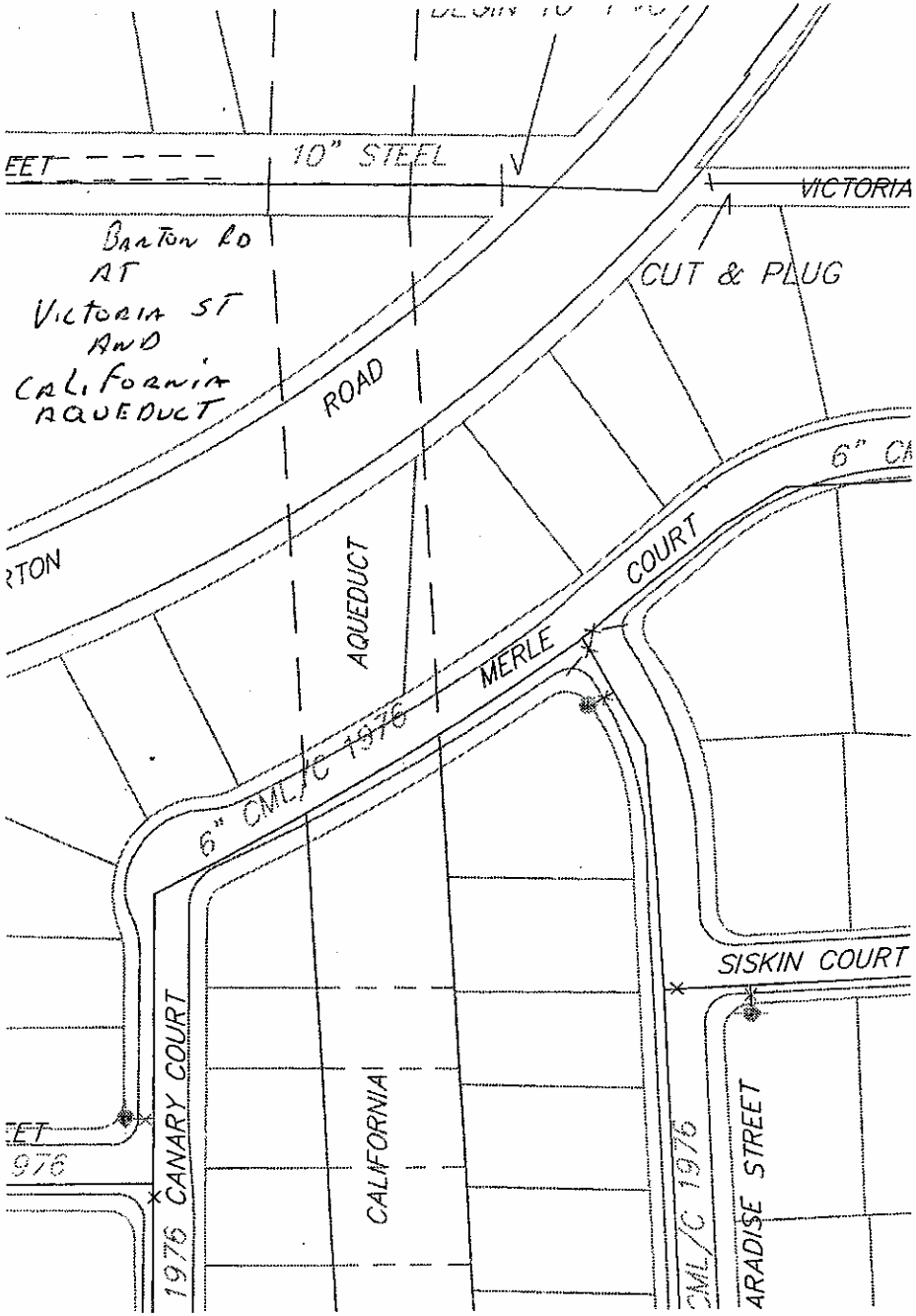
Encl.

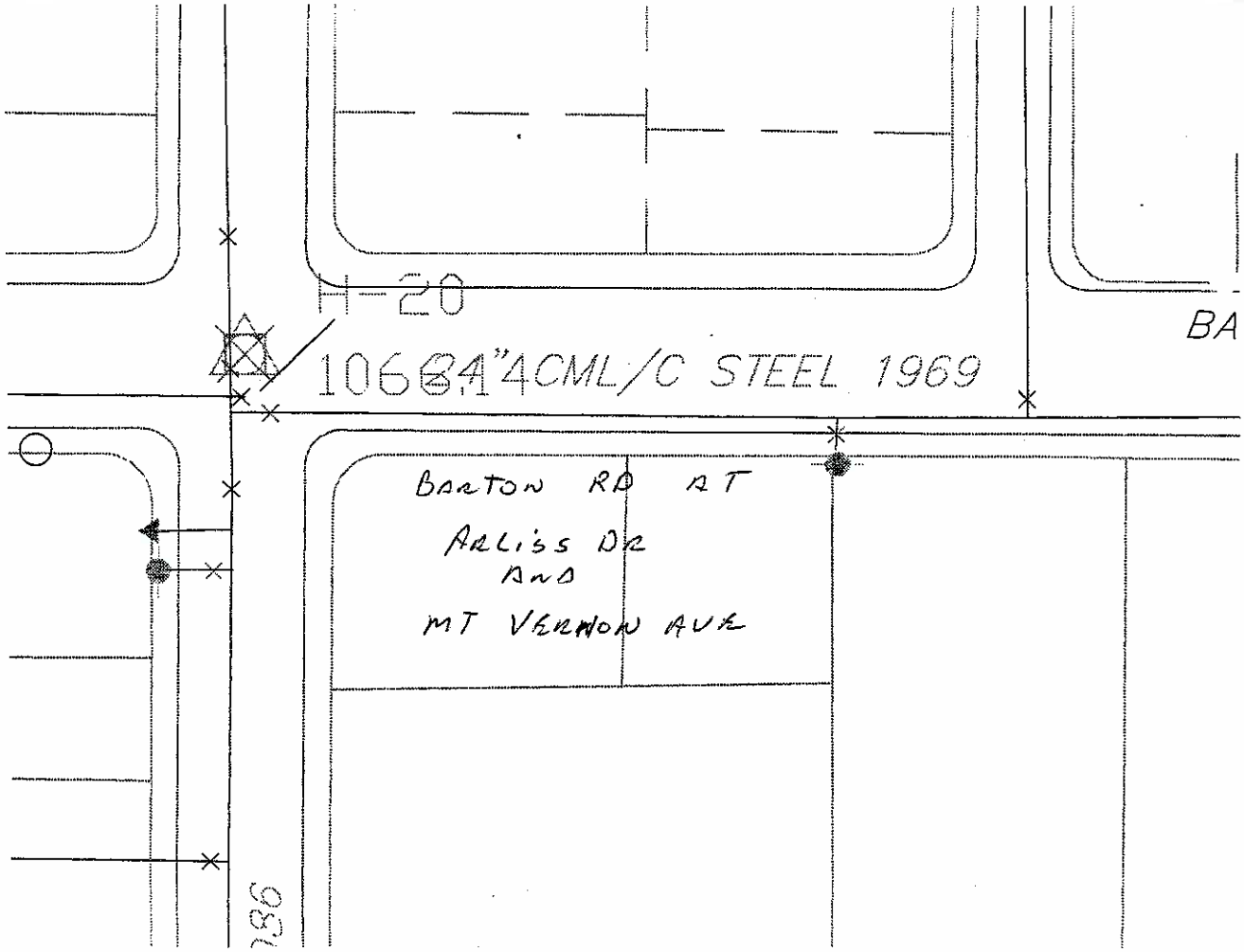

646
606
645
SEE MAP
SAN BERNARDINO
R5W
R4W
T1S
T2S
92324
92507
92508
RIVERSIDE
GRAND TERRACE
MOUNT VERNON AV
CENTER ST
MAIN ST
BARTON RD
PIGEON PASS RD
ROUTES I II III
BLUE MOUNTAIN 2414'
ADVOCATE HS
THE COURTYARD
MONTECITO MEMORIAL PARK
PICO PARK
TRUJILLO ADOBE HISTORIC AREA
REID PARK

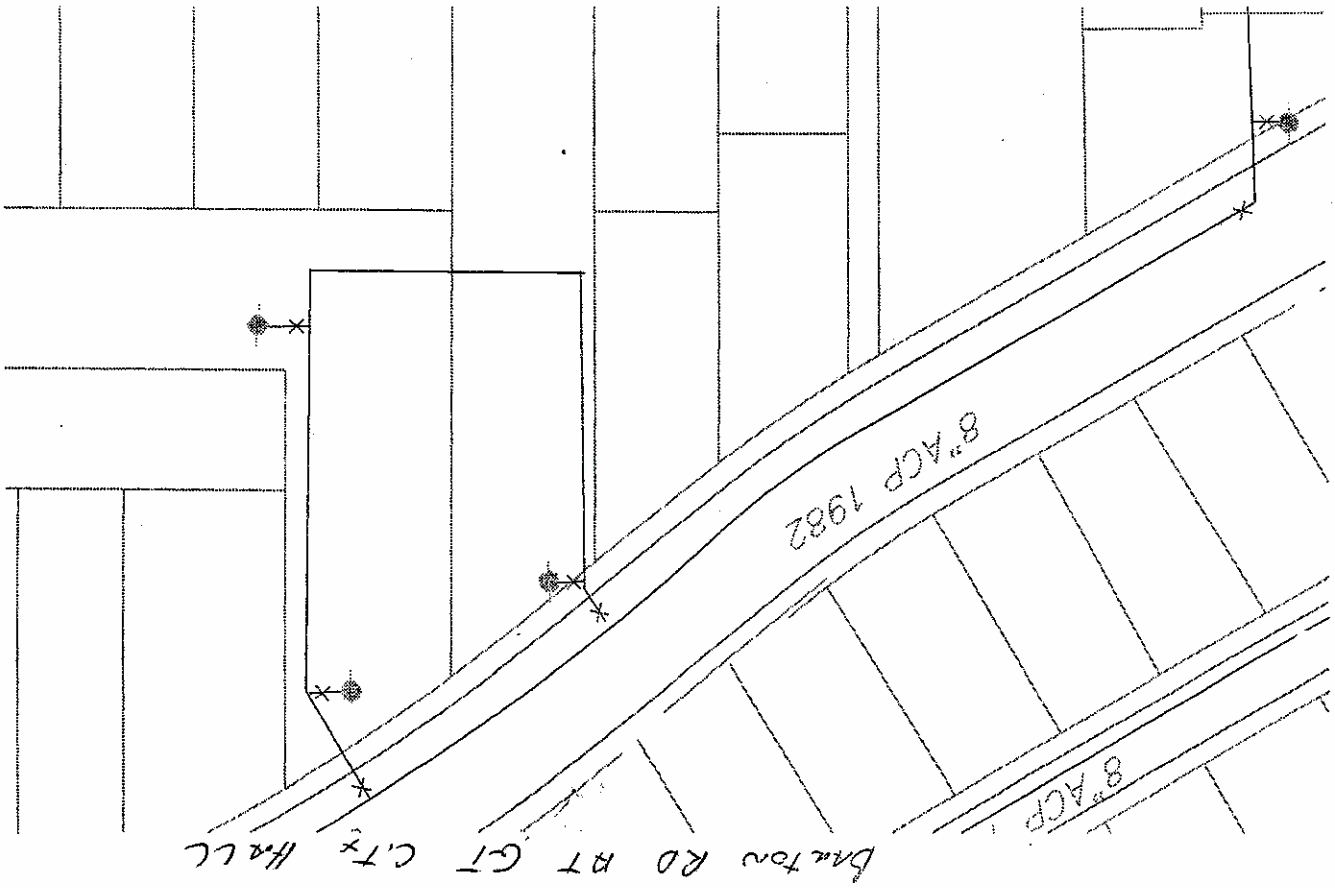

BARTON RD AT
GLENDORA AVE
AND
HONEY HILL DR
6" PVC 1993
8" PVC 1998
BARTON
H-24
0.00
HONEY HILL
COURT
" C900 PVC 2001

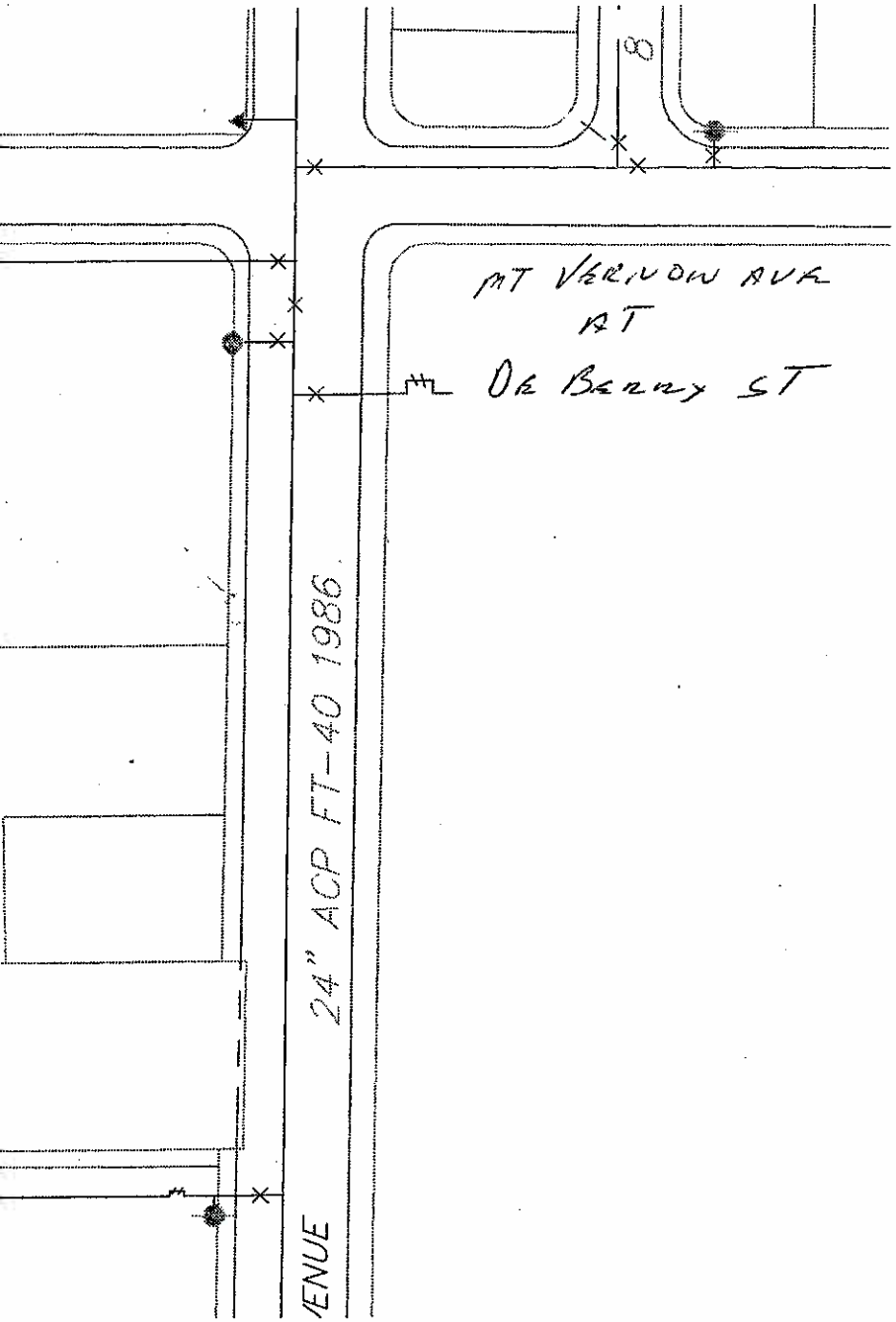

ROUTE 1
BARTON RD, MT VERNON, SPRINGFIELD
6" STEEL 1960
BARTON RD AT HILL TOP
BARTON

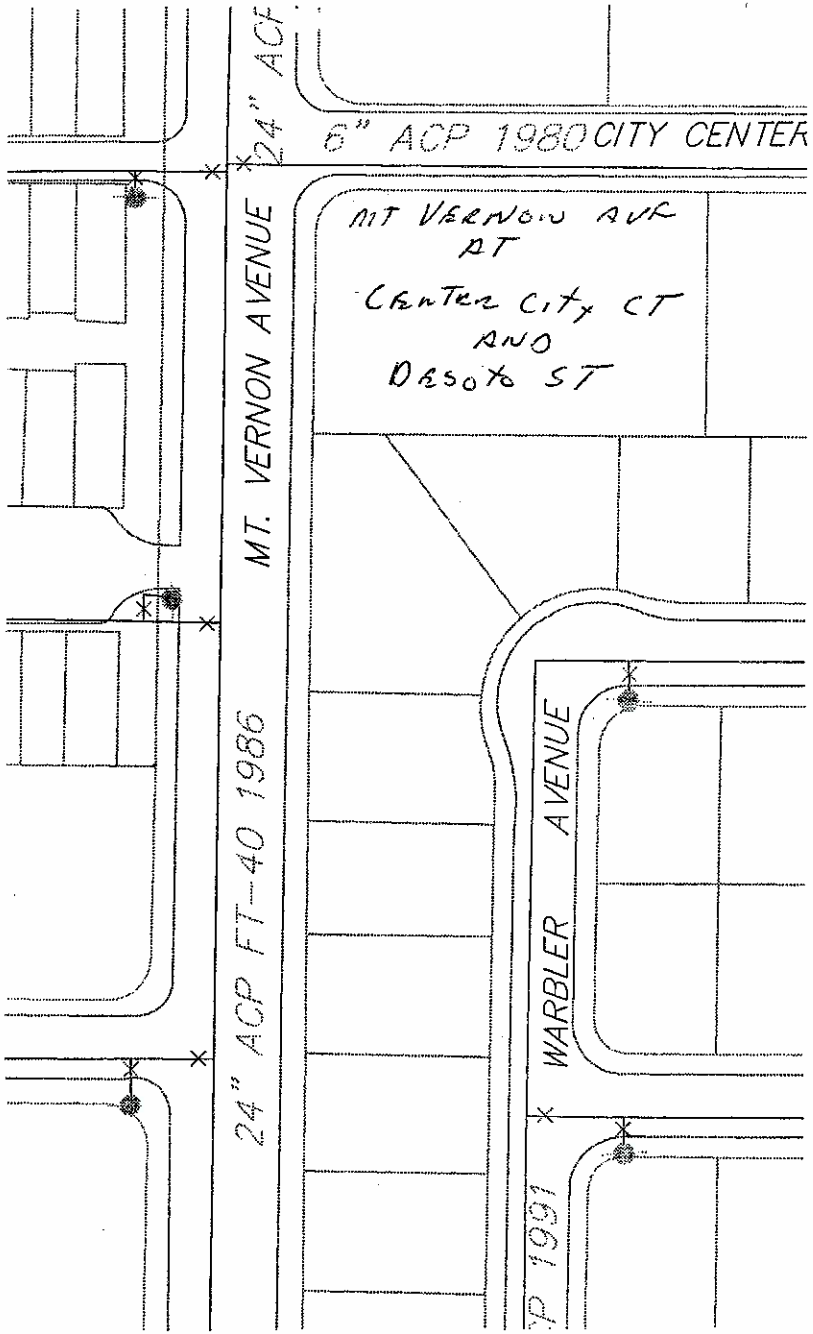

BARTON ROAD
AT
PRESTON ST
3"CML&C
ACP 1990
H-33
1146.28
0.00
H-34
BARTON

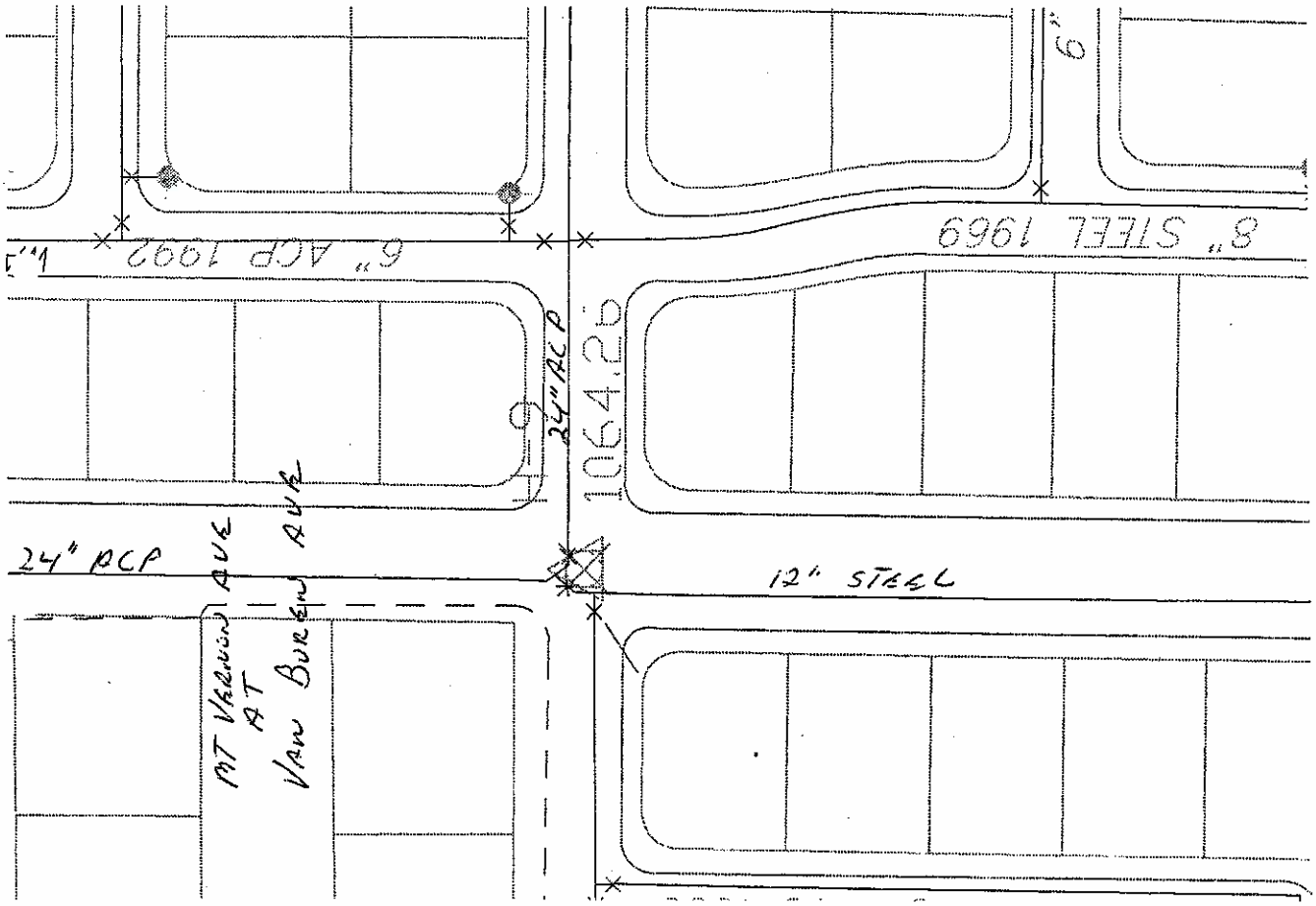

10" STEEL
VICTORIA
BARTON RD
AT
VICTORIA ST
AND
CALIFORNIA
AQUEDUCT
CUT & PLUG
ROAD
AQUEDUCT
6" CA
COURT
MERLE
6" CML/C 1976
SISKIN COURT
1976 CANARY COURT
CALIFORNIA
CML/C 1976
PARADISE STREET

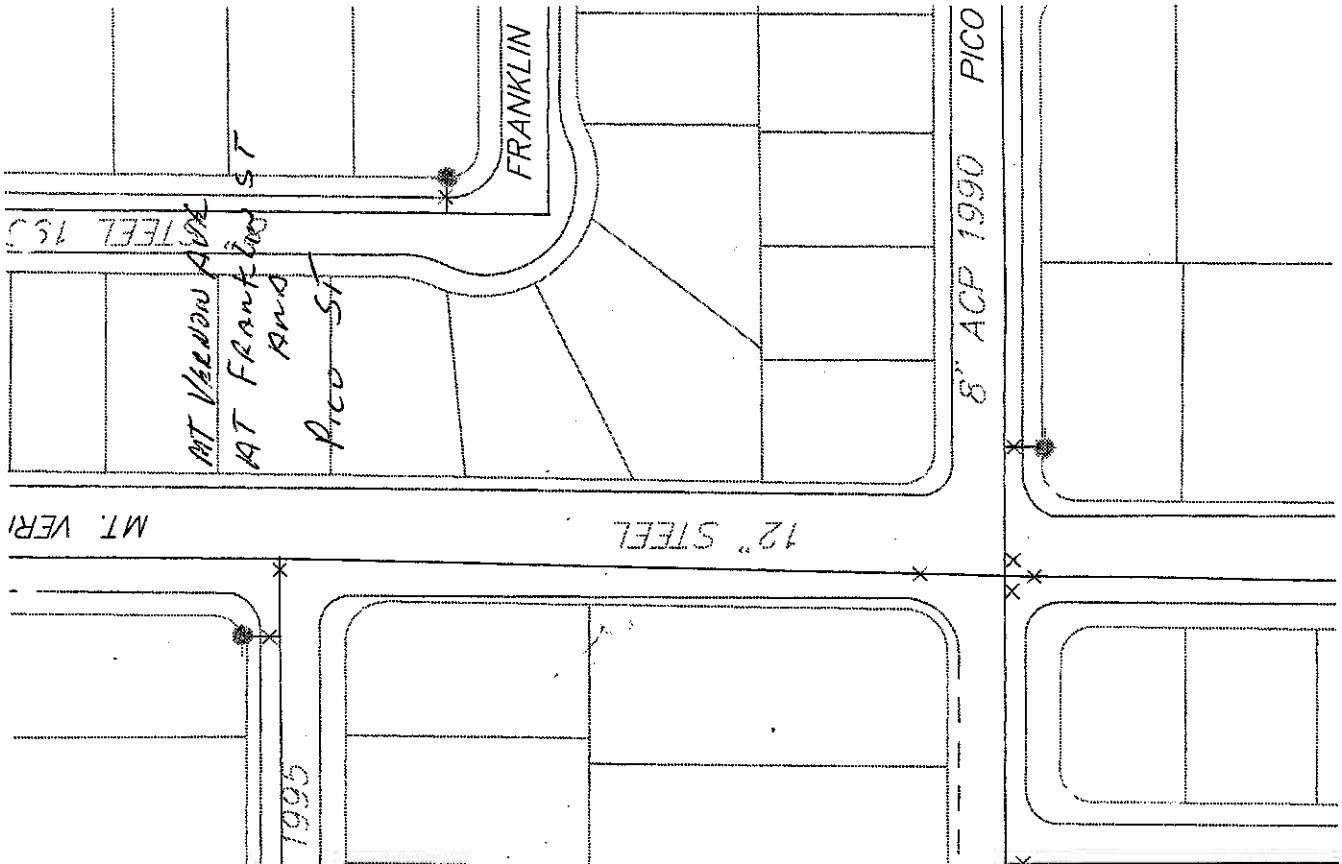

H-20
10684"4CML/C STEEL 1969
BA
BARTON RD AT
ARLISS DR
AND
MT VERNON AVE

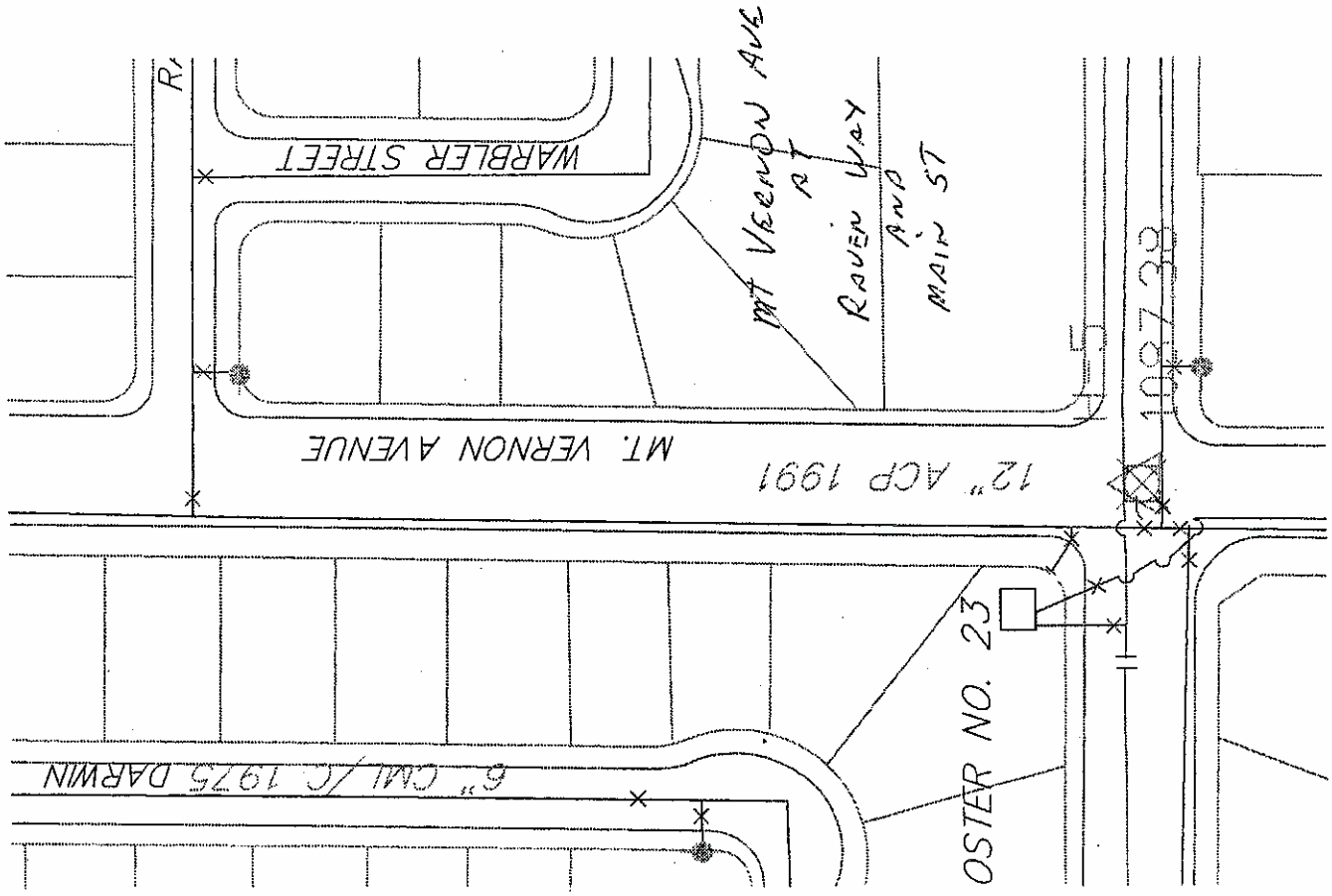

Barton RD AT CT, CTY Hall
8"ACP
8"ACP 1982

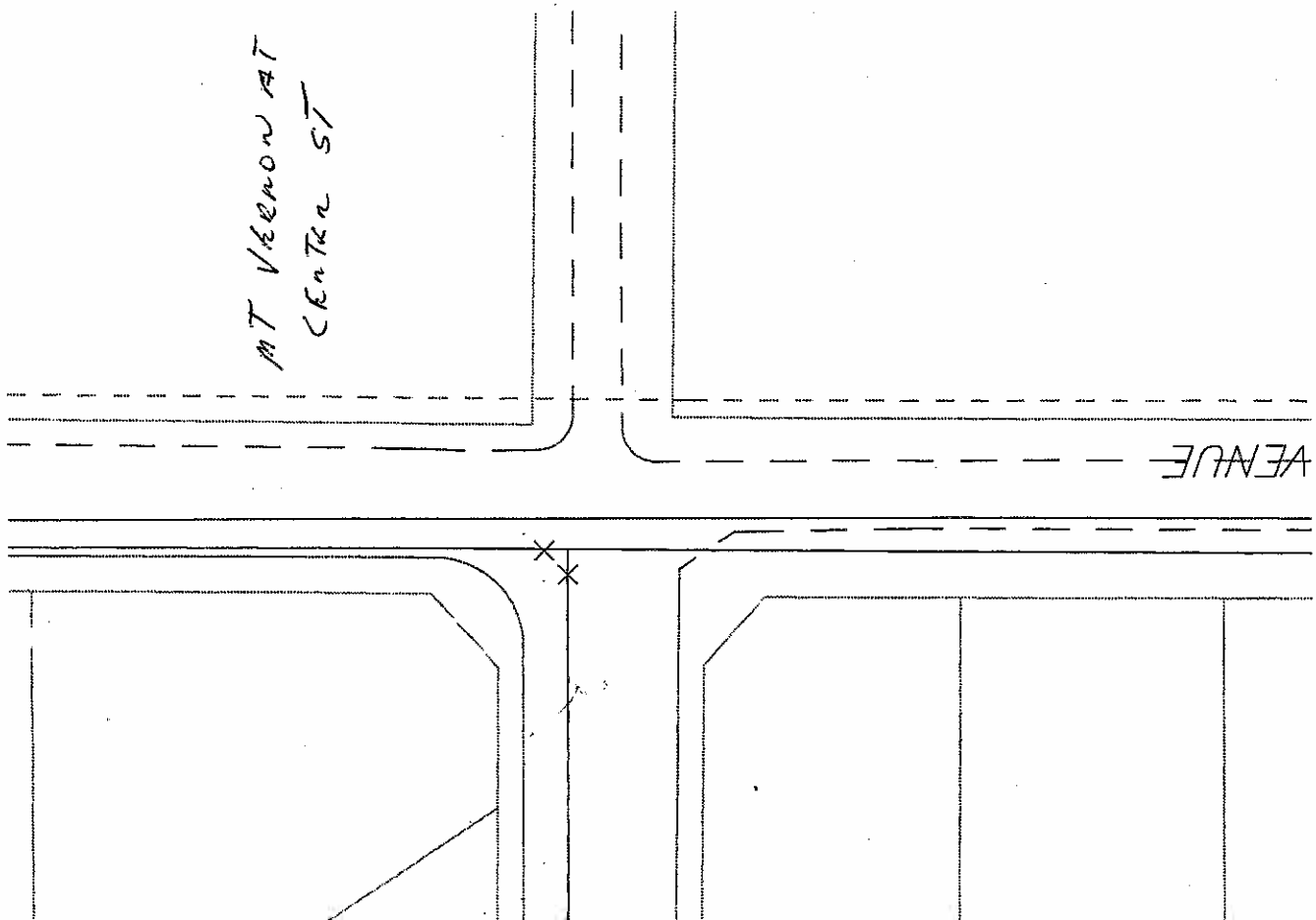

8
MT VERNON AVE
AT
DE BERRY ST
24" ACP FT-40 1986
VENUE

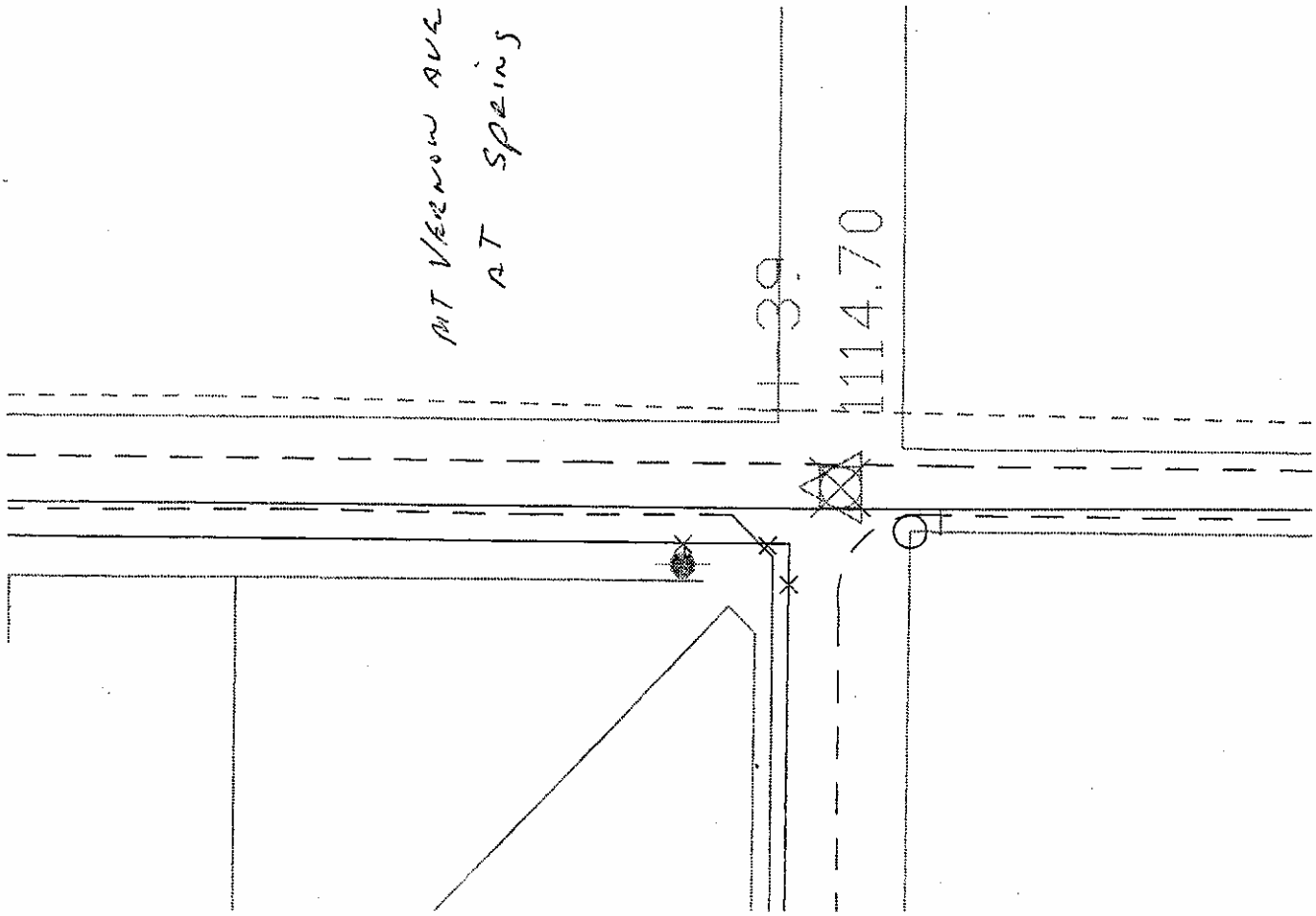

24" ACP
6" ACP 1980 CITY CENTER
MT VERNON AVE
AT
CENTER CITY CT
AND
DESOTO ST
MT. VERNON AVENUE
24" ACP FT-40 1986
WARBLER AVENUE
P 1991

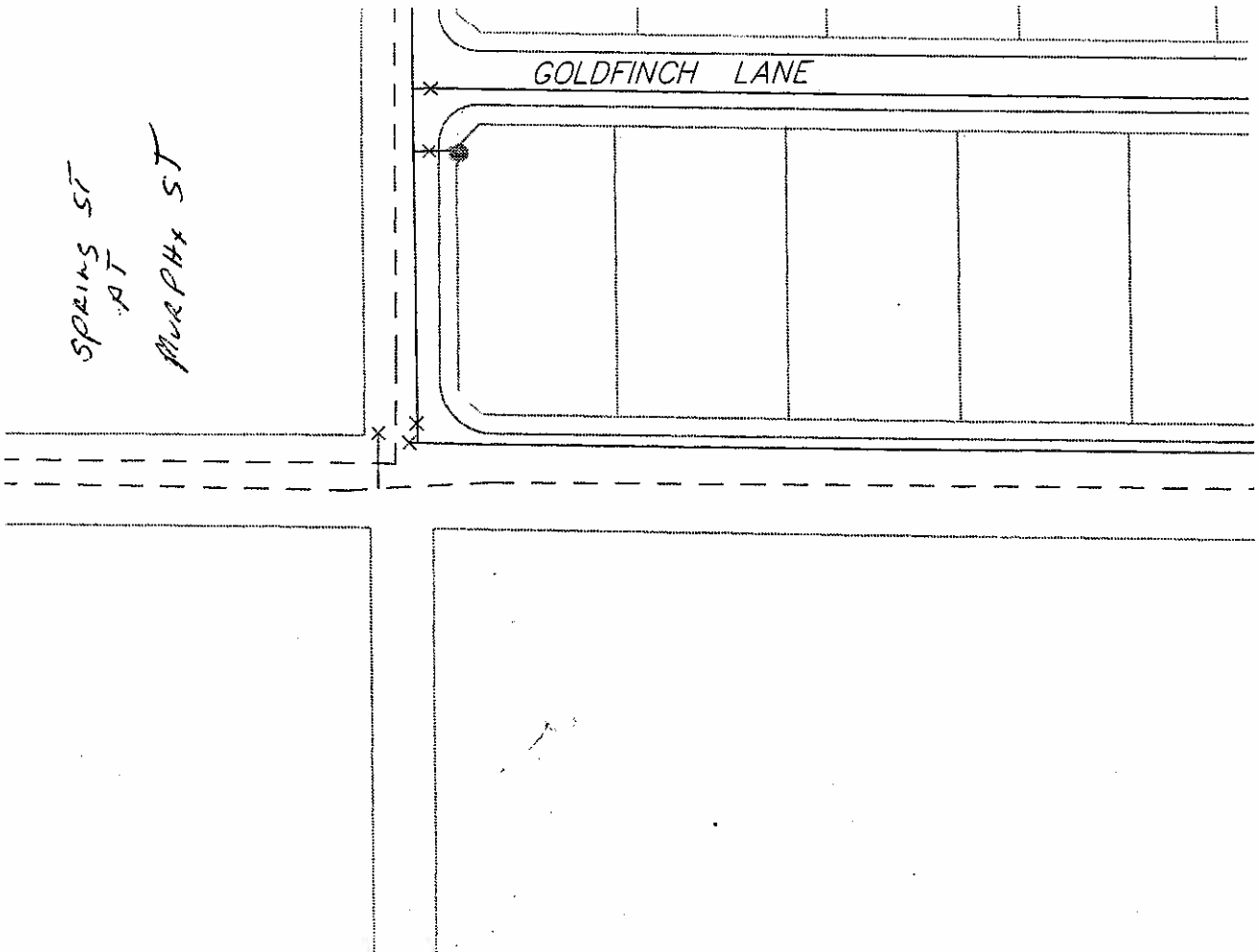

6" ACP 1992
8" STEEL 1969
24" ACP
1064.25
24" ACP
12" STEEL
MT VERNON AVE
AT
VAN BUREN AVE

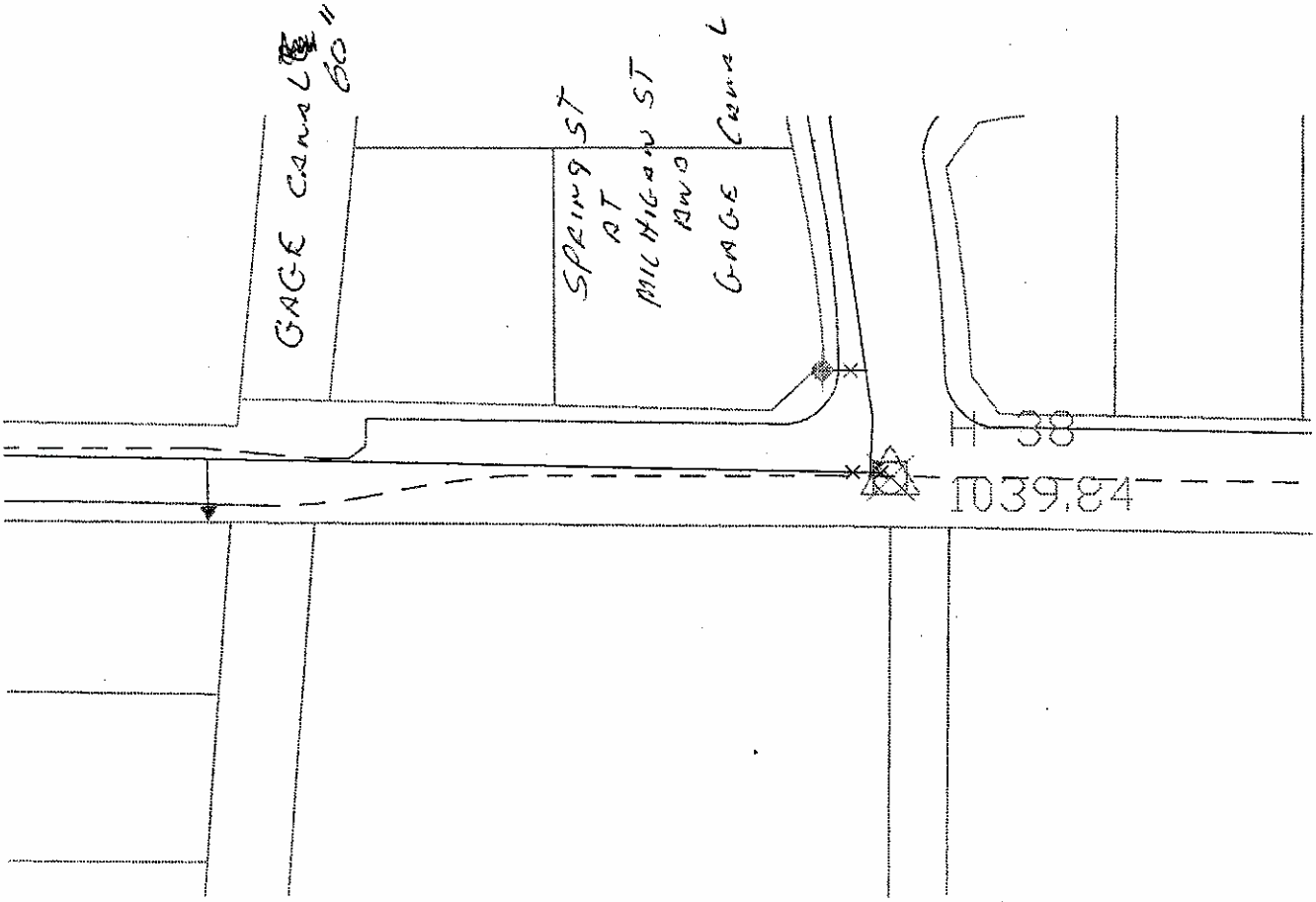

FRANKLIN
8" ACP 1990
PICO
MT VERNON AVE
AT FRANKLIN ST
AND
PICO ST
12" STEEL
1995

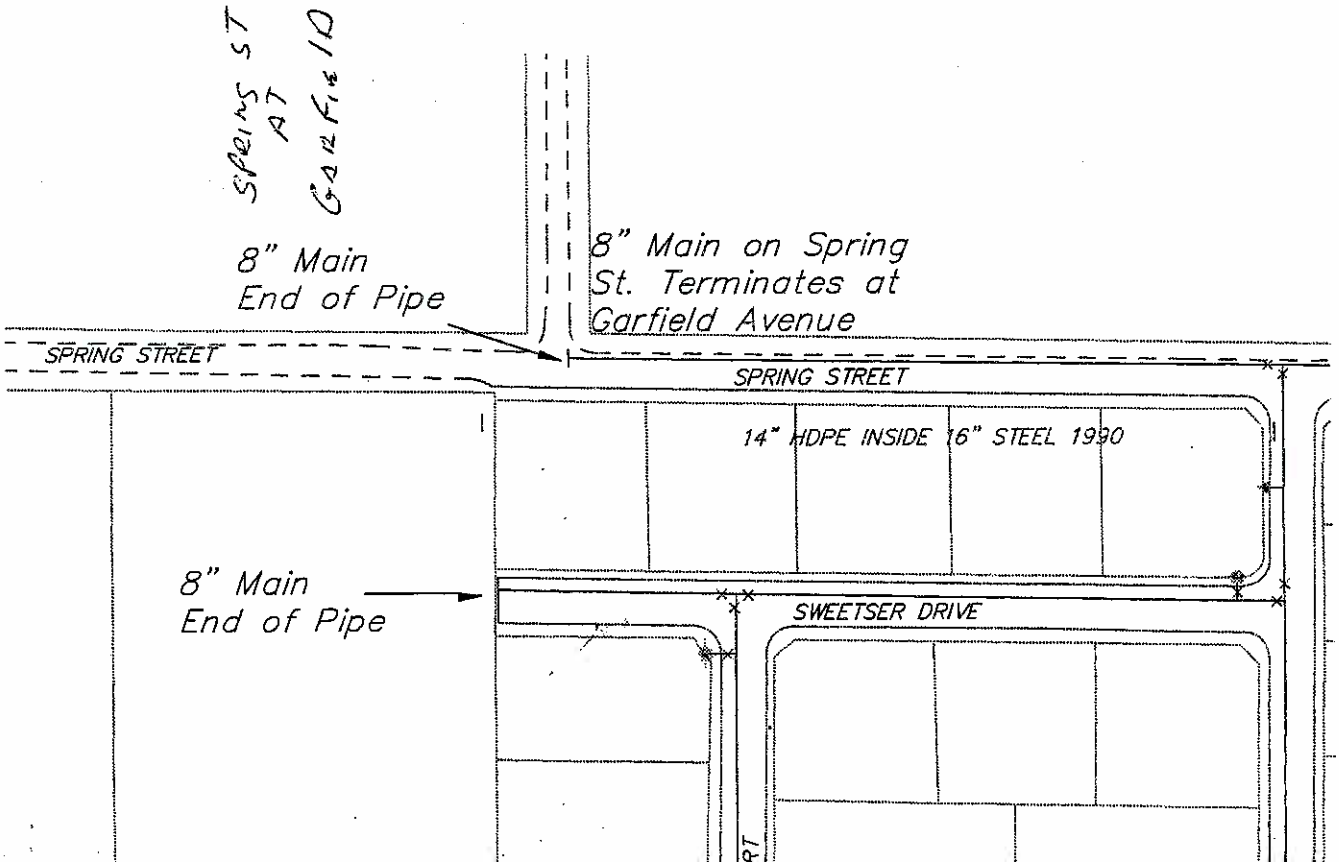

OSTER NO. 23
6" CMU/C 1975 DARWIN
MT. VERNON AVENUE
12" ACP 1991
WARBLER STREET
MT VERNON AVE
AT
RAVEN WAY
AND
MAIN ST
1987 33

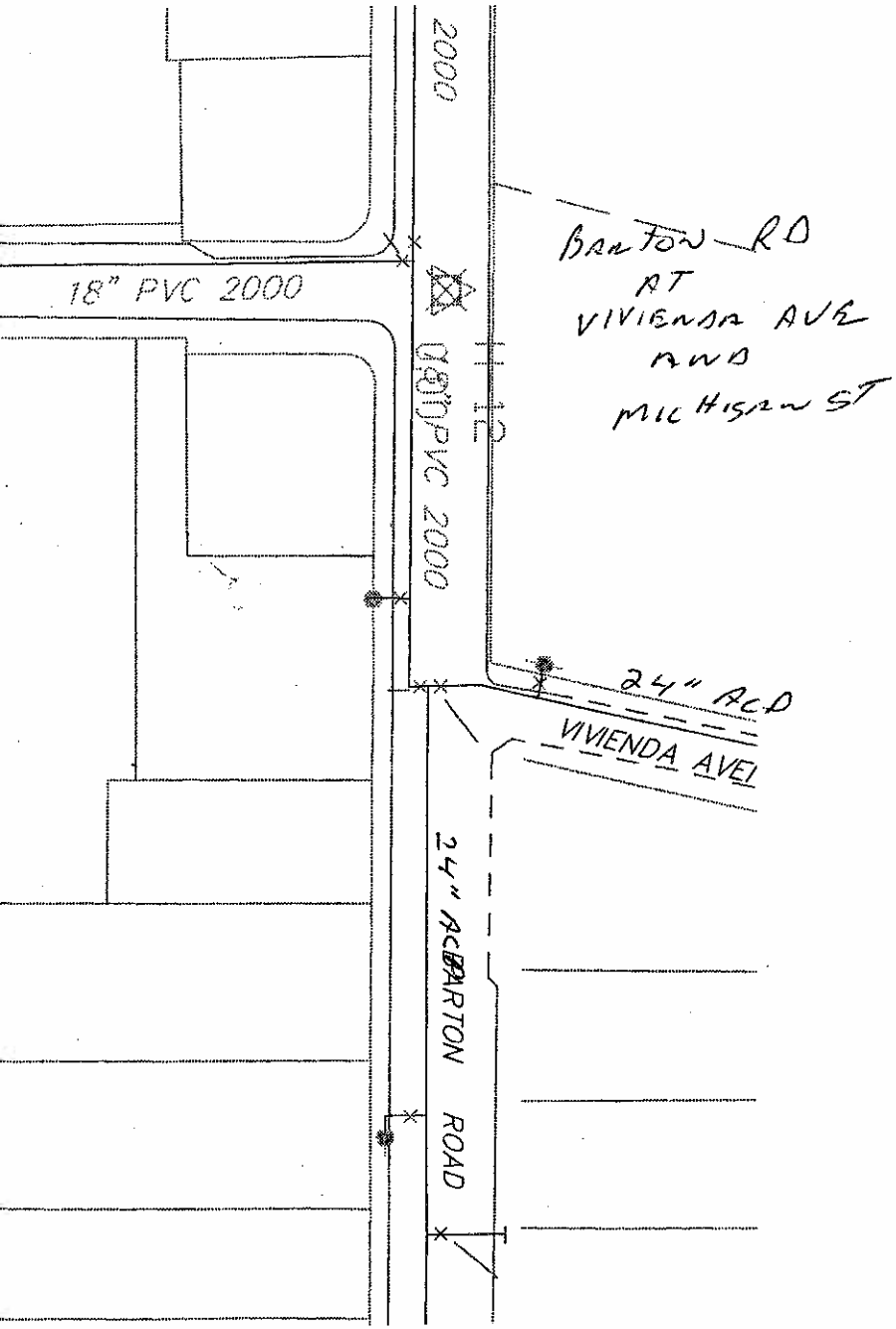

MT VERNON AT
CENTER ST
VENUE

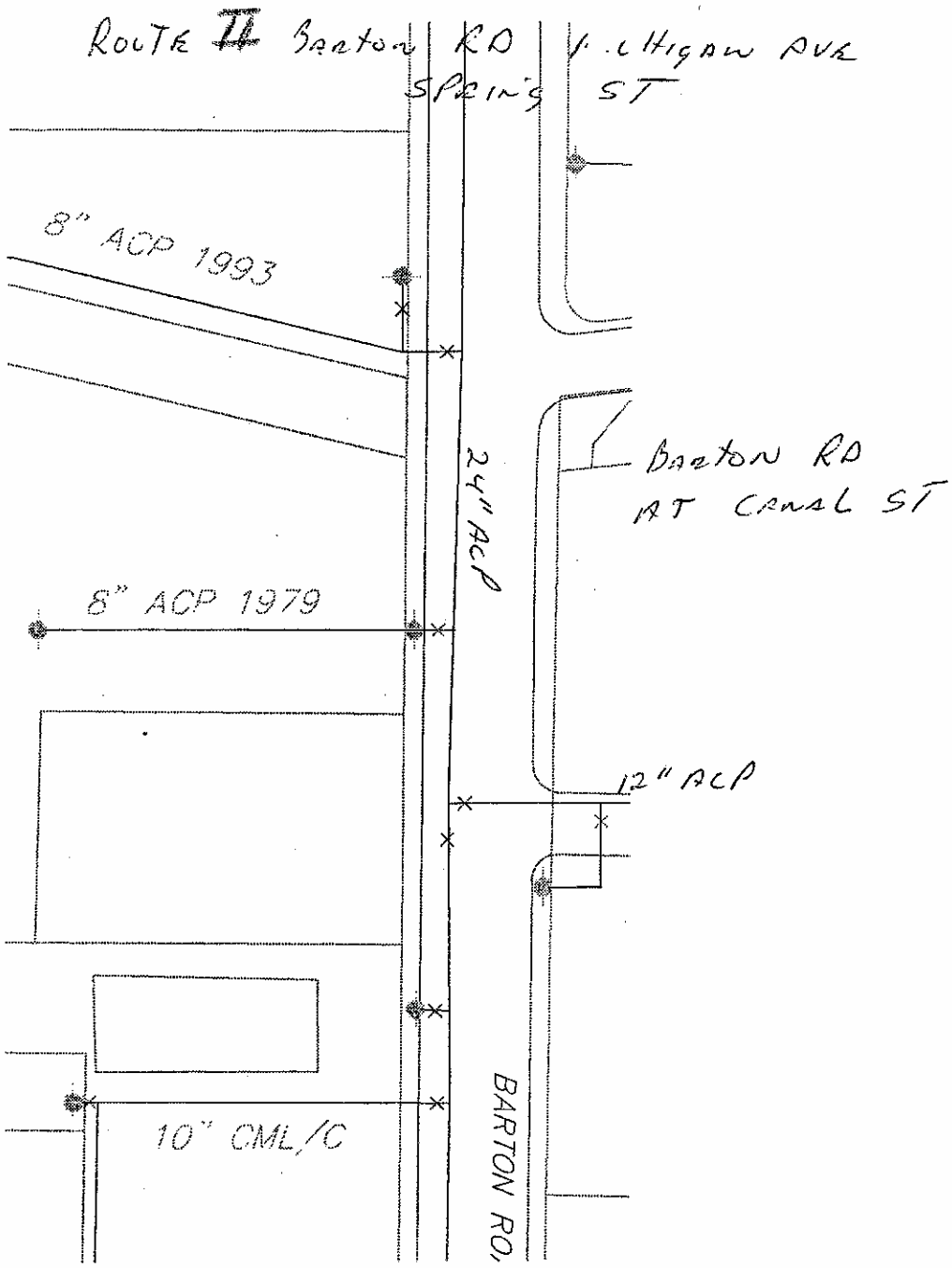

MT VERNON AVE
AT SPRING
39'
114.70

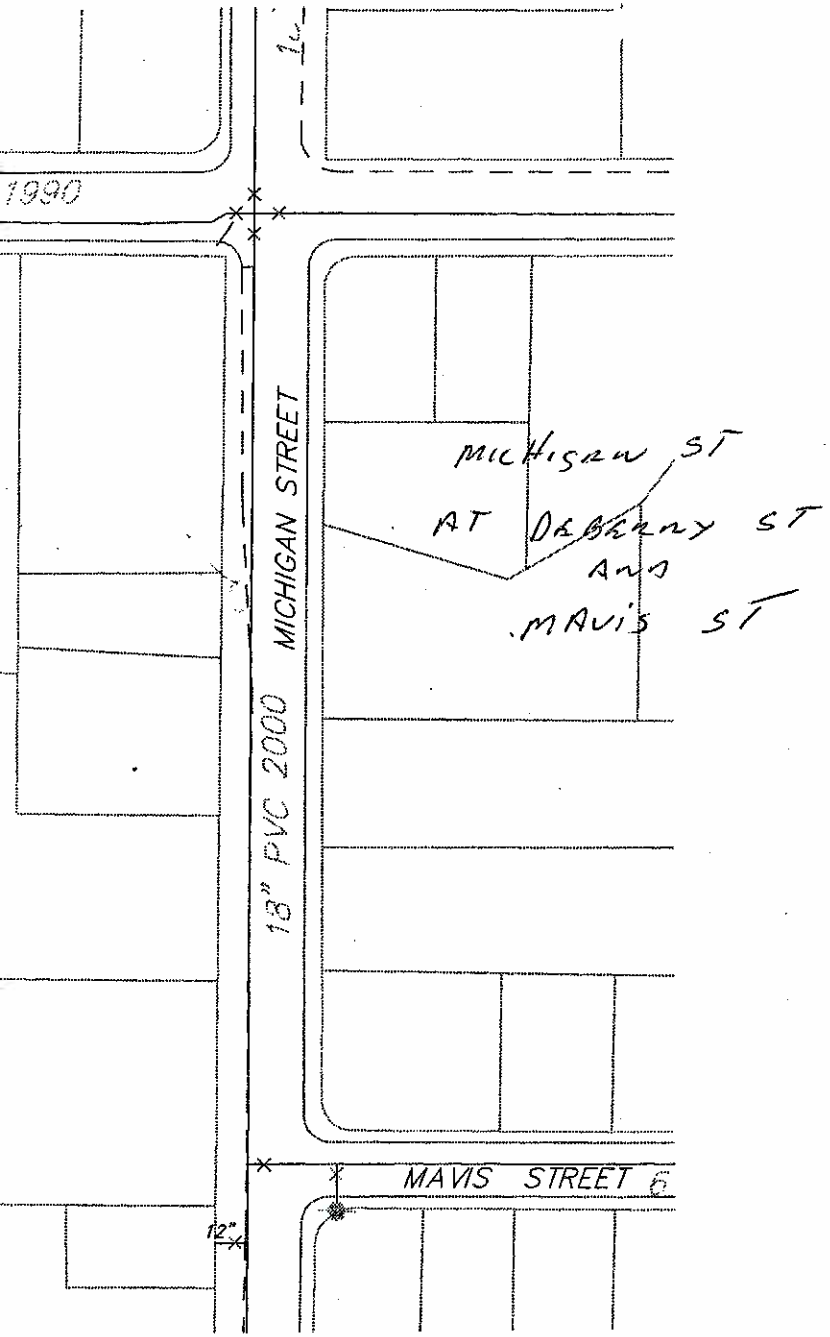

GOLDFINCH LANE
SPRING ST
AT
MURPHY ST

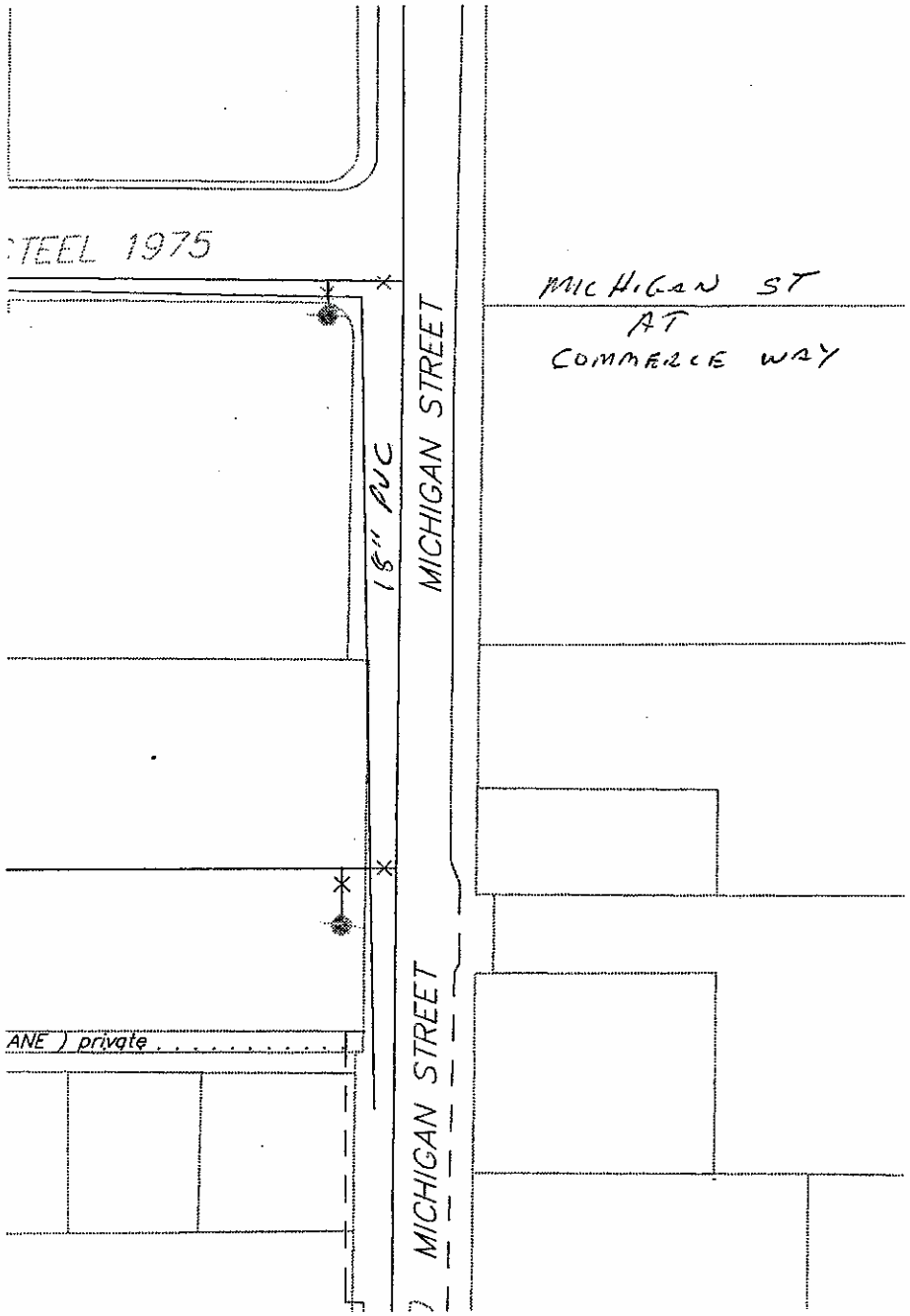

GAGE CANAL 60"
SPRING ST AT MICHIGAN ST AND GAGE CANAL
H 38
1039.84


SPRING ST AT GARFIELD
8" Main End of Pipe
8" Main on Spring St. Terminates at Garfield Avenue
SPRING STREET
SPRING STREET
14" HDPE INSIDE 16" STEEL 1990
8" Main End of Pipe
SWEETSER DRIVE

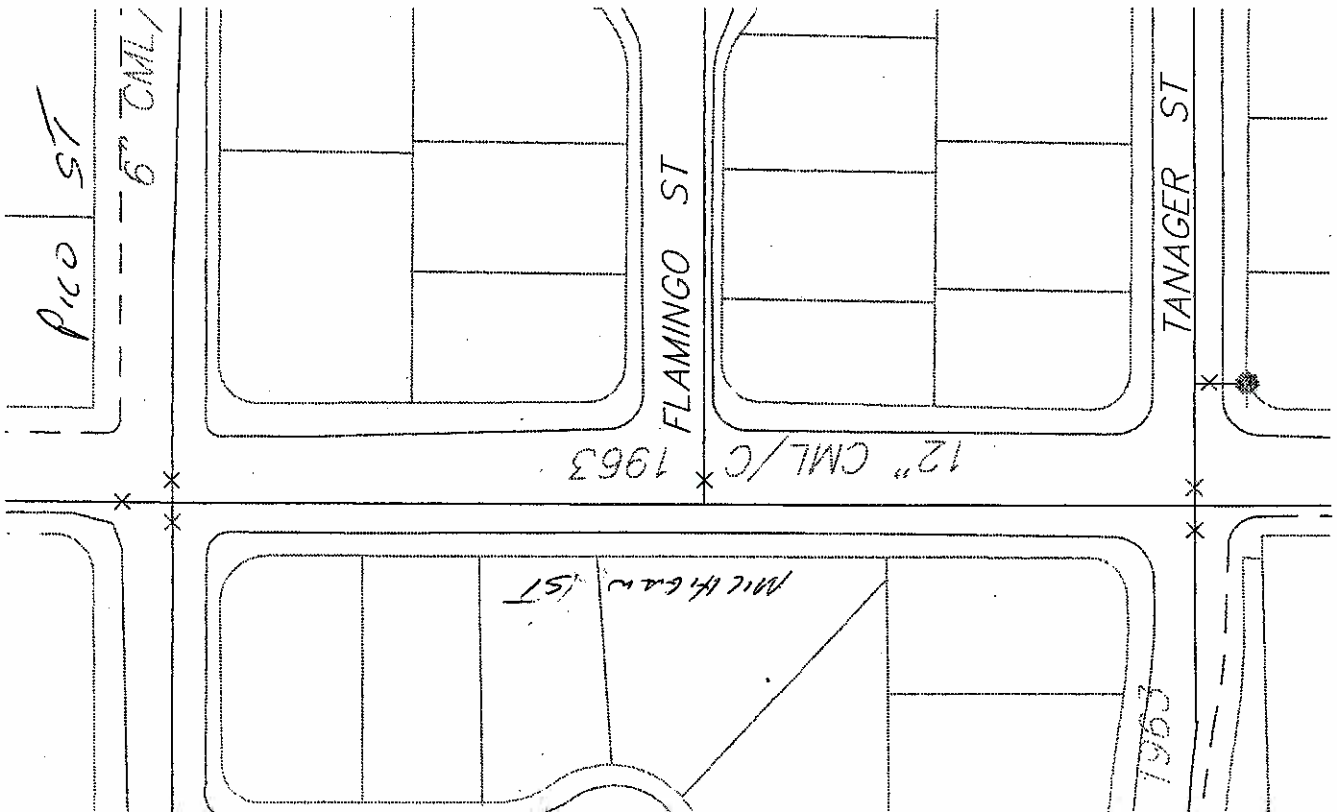

2000
18" PVC 2000
8" PVC 2000
BARTON RD
AT
VIVIENDA AVE
AND
MICHIGAN ST
24" ACP
VIVIENDA AVE
24" ACP
BARTON ROAD

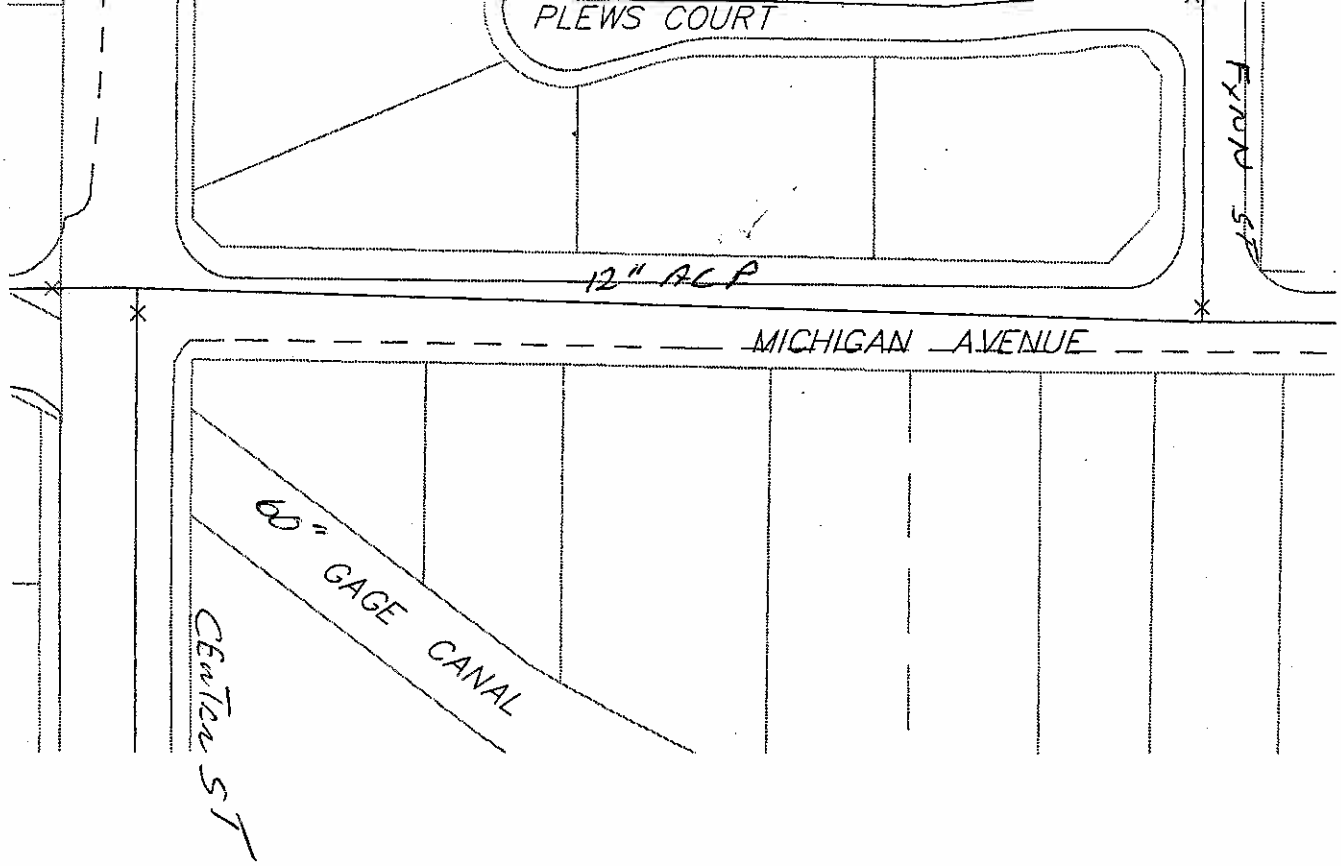

ROUTE II
BARTON RD
SPRING ST
MICHIGAN AVE
8" ACP 1993
24" ACP
BARTON RD
AT CANAL ST
8" ACP 1979
12" ACP
10" CML/C
BARTON RD


1990
MICHIGAN STREET
18" PVC 2000
MICHIGAN ST
AT DEBERRY ST
AND
MAVIS ST
MAVIS STREET
12"


STEEL 1975
18" PVC
MICHIGAN STREET
MICHIGAN ST
AT
COMMERCE WAY
ANE) private
MICHIGAN STREET

1994
MICHIGAN ST
18" PVC 2000
CARDINAL COURT
VAN BUREN
10
09363


1963
MICHIGAN ST
12" CML/C 1963
FLAMINGO ST
TANAGER ST
PICO ST
6" CML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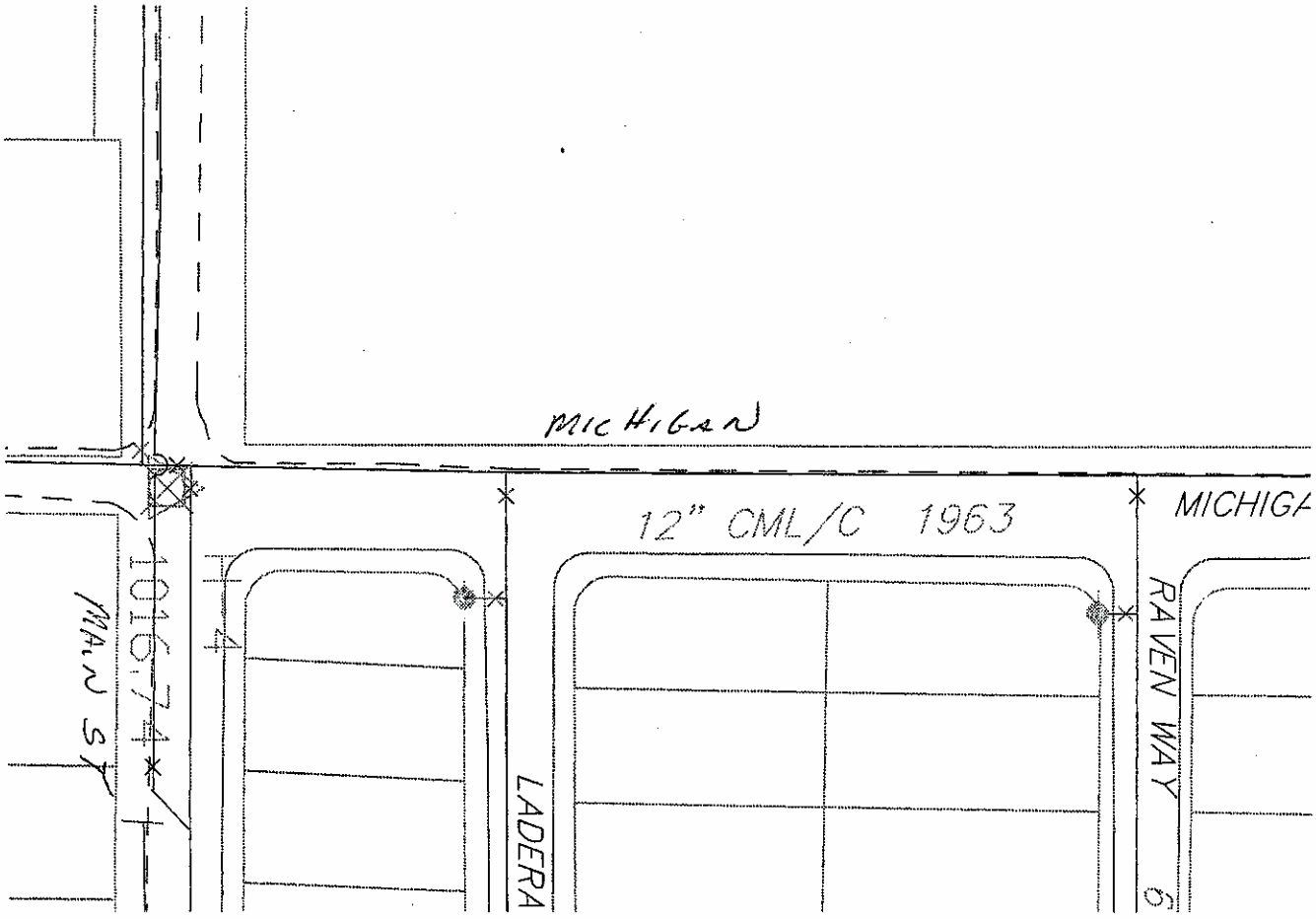
MICHIGAN AVENUE
60" GAGE CANAL
CENTER ST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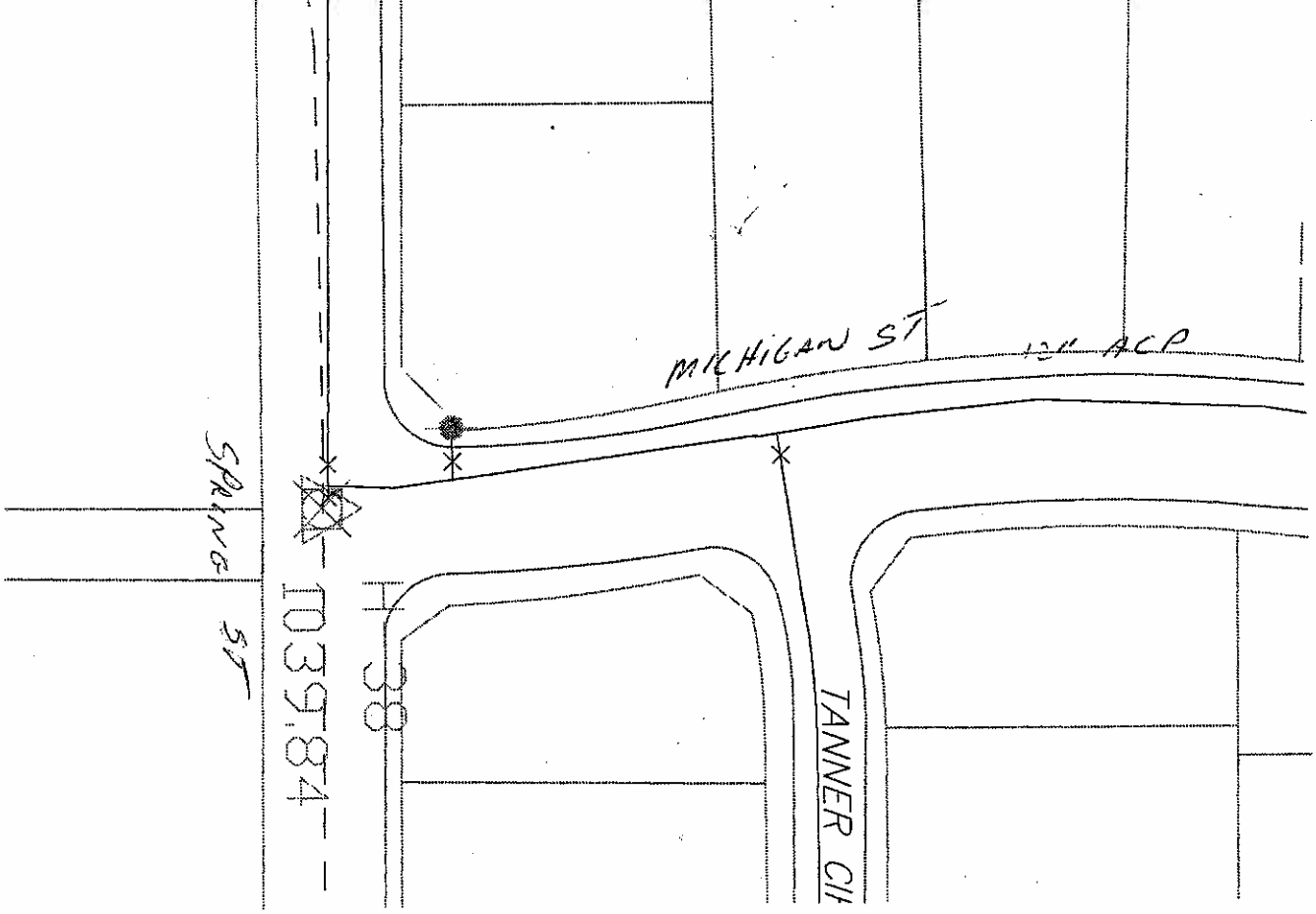
LADERA
RAVEN WAY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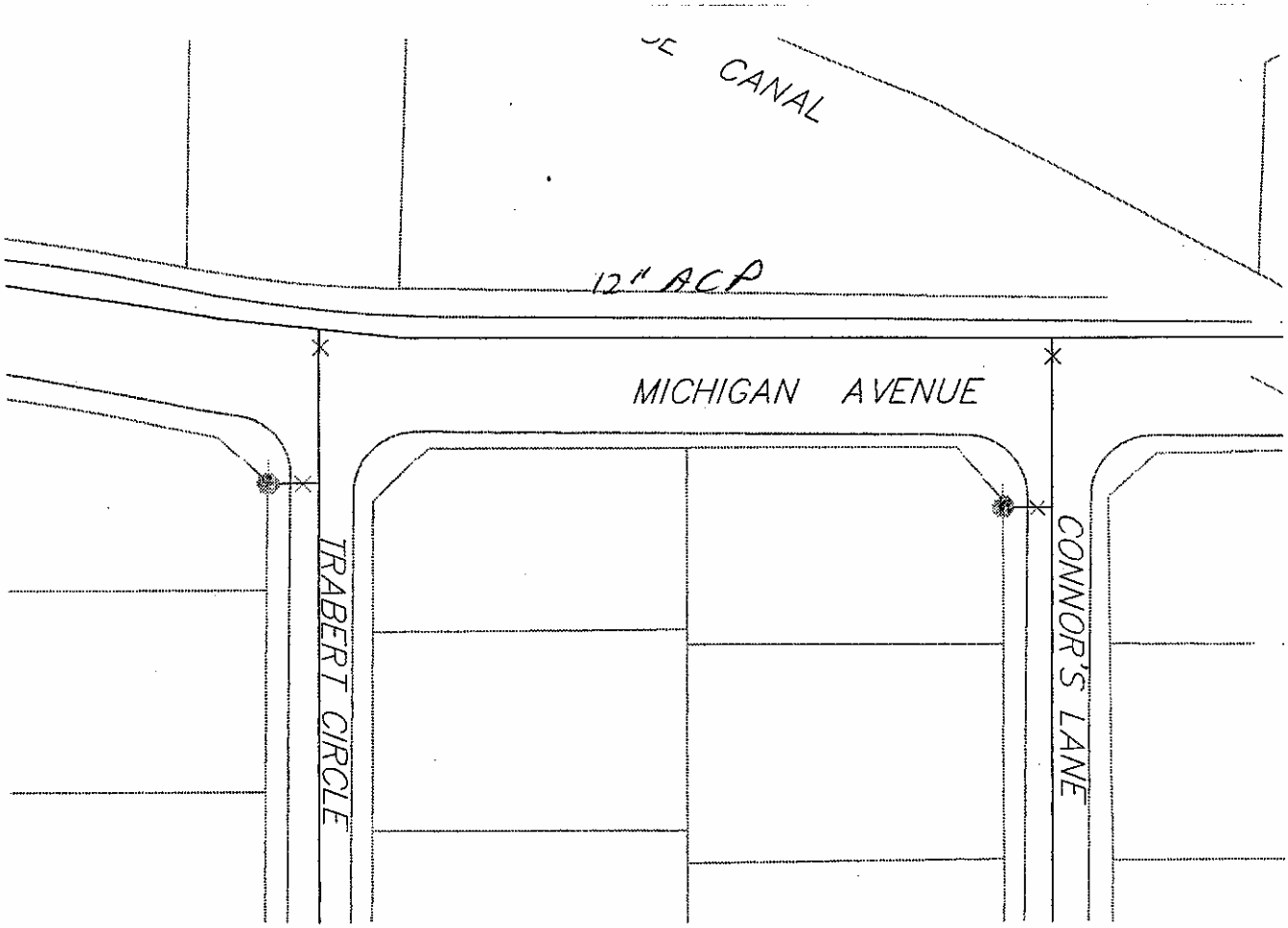
38
TANNER CI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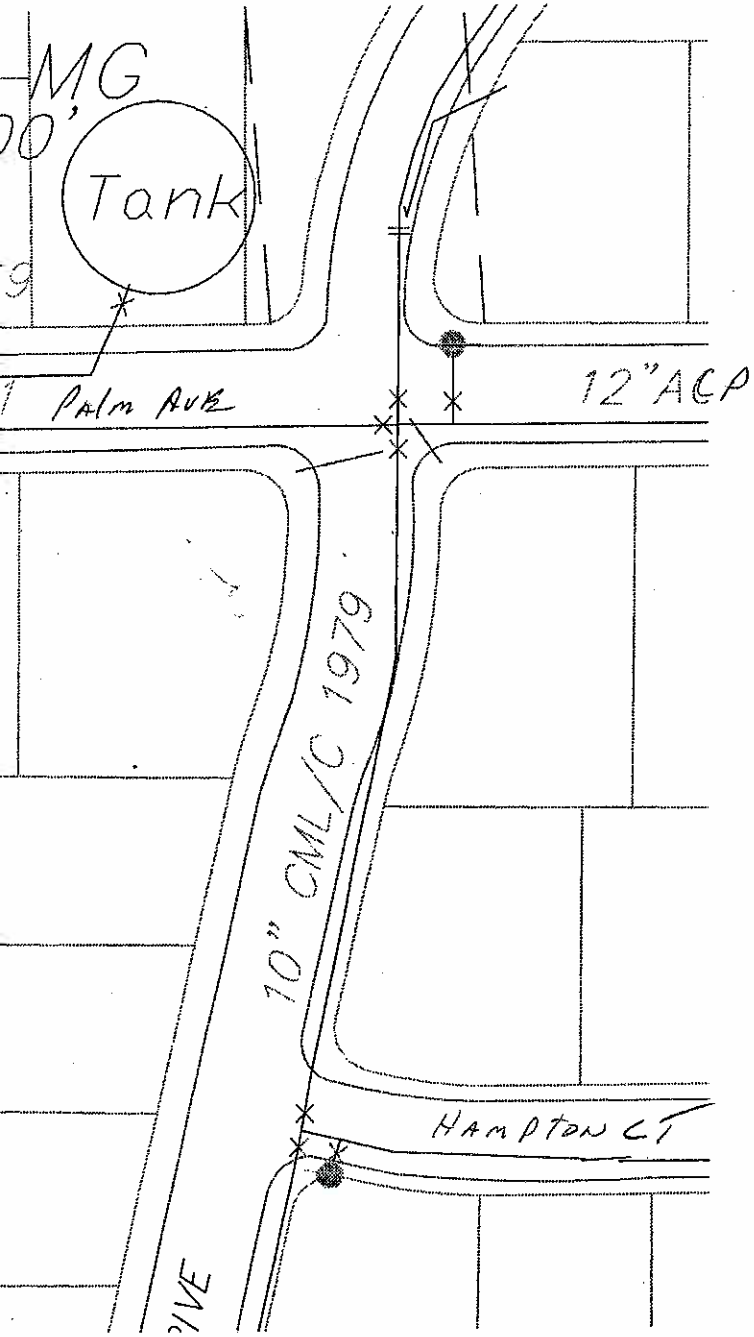
MICHIGAN AVENUE
TRABERT CIRCLE
CONNOR'S LANE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Tank
Palm Ave
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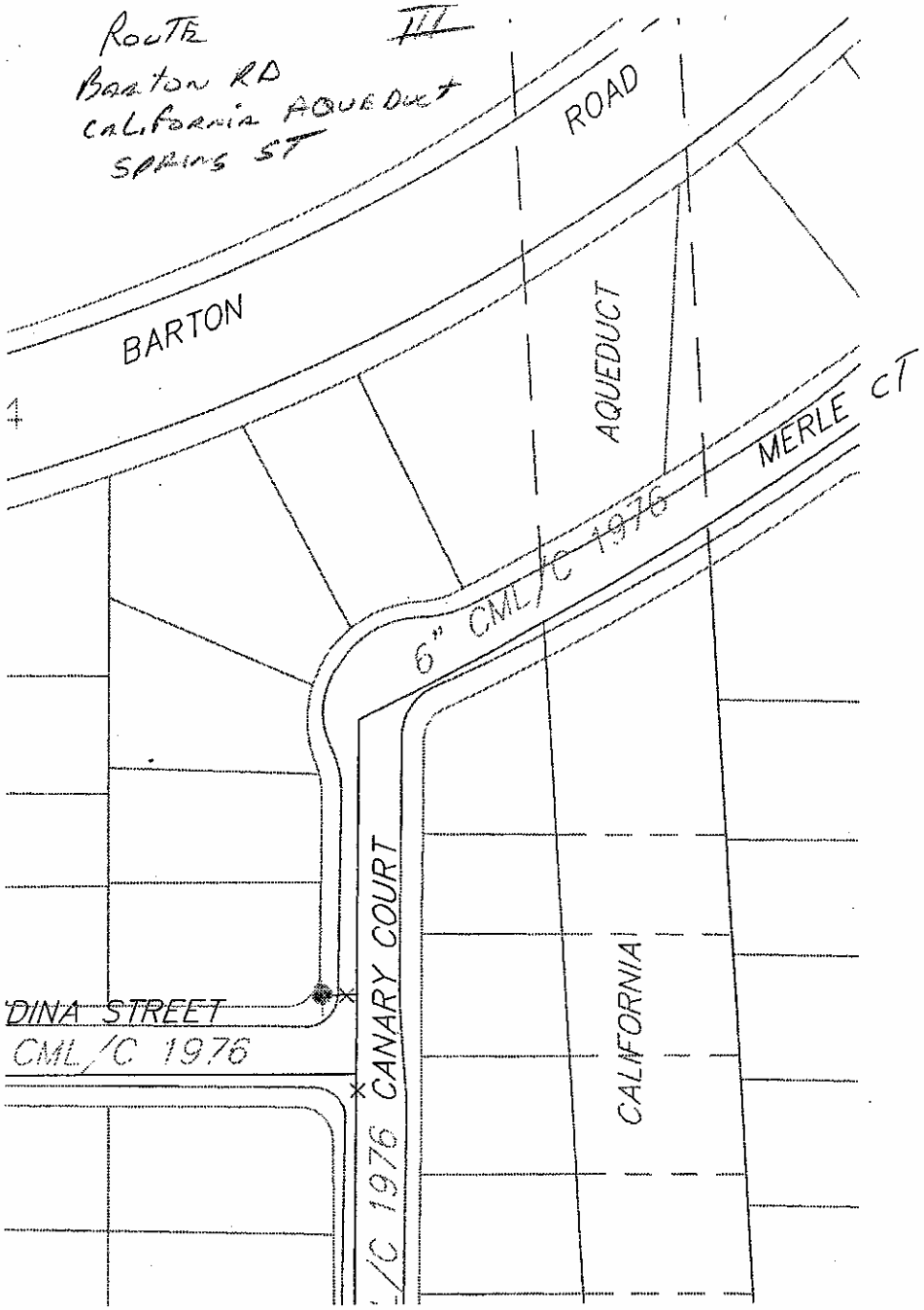
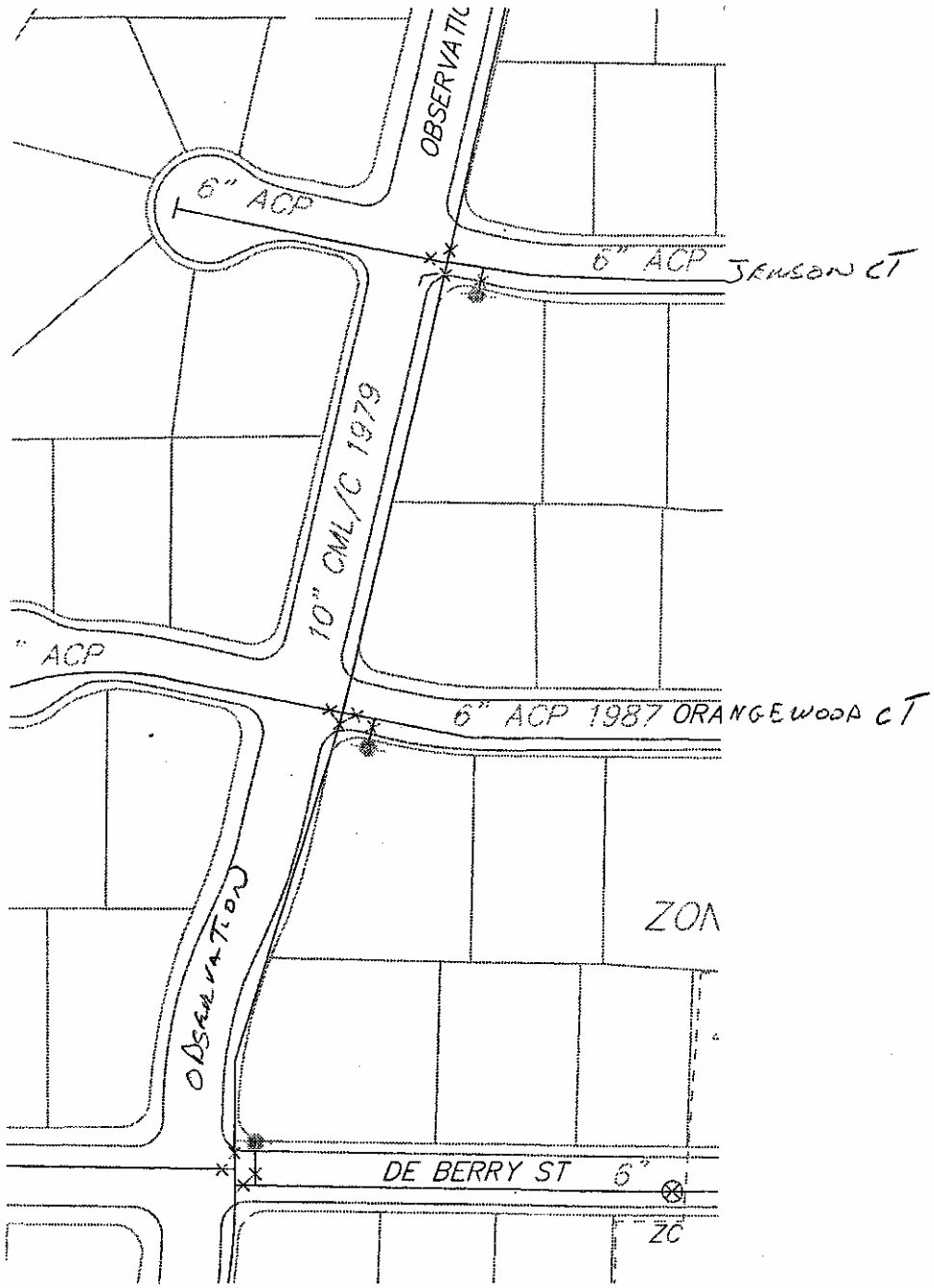
HAMPTON CT


Route
Barton Rd
California Aqueduct
Spring St
III
BARTON
ROAD
AQUEDUCT
MERLE CT
6" CML/C 1976
DINA STREET
CML/C 1976
CANARY COURT
CALIFORNIA

6" ACP
ZC
OBSERVATION
10" CML/C 1979
8" ACP 1987
FINCH ZC STREET
ZC
10" CML/C 1979
6" ACP 1987
CARDINAL CT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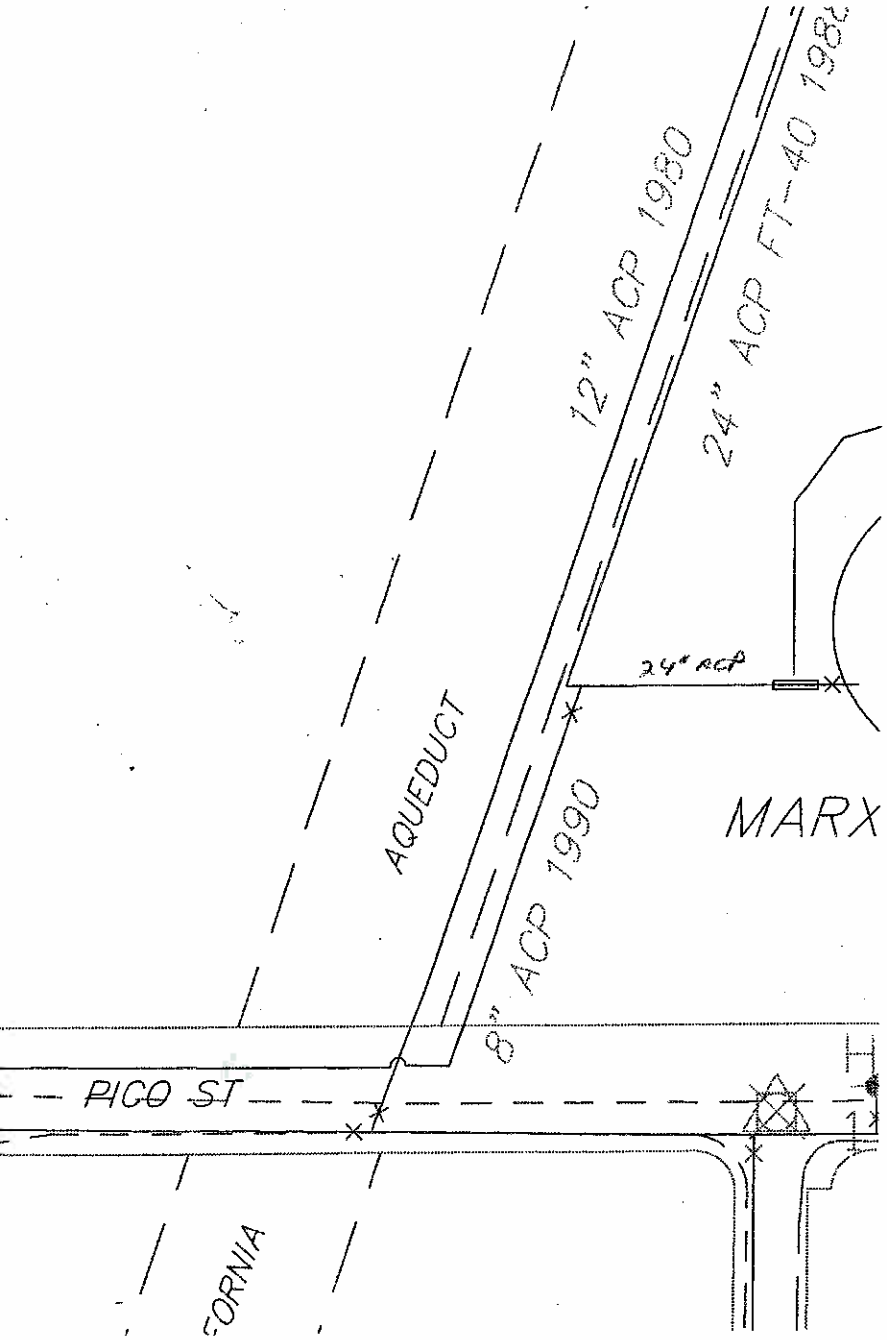
ZC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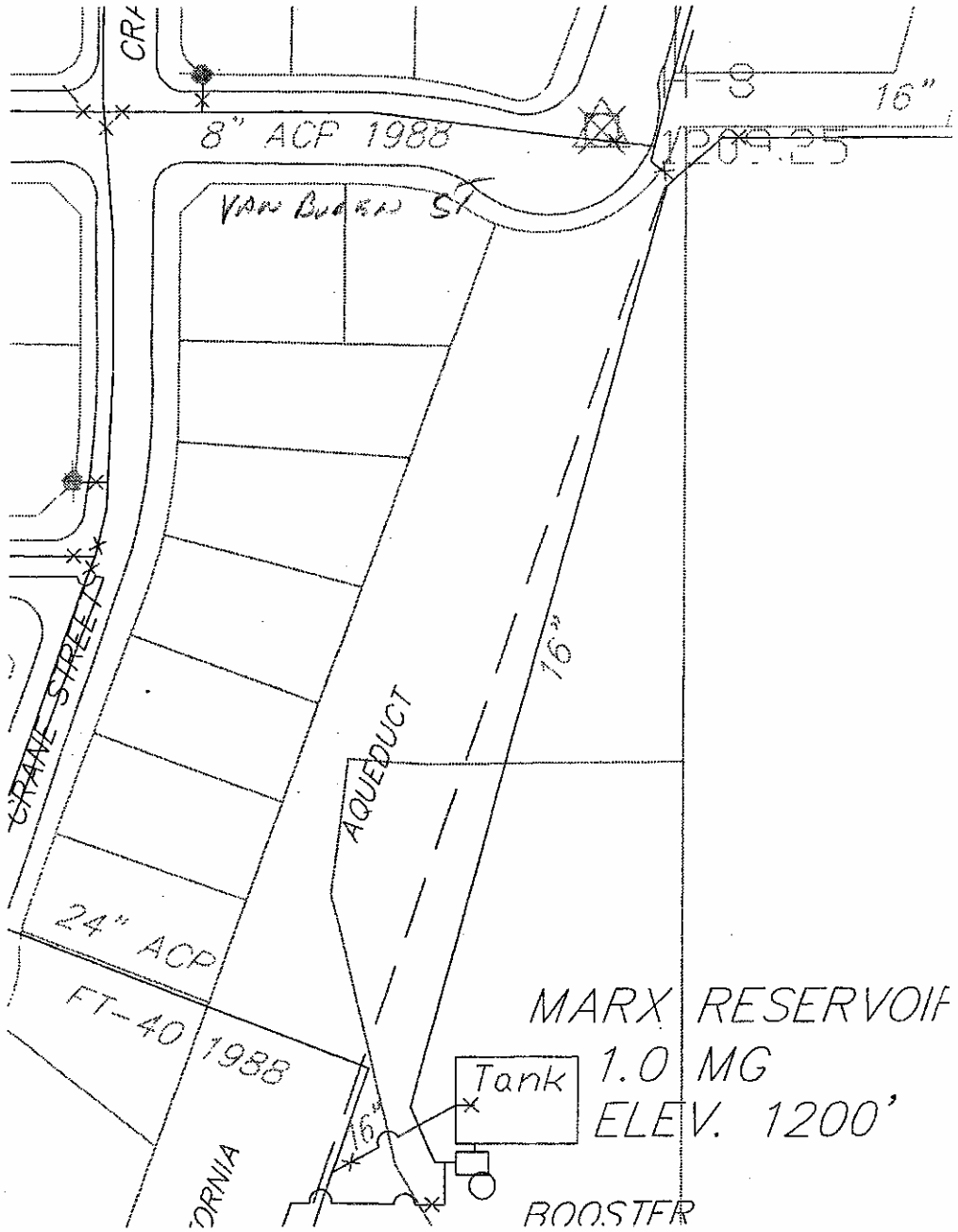
24" ACP
AQUEDUCT
8" ACP 1990
MARX
PICO ST
CORNIA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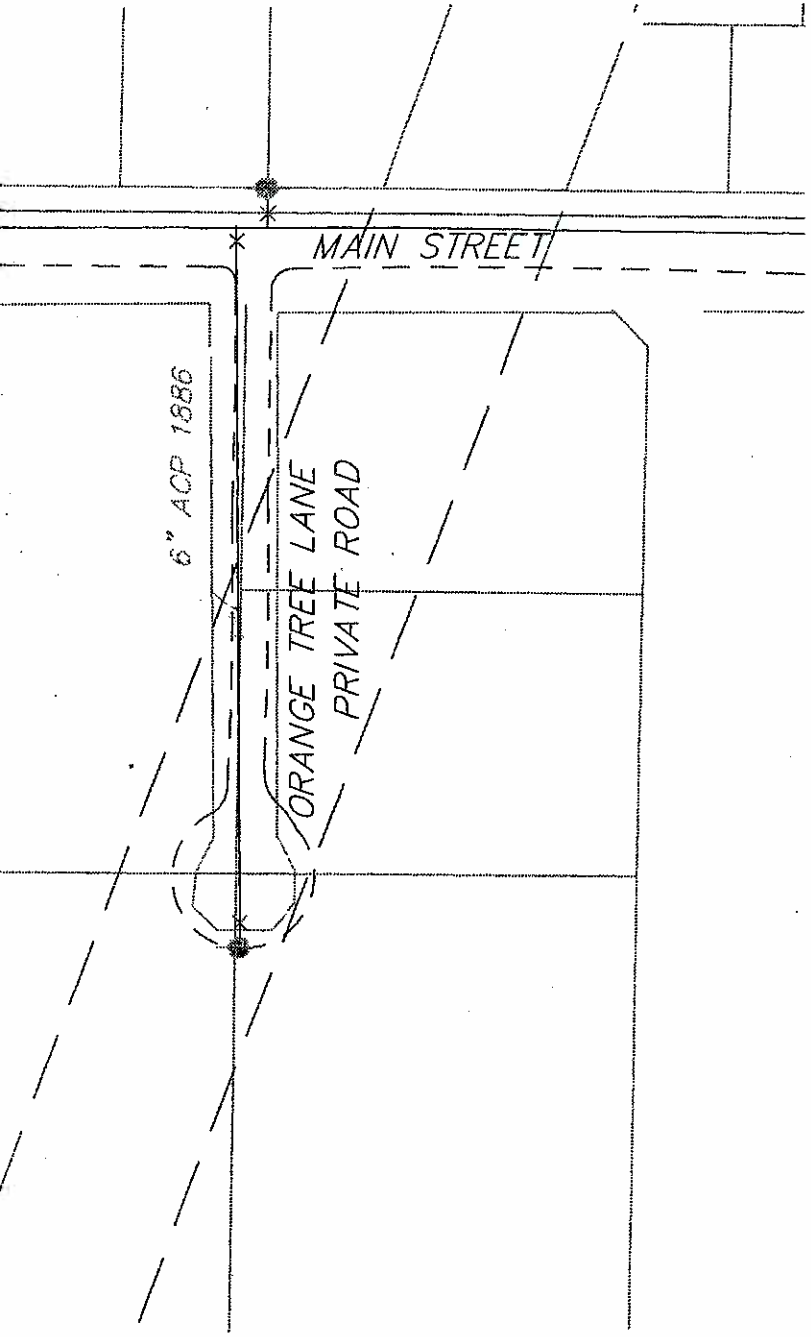
VAN BUREN ST
16"
CRANE STREET
AQUEDUCT
16"
24" ACP
FT-40 1988
16"
Tank
MARX RESERVOIR
1.0 MG
ELEV. 1200'
BOOSTER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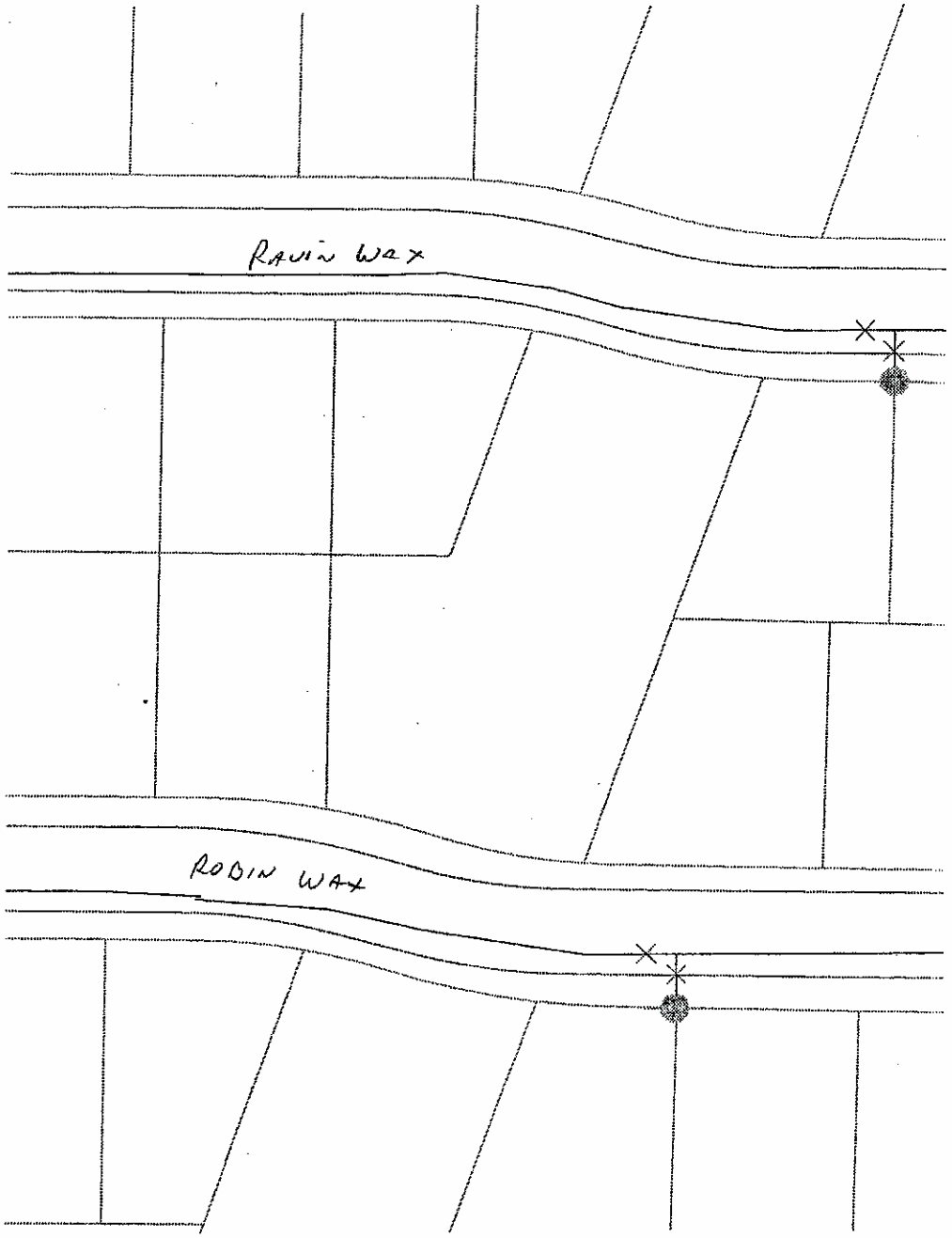
ORANGE TREE LANE
PRIVATE ROAD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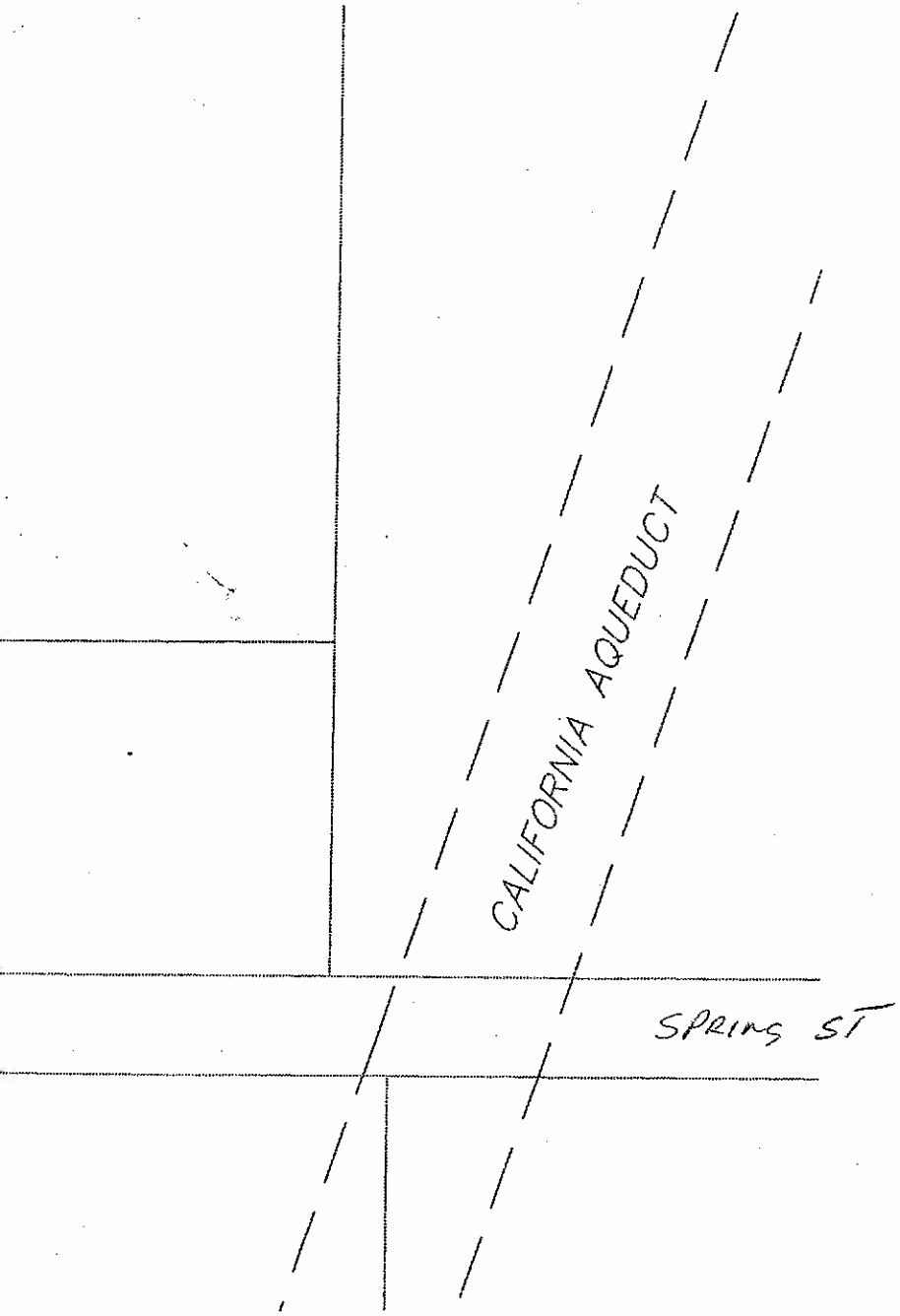
ROBIN WAY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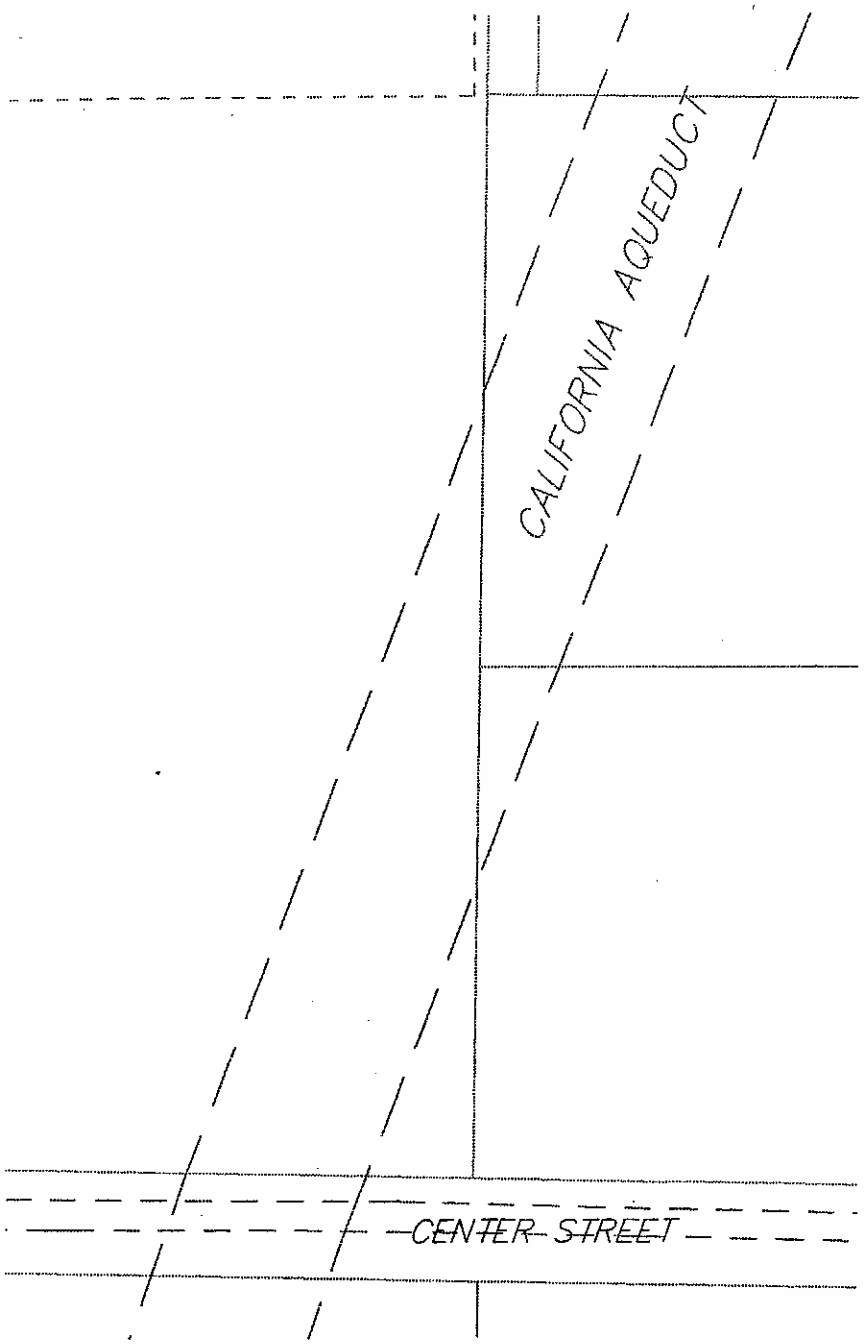
SPRING ST


CALIFORNIA AQUEDUCT
CENTER STREET

Riverside Transit Agency
1825 Third Street
P.O. Box 59968
Riverside, CA 92517
Phone: (909) 684-0850
Fax: (909) 684-1007

RECEIVED
APR - 7 2003
W. M. W. D.

April1, 2003

Don Harriger
General Manager
Western Municipal Water District
450 Alessandro Blvd
Riverside, CA 92508

SUBJECT: Notice of Preparation and Initial Study for the Riverside-Corona Feeder Project: Comments by RTA

Dear Mr Harriger:

Thank you for the opportunity to review the Notice of Preparation and Initial Study for the proposed Riverside-Corona Feeder (RCF) pipeline project. Although RTA is supportive of this water service infrastructure project and agrees it is warranted, our agency does have some concerns regarding its construction impacts on our bus services. A copy of our internal review memo of the project is attached for your information.

From our review of the Initial Study, RTA would like to raise the following issues:

- *Observation:* The Initial Study totally failed to recognize impacts on public transportation. On pages 32 and 33, in the Traffic/Transportation Section, RTA believes a more thorough discussion of these concerns, especially on public transportation, needs to be developed. RTA staff found that RCF construction could disturb 13 RTA bus routes, including 10 miles of service lines and about 40 bus stops for an undetermined period. A copy of our current Ride Guide, with maps and schedules, is enclosed. An updaged guide with revised maps will be issued in early May.

- *Observation:* Even more important, from a public safety and convenience perspective, the Initial Study made no suggestions for remedying these impacts by means of notification and coordination between Western Municipal Water District (WMWD) construction activities and RTA bus operations. Indeed, closing statements in this part of the Initial Study, such as "no further discussion" of these issues, do not adequately inform the public.

- *Advisory:* We encourage the WMWD to include appropriate language in the Traffic/ Transportation section of the forthcoming EIR that recognizes the potential for temporary but significant impacts on public transportation.

- *Advisory:* The EIR discussion should incorporate mitigation of such service disruptions by establishing a mechanism to notify RTA, as far in advance as possible, of construction activities that may influence the safety and convenience of RTA's ridership. RTA welcomes contact from WMWD to

establish this notification procedure. The person to contact at RTA regarding this process is Mr. Doyle Glancy, at:

Doyle Glancy
Quality Control Analyst/Stops & Zones
Riverside Transit Agency
1825 Third Street
Riverside CA 92507
Phone (909) 565-5000
Fax: 909.565.5123
E mail : dglancy@riversidetransit.com

- *Advisory:* Whether discussed in the EIR or through other documents, RTA would like to know the proposed timeline for this project, for example, when construction would commence and finish. For an example, an answer to this question might be "Sept 2003-July 2004".

There is considerable basis for RTA's concerns. For your information, once construction begins, RTA customers, drivers, operations staff, and its Board of Directors (comprised of elected officials from around the County) usually must deal with the following kinds of transportation service impacts during a construction project the size of the RCF:

- Bus lines often must be rerouted to other streets due to construction;
- Re-routings significantly affect published schedules. Public notices of changes need to be distributed well in advance so that buses are not missed;
- Construction-caused congestion and slower traffic affects schedules and route connections;
- The above difficulties can "domino" through much of the transit system;
- Bus benches, bus stops, etc. are closed, moved or otherwise made inaccessible and riders are unsure where to safely board the bus or step off the bus;
- As construction proceeds, RTA needs assurance that a Traffic Safety Plan is in place;
- RTA dispatchers will need to publish numerous driver bulletins as necessary to keep the crew informed of changes to routes and stops. In a normal week, perhaps 10 are issued for the entire Western Riverside County RTA service area. A project such as the RCF could quadruple this number.

RTA looks forward to reviewing the forthcoming Draft EIR. If you need further clarification or I can be of further assistance, please call me at (909) 565-5164 or contact me online at mmccoy@riversidetransit.com.

Sincerely,

Michael McCoy

Michael McCoy
Senior Planner

Riverside Transit Agency

April 1, 2003

PLANNING DEPARTMENT MEMO

DEVELOPMENT REVIEW

To: Anne Palatino, Director of Planning

From: Michael McCoy, Senior Planner

Subject: Notice of Preparation (NOP) of an EIR by Western Municipal Water District (WMWD) for the Riverside-Corona Feeder pipeline project, **RTA Comments**
Bus routes affected: 1, 3, 10, 13, 14, 16, 20, 22, 25, 27, 208 and local trolleys

Summary: WMWD proposes a 30-mile long fresh water pipeline from San Bernardino to Corona that will wind through the intervening cities. The agency is now proceeding with environmental steps required under CEQA and is seeking information from affected parties such as RTA. WMWD's Initial Study of potential impacts of the pipeline and its construction does not specifically discuss its effects on public transportation, mentioning only local disturbances of vehicle traffic in general. Further, the Study states there are no plans to address such impacts on traffic or public transportation, in any detail, in the forthcoming EIR. No estimated construction timeline for this project is given in the NOP.

Staff's research indicates the significant construction along the pipeline route could temporarily impact 13 RTA bus lines, 10 miles of service lines and about 40 bus stops as detailed in the technical section below. RTA supports the overall project but is concerned that sudden construction activity could interfere with bus service, alter normal routes or cut off access to bus stops. This will create significant safety, delay and ease-of-use challenges for the bus ridership. Consequently, RTA will request the EIR address public transportation issues in more detail and call for a procedure to be set up for WMWD or its contractor to regularly notify RTA prior to street or lane closures, interference with bus stops and other related matters.

INITIAL REVIEW INFORMATION - Review completed date: April 1, 2003

Documents received at RTA: March 28, 2003;
Reply-by Date: April 20, 2003. WMWD Board Agenda Date: N/A or unknown;
City Council/Bd of Supervisors Agenda Date: N/A;
Thomas Guide Map pg and grid: Covers several Thomas pages between Colton and Corona;
Case (State Clearinghouse) Number: *Not provided.*
Contact Person or Planner: Don Harriger, Gen'l Manager, WMWD, (909) 789-5042.
WMD's consultant contact: Roma Stromberg, at Albert Webb Associates, (909) 686-1070;
Applicant: Western Municipal Water District, HQ'ed in Riverside

ADDITIONAL TECHNICAL INFORMATION DEVELOPED BY STAFF:

WMWD justifies this project to provide additional, reliable fresh water services to its existing and future Riverside County customers in the event drought conditions or legal actions threaten normal water supplies, delivered mostly from the Colorado River. The ultimate source of water

for this project will primarily be from the Feather River and other sources in Northern California. Local water generated by runoff from the San Bernardino Mountains will, from time to time, supplement the imported resource. The pipeline route and its intersection with RTA bus routes is as follows:

- The pipeline starts approximately at the intersection of Hospitality Ln & Hunts Ln in San Bernardino;
- Following a gravity-sensitive, downhill pattern towards Corona, the pipeline will be constructed primarily in the right-of-ways of existing arterial streets;
- The pipeline terminates approximately at the intersection of Interstate 15 and Ontario Av in Corona;
- These existing or proposed RTA bus routes will intersect or parallel the pipeline, in sequence from northeast to southwest, according to the map supplied with the NOP:

Route 25	Barton Rd from Hunts Ln to Mount Vernon, in Colton & Grand Terrace, for 1.6 mi;
Route 25	At intersection of Iowa Av and Marlborough Av in Riverside;
Route 13	Marlborough Av from Iowa Av to Chicago Av in Riverside, for .5 mi;
Route 13	Chicago Av from Marlborough Av to Martin L King Bl, in Riverside, for 2.0 mi;
Route 1	At intersection of Chicago Av and 3rd St in Riverside;
Route 14	At intersection of University Av and Chicago Av in Riverside;
Route 16	At intersection of University Av and Chicago Av in Riverside;
Route 25	At intersection of University Av and Chicago Av in Riverside;
Other	Local trolley lines and shuttle buses at intersection of University and Chicago;
Route 208	At intersection of Chicago Av and Martin L King Bl in Riverside
Route 22	Chicago Av from University Av to Alessandro Bl in Riverside, for 2.2 mi;
Route 20	At intersection of Alessandro/Central and Chicago/Arlington in Riverside;
Route 10	Lincoln Av from Horace St to Adams St in Riverside, for 2.5 miles;
Route 27	At intersection of Van Buren Bl and Cleveland Av in Riverside;
Route 1	Magnolia Av from Neece St to Interstate 15 in Corona, for 1.0 mi;
Route 3	Magnolia Av from Neece St to Interstate 15 in Corona, for 1.0 mi

These direct impacts involve 13 RTA routes, approximately 10 miles of service lines and 30 to 40 bus stops.

WMWD's Initial Study states, on page 32, there will be "Less Than Significant Impact" to Transportation and Traffic. It also says "Impacts to traffic from the project will consist of minor, short-term increases in vehicle trips as a result of pipeline construction" and that "encroachment permits... will address issues associated with short-term traffic impacts". The Study also advises "this issue will not be discussed further in the forthcoming EIR".

On page 33, the Study asks if "Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)" would have an impact on the community. WMWD's response to this question is there will be "No Impact" and advises there will be no further discussion of it in the EIR.

On page 32, in the Transportation/Traffic section, there is a brief discussion of safety measures and encroachment permits but only in a somewhat minimal fashion, to meet basic requirements of the law. No mention is made, for example, of WMWD voluntarily offering to set up a cooperative or partnership arrangement with impacted parties, such as RTA, for some form of information and notification process relative to potential interference with normal public transportation routes caused by the construction of this pipeline.

RTA PLANNING FOLLOW-UP:

___ Standard "Acceptable" letter to jurisdiction without comments

___ Standard "Acceptable" letter to jurisdiction with compliments or positive advisories

_✓_ Letter with comments advising environmental document modifications re transit issues

___ Verbal conversation with Case Planner and appropriate letter follow-up

___ Other (no RTA letter)

SECOND REVIEW:

Review materials placed in archive files: Date: _____

CITY OF RIVERSIDE

"People Serving People"

April 5, 2003

Post-it® Fax Note 7671	Date 8-18-03 # of pages ▶ 12
To Roma Stromberg	From Sonia Thomas
Co./Dept. Webb	Co. WMWD
Phone #	Phone #
Fax # 788-4139	Fax #

Don Harringer
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

Subject: Initial Study for the Riverside/ Corona Feeder Project

Dear Mr. Harriger:

The Planning Department has reviewed the Initial Study and Notice of Preparation for the Riverside/Corona Feeder Project Draft Environmental Impact Report. According to the location map and project description the proposed pipeline passes through the City of Riverside primarily within existing street right-of-way. A portion of the project may also be located within the Gage Canal right-of-way. We agree with Western's assessment that this project could have a significant adverse impact on the environment and that an environmental impact report needs to be prepared. However, the Planning Department has the following comments regarding the evaluation of the environmental impacts:

Aesthetics -The initial study indicates that the aesthetic impact of the project would be less than significant since construction activities will create a temporary nuisance for motorists and local residents. According to the City of Riverside's Public Utilities Water Division the precise alignment of the pipeline within City street right-of-way has not been determined. Due to the magnitude of the project we are particularly concerned with the potential significant impact that the construction and maintenance of this pipe line could have on existing landscaping including mature street trees located within the City's street right-of-way. This potential aesthetic impact as well as and mitigating measures reducing the impact to a level that is less than significant must be addressed in the Draft EIR.

Cultural Resources - The initial study indicates that the project could have a significant impact on cultural resources. Although the initial study discusses some landmarks identified by the Cultural Heritage Board located in the vicinity of the proposed pipeline that could be impacted, we are particularly concerned with the potential impact of the location of a portion of the pipeline within the Gage Canal right-of-way. The Gage Canal is designated a historic landmark within the City of Riverside and is eligible for placement on both the California and the National Registers of Historic Places. The potential impact of the location of a portion of the pipeline within the canal right-of-way

PLANNING DEPARTMENT
3900 MAIN STREET • RIVERSIDE, CALIFORNIA 92522 • (909) 826-5371
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and mitigating measures reducing this impact to a level that is less than significant must be addressed within the Draft EIR.

Thank you for the opportunity to comment on this project. If you have any questions or require additional information regarding these comments, please call me at (909) 826-5874. Please forward a copy of the Draft EIR for Planning Department review.

Sincerely,

Jeff Belier
Senior Planner

Facsimile Transmittal Memo

WESTERN MUNICIPAL WATER DISTRICT

Date: 5/16/03 Time:

To: Roma Stromberg Company: Webb & Associates

FAX: Telephone:

From: Sonia S. Huff

Title: Civil Engineering Assistant Direct Line: (909) 789-5032

Subject: NOP Comments

Number of pages, including this page: 3

Comments:

Western Municipal Water District of Riverside County
450 Alessandro Blvd., Riverside, CA 92508
P.O. Box 5286, Riverside, CA 92517-5286
Telephone: (909) 780-4170 FAX: (909) 780-3837

RIVERSIDE

PUBLIC UTILITIES

File: Western Municipal Water District

May 14, 2003

RECEIVED
MAY 16 2003
W. M. W. D.

Mr. Don Harriger
General Manager
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

RE: Initial Study for Riverside Corona Feeder (RCF) Project, Dated January 23, 2003

Western Municipal Water District (WMWD) will prepare a Draft Program Environmental Impact Report (EIR) for the proposed RCF project. The following is our comments to be considered in the preparation of draft EIR.

The proposed RCF project involves the construction of a 30-mile long feeder pipeline; metered turnouts; twenty new or existing groundwater wells; and a 2,500 hp pump station to lift water from the City of Riverside Waterman Transmission Main (page 1 of referenced Initial Study). The facilities "may be used to convey native water pursuant to rights held by the City of Riverside and Elsinore Valley Municipal Water District" if appropriate agreements can be reached (page 1). WMWD "intends to seek capacity (50cfs) in the City of Riverside's Waterman Avenue pipeline" (page 1). "Proposed RCF Project pipelines may be shared with other public agencies within the San Bernardino Basin Area" (page 1), including Riverside. "The proposed infrastructure will allow WMWD to purchase and store water from the State Water Project in the San Bernardino Basin" (page 1).

The proposed well locations and operational plan have not yet been determined. Riverside would expect to be directly and intimately involved in the location and operation of any proposed wells (page 22, item 8b).

WMWD suggested, "sufficient water is available and entitlements to water is currently being negotiated" (Item 16d; page 34). We also request an operational plan be developed for the proposed project prior to the initiation of construction activity.

Sincerely,

Dieter P. Wirtzfeld

Dieter P. Wirtzfeld
Assistant Director – Water

xc: Tom P. Evans Zahra Panahi Babs Makinde

DPW/ZP/Babs

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CITY OF RIVERSIDE

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Riverside All-America City 1998

RECEIVED MAY 16 2003 W. M. W. D.

May 14, 2003

Don Harriger, General Manager
WESTERN MUNICIPAL WATER DISTRICT
450 Alessandro Boulevard
Riverside, CA 92508

Notice of Preparation of a Draft Program Environmental Impact Report for the Riverside Corona Feeder Project

We have reviewed your Notice and the attached environmental Initial Study for this project and have the following comments.

- The Environmental Impact Report (EIR) should address impacts related to existing utilities within the selected project alignment. The project alignment may either need to be revised due to conflicts with existing utilities or the existing utility may need to relocated so the project can remain within the approved alignment.

- The EIR should address the affects of project construction on traffic patterns. The project alignment is along several heavily traveled arterial streets within the City. The construction will create traffic delays, especially at intersections, and consequently, may cause traffic to divert through residential neighborhoods. Proposed traffic detours for major portions of the work should be a part of the EIR.

Thank you for the opportunity to comment on the proposed Riverside Corona Feeder project, if you have any questions regarding our comments please contact Sandy Caldwell at 909-826-5348.

Sincerely,

Thomas J. Boyd, P.E.
Deputy Public Works Director/City Engineer

G:\COMMON\SANDY\WMWD EIR.DOC
PUBLIC WORKS DEPARTMENT
3900 MAIN STREET • RIVERSIDE, CALIFORNIA 92522 • (909) 826-5341
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COUNTY OF RIVERSIDE • COMMUNITY HEALTH AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH

April 2, 2003

RECEIVED
APR - 7
W. M.

Don Harriger, General Manager
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

RE: Initial Study for the Riverside Corona Feeder Project

Dear Mr. Harriger,

Thank you for the opportunity to review this project in its planning stage. The Riverside County Department of Environmental Health offers the following considerations:

- Where the proposed pipeline runs through a street right of way, care must be taken to adhere to sewer line setbacks (10 ft. minimum horizontal). Also, if the pipeline crosses existing sewers, the water must cross over the sewer with a minimum of one (1) foot vertical clearance.

- If the proposed pipeline alignment runs across property with on-site sewage disposal systems (leach fields or seepage pits), care must be taken to meet the required setbacks.

- Pg. 4., C., Environmental Setting. Land Use. This section states that "The pipeline portion of the proposed project…"[will] pass through the El Sobrante Land Fill…" Our department (specifically the Local Solid Waste Enforcement Agency which permits and regulates the Landfill), will have some serious concerns with respect to, not only the potential effects of the waste on the water line, but also the potential for water seepage into the trash from compromised sections of the pipeline due to unforeseeable events.

If you have any questions regarding this letter, please call me at (909) 955-8982.

Sincerely,

Charles A. Strey, P.E.
Senior Public Health Engineer

Cc: Sam Martinez, Supervisor – Land Use (for file)

Local Enforcement Agency • P.O. Box 1280, Riverside, CA 92502-1280 • (909) 955-8982 • FAX (909) 781-9653 • 4080 Lemon Street, 9th Floor, Riverside, CA 92501
Land Use and Water Engineering • P.O. Box 1206, Riverside, CA 92502-1206 • (909) 955-8980 • FAX (909) 955-8903 • 4080 Lemon Street, 2nd Floor, Riverside, CA 92501

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Established 1932

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Redlands, CA 92373-8032
(909) 793-2503
Fax: (909) 793-0188

P.O. Box 1839
Redlands, CA 92373-0581
Email: sbvwcd@eee.org

RECEIVED
APR 22 2003
W. M. W. D.

April 17, 2003

VIA Facsimile and US Mail

Mr. Don Harriger
General Manager
Western Municipal Water District
450 Alessandro Boulevard
Riverside, California 92508

RE: Notice of Preparation of an Environmental Impact Report for the Riverside Corona Feeder Project

Dear Mr. Harriger

This letter responds to the subject Notice of Preparation ("NOP"), which was received by the offices of the San Bernardino Valley Water Conservation District ("Conservation District") on March 27, 2003. Comments were to be received "not later than 30 days after receipt of this notice."

I. Introduction

As part of the Riverside-Corona Feeder Project ("RCFP"), Western Municipal Water District ("Western") proposes the construction of a 30-mile pipeline extending across six jurisdictions, a pump station, and use of up to 20 new or existing wells within the San Bernardino Basin Area. Collectively, the RCFP represents a significant new water management tool in the Upper Santa Ana River area. The Conservation District believes that the RCFP offers the potential for enhanced management of water resources in the area. Improved management of water resources, however, will depend on the design of the RCFP. To maximize benefits, wells should be sited in such a manner as to allow for additional actions for pressure zone dewatering and water quality improvements to the Bunker Hill Basin ("Basin").

At the same time, the RCFP presents the possibility for groundwater management actions that could negatively impact the environment and existing water users. Therefore, the Conservation District offers the following comments on the NOP of the Environmental Impact Report ("EIR") for the RCFP.

II. To ensure that the potential benefits of the RCFP are not achieved at the expense of the environment or existing water users, the EIR must evaluate operation of the RCFP in the broader context of Basin water use and management.

BOARD OF DIRECTORS
Bert Marcum, Jr.
Clare Henry Day
Arnold L. Wright
Sterling Woodbury
Cheryl A. Tubbs
Melody Henriques
Manuel Aranda, Jr.
GENERAL MANAGER
D. Burnell Cavender, AICP

The RCFP is inextricably linked to sources of water, both natural and imported, that replenish the Basin. The source of water for export impacts, among other issues, the rights of groundwater users in the Basin, the quality of water in the Basin, and groundwater levels in the Basin. Therefore, the EIR should explain how exports would occur in the context of overall Basin management and identify the source(s) of water to be exported; the timing of exports; the specific number, location, and capacity of wells that would be used for export; the total quantity of water to be exported from the Basin on a seasonal and annual basis; any operational parameters or restrictions on export from individual wells or from the Basin as a whole; and how water exports are to be accounted for.

Additionally, because of the obvious potential impact on groundwater availability and quality, the project description should include a thorough recitation of the expected operations plan for the RCFP, including any groundwater basin management element. We encourage you to consult with the Conservation District when formulating operational parameters for the RCFP, so that your groundwater production and potential export activities using proposed RCFP facilities can be coordinated with the Conservation District's groundwater recharge operations.

III. The EIR should include an alternative that presumes that no Santa Ana River ("SAR") surface water will be available for export under a conjunctive use program.

The EIR should include analysis of an alternative that does not presume the availability of SAR surface water for export by Western under a conjunctive use program. More specifically, Western should evaluate an alternative that does not rely upon the introduction of SAR surface water by Western for later export through the RCFP in quantities above Western's existing rights (e.g., under the Western Judgment). Such an alternative is prudent in light of the fact that no determination has been made as to the availability of water for appropriation by Western from the Santa Ana River at Seven Oaks Dam.

IV. Conclusion

The Conservation District appreciates the opportunity to comment on the NOP for the RCFP EIR. If you have any questions or would like to discuss any of the issues raised in this letter, please do not hesitate to call me at (909) 793-2503.

Sincerely,

Thomas J. Crowley

Thomas J. Crowley, P.E.
Assistant General Manager

COUNTY OF RIVERSIDE
TRANSPORTATION AND LAND MANAGEMENT AGENCY

Richard K. Lashbrook
Agency Director

Planning Department

Ron Goldman
Assistant Planning Directo

RECEIVED
APR 22 2003
W. M. W. D.

April 17, 2003

Western Municipal Water District
Attn: Don Harriger, General Manager
450 Alessandro Boulevard
Riverside, CA 92508

RE: Notice of Preparation of a Draft Program Environmental Impact Report for the Riverside Corona Feeder Project

Dear Mr. Harriger:

The Riverside County Planning Department has reviewed the above notice and the environmental issue areas to be addressed in the Draft EIR. We have no comments at this time.

We would like to request that we receive a copy of the draft environmental document for our further review and analysis when available. If you should have any questions, please contact me at (909) 955-4949.

Sincerely,

Kathleen Browne
Project Manager

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P.O. Box 1409· Riverside, California 92502-1409
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CITY OF SAN BERNARDINO
MUNICIPAL WATER DEPARTMENT

BOARD OF WATER COMMISSIONERS

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JOHN A. PERRY, P.E.
Director, Water Reclamation
DAVID S. ERICKSON
Director, Administration and Finance
JON K. TURNIPSEED
Safety Program Manager

April 25, 2003

Don Harriger, General Manager
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

Re: Notice of Preparation of a Draft Program Environmental Impact Report for the Riverside Corona Feeder Project

Dear Mr. Harriger:

The City of San Bernardino Municipal Water Department (the Department) has received a copy of Western Municipal Water District's (Western's) Notice of Preparation and Initial Study (IS) and submits the following comments for consideration in preparation of the Draft Program Environmental Impact Report (EIR).

The Department encourages Western to fully address the impacts of the proposed project, including the potential hydrologic consequences of its proposal to drill up to twenty (20) new wells in the City of San Bernardino (the IS is ambiguous with respect to the actual number of new wells versus existing wells).

While the Initial Study identifies the hydrologic impacts as pertaining to the Santa Ana River Drainage Area, this merely addresses impacts caused by the construction of the pipeline. The greater hydrologic consequences will be caused by the construction and operation of these proposed new wells in the San Bernardino Basin.

As Western is no doubt aware, the Department is the contractor for the United States Environmental Protection Agency for its Newmark Groundwater Remediation project, a project consisting of two lines of inhibition wells located in the southern end of the Bunker Hill Basin. These inhibition wells are designed to intercept the two halves of a plume of contaminated groundwater emanating from northern San Bernardino. The Newmark wells operate continuously to create a cone of depression into which the contaminants, perchlorethylene (PCE) and tetrachlorethylene (TCE), are drawn. The

300 North "D" Street, San Bernardino, California 92418 P.O. Box 710, 92402 Phone: (909) 384-5141
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Corporate Yards: (909) 384-5260 Water Reclamation Plant: (909) 384-5258

water from the wells is then treated through granular activated carbon vessels and served to the public at the non-detect level.

The Department is concerned that placement of these proposed wells could jeopardize the efficacy of the inhibition wells. If the wells are placed downgradient of the inhibition wells, they may affect the capture of contaminated water by pulling a different cone of depression or altering the designed cone of depression. The Department needs additional information regarding the proposed placement of these new wells to further evaluate the potential for impacts to the inhibition well systems.

Alternatively, if the wells are placed in areas that are not downgradient, but are laterally contiguous to the inhibition wells, they might, again, jeopardize the inhibition well systems.

Similarly, in addition to the Newmark plume, there are a number of other contaminate plumes in the area that could be affected by the placement of new supply wells and Western needs to provide additional information and analysis to address these potential impacts.

In addition to the Department's concerns about impacts to the Newmark systems, the Department is also quite alarmed by the proposition that Western is contemplating placement of an undetermined number of additional supply wells in the San Bernardino Basin. We note that the IS mentions that Western is conducting a review of its water rights in the San Bernardino Basin. The EIR should substantiate Western's position regarding rights to additional supply.

Assuming that Western does have sufficient water rights in the San Bernardino Basin, the Department requests that Western include in its EIR analysis a plan for basin management. If Western does intend to increase its production in the San Bernardino Basin significantly, then some consideration must be given to replenishment, as well as management of the basin during wet and dry years.

If Western significantly increases its production and there is no resulting replenishment, then the Department would have grave concerns about future supply. If Western intends to replenish or store water in the San Bernardino Basin during wet years, for use during dry years, then has Western examined the impacts on other producers' ability to store water for a similar purpose? Additionally, how does Western propose to account for storage?

The Department also operates a geothermal heating district, using geothermal water for heat exchange for a number of different customers in the San Bernardino area. Geothermal water is classified as a mineral resource by the State of California. Depending on where Western proposes to place any new wells, and depending on how recharge and extractions are managed, this project has the potential to alter the historic recharge and flow patterns in the San Bernardino Basin and impact or disrupt the basin's

ability to produce geothermal water of the same quality, temperature and volume that we currently serve and on which the customers we supply depend.

The Department is confident that Western will thoroughly examine these issues and adequately address any environmental consequences of this proposed project.

If you have any questions regarding this letter, please call me at (909) 384-7210.

Very truly yours,

Stacey Aldstadt

Stacey R. Aldstadt
Deputy General Manager

Cc: Bernard C. Kersey
William Bryden
EIR Comments File

DEPARTMENT OF PUBLIC WORKS

FLOOD CONTROL • REGIONAL PARKS • SOLID WASTE MGMT • SURVEYOR • TRANSPORTATION

COUNTY OF SAN BERNARDINO
ECONOMIC DEVELOPMENT
AND PUBLIC SERVICES GROUP

825 East Third Street • San Bernardino, CA 92415-0835 • (909) 387-8104
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KEN A. MILLER
Director of Public Works

April 21, 2003

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APR 24 2003
W. M. W. D.

Mr. Don Harriger, General Manager
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

File #10(ENV)-4.01

RE: NOTICE OF DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT - RIVERSIDE CORONA FEEDER PROJECT - RIVERSIDE WESTERN MUNICIPAL WATER DISTRICT

Dear Mr. Harriger:

Thank you for giving the San Bernardino County Department of Public Works the opportunity to comment on the above-referenced project.

After reviewing the submitted document, our Department has comments concerning this project, as it may affect San Bernardino County.

The site is generally located in the cities of San Bernardino, Grand Terrace, and Colton, and will either cross or be proximate to the Santa Ana River, Reche Canyon Creek, Barton Storm Drain, and De Berry Storm Drain. According to the most recent FEMA Flood Insurance Rate Maps, the proposed pipeline near the Santa Ana River appears to be within Zones A99 and X shaded. The proposed pipeline near Reche Canyon Creek appears to be within Zones A, AO, and X shaded. The proposed pipeline near Barton Storm Drain and De Berry Storm Drain appear to be in Zone X unshaded.

The Water Resources Division's comments are as follows:

1. We have reviewed the Initial Study and it appears that the drainage concerns have been adequately identified.

2. We recommend that the proposed pipeline be constructed in a manner not to alter the direction, elevation, or capacity of any existing drainage facility, and that the line be placed below all drainage course scour depths.

3. It is assumed that the cities will establish adequate provisions for intercepting and conducting any accumulated drainage around or through the site areas in a manner which will not adversely affect adjacent or downstream properties.

4. The project should incorporate the most recent FEMA floodproofing regulations.

WALLY HILL
County Administrative Officer
JOHN GOSS
Assistant County Administrator
Economic Development and
Public Services Group

Board of Supervisors
BILL POSTMUS ..... First District
PAUL BIANE ..... Second District
DENNIS HANSBERGER ..... Third District
FRED AGUIAR ..... Fourth District
JERRY EAVES ..... Fifth District

RE: NOTICE OF DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT - RIVERSIDE CORONA FEEDER PROJECT - RIVERSIDE WESTERN MUNICIPAL WATER DISTRICT

5. Prior to any encroachment on District right-of-way, a permit shall be obtained from the District's Flood Control Operations Division, Permit Section. Other off-site on on-site improvements may be required which cannot be determined at this time.

6. U.S. Army Corps of Engineers' approval may also be required for work near the Santa Ana River. Information regarding this item can be obtained from the District's Flood Control Operations Division, Permit Section.

The Environmental Management Division's comments are as follows:

1. We have reviewed the Initial Study and it appears that the biological issues were fully and properly addressed.
2. Certain environmental approvals may be necessary if the proposed project alters any existing watercourses in the project boundary, including any work necessary within the Flood Control District's right of way. Submittal of all of the necessary environmental permits from the regulatory agencies will be required along with the permit application for obtaining any required encroachment permit from the San Bernardino County Flood Control District.

Should there be any changes to this project, please notify our Department so that we may have the opportunity to comment on the changes. If you have any questions or need additional information, please contact Kelly A. Rozich, Senior Associate Planner at (909) 387-8114.

Sincerely,

NARESH P. VARMA, P.E., Division Chief
Environmental Management Division

NPV:KR/RiversideCoronaFeeder-Response

cc: Mike Fox, Water Resources
Shay Lawrey, EMD
Kelly Rozich, EMD
KAM/PJM Reading File

THE CITY OF SAN JACINTO
Development Services

April 2, 2003

RECEIVED
APR - 4 2003
W. M. W. D.

Don Harriger
Western Municipal Water District
450 Alessandro Boulevard
Riverside, CA 92508

Dear Mr. Harriger:

This is in response to your Notice of Preparation of a DEIR for the Riverside Corona Feeder Project.

The City has no comments at this time, but we would appreciate the opportunity to review the DEIR when it is available.

Thank you for the opportunity to comment on this matter.

Very truly yours,

Tim Hults

Tim Hults
Community Development Director

248 E. Main Street . San Jacinto, CA 92583
Tel: 909/487-7330 . Fax: 909/654-9896 . www.ci.san-jacinto.ca.us

Appendix B

Air Quality Impact Analysis Report and Update Memorandum

ALBERT A. WEBB ASSOCIATES
Consulting Engineers

Ref. W.O. 00-303E
File No:

MEMORANDUM

TO: Western Municipal Water District

FROM: Jillian Baker

CC: Cathy Perring

DATE: July 2, 2004

Re: Riverside-Corona Feeder Pipeline Project Air Quality Impact Analysis Addendum.

The purpose of this memo is to provide a discussion of the air quality impacts from construction of 900 feet of Reach A, which will be placed below the Santa Ana River as part of this proposed project. In the Air Quality Impact Analysis (Air Study) done by Albert A Webb Associates in August 2003 for this project, it was assumed that the construction of this 900 foot section of Reach A would require microtunneling techniques. However, it is possible that typical excavation techniques could be used instead of microtunneling; therefore, air quality impacts from excavation of this section of the pipeline would have to be estimated.

Construction emissions were estimated using the tables for construction of Reach A found in Appendix A of the Air Study. Tables I and II summarize the daily and quarterly emissions from either microtunneling or excavation of the section of pipe described above.

Table I – Estimated Maximum Daily Construction Emissions

Emission Threshold	ROG	NO_X	CO	SO_X	PM-10
Daily Threshold (lbs/day)	**75**	**100**	**550**	**150**	**150**
Microtunneling	61.02	547.96	326.47	55.07	58.34
Excavation	66.10	614.27	295.80	46.41	38.39
Change [1]	+5.08	+66.31	-30.67	-8.66	-19.95

[1] The Air Quality Impact Analysis assumed this section of pipe would be constructed using microtunneling. Since the other construction assumptions used are still valid, the only difference in amount of emissions would be due to excavation of the 900 feet section of pipeline. Therefore, the change in emissions using excavation would represent the maximum amount of reduction or increase in the daily construction emissions.

Table II – Estimated Maximum Quarterly Construction Emissions

Emission Threshold	ROG	NO_X	CO	SO_X	PM-10
Quarterly Threshold (tons/qtr)	**2.5**	**2.5**	**24.75**	**6.75**	**6.75**
Microtunneling [1]	1.37	12.33	7.35	1.24	1.31
Excavation [2]	0.40	3.69	1.96	0.33	0.23
Change [3]	-0.97	-8.64	-5.39	-0.91	-1.08

[1] Microtunneling will occur at about 20' - 30' per day, therefore a 900' section of pipeline will take about 30 – 45 days to complete. Thus quarterly emissions were calculated using 45 days per quarter.

[2] Excavation will occur at about 80' per day, therefore a 900' section of pipeline will take about 12 days to complete. Thus quarterly emissions were calculated using 12 days per quarter.

[3] The Air Quality Impact Analysis assumed this section of pipe would be constructed using microtunneling. Since the other construction assumptions used are still valid, the only difference in amount of emissions would be due to excavation of the 900 feet section of pipeline. Therefore, the change in emissions using excavation would represent the maximum amount of reduction or increase in the quarterly construction emissions.

The maximum daily emissions of ROG and NO_X are higher for microtunneling, while maximum daily emissions of CO, SO_X, and PM-10 are higher for excavation. However, the maximum quarterly construction emissions for microtunneling are larger than for excavation due to the longer time required for microtunneling.

Table III – Estimated Maximum Daily and Quarterly Construction Emissions Overview

Emission Threshold	ROG	NO_X	CO	SO_X	PM-10
Daily Threshold (lbs/day)	**75**	**100**	**550**	**150**	**150**
Reach A Boring [1]	53.64	392.26	216.26	31.46	56.84
Exceeds Threshold?	*No*	*Yes*	*No*	*No*	*No*
Change [2]	+5.08	+66.31	-30.67	-8.66	-19.95
New Total	58.72	458.57	185.59	22.80	36.89
Exceeds Threshold?	*No*	*Yes*	*No*	*No*	*No*
Quarterly Threshold (tons/qtr)	**2.5**	**2.5**	**24.75**	**6.75**	**6.75**
Reach A Boring [1]	1.74	12.75	7.03	1.02	1.85
Exceeds Threshold?	*No*	*Yes*	*No*	*No*	*No*
Change [2]	-0.97	-8.64	-5.39	-0.91	-1.08
New Total	0.77	4.11	1.64	0.11	0.77
Exceeds Threshold?	*No*	*Yes*	*No*	*No*	*No*

[1] Data from Table 9 of Air Study.

[2] Data from Tables I and II above.

Comparison of project emissions from project construction (Table III, above) shows that even with the changes in amounts of emissions of excavation versus microtunneling, the air quality impacts have not changed.

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SECTION 1 – INTRODUCTION AND SUMMARY

Purpose and Methods of Analysis

The following air quality assessment was prepared to evaluate whether the expected criteria air pollutant emissions generated as a result of the proposed project would cause significant impacts to air resources in the project area. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 et seq.). The methodology follows the "CEQA Air Quality Handbook" prepared by the South Coast Air Quality Management District (SCAQMD) for quantification of emissions and evaluation of potential impacts to air resources. As recommended by SCAQMD staff, EMFAC2002 version 2.2, a computer program developed and approved by the California Air Resources Control Board, was used to quantify project-related on-road mobile source emissions.

EXECUTIVE SUMMARY

Site Location

The proposed project is a regional water pipeline located in San Bernardino and Riverside counties starting at a point north of the Santa Ana River between Interstate 215 and Tippecanoe Avenue in the City of San Bernardino and extends in a southwesterly direction ending at a point near the intersection of Compton Avenue and Ontario Avenue in the City of Corona where the proposed pipeline would intersect with an Elsinore Valley Municipal Water District (EVMWD) pipeline.

Development Description

The proposed project is the installation and operation of approximately 30 miles of water pipeline. The pipeline will be constructed under the Santa Ana River, through a commercial and industrial area parking lot and in road right-of-ways all within the City of San Bernardino. The pipeline construction will continue under Interstate 10, in a southwest direction within paved road right-of-ways, the Gage Canal right-of-way, agricultural dirt roads, across flood control easements and several rail lines within the cities of Colton, Grand Terrace, Riverside and unincorporated Riverside County. Construction of the pipeline will extend southward within paved road right-of-ways, through land within the El Sobrante Land Fill easement and under Interstate 15 connecting to an existing EMWD pipeline near the intersection of Compton Avenue and Ontario Avenue in the City of Corona. The proposal also includes a pump station capable of 50 cubic feet per second (cfs).

Findings

The study found that without mitigation short-term emissions of NOx and ROC are above the SCQAMD suggested significance thresholds. With mitigation incorporated into the project during construction of the improvements, short-term emissions of Nox and ROC are still above the SCAQMD recommended significance thresholds. Long-term criteria pollutant emissions are below the SCAQMD suggested significance thresholds. The following findings are supported with regard to this project:

- The project is not in compliance with the SCAQMD Air Quality Management Plan.
- The project-generated emissions may violate Federal or State ambient air quality standards.
- The project's contribution to cumulative impacts may be significant.
- The project will not expose sensitive receptors to substantial pollutant concentrations.
- Project-generated odors will not affect a substantial number of people.

Mitigation Measures

- Prior to construction of the proposed improvements, the project proponent will provide a traffic control plan that will describe in detail safe detours around the project construction sites and provide temporary traffic control (i.e. flag person) during earthen material transport and other construction related truck hauling activities.
- During construction of the proposed improvements one of the following options must be used to supply the power needs for boring operations: 1) use natural gas fueled generator sets; 2) use low emission, duel fueled generator sets; or 3) prior to construction of the proposed improvements, arrangements will be made with Southern California Edison to provide temporary construction power at the boring sites.
- During construction of the proposed improvements, all mobile and stationary construction equipment will be properly maintained at an offsite location and includes proper tuning and timing of engines. Equipment maintenance records and equipment design specification data sheets shall be kept on-site during construction.
- During construction of the proposed improvements, all contractors will be advised not to idle trucks on site for more than ten minutes.

SECTION 2 – SETTING

Project Description

The proposed project is a regional water pipeline located in San Bernardino and Riverside counties starting at a point north of the Santa Ana River between Interstate 215 and Tippecanoe Avenue in the City of San Bernardino and extends in a southwesterly direction ending at a point near the intersection of Compton Avenue and Ontario Avenue in the City of Corona where the proposed pipeline would intersect with an Elsinore Valley Municipal Water District pipeline.

The proposed project is the installation of approximately 30 miles of water pipeline. The 72-inch diameter segment of the pipeline will be constructed under the Santa Ana River, through a commercial and industrial area parking lot and in road right-of-ways all the City of San Bernardino. The 72-inch diameter pipeline construction will continue under Interstate 10, in a southwest direction within paved road right-of-ways and an industrial area to the proposed mainline meter facility at Barton Road west of Reche Canyon Road. Construction of the pipeline will continue as a 60-inch diameter segment from the proposed mainline meter facility in a southwest direction within paved road right-of-ways, the Gage Canal right-of-way, agricultural dirt roads, across flood control easements, and several rail lines within the cities of Colton, Grand Terrace, Riverside and unincorporated Riverside and San Bernardino counties. A 54-inch diameter segment of the pipeline would be constructed continuing southwest from the 60-inch diameter segment within paved road right-of-ways to the intersection of Cleveland Avenue and Irving Street. A 36-inch branch pipeline would be constructed that extends southeast in Irving Street to a point approximately 200-feet northwest of Firethorn Avenue. Construction of the mainline portion of the proposed pipeline will extend southwest within paved road right-of-ways as a 42-inch diameter pipeline segment from the intersection of Cleveland Avenue and Irving Street to the intersection of Filmore Street and Indiana Avenue. Another branch would be constructed as a 30-inch diameter pipeline extending northwest within paved road right-of-ways and under the Arlington Flood Control Channel from the intersection of Filmore Street and Indiana Avenue to the existing Arlington Pump Station. The mainline portion of the proposed project would be constructed as a 36-inch diameter pipeline extending southwest from the intersection of Fillmore Street and Indiana Avenue then southward within paved road right-of-ways, through land within the El Sobrante Land Fill easement and under Interstate 15 connecting to an existing EMWD pipeline near the intersection of Compton Avenue and Ontario Avenue in the City of Corona.

The proposed pipeline will connect to the City of Riverside's proposed 60-inch diameter Waterman Avenue Pipeline Replacement Project at a Hydraulic Gradient Line (HGL) of 1060N∀. This connection necessitates the construction and operation of a maximum 50 cubic feet per second (cfs) capacity pump station to lift water into the proposed Riverside Corona Feeder Pipeline, which is anticipated to operate at a HGL of 1250N∀. The proposed pump station will be constructed in a vacant lot near the intersection of Orange Show Road and Waterman Avenue in the City of San Bernardino.

Pipeline segments that will be constructed under the Santa Ana River, rail lines, flood control channels, Interstate 10, and Interstate 15, will require boring techniques. The largest of these will be the 72-inch pipeline that crosses under the Santa Ana River. This segment of the project will be installed across the riverbed utilizing micro-tunneling techniques within a 92-inch casing pipe and require two diesel powered electric generators to power pumps to dewater the boring during construction.

The following summarizes salient project features with respect to evaluation of criteria air pollutant emissions.

- Disturbance of approximately 120 gross acres as a result of pipeline trenching, construction staging activities, and pump station site grading activities over approximately 7 years.
- Paving of approximately 35 acres during installation of the pipeline and pump station over approximately 7 years.

Physical Setting

The project site is located in the South Coast Air Basin (SCAB). The SCAB consists of Orange County, together with the coastal and mountain portions of Los Angeles, Riverside and San Bernardino counties. Regionally, the interaction of land (offshore) and sea (onshore) breezes control local wind patterns in the area. Daytime winds typically flow from the coast to the inland areas, while the pattern typically reverses in the evening, flowing from the inland areas to the ocean (SCAQMD, 1993). Air stagnation may occur during the early evening and early morning during periods of transition between day and nighttime flows. The region also experiences periods of hot, dry winds from the desert, known as Santa Ana winds. Locally, the prevailing wind is generally from west to east (Figure 2, Wind Patterns in the Project Area).

Regional and local air quality within the SCAB is affected by topography, atmospheric inversions, and dominant onshore flows. Topographic features such as the San Gabriel and San Bernardino Mountains form natural barriers to the dispersion of air contaminants. The presence of atmospheric inversions limits the vertical dispersion of air pollutants. With an inversion, the temperature initially follows a normal pattern of decreasing temperature with increasing altitude, however, at some elevation, the trend reverses and temperature begins to increase as altitude increases. This transition to increasing temperature establishes the effective mixing height of the atmosphere and acts as a barrier to vertical dispersion of pollutants. Dominant onshore flow provides the driving mechanism for both air pollution transport and pollutant dispersion.

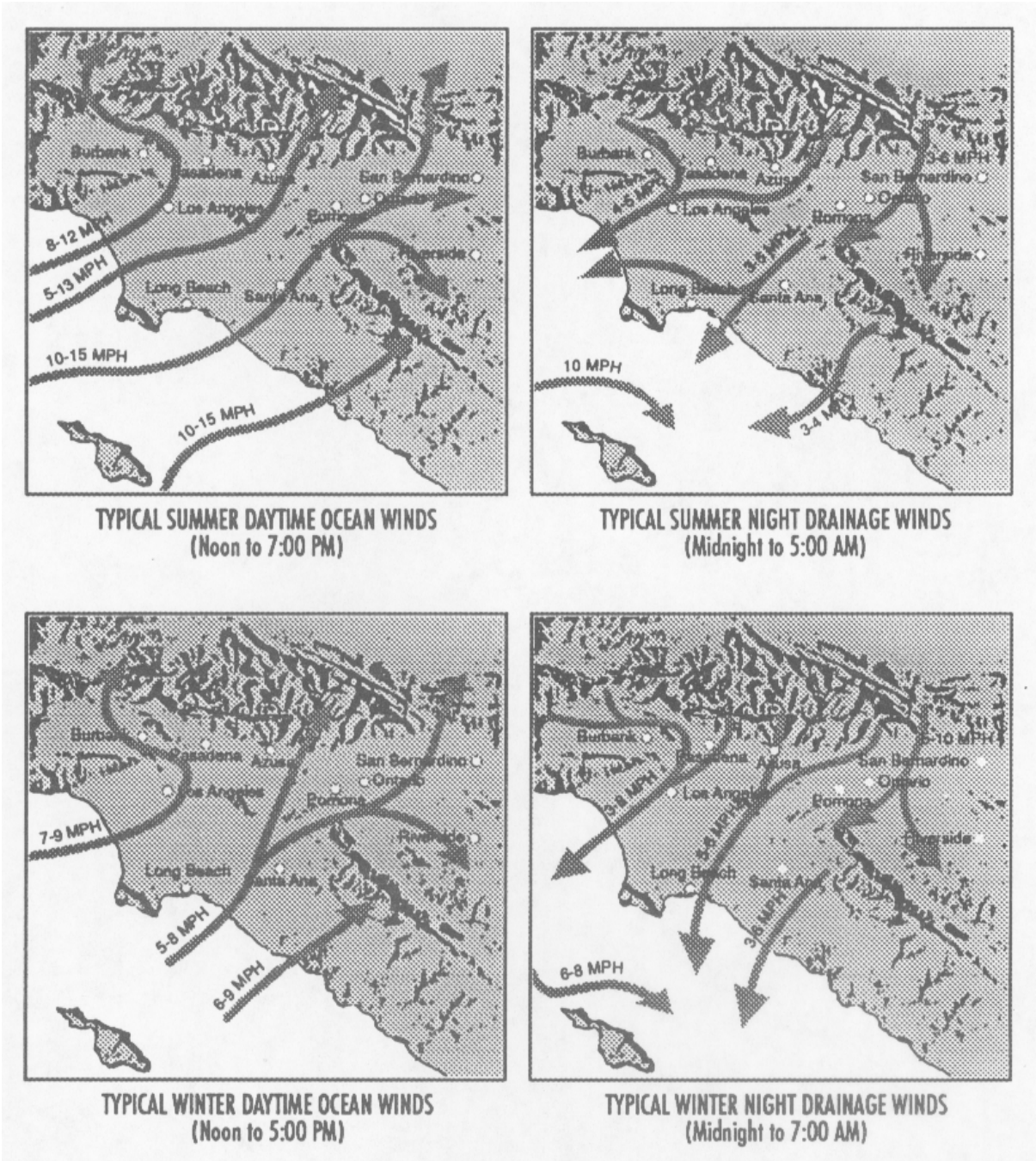
Air pollution generated in coastal areas is transported east to inland receptors by the onshore flow during the daytime until a natural barrier (the mountains) is confronted, limiting the horizontal dispersion of pollutants. The result is a gradual degradation of air quality from coastal areas to inland areas, which is most evident with the photochemical pollutants such as ozone. The greatest ozone problems are recorded at those South Coast Air Quality Management District

(SCAQMD) monitoring stations, which are located at the base of the San Gabriel and San Bernardino mountains ranging from the City of Santa Clarita, east to the City of San Bernardino.

The project area is within SCAQMD Source Receptor Area (SRA) 22, SRA 23, SRA 34, and SRA 35. The most recent published data for these source receptor areas are presented in Tables 1 through 4, Air Quality Monitoring Summary 1991-2001. This data shows that the baseline air quality conditions in the project area include occasional events of very unhealthful air. Even so, the frequency of smog alerts has dropped significantly in the last decade. The greatest recognized air quality problem in the SCAB is ozone. The yearly monitoring records document that prior to 1995, approximately one-third or more of the days each year experienced a violation of the state hourly ozone standard, with around ten days annually reaching first stage alert levels of 0.20 parts per million (ppm) for one hour. It is encouraging to note that ozone levels have dropped significantly in the last few years with approximately one-tenth of the days each year experiencing a violation of the state hourly ozone standard in 2001. Locally, no first stage alert (0.20 ppm/hour) has been called by SCAQMD in over two years, and no second stage alert (0.35 ppm/hour) has been called by SCAQMD in the last ten years.

Although the overall air quality in project aria is improving, one exception is the ambient concentrations of particulate matter smaller than 10 microns in diameter (PM-10 and PM-2.5). Over the last decade the State air quality standard for PM-10 has been consistently exceeded in the area, and the Federal standard has been exceeded in all but two years (Table I: Years 1992 and 1998). The 1997 Federal standards for PM-2.5 (annual arithmetic mean of 15 $\mu g/m^3$ and 24-hour average of 65 $\mu g/m^3$) were recently upheld by the U.S. Supreme Court in February 2001. SCAQMD monitoring data shows that all of the source receptor areas the project is within are exceeding the federal annual and 24-hour standards since SCAQMD began monitoring PM-2.5 in 1999. Final adoption of State standards for $PM_{2.5}$ occurred in June of 2003 and a comparison of the air quality in the project area with the state standards is not yet available.

The sources contributing to particulate matter pollution include road dust, windblown dust, agriculture, construction, fireplaces and wood burning stoves, and vehicle exhaust. Specifically, SCAQMD data indicates the largest component of PM-10 particles in SRA 23 comes from road and windblown dust.



Source: South Coast Air Quality Management District
CEQA Air Quality Handbook (1993)

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

FIGURE 1
WIND PATERNS IN THE PROJECT AREA
Riverside/Corona Feeder
Western Municipal Water District

Table 1
SOURCE RECEPTOR AREA 22
AIR QUALITY MONITORING SUMMARY- 1991-2001

	Pollutant/Standard Source: CARB 1/25/99	Monitoring Year										
		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
No. Days Exceeded	**Ozone [a]:**											
	California Standard:											
	1-Hour - 0.09 ppm	103 [a]	57 [a]	71 [a]	83 [a]	75 [a]	8 [a]	89 [c]	70 [c]	38 [c]	41 [c]	41 [c]
	Federal Primary Standards:											
	1-Hour - 0.12 ppm	54 [a]	16 [a]	17 [a]	14 [a]	23 [a]	2 [a]	13 [c]	32 [c]	3 [c]	3 [c]	7 [c]
	8-Hour - 0.08 ppm [a]							55 [c]	57 [c]	27 [c]	29 [c]	34 [c]
	Max 1-Hour Conc. (ppm)	0.22 [a]	0.23 [a]	0.16 [a]	0.17 [a]	0.19 [a]	0.16 [a]	0.19 [c]	0.20 [c]	0.14 [c]	0.14 [c]	0.143 [c]
	Max 8-Hour Conc. (ppm) [a]							0.13 [b]	0.17 [b]	0.11 [b]	0.11 [b]	0.12 [b]
No. Days Exceeded	**Carbon Monoxide [c]:**											
	California Standard:											
	1-Hour - 20 ppm	0	0	0	0	0	0	0	0	0	0	0
	8-Hour - 9.0 ppm	0	0	0	0	0	0	0	0	0	0	0
	Federal Primary Standards:											
	1-Hour - 35 ppm	0	0	0	0	0	0	0	0	0	0	0
	8-Hour - 9.5 ppm	0	0	0	0	0	0	0	0	0	0	0
	Max 1-Hour Conc. (ppm)	14.0	11.0	10.0	11.0	9.0	9.0	7.0	6.0	7.0	5.0	5.0
	Max 8-Hour Conc. (ppm)	6.9	6.1	6.3	7.3	6.5	5.0	5.8	4.6	4.4	4.3	3.43
No. Days Exceede	**Nitrogen Dioxide:**											
	California Standard:											
	1-Hour - 0.25 ppm	0	0	0	0	0	0	0	0	0	0	0
	Federal Standard:											
	Annual Standard - 0.053ppm	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.16	0.23	0.14	0.18	0.15	0.11	0.12	0.10	0.13	0.10	0.15
No. Days Exceeded	**Sulfur Dioxide:**											
	California Standards:											
	1-Hour – 0.25 ppm	0	0	0	0	0	0	0	0	0	0	0
	24-Hour – 0.04 ppm	0	0	0	0	0	0	0	0	0	0	0
	Federal Primary Standards:											
	24-Hour – 0.14 ppm	0	0	0	0	0	0	0	0	0	0	0
	Annual Standard – 0.03 ppm	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.02	0.02	0.02	0.02	0.02	0.01	0.04	0.03	0.04	0.03	0.02
	Max. 24-Hour Conc. (ppm)	0.007 [b]	0.026 [b]	0.010 [b]	0.005 [c]	0.006	0.004	0.007	0.010	0.007	0.010	0.011
No. Days Exceeded	**Inhalable Particulates (PM-10):**											
	California Standards:											
	24-Hour - 50 µg/m^3	41 [c]	39 [c]	31 [a]	35 [a]	28 [a]	19 [a]	25 [a]	23 [a]	31 [a]	28 [a]	18 [a]
	Annual Geometric Mean (µg/m^3)	65.4 [c]	52.5 [c]	43.9 [a]	45.3 [a]	44.6 [a]	39.7 [a]	38.5 [a]	41.0 [a]	49.0 [a]	43.4 [a]	39.3 [a]
No Days	Federal Primary Standards:											
	24-Hour – 150 µg/m^3	2 [c]	0 [c]	1 [a]	0 [a]	2 [a]	0 [a]	1 [a]	0 [a]	0 [a]	0 [a]	0 [a]
	Annual Arithmetic Mean (µg/m^3)	76.0 [c]	62.5 [c]	53.0 [a]	52.9 [a]	54.2 [a]	48.8 [a]	49.6 [a]	46.7 [a]	55.4 [a]	49.3 [a]	44.0 [a]
	Max. 24-Hour Conc. (µg/m^3)	179.0 [c]	126.0 [c]	164.0 [a]	139.0 [a]	177.0 [a]	94.0 [a]	158.0 [a]	93.0 [a]	136.0 [a]	129.0 [a]	109.0 [a]
No Days Exceeded	**Inhalable Particulates (PM-2.5):**											
	Federal Primary Standards:											
	Annual Standard – 15µg/m^3									Yes [e]	Yes [e]	Yes [e]
	24-Hour – 65 µg/m^3									9 [d]	11 [d]	19 [d]
	Annual Arithmetic Mean (µg/m^3)									30.9 [d]	28.2 [d]	31.3 [d]
	Max. 24-Hour Conc. (µg/m^3)									111.2 [d]	119.6 [d]	98.0 [d]

Note:
[a] The project is located within SRA 22 (Norco), however, data is only available for ozone (1991-96) and PM-10 (1993-2001) at that location.
[b] 1997 is first year of SCAQMD records for federal 8-hour Ozone standard.
[c] SRA 23 (Riverside) data summaries used for CO, NO_2, and SO_2.during all years, PM-10 for 1991-92, PM-2.5 for 1999-2001, and ozone for 1997-2001.
[d] 1999 is first year of SCAQMD records for federal 24-hour PM-2.5 standard
[e] Exceedance of annual standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year.

Table 2
SOURCE RECEPTOR AREA 23
AIR QUALITY MONITORING SUMMARY- 1991-2001

	Pollutant/Standard Source: CARB 1/25/99	Monitoring Year										
		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
No. Days Exceeded	**Ozone [a]:**											
	California Standard:											
	1-Hour - 0.09 ppm	139 [b]	142 [b]	132 [b]	134 [c]	109 [c]	92 [c]	89 [c]	70 [c]	38 [c]	41 [c]	41 [c]
	Federal Primary Standards:											
	1-Hour - 0.12 ppm	79 [b]	75 [b]	71 [b]	77 [c]	52 [c]	36 [c]	13 [c]	32 [c]	3 [c]	3 [c]	7 [c]
	8-Hour - 0.08 ppm [a]							55 [c]	57 [c]	27 [c]	29 [c]	34 [c]
	Max 1-Hour Conc. (ppm)	0.24 [b]	0.26 [b]	0.26 [b]	0.25 [c]	0.21 [c]	0.20 [c]	0.19 [c]	0.20 [c]	0.14 [c]	0.14 [c]	0.143 [c]
	Max 8-Hour Conc. (ppm) [a]							0.13 [c]	0.17 [c]	0.11 [c]	0.11 [c]	0.12 [b]
No. Days Exceeded	**Carbon Monoxide [c]:**											
	California Standard:											
	1-Hour - 20 ppm	0	0	0	0	0	0	0	0	0	0	0
	8-Hour - 9.0 ppm	0	0	0	0	0	0	0	0	0	0	0
	Federal Primary Standards:											
	1-Hour - 35 ppm	0	0	0	0	0	0	0	0	0	0	0
	8-Hour - 9.5 ppm	0	0	0	0	0	0	0	0	0	0	0
	Max 1-Hour Conc. (ppm)	14.0	11.0	10.0	11.0	9.0	9.0	7.0	6.0	7.0	5.0	5.0
	Max 8-Hour Conc. (ppm)	6.9	6.1	6.3	7.3	6.5	5.0	5.8	4.6	4.4	4.3	3.43
No. Days Exceede	**Nitrogen Dioxide :**											
	California Standard:											
	1-Hour - 0.25 ppm	0 [b]	0 [b]	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0
	Federal Standard:											
	Annual Standard - 0.053ppm	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.16 [b]	0.23 [b]	0.14 [b]	0.18 [c]	0.15 [c]	0.11 [c]	0.12 [c]	0.10 [c]	0.13 [c]	0.10 [c]	0.15
No. Days Exceeded	**Sulfur Dioxide :**											
	California Standards:											
	1-Hour – 0.25 ppm	0 [b]	0 [b]	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0
	24-Hour – 0.04 ppm	0 [b]	0 [b]	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0
	Federal Primary Standards:											
	24-Hour – 0.14 ppm	0 [b]	0 [b]	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0
	Annual Standard – 0.03 ppm	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.02 [b]	0.02 [b]	0.02 [b]	0.02 [c]	0.02 [c]	0.01 [c]	0.04 [c]	0.03 [c]	0.03 [c]	0.11 [c]	0.02
	Max. 24-Hour Conc. (ppm)	0.007 [b]	0.026 [b]	0.010 [b]	0.005 [c]	0.009 [c]	0.004 [c]	0.007 [c]	0.010 [c]	0.011 [c]	0.041 [c]	0.011
No. Days Exceeded	**Inhalable Particulates (PM-10):**											
	California Standards:											
	24-Hour - 50 µg/m^3	41 [b]	39 [b]	42 [b]	41 [c]	38 [c]	19 [c]	41 [c]	42 [c]	46 [c]	68 [c]	78 [a]
	Annual Geometric Mean (µg/m^3)	65.4 [b]	52.5 [b]	58.0 [b]	55.9 [c]	51.8 [c]	52.0 [c]	56.3 [c]	48.7 [c]	64.9 [c]	54.7 [c]	54.3 [a]
No Days	Federal Primary Standards:											
	24-Hour – 150 µg/m^3	2 [b]	0 [b]	4 [b]	1 [c]	4 [c]	1 [c]	1 [c]	0 [c]	1 [c]	0 [c]	0 [a]
	Annual Arithmetic Mean (µg/m^3)	76.0 [b]	62.5 [b]	72.4 [b]	65.7 [c]	69.0 [c]	61.1 [c]	64.9 [c]	58.2 [c]	72.3 [c]	60.1 [c]	63.1 [a]
	Max. 24-Hour Conc. (µg/m^3)	179.0 [b]	126.0 [b]	231.0	161.0 [c]	219.0 [c]	162.0 [c]	163.0 [c]	116.0 [c]	153.0 [c]	139.0 [c]	135.0 [a]
No Days Exceeded	**Inhalable Particulates (PM-2.5):**											
	Federal Primary Standards:											
	Annual Standard – 15µg/m^3									Yes [e]	Yes [e]	Yes [e]
	24-Hour – 65 µg/m^3									9 [d]	11 [d]	19 [d]
	Annual Arithmetic Mean (µg/m^3)									30.9 [d]	28.2 [d]	31.3 [d]
	Max. 24-Hour Conc. (µg/m^3)									111.2 [d]	119.6 [d]	98.0 [d]

Note: [a] 1997 is first year of SCAQMD records for federal 8-hour Ozone standard.
[b] Rubidoux air monitoring station (SRA 23) data summaries for ozone, NO_2, SO_2 and PM-10 during years 1991 through 1993.
[c] Metro Riverside County 1 air monitoring station (also in SRA 23) data summaries for CO during all years and ozone, NO_2, SO_2 and PM-10 in years 94 –2000
[d] 1999 is first year of SCAQMD records for federal 24-hour PM-2.5 standard
[e] Exceedance of the Annual Standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year.

Table 3
SOURCE RECEPTOR AREA 34
AIR QUALITY MONITORING SUMMARY- 1991-2001

	Pollutant/Standard Source: CARB 1/25/99	**Monitoring Year**										
		1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
No. Days Exceeded	**Ozone [a]:**											
	California Standard:											
	1-Hour - 0.09 ppm	120 [b]	144 [b]	134 [b]	132 [b]	111 [b]	80 [b]	65 [b]	60 [b]	26 [b]	36 [b]	44 [c]
	Federal Primary Standards:											
	1-Hour - 0.12 ppm	74 [b]	88 [b]	65 [b]	96 [b]	61 [b]	38 [b]	10 [b]	32 [b]	4 [b]	7 [b]	13 [c]
	8-Hour - 0.08 ppm [a]							33 [c]	43 [c]	16 [c]	16 [c]	31 [c]
	Max 1-Hour Conc. (ppm)	0.29 [b]	0.28 [b]	0.24 [b]	0.25 [b]	0.22 [b]	0.22 [b]	0.17 [b]	0.17 [b]	0.14 [b]	0.17 [b]	0.165 [c]
	Max 8-Hour Conc. (ppm) [a]							0.13 [b]	0.20 [b]	0.10 [b]	0.139 [b]	0.136 [b]
No. Days Exceeded	**Carbon Monoxide [c]:**											
	California Standard:											
	1-Hour - 20 ppm	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0
	8-Hour - 9.0 ppm	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0
	Federal Primary Standards:											
	1-Hour - 35 ppm	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]
	8-Hour - 9.5 ppm	0 [b]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]
	Max 1-Hour Conc. (ppm)	6.0 [b]	7.0 [c]	7.0 [c]	9.0 [c]	8.0 [c]	6.0 [c]	8.0 [c]	6.0 [c]	5.0 [c]	5.0 [c]	4.0 [c]
	Max 8-Hour Conc. (ppm)	4.4 [b]	5.9 [c]	6.0 [c]	6.5 [c]	6.3 [c]	4.6 [c]	6.0 [c]	4.6 [c]	4.0 [c]	4.3 [c]	3.25 [c]
No. Days Exceede	**Nitrogen Dioxide:**											
	California Standard:											
	1-Hour - 0.25 ppm	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0
	Federal Standard:											
	Annual Standard - 0.053ppm	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	No [e]
	Max. 1-Hour Conc. (ppm)	0.19 [b]	0.14 [b]	0.16 [b]	0.18 [b]	0.17 [b]	0.17 [b]	0.14 [b]	0.15 [b]	0.15 [b]	0.12 [b]	0.13
No. Days Exceeded	**Sulfur Dioxide:**											
	California Standards:											
	1-Hour – 0.25 ppm	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0
	24-Hour – 0.04 ppm	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0
	Federal Primary Standards:											
	24-Hour – 0.14 ppm	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0
	Annual Standard – 0.03 ppm	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	No [e]
	Max. 1-Hour Conc. (ppm)	0.05 [b]	0.02 [b]	0.01 [b]	0.03 [b]	0.01 [b]	0.01 [b]	0.01 [b]	0.02 [b]	0.01 [b]	0.02 [b]	0.01
	Max. 24-Hour Conc. (ppm)	0.010 [b]	0.012 [b]	0.001 [b]	0.009 [b]	0.006 [b]	0.007 [b]	0.001 [b]	0.010 [b]	0.010 [b]	0.010 [b]	0.010
No. Days Exceeded	**Inhalable Particulates (PM-10):**											
	California Standards:											
	24-Hour - 50 $\mu g/m^3$	41 [b]	31 [b]	34 [b]	38 [b]	35 [b]	35 [b]	29 [b]	20 [b]	36 [b]	31 [b]	34 [a]
	Annual Geometric Mean ($\mu g/m^3$)	57.7 [b]	48.9 [b]	46.3 [b]	52.7 [b]	50.6 [b]	48.2 [b]	47.6 [b]	43.3 [b]	54.3 [b]	47.1 [b]	43.8 [a]
No Days	Federal Primary Standards:											
	24-Hour – 150 $\mu g/m^3$	0 [b]	0 [b]	0 [b]	0 [b]	2 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [a]
	Annual Arithmetic Mean ($\mu g/m^3$)	63.1 [b]	56.1 [b]	57.1 [b]	60.0 [b]	61.0 [b]	55.1 [b]	53.7 [b]	50.2 [b]	60.2 [b]	52.6 [b]	50.5 [a]
	Max. 24-Hour Conc. ($\mu g/m^3$)	127.0 [b]	105.0 [b]	143.0	147.0 [b]	178.0 [b]	130.0 [b]	122.0 [b]	101.0 [b]	116.0 [b]	108.0 [b]	105.0 [a]
No Days Exceeded	**Inhalable Particulates (PM-2.5):**											
	Federal Primary Standards:											
	Annual Standard – 15$\mu g/m^3$									Yes [e]	Yes [e]	Yes [e]
	24-Hour – 65 $\mu g/m^3$									3 [d]	2 [d]	4 [d]
	Annual Arithmetic Mean ($\mu g/m^3$)									25.9 [d]	24.5 [d]	24.3 [d]
	Max. 24-Hour Conc. ($\mu g/m^3$)									98.0 [d]	72.9 [d]	74.6 [d]

Note: [a] 1997 is first year of SCAQMD records for federal 8-hour Ozone standard.
[b] Fontana air monitoring station (SRA 34) data summaries for ozone, NO_2, SO_2 and PM-10 during all years, CO in 1991 only, and PM-2.5 in 1999-2000.
[c] San Bernardino air monitoring station (also in SRA 34) data summaries for CO during years 1992-2000.
[d] 1999 is first year of SCAQMD records for federal 24-hour PM-2.5 standard.
[e] Exceedance of the Annual Standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year.

Table 4
SOURCE RECEPTOR AREA 35
AIR QUALITY MONITORING SUMMARY- 1991-2001

	Pollutant/Standard Source: CARB 1/25/99	**Monitoring Year**										
		1991	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
No. Days Exceeded	**Ozone [a]:**											
	California Standard:											
	1-Hour - 0.09 ppm	145 [b]	159 [b]	160 [b]	140 [b]	111 [b]	117 [b]	108 [b]	76 [b]	59 [b]	78 [b]	68 [b]
	Federal Primary Standards:											
	1-Hour - 0.12 ppm	91 [b]	103 [b]	95 [b]	98 [b]	61 [b]	65 [b]	35 [b]	43 [b]	12 [b]	11 [b]	21 [b]
	8-Hour - 0.08 ppm [a]							79 [b]	60 [b]	39 [b]	51 [b]	52 [b]
	Max 1-Hour Conc. (ppm)	0.25 [b]	0.27 [b]	0.27 [b]	0.23 [b]	0.22 [b]	0.22 [b]	0.20 [b]	0.22 [b]	0.15 [b]	0.15 [b]	0.167 [b]
	Max 8-Hour Conc. (ppm) [a]							0.14 [b]	0.19 [b]	0.13 [b]	0.133 [b]	0.144 [b]
No. Days Exceeded	**Carbon Monoxide [c]:**											
	California Standard:											
	1-Hour - 20 ppm	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]
	8-Hour - 9.0 ppm	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]
	Federal Primary Standards:											
	1-Hour - 35 ppm	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]
	8-Hour - 9.5 ppm	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]
	Max 1-Hour Conc. (ppm)	8.0 [c]	7.0 [c]	7.0 [c]	9.0 [c]	8.0 [c]	6.0 [c]	8.0 [c]	6.0 [c]	5.0 [c]	5.0 [c]	4.0 [c]
	Max 8-Hour Conc. (ppm)	7.0 [c]	5.9 [c]	6.0 [c]	6.5 [c]	6.3 [c]	4.6 [c]	6.0 [c]	4.6 [c]	4.0 [c]	4.3 [c]	3.25 [c]
No. Days Exceede	**Nitrogen Dioxide :**											
	California Standard:											
	1-Hour - 0.25 ppm	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]	0 [c]
	Federal Standard:											
	Annual Standard - 0.053ppm	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.16 [c]	0.13 [c]	0.15 [c]	0.18 [c]	0.17 [c]	0.15 [c]	0.14 [c]	0.11 [c]	0.14 [c]	0.10 [c]	0.11 [c]
No. Days Exceeded	**Sulfur Dioxide :**											
	California Standards:											
	1-Hour – 0.25 ppm	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]
	24-Hour – 0.04 ppm	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]
	Federal Primary Standards:											
	24-Hour – 0.14 ppm	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]	0 [d]
	Annual Standard – 0.03 ppm	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]	No [e]
	Max. 1-Hour Conc. (ppm)	0.05 [d]	0.02 [d]	0.01 [d]	0.03 [d]	0.01 [d]	0.01 [d]	0.01 [d]	0.02 [d]	0.01 [d]	0.02 [d]	0.01 [d]
	Max. 24-Hour Conc. (ppm)	0.010 [d]	0.012 [d]	0.001 [d]	0.009 [d]	0.006 [d]	0.007 [d]	0.001 [d]	0.010 [d]	0.010 [d]	0.010 [d]	0.010 [d]
No. Days Exceeded	**Inhalable Particulates (PM-10):**											
	California Standards:											
	24-Hour - 50 $\mu g/m^3$	41 [c]	36 [c]	25 [c]	24 [b]	24 [b]	25 [b]	23 [b]	19 [b]	23 [b]	27 [b]	22 [b]
	Annual Geometric Mean ($\mu g/m^3$)	52.0 [c]	48.7 [c]	35.2 [c]	37.8 [b]	37.4 [b]	38.4 [b]	35.4 [b]	33.9 [b]	40.5 [b]	39.7 [b]	39.6 [b]
No Days	Federal Primary Standards:											
	24-Hour – 150 $\mu g/m^3$	0 [c]	0 [c]	0 [b]	0 [b]	1 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]	0 [b]
	Annual Arithmetic Mean ($\mu g/m^3$)	60.6 [c]	56.7 [c]	45.3 [b]	47.2 [b]	48.4 [b]	46.3 [b]	43.2 [b]	40.5 [b]	46.6 [b]	46.0 [b]	46.6 [b]
	Max. 24-Hour Conc. ($\mu g/m^3$)	163.0 [c]	136.0 [c]	109.0 [b]	138.0 [b]	172.0 [b]	128.0 [b]	103.0 [b]	97.0 [b]	92.0 [b]	109.0 [b]	102.0 [b]
No Days Exceeded	**Inhalable Particulates (PM-2.5) [f]:**											
	Federal Primary Standards:											
	Annual Standard – 15$\mu g/m^3$									Yes [e]	Yes [e]	Yes [e]
	24-Hour – 65 $\mu g/m^3$									4 [c]	3 [c]	5 [c]
	Annual Arithmetic Mean ($\mu g/m^3$)									25.7 [c]	25.4 [c]	26.2 [c]
	Max. 24-Hour Conc. ($\mu g/m^3$)									121.5 [c]	89.8 [c]	78.5 [c]

Note: [a] 1997 is first year of SCAQMD records for federal 8-hour Ozone standard.
[b] Redlands air monitoring station (SRA 35) data summaries for ozone and PM-10 during all years,
[c] San Bernardino air monitoring station (SRA 34) data summaries for CO and NO_2 during all years, and PM-2.5 in 1999-2001.
[d] Fontana air monitoring station(also in SRA 34) data summaries for SO_2 during all years.
[e] Exceedance of the Annual Standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year.
[f] 1999 is first year of SCAQMD records for federal 24-hour PM-2.5 standard.

Regulatory Setting

The federal and state ambient air quality standards (AAQS) establish the context for the local air quality management plans. The state and federal AAQS are presented in Table 1. The California Air Resources Board maintains records as to the attainment status of basins throughout the state, under both state and federal criteria. For 2001, that portion of the SCAB, within which the proposed project is located, was designated as a non-attainment area for ozone and PM-10 under state standards, and as a non-attainment area for ozone, carbon monoxide, and PM-10 under federal standards. The Air Quality Management Plan (AQMP) for the SCAB establishes a program of rules and regulations directed at attainment of the state and national air quality standards.

SCAQMD rules and regulations that apply to this project include SCAQMD Rule 403, which governs emissions of fugitive dust, which is achieved through application of standard best management practices in construction activities, such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. Rule 403 also requires projects that disturbs 100 acres or more of soil at any given time or moves 10,000 yds^3/day of materials/day to submit to SCAQMD a Fugitive Dust Control Plan. Since construction of the proposed project will disturb approximately 4 acres or less at any given time and is projected to move less than 10,000 yds^3/day, the project will not be required to submit a formal Fugitive Dust Control Plan to SCAQMD.

SCAQMD Rule 1108 governs the sale and use of asphalt and limits the VOC content in asphalt. Although this rule does not directly apply to the project, it does dictate the VOC content of asphalt available for use during paving activities.

SCAQMD Rule 1113 governs the sale of architectural coatings and limits the VOC content in paints and paint solvents. Although this rule does not directly apply to the project, it does dictate the VOC content of paints available for use during the construction of the pump station.

SECTION 3 – EMISSIONS ESTIMATES

THRESHOLDS OF SIGNIFICANCE

Air quality impacts may be considered significant if:

- Project-generated emissions contribute substantially to an existing or projected air quality violation.
- Project-generated emissions increase pollutant concentrations so as to result in a violation of a federal or state ambient air quality standard.
- Project-generated emissions expose sensitive receptors to substantial pollutant concentrations.
- The project does not conform to the rules and regulations of the South Coast Air Quality Management District.

While the final determination of whether or not a project is significant is within the purview of the lead agency pursuant to § 15064(b) of the State CEQA Guidelines, the SCAQMD recommends that the following quantitative air pollution thresholds be used by the lead agencies in determining whether the proposed project could result in a significant impact. If the lead agency finds that the proposed project has the potential to exceed these air pollution thresholds, the project should be considered significant. These thresholds have been defined by SCAQMD for the South Coast Air Basin based on scientific data the SCAQMD has obtained and factual data within the federal and state Clean Air Acts. Since the project is located within the South Coast Air Basin and current air quality in the project area is typical of the air basin as a whole, these thresholds are considered valid and reasonable. Each of these threshold factors is discussed below.

Thresholds for Emissions Related to Construction Activities

Projects in the South Coast Air Basin with construction-related emissions that exceed any of these thresholds should be considered significant:

- 100 pounds per day or 2.5 tons per quarter-year of NOx;
- 75 pounds per day or 2.5 tons per quarter-year of ROC;
- 550 pounds per day or 24.75 tons per quarter-year of CO; and
- 150 pounds per day or 6.75 tons per quarter-year of SOx or PM_{10}.

Thresholds for Emissions Related to Operation of the Project

Specific criteria for determining whether the potential air quality impacts of a project are significant are set forth in the SCAQMD Handbook. The criteria for these emissions thresholds include, compliance with the State and National air quality standards and conformity with the

existing Air Quality Management Plan (AQMP) for the South Coast Air Basin. The daily operational emissions "significance" thresholds are:

- 55 pounds per day of NOx;
- 55 pounds per day of ROC;
- 550 pounds per day of CO; and
- 150 pounds per day of SOx or PM_{10}.

For projects that emit toxic air contaminants (TACs) or for project designated as a sensitive receptor within ¼ mile of a facility that emits TACs, the California Air Resources Board (CARB) recommends that a health risk assessment is conducted. If the health risk assessment determines that TAC emissions either individually or cumulatively result in an individual cancer risk exceeding 10 in 1 million this is considered a significant impact.

Long-term exposure to TACs may also produce non-cancer risks. The California Office of Environmental Health Hazards Assessment (OEHHA) evaluates these non-cancer risks and has established maximum exposure levels also known as chronic reference exposure levels (REL) for each TAC. No adverse health effects are anticipated for exposures at or below the REL. OEHHA established the REL for PM_{10} within diesel exhaust as 5 ug/m^3. The exposure of PM_{10} within diesel exhaust at concentrations equal to the REL represents a non-cancer chronic hazard index level of 1.0. Exposure above a hazard index of 1.0 is considered a significant impact.

IMPACTS

Air quality impacts can be described in a short-term and long-term perspective. Short-term impacts will occur during site grading and project construction. Long-term air quality impacts will occur once the project is in operation.

Short-term Impacts

Short-term impacts will include fugitive dust and other particulate matter, as well as exhaust emissions generated by earthmoving activities and operation of grading equipment during site preparation. Short-term impacts will also include emissions generated during pad and tank construction, installation of the connecting piping and roadway paving as a result of operation of equipment, operation of personal vehicles by construction workers, and asphalt offgassing.

Construction of the project has been divided up into eight pipeline segments titled Reaches A through H. Two construction scenarios were chosen for analysis based on worst-case conditions. These two scenarios are construction of Reaches A and C of the project. They were determined to be the worst-case scenario for short-term emissions because these portions of the project include tunneling operations and the largest diameters of pipeline segments. Reach A also includes construction of a pump station. Of the remaining reaches, Reach B was eliminated from analysis because it does not include tunneling operations, Reaches D through E were eliminated from analysis because they are of smaller diameter pipe, shorter lengths, and do not include tunneling operations. Reach H was eliminated from consideration because it is of much smaller

diameter and does not include tunneling operations. Assumptions relevant to model input for short-term emissions estimates are calculated as follows:

Construction of Reach "A":

Reach "A" of the project encompasses 8,000 lineal feet of 72-inch diameter pipeline that will be constructed from the southerly terminus of the San Bernardino Valley Municipal Water District Baseline North/South Feeder, at a point on the north side of the Santa Ana River near the City of Riverside's Rice Thorne Pipeline where it intersects with the Warm Creek Bypass maintenance road in the City of San Bernardino. From that point the pipeline would be constructed south under the Santa Ana River utilizing micro-tunneling techniques within a 92-inch casing pipe. South of the Santa Ana River, Reach A will continue south through a commercial business park parking lot, south within the right-of-way of Hunts Lane, under Interstate 10, west on Steel Road to a point approximately 600 feet east of Interstate 215, south through an industrial park to Cooley Drive, south on Cooley Drive, southwesterly on Washington Street then east on Barton Road for approximately 1,100 feet where the pipeline will connect to the 100 CFS mainline meter facility on Barton Road located just east of Reche Canyon Road. The pipeline will be placed underground utilizing boring techniques where it will travel under Hospitality Lane, Interstate 10 and under the flood control facility located just west of Reche Canyon Road. Total micro-tunneling and boring will encompass approximately 2,000 lineal feet. The remainder of the pipeline would be installed using conventional trenching techniques. In addition, a proposed pump station will be constructed in a vacant lot near the intersection of Orange Show Road and Waterman Avenue in the City of San Bernardino as part of Reach "A." Micro-tunneling, excavation and boring to install the pipeline will be done sequentially. The proposed pump station will be built concurrent with pipeline installation. The construction of the various components of Reach "A" can be summarized as follows:

Installation of Reach "A" Using the Microtunneling and Boring Methods:

Microtunneling utilizes a pit-launched rig to bore a hole and install the casing utilizing an auger spoil removal system. This technique reduces surface disturbance to areas around the vertical jacking and receiving shafts at each end of the tunneling operation. Surface disturbance will include stockpiles of spoils, spoil removal activities, and equipment and materials storage. Ancillary equipment required of the operation includes an electric motor powered hydraulic pump, an articulating crane, electric generator sets, a front end loader, and haul trucks to remove the spoils. Work crews connected with boring operation typically work 24-hours a day until the boring operation is completed. Removal of the spoils can be limited to daylight hours provided there is room onsite to stockpile the spoils. Assumptions relevant to the tunneling includes:

- Boring will progress at an average rate of 20 to 30 lineal feet per day.
- Boring activities will disturb approximately 2.02 acres per day.
- Approximately 9,000 cubic yards of material will be removed during boring operations necessitating approximately 600 truckloads of material being exported off-site over a one-year period or a maximum of 17 truckloads per workday. Plenty of

sites exist within 10 miles of the boring site to deposit clean fill material. Therefore, for modeling purposes each truck trip (two truck trips per truckload) is set at 10 miles.

- Two diesel fueled 500 hp electric generators will be used during boring operations.
- Approximately 90 truckloads of pipe, casing, and other building materials will be transported to the construction site micro-tunneling operations or a maximum of 7 truckloads per day. Evaluating possible sources of pipe and construction materials in the vicinity, each truck trip will be approximately 60 miles or less.
- As many as 25 construction workers may be involved in excavation and pipeline installation activities at the site on the peak day of activities. As defined in the SCAQMD CEQA Handbook (Table A9-5-D) mileage for worker commutes is assumed to average 13.6 miles per trip.
- This study assumes construction equipment is running 10 hours per workday.

Installation of Reach "A" Using Typical Excavation Techniques:

This analysis assumes that this portion of the pipeline will be constructed with standard trenching techniques. Excavation of trenches will depend on several factors including available right-of-way, condition of in-situ material, and groundwater levels. Whenever possible, native material will be used to backfill the remainder of the trench.

Assumptions relevant to pipeline excavation activities are:

- Trenching will progress at an average rate of 80 lineal feet per day.
- Approximately 0.07 acres per day will be disturbed during pipeline installation.
- Approximately 8 truckloads of material per day will be transported off-site for removal of asphalt and other miscellaneous materials at 10 miles per trip. Adequate sites exist within 10-mile radius of the project area to deposit waste material.
- Approximately 800 square feet or 0.02 acres of surface area will be covered in asphalt each day requiring approximately 3 truckloads of asphalt and base material. Adequate asphalt batch plants and gravel mining are found within a 10-mile radius of the project area.
- Approximately 300 pipe segments 72-inches in diameter and 20-feet long will be brought to the site requiring approximately 2 truckloads per day. Evaluating possible sources of pipe and construction materials in the vicinity, each truck trip will be approximately 60 miles or less.
- Approximately 5 truckloads of other miscellaneous construction material and equipment per day will be brought to the construction site at 60 miles per trip.
- As many as 25 construction workers may be involved in excavation and pipeline installation activities at the site on the peak day of activities. As defined in the

SCAQMD CEQA Handbook (Table A9-5-D) mileage for worker commutes is assumed to average 13.6 miles per trip.

- This study assumes construction equipment is running 10 hours per workday.

Construction of the proposed Pump Station:

- A maximum of ½ acre per day may be disturbed during construction of the pump station.
- Approximately 50 cubic yards of concrete will be used during construction with a maximum of approximately 5 truckloads of concrete in one day at 10 miles per trip.
- Approximately 5 truck trips per day will occur to bring in construction material and equipment at 60 miles per trip.
- Approximately 2 truckloads of material per day will be transported off-site as a result of site grubbing and clearing at 10 miles per trip.
- As many as 25 construction workers may be involved in excavation and pipeline installation activities at the site on the peak day of activities. As defined in the SCAQMD CEQA Handbook (Table A9-5-D) mileage for worker commutes is assumed to average 13.6 miles per trip.
- This study assumes construction equipment is running 10 hours per workday.

Construction of Reach "C":

Reach "C" of the project encompasses 29,000 lineal feet of 60-inch diameter pipeline. The easterly terminus of Reach "C" is located at the proposed Turnout No. 1 near the intersection of Rustin Avenue at Marlborough Avenue. From that point, construction of Reach "C" will progress west in Marlbourough Avenue, extend south in Chicago Avenue, then west again in Arlington Avenue to the proposed Turnout No. 2 located near the intersection of Arlington Avenue at Fariview Avenue in the City of Riverside. Boring techniques will be utilized to construct under the paved right-of-ways of Iowa Avenue, Interstate 215, Third Street, University Avenue, Martin Luther King Boulevard, and Central Avenue, as well as the Union Pacific rail line located just east of Chicago Avenue. The remainder of Reach "C" will be constructed using typical excavation construction methods. Boring and excavation will be done sequentially. The construction of Reach "C" can be summarized as follows:

Installation of Reach "C" Using the Boring Method:

Boring will be required along approximately 1,900 lineal feet of the pipeline in Reach "C." Casings 84-inches in diameter will be used to encase the pipeline. Boring techniques reduces surface disturbance to areas around each end of the tunneling operation. Surface disturbance will include stockpiles of spoils, spoil removal activities, and equipment and materials storage. Ancillary equipment required of the operation includes an electric motor powered hydraulic pumps, an articulating crane, electric

generator sets, a front end loader, and haul trucks to remove the spoils. Work crews connected with boring operation typically work 24-hours a day until the boring operation is completed. Removal of the spoils can be limited to daylight hours provided there is room onsite to stockpile the spoils. Assumptions relevant to the tunneling includes:

- Boring will progress at an average rate of 20 to 30 lineal feet per day.
- Boring activities will disturb approximately 2.02 acres per day.
- Approximately 10,000 cubic yards of material will be removed during boring operations necessitating approximately 667 truckloads of material being exported off-site with a maximum of 18 truckloads per workday. Plenty of sites exist within 10 miles of the boring site to deposit clean fill material. Therefore, for modeling purposes each truck trip (two truck trips per truckload) is set at 10 miles.
- Two diesel fueled 500 hp electric generators will be used during boring operations.
- Approximately 64 truckloads of pipe, casing, and other building materials will be transported to the construction site tunneling operations or a maximum of 5 truckloads per day. Evaluating possible sources of pipe and construction materials in the vicinity, each truck trip will be approximately 60 miles or less.
- As many as 25 construction workers may be involved in excavation and pipeline installation activities at the site on the peak day of activities. As defined in the SCAQMD CEQA Handbook (Table A9-5-D) mileage for worker commutes is assumed to average 13.6 miles per trip.
- This study assumes construction equipment is running 10 hours per workday.

Installation of Reach "C" Using Typical Excavation Techniques:

This analysis assumes that this portion of the pipeline will be constructed with standard trenching techniques. Excavation of trenches will depend on several factors including available right-of-way, condition of in-situ material, and groundwater levels. Whenever possible, native material will be used to backfill the remainder of the trench.

Assumptions relevant to pipeline excavation activities are:

- Trenching will progress at an average rate of 116 lineal feet per day.
- Approximately 0.09 acres per day will be disturbed during pipeline installation.
- Approximately 8 truckloads of material per day will be transported off-site for removal of asphalt and other miscellaneous materials at 10 miles per trip. Adequate sites exist within 10-mile radius of the project area to deposit waste material.
- Approximately 1,000 square feet or approximately 0.02 acres of surface area will be covered in asphalt each day requiring approximately 3 truckloads of asphalt and base material. Adequate asphalt batch plants and gravel mining are found within a 10-mile radius of the project area.

- Approximately 1,105 pipe segments 60-inches in diameter and 20-feet long will be brought to the site requiring approximately 3 truckloads per day. Evaluating possible sources of pipe and construction materials in the vicinity, each truck trip will be approximately 60 miles or less.
- Approximately 5 truckloads of other miscellaneous construction material and equipment per day will be brought to the construction site at 60 miles per trip.
- As many as 25 construction workers may be involved in excavation and pipeline installation activities at the site on the peak day of activities. As defined in the SCAQMD CEQA Handbook (Table A9-5-D) mileage for worker commutes is assumed to average 13.6 miles per trip.
- This study assumes construction equipment is running 10 hours per workday.

Evaluation of Reach "A" assumes that the proposed pump station will be built at the same time as either boring activities or excavation activities. Tables 5 and 6 summarize the results of these evaluations. The evaluation results from construction of Reach "C" using excavation and boring techniques are summarized in Tables 7 and 8 respectively.

Table 5 – ESTIMATED SHORT-TERM EMISSIONS
Associated with Reach A Boring—Pipeline Installation and Pump Station Construction

Pollution Source	NOx	CO	ROC	SOx	PM-10
Grading and Boring Activities	NG[1]	NG[1]	NG[1]	NG[1]	6.99
Mobile Off-road Construction Equipment	183.29	73.24	19.86	16.68	13.23
Heavy-duty Truck trips	65.13	48.73	5.88	0.72	1.64
Commuting Traffic	0.64	1.22	0.46	NG[1]	0.12
Stationary Equipment	480.02	293.71	53.46	52.52	26.73
Asphalt Paving	NG[1]	NG[1]	0.52	NG[1]	NG[1]
Architectural Coatings	NG[1]	NG[1]	9.76	NG[1]	NG[1]
Maximum Daily Emissions (lbs/day)	729.08	416.90	89.95	69.92	48.71
Emissions Totals[3] (tons/quarter)	23.70	13.55	2.92	2.27	1.58
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Notes: [1] Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
[2] CO emissions for stationary and mobile equipment were calculated from the CEQA Air Quality Handbook
[3] Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity. See Appendix A for model output report.

Table 6 – ESTIMATED SHORT-TERM EMISSIONS
Associated with Reach A Excavation—Pipeline Installation and Pump Station Construction

Pollution Source	NOx	CO	ROC	SOx	PM-10
Grading and Excavation	NG[1]	NG[1]	NG[1]	NG[1]	6.99
Mobile Off-road Construction Equipment	619.12	269.66	65.92	49.55	39.65
Heavy-duty Truck trips	61.72	45.01	5.45	0.68	1.56
Commuting Traffic	0.64	1.22	0.46	NG[1]	0.12
Stationary Equipment	113.91	70.34	12.91	11.03	6.48
Asphalt Paving	NG[1]	NG[1]	0.57	NG[1]	NG[1]
Architectural Coatings	NG[1]	NG[1]	9.76	NG[1]	NG[1]
Maximum Daily Emissions (lbs/day)	795.39	386.23	95.07	61.26	54.80
Emissions Totals[3] (tons/quarter)	25.85	12.55	3.09	1.99	1.78
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Notes: [1] Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
[2] CO emissions for stationary and mobile equipment were calculated from the CEQA Air Quality Handbook
[3] Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity. See Appendix A for model output report.

Table 7 – ESTIMATED SHORT-TERM EMISSIONS
Associated with Reach C Excavation—Pipeline Installation

Pollution Source	NOx	CO	ROC	SOx	PM-10
Grading and Excavation	NG[1]	NG[1]	NG[1]	NG[1]	1.21
Mobile Off-road Construction Equipment	512.02	228.56	54.84	39.50	32.46
Heavy-duty Truck trips	36.13	26.29	3.20	0.40	0.91
Commuting Traffic	0.64	1.22	0.46	NG[1]	0.12
Stationary Equipment	65.89	40.63	7.45	6.51	3.75
Asphalt Paving	NG[1]	NG[1]	0.05	NG[1]	NG[1]
Maximum Daily Emissions (lbs/day)	614.68	296.70	66.00	46.41	38.45
Emissions Totals[3] (tons/quarter)	19.98	9.64	2.15	1.51	1.25
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Notes: [1] Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
[2] CO emissions for stationary and mobile equipment were calculated from the CEQA Air Quality Handbook
[3] Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity. See Appendix A for model output report.

Table 8 – ESTIMATED SHORT-TERM EMISSIONS
Associated with Reach C Boring—Pipeline Installation

Pollution Source	NOx	CO	ROC	SOx	PM-10
Grading and Excavation	NG[1]	NG[1]	NG[1]	NG[1]	27.25
Mobile Off-road Construction Equipment	76.19	32.14	8.78	6.63	6.04
Heavy-duty Truck trips	32.39	26.48	3.09	0.36	0.81
Commuting Traffic	0.64	1.22	0.46	NG[1]	0.12
Stationary Equipment	432.00	264.00	48.00	48.00	24.00
Maximum Daily Emissions (lbs/day)	541.22	323.84	60.33	54.99	58.22
Emissions Totals[3] (tons/quarter)	17.59	10.52	1.96	1.78	1.89
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Notes: [1] Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
[2] CO emissions for stationary and mobile equipment were calculated from the CEQA Air Quality Handbook
[3] Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity.
See Appendix A for model output report.

Evaluation of Tables 5 through 7 indicates that projected NOx emissions are above the SCAQMD recommended daily and quarterly thresholds during all of the construction scenarios and ROC emissions are above the SCAQMD recommended daily and quarterly thresholds during construction of Reach A. The primary sources of NOx and ROC emissions are the mobile construction equipment, diesel powered electric generators, and heavy-duty diesel trucks.

In an effort to reduce estimated short-term emissions of NOx a range of reduction measures was considered. Effective emission reduction measures were narrowed to include properly maintaining mobile and stationary construction equipment (5% reduction), provide temporary traffic control (e.g., flag person) during transport activities (10% reduction), prohibit truck idling in excess of ten minutes (4% reduction), and use low emission diesel generator sets during boring operations (67% reduction). These emission reduction measures are anticipated to reduce all criteria pollutant emissions from mobile construction equipment by approximately nineteen percent, stationary equipment by five percent (traffic control and truck idling do not apply to stationary equipment), and electric generators by ninety-eight percent. As shown in Table 9, with these reductions the daily and quarterly emissions of NOx are still above the SCAQMD suggested daily and quarterly thresholds for all construction scenarios, and ROC emissions are above the daily and quarterly thresholds during excavation of Reach A in combination with the proposed pump station construction.

TABLE 9 - MITIGATED SHORT-TERM EMISSIONS

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM-10 (Lbs/Day)
Reach A Boring—Pipeline Installation and Pump Station Construction					
Maximum Daily Emissions (lbs/day)	392.26	216.26	53.64	31.46	56.84
Emissions Totals (tons/quarter)	12.75	7.03	1.74	1.02	1.85
Significant Impact:	YES	NO	NO	NO	NO
Reach A Excavation—Pipeline Installation and Pump Station Construction					
Maximum Daily Emissions (lbs/day)	665.86	324.53	82.26	51.72	47.97
Emissions Totals (tons/quarter)	21.64	10.55	2.67	1.68	1.56
Significant Impact:	YES	NO	YES	NO	NO
Reach C Excavation—Pipeline Installation					
Maximum Daily Emissions (lbs/day)	480.92	225.12	48.00	34.28	29.17
Emissions Totals (tons/quarter)	15.63	7.32	1.56	1.11	0.95
Significant Impact:	YES	NO	NO	NO	NO
Reach C Boring—Pipeline Installation					
Maximum Daily Emissions (lbs/day)	236.89	139.95	26.65	21.57	40.93
Emissions Totals (tons/quarter)	7.70	4.55	0.87	0.70	1.33
Significant Impact:	YES	NO	NO	NO	NO
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr

Long-term Impacts

Operation of the proposed pipeline will involve long-term emissions of air pollutants from an increase in electrical demand, weekly test runs of the back-up diesel powered electric generator at the pump station, and employees needed for operations and maintenance. Staff that currently maintains and operates the existing treatment plants and pump stations connected to the project will maintain and operate these new facilities. It is estimated that approximately 5 new employees will be needed when the project is at full capacity. Assumptions relevant to long-term emissions estimates are:

- Approximately 20 vehicle commuter trips per day at 17 miles per trip.
- Electric usage to power the pump station on Waterman Avenue and at up to 20 well sites.
- Weekly test runs of a back-up 600 kilowatt electric generator at each of the lift stations.

According to the CEQA Air Quality Handbook, Table A9-5-D, the average work related round trip is 17 miles in Riverside County. Table 10, Estimated Long-Term Mobile Emissions, presents emissions of each of the criteria pollutants as a result motor vehicle trips at project build-out in the year 2010.

Table 10 – ESTIMATED LONG-TERM MOBILE EMISSIONS[1]

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM-10 (Lbs/Day)
Worker Commutes	0.32	3.38	0.37	NG	0.04

Note: [1] Average speed of commuter trips is estimated at 35 MPH.
Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).
See Appendix C for model output report.

Electric usage rates for the pump station and wells are presented in Appendix C. Table A9-11-B of the CEQA Air Quality Handbook lists the emission factors for each criteria pollutant from the consumption of electricity. Table 11, Estimated Emissions from Electrical Consumption, presents anticipated emissions of criteria pollutants from electrical consumption at project build-out.

Table 11 – ESTIMATED LONG-TERM EMISSIONS FROM ELECTRICAL CONSUMPTION

Pollution Source	NOx (lbs/day)	CO (lbs/day)	ROC (lbs/day)	SOx (lbs/day)	PM-10 (lbs/day)
Electrical Consumption	7.79	10.38	0.52	6.23	2.08

Note: See Appendix C for electrical usage emissions calculations.

The Pump Station on Waterman Avenue will have a back-up generator which would supply power to the station in the event of a power failure. This back-up generator is anticipated to be approximately 600 hp and will be test run at full power once a week for 15 minutes. The anticipated emissions estimated for the back-up generators are listed in Table 12, Estimated Emissions from Back-up Generator Tests.

Table 12
ESTIMATED LONG-TERM EMISSIONS FROM BACK-UP GENERATOR TESTS

Emission Factor (gms/Hp hour) [1]					Horsepower	Hours per week	Daily Emissions (lbs/day) [2]				
NOx	CO	ROC	SOx	PM10			NOx	CO	ROC	SOx	PM10
6.90	8.50	1.00	0.73	0.40	600	0.25	2.28	2.81	0.33	0.24	0.13

Notes: [1] Emission factors for all criteria pollutants except SOx are from SCAQMD BACT requirements effective January 1, 2000. The emission factor for SOx is estimated using emissions data from a 2000kv standby diesel generator.
[2] Emission factor is in grams per Hp hour assuming both emergency generators are running the same day. Daily emission total reflects conversion of grams to pounds (454 grams per pound)

Combining both mobile and stationary emissions derives an estimate of the daily total long-term project emissions. Table 13, Composite Long-term Emissions, presents the estimated daily total emissions at project build out.

Table 13 – COMPOSITE LONG-TERM EMISSIONS

Pollution Source	NOx (lbs/day)	CO (lbs/day)	ROC (lbs/day)	SOx (lbs/day)	PM-10 (lbs/day)
Vehicle trips	0.32	3.38	0.37	NG	0.04
Electric Usage Emissions	7.79	10.38	0.52	6.23	2.08
Back-up Diesel Generator	2.28	2.81	0.33	0.24	0.13
Total Emissions	10.39	16.57	1.22	6.47	2.25
SCAQMD Thresholds	55 lbs/day	550 lbs/day	55 lbs/day	150 lbs/day	150 lbs/day

Note: See Appendix C for electrical usage emissions calculations.

All of the long-term emissions projections are below the applicable SCAQMD thresholds for significance.

Toxic Air Contaminant Emissions

The California Air Resources Board (CARB) has designated particulates within diesel exhaust as a toxic air contaminant (TAC). The CARB's Scientific Review Panel has established 3.0 X 10^{-4} per $\mu g/m^3$ as a unit risk value for diesel exhaust particulates. The unit risk value is a theoretical value of contracting cancer over a 70-year life span of exposure. SCAQMD uses a significance standard of 10 in one million as the maximum acceptable health risk.

The back-up generator at the proposed pump station on Waterman Avenue may be diesel fueled and could present long-term exposure of diesel exhaust to residents immediately adjacent to the facility. The exhaust characteristics of the back-up generators are assumed to be as shown in Table 14, Back-Up Generator Exhaust Characteristics.

TABLE 14 - BACK-UP GENERATOR EXHAUST CHARACERISTICS

Parameter	Value	Modeling Input
Exhaust Velocity	60feet/second	18.3 meters/second
Exhaust Diameter	3 inches	0.076 meters
Release Height	18 feet	5.49 meters
Exhaust Emissions Rate	0.132 lbs/day	6.94 x 10^{-4} grams/second
Exhaust Temperature	968 ^{B}F	1,231 ^{B}K

SCREEN3, a U.S. EPA computer model designed to estimate maximum ground-level concentrations of air contaminants, was used to evaluate potential ambient concentrations of diesel particulates at varying distances from the back-up generator. It is assumed that the back-up generators would be placed at least 50 feet from curbsides and neighboring residential units. Therefore, the model calculated ambient concentrations of diesel particulates at 5 meter intervals starting at 15 meters (approximately 49 feet) and continuing to a 150 meter (approximately 492 feet) distance from the back-up generator. The model output is in Appendix C.

The unit health risk value assumes constant exposure over a 70-year life span (total of 613,200 hours of exposure). The back-up generator will be test run for 15 minutes per week (total exposure of 910 hours over 70 years). Therefore, the model output was multiplied by 0.0015 to convert modeled one-hour concentrations to average annual exposure concentrations. Table 15, Health Risk Assessment, shows individual cancer risks associated with varying distances from the back-up generator.

TABLE 15 - HEALTH RISK ASSESSMENT

Distance From Generator	Ambient Concentration	Unit Risk Factor	Individual Cancer Risk
15 Meters	0.0003 $\mu g/m^3$	3.0×10^{-4}	0.09 in one million
97 Meters	0.0012 $\mu g/m^3$	3.0×10^{-4}	0.36 in one million
150 Meters	0.0011 $\mu g/m^3$	3.0×10^{-4}	0.33 in one million

All of the individual cancer risks are below one in one million—well below the SCAQMD maximum threshold of 10 in one million—so long-term diesel emissions from the proposed project will not pose any significant health risk to the surrounding community.

The California Office of Environmental Health Hazards Assessment (OEHHA) established the chronic reference exposure level (REL) for particulate matter within diesel exhaust as 5 ug/m^3. The exposure of particulate matter within diesel exhaust at concentrations equal to the REL represents a non-cancer chronic hazard index level of 1.0. Exposure above a hazard index of 1.0 is considered a significant impact.

The relationship for the non-cancer health effects of diesel particulates is given by the following equation:

$$HI_{DPM} = C_{DPM} / REL_{DPM}$$

where:

HI_{DPM} = Hazard Index; an expression of the potential for non-cancer health effects
C_{DPM} = Annual average DPM concentration (ug/m_3) as calculated from the Screen3 model
REL_{DPM} = Reference exposure level (REL) for DPM; the DPM concentration at which no adverse health effects are anticipated

The resulting non-cancer risks calculated for the project are shown in Table 16.

TABLE 16
NON-CANCER RISK HAZARD INDEX

Distance From Generator	Ambient Concentration	Reference Exposure Levels	Non Cancer Chronic Hazard Index Levels
15 Meters	0.0003 $\mu g/m^3$	5 ug/m^3	0.00006
97 Meters	0.0012 $\mu g/m^3$	5 ug/m^3	0.00024
150 Meters	0.0011 $\mu g/m^3$	5 ug/m^3	0.00022

All of the non-cancer chronic hazard index levels are well below the OEHHA maximum threshold of 1, so long-term diesel emissions from the proposed project will not pose any significant chronic non-cancer health risk to the surrounding community.

MITIGATION MEASURES

- Prior to construction of the proposed improvements, the project proponent will provide a traffic control plan that will describe in detail safe detours around the project construction sites and provide temporary traffic control (i.e. flag person) during earthen material transport and other construction related truck hauling activities.
- During construction of the proposed improvements one of the following options must be used to supply the power needs for boring operations: 1) use natural gas fueled generator sets; 2) use low emission, duel fueled generator sets; or 3) prior to construction of the proposed improvements, arrangements will be made with Southern California Edison to provide temporary construction power at the boring sites.
- During construction of the proposed improvements, all mobile and stationary construction equipment will be properly maintained at an offsite location and includes proper tuning and timing of engines. Equipment maintenance records and equipment design specification data sheets shall be kept on-site during construction.
- During construction of the proposed improvements, all contractors will be advised not to idle trucks on site for more than ten minutes.

SECTION 4 – FINDINGS AND CONCLUSIONS

EVALUATION OF SIGNIFICANCE

Under the California Environmental Quality Act, air quality impacts may be considered significant if:

- **A project conflicts with, or obstructs implementation of, the Air Quality Management Plan.**

  The Air Quality Management Plan (AQMP) for the SCAB sets forth a comprehensive program that will lead the SCAB into compliance with all federal and state air quality standards. The AQMP control measures and related emission reduction estimates are based upon emissions projections for a future development scenario derived from land use, population, and employment characteristics defined in consultation with local governments. The SCAQMD has developed two criteria to evaluate a project's consistency with the AQMP. The SCAQMD CEQA Air Quality Handbook states that a project is deemed consistent with the applicable AQMP if 1) it results in population and/or employment growth that is consistent with the growth estimates in the applicable AQMP, and 2) emissions resulting from the project do not exceed the SCAQMD recommended thresholds. Accordingly, conformance with the AQMP for development projects is determined by demonstrating compliance with local land use plans and/or population projections, and a project specific air quality evaluation determines that all criteria pollutant emissions are below the SCAQMD recommended significance thresholds.

  For the proposed project, the size and scope of the project was designed to meet the needs of the project area based on SCAG land use designations, which is consistent with the land use information that is the basis for the current AQMP. However, the preceding project specific evaluation determined that with mitigation incorporated into the project, estimated emissions are still above the SCAQMD recommended significance thresholds. Therefore, the project is determined to be inconsistence with the AQMP.

- **Project-generated emissions violate federal or state ambient air quality standards.**

  The SCAB is designated a non-attainment area for ozone, carbon monoxide, and PM-10. The preceding analysis demonstrates that with mitigation, projected emissions of NOx and ROC are still above the applicable SCAQMD thresholds during construction of the project. NOx and ROC emissions are precursors to the formation of ozone. Project emissions that contribute to ozone concentrations downwind of project construction sites may temporarily be above state or federal ambient air quality standards during construction of the improvements. Therefore, the project may temporarily violate the state or federal ambient air quality standards.

- **A project contributes a cumulatively considerable net increase of a criteria pollutant in a non-attainment area.**

  The SCAB is designated a non-attainment area for ozone, carbon monoxide, and PM-10. The project-specific evaluation of emissions presented in the preceding analysis shows that emissions of NOx and ROC are above the recommended SCAQMD thresholds during construction of the improvements and supports a conclusion that the air quality impacts for the proposed project are significant on an individual project basis. While the amount of additional pollution generated during construction of the project is considered a significant contribution to cumulative impacts, the impact is temporary, and the proposed project will comply with all applicable emission control measures imposed by the SCAQMD pursuant to the current and pending AQMP. Post construction impacts and continued compliance with the currently adopted (and any future) AQMP will reduce future emissions and reduce this significant impact.

- **Project-generated emissions expose sensitive receptors to substantial pollutant concentrations.**

  Sensitive receptors include existing residential and schools uses along the pipeline route and adjacent to the pump station. However, emissions will only be generated in the project area during construction of the project and 15-minute test runs of the back-up generator at the pump station. The bulk of the long-term emissions is from the consumption of electricity and will be dispersed at electrical generating stations all across the SCAB. While the preceding analysis demonstrates that projected emissions of NOx and ROC are above the applicable SCAQMD thresholds, these emissions will dissipate and be rapidly diluted by the atmosphere downwind of the emission sources. Additionally, a health risk assessment pertaining to diesel emissions emitted during test runs of the back-up diesel generator concluded that health risks are less than significant. Considering the short-term duration of emissions (construction activities and 15-minute test runs of the back-up generator), dispersion of short-term emissions, and quantity of long-term emissions in the project area, the project will not expose sensitive receptors to substantial pollutant concentrations.

- **Project creates objectionable odors affecting a substantial number of people.**

  The project presents the potential for generation of objectionable odors in the form of diesel exhaust during construction and the 15-minute test running of the back-up diesel generator each week in the immediate vicinity of the project site. These emissions would rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Recognizing the short-term duration of emissions and the dispersion of the pollutants, the project will not subject a substantial number of people to objectionable odors.

CONCLUSIONS

The study found that without mitigation short-term emissions of NOx and ROC are above the SCQAMD suggested significance thresholds. With mitigation incorporated into the project

during construction of the improvements, short-term emissions of Nox and ROC are still above the SCAQMD recommended significance thresholds. Long-term criteria pollutant emissions are below the SCAQMD suggested significance thresholds. Therefore, the proposed project generates temporary, but significant impacts to air quality.

SECTION 5 – REFERENCES

REFERENCES CITED

The following documents were referred to as general information sources during preparation of this document. They are available for public review at the locations abbreviated after each listing and spelled out at the end of this section. Some of these documents are also available at public libraries and at other public agency offices.

CARB 2002A	California Air Resources Control Board. URBEMIS 2001 for Windows Computer Program and User's Guide, Version 6.2.1. March, 2002 *(Available at SCAQMD)*
CARB 2002B	California Air Resources Control Board. EMFAC2002, version 2.2, Calculating Emission Inventories for Vehicles in California, User's Guide. September, 2002 *(Available at SCAQMD)*
RivCo 1990	County of Riverside, Planning Department. Air Quality Element of the Comprehensive General Plan. March 1990. (*Available at Planning)*
RivCo 1989	County of Riverside, Planning Department. Comprehensive General Plan. December 1989. (*Available at Planning)*
San Bern Co 1996	County of San Bernardino, Planning Department. Comprehensive General Plan. December 1996. (*Available at SBCo)*
SCAQMD 1996	South Coast Air Quality Management District. 1997 Air Quality Management Plan. November, 1996. *(Available at SCAQMD)*
SCAQMD 1993	South Coast Air Quality Management District. CEQA Air Quality Handbook. November 1993. *(Available at SCAQMD)*
SCAQMD 1991	South Coast Air Quality Management District. Rule 1135, Emissions of Oxides of Nitrogen from Electric Power Generation Systems. Adopted August 4, 1989. Amended July 19, 1991. *(Available at SCAQMD)*

USEPA 1995 United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions, Monitoring, and Analysis Division. Screen3 Model User's Guide (EPA-454/B-95-004). September 1995. *(Available at SCAQMD)*

Location:	**Address:**
Planning	County of Riverside Planning Department, 4080 Lemon Street Riverside, CA 92502-1409
SBCo	County of San Bernardino Planning Department 385 North Arrowhead Avenue, 3rd Floor San Bernardino, CA 92415
SCAQMD	South Coast Air Quality Management District, 21865 East Copley Drive Diamond Bar, CA 91765-4182

DOCUMENT PREPARATION STAFF

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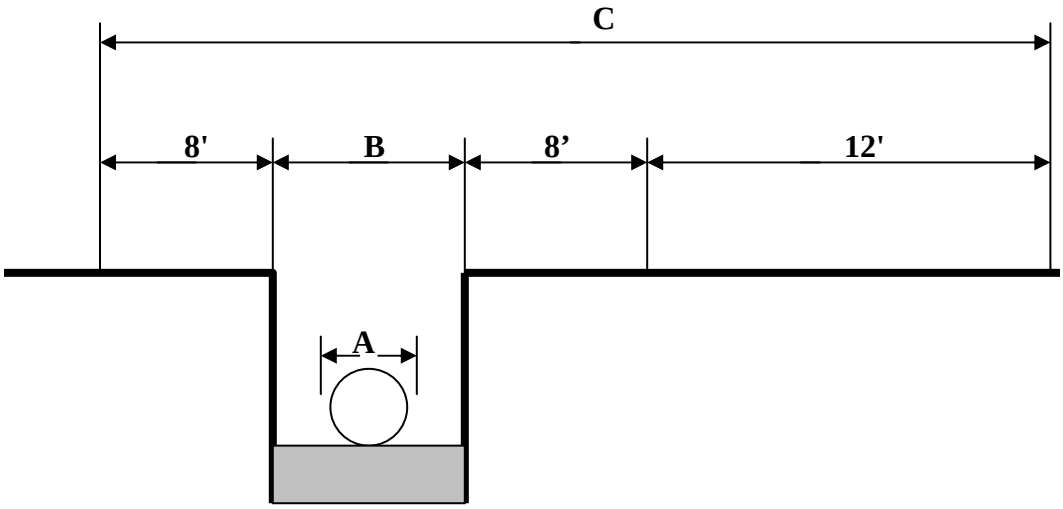
APPENDIX A

CONSTRUCTION EMISSIONS WORKSHEETS AND EMFAC2002 OUTPUT FILES

ESTIMATING THE PIPELINE DISTURBANCE AREA



Pipeline Element	Diameter	Trench Width	Total Disturbance Width	Maximum Daily Rate of Progress[1]	Total Daily Disturbance Area
	A	B	C		
Reach G: approximately 2,000 linear feet.	30"	4'	32'	350'/day	0.26 acres
Reach E: approximately 11,000 linear feet and Reach H: approximately 32,000 linear feet	36"	5'	33'	300'/day	0.23 acres
Reach F: approximately 24,000 linear feet	42"	5.5'	33.5'	250'/day	0.19 acres
Reach D: approximately 24,000 linear feet	54"	6.5'	34.5'	175'/day	0.14 acres
Reaches B and C: approximately 29,000 linear feet each	60"	7.5'	35.5'	116'/day	0.09 acres
Reach A: approximately 8,000 linear feet	72"	8.5'	36.5'	80'/day	0.07 acres
Boring Casings	96"	NA[2]	NA[2]		2.02 acres[2]

Notes: [1] Estimated daily rate of progress is length of pipeline completed per day. Variables affecting progress include road conditions (level of traffic and number of intersections), topography, terrain, groundwater levels, and soil/geological conditions.

[2] Trenching is not applicable (NA) to boring activities. Total daily disturbance area for borings (including micro-tunneling) represents approximately one acre at either end of the bore tunnel where boring equipment is operating, and haul trucks are queued to haul pipe and casing to the site or remove earthen material from boring activities offsite. An additional 0.02 acres represent the area where excavated material as a result of the boring activities is stockpiled prior to hauling.

Construction Equipment
Horsepower, Load Factors and Emission Factor

Equipment Type	Fuel	Horse-power	Load Factor Percent	CO lb/bhp-hr	VOC lb/bhp-hr	NO_X lb/bhp-hr	SO_X lb/bhp-hr	PM10 lb/bhp-hr
Grader	Diesel	156.6	57.5	0.008	0.003	0.021	0.002	0.001
Excavator (Komatsu 750)	Diesel	450	58	0.013	0.003	0.031	0.002	0.002
Excavator (Komatsu 600)	Diesel	385	58	0.013	0.003	0.031	0.002	0.002
Loader	Diesel	250	46.5	0.011	0.002	0.023	0.002	0.0015
Backhoe	Diesel	90	46.5	0.015	0.003	0.022	0.002	0.001
Paving Machine	Diesel	300	53	0.010	0.002	0.024	0.002	0.001
Crane (40 ton)	Diesel	300	43	0.009	0.003	0.023	0.002	0.002
Crane (85 ton)	Diesel	500	43	0.009	0.003	0.023	0.002	0.002
Rough Terrain Fork Lift	Diesel	83	47.5	0.022	0.003	0.018	0.002	0.0015
Man Lift	Diesel	43	50.5	0.013	0.003	0.031	0.002	0.0015
Small Generator Set	Diesel	50	62	0.011	0.002	0.018	0.002	0.001
Large Generator Set	Diesel	500	62	0.011	0.002	0.018	0.002	0.001
Air Compressor (250 cfm)	Diesel	80	48	0.011	0.002	0.018	0.002	0.001
Concrete Tamper	Gasoline	2.5	62	0.570	0.025	0.011	0.001	0.000
Concrete Power Trowel	Gasoline	11	62	0.570	0.025	0.011	0.001	0.000
Smooth Drum Roller	Diesel	80	57.5	0.007	0.002	0.020	0.002	0.001
Plate Compactor	Diesel	80	55	0.007	0.002	0.020	0.002	0.001
Power Broom (Sweeper)	Diesel	65	68	0.013	0.003	0.031	0.002	0.0015
Asphalt Grinder	Diesel	150	62	0.020	0.003	0.024	0.002	0.0015
Welder	Diesel	50	45	0.011	0.002	0.018	0.002	0.001

Note: Emission factors, load factors, and horsepower from SCAQMD CEQA Air Quality Handbook Table A9-8-B (emission factors), Table A9-8-D (load factors), and Table A9-8-C (horsepower: AA Webb Associates specified horsepower of equipment).
Mobile emissions for water trucks and transport of concrete, soils and other materials, as well as construction worker commute trips were estimated using EMFAC2002.

Reach A Construction Emissions Estimates:

Excavation—Pipeline Installation Associated with Reach A

Equipment Type	Number of Equipment Units	Hours of Operationor Miles/day	CO lb/day	VOC lb/day	NO_X lb/day	SO_X lb/day	PM10 lb/day
Off-Road Mobile Construction Equipment							
Excavators (Komatsu 750)	2	10 hours	67.86	15.66	161.82	10.44	10.44
Excavators (Komatsu 600)	2	10 hours	58.06	13.40	138.45	8.93	8.93
Crane (40 ton)	1	10 hours	11.61	3.87	29.67	2.58	2.58
Loaders	3	10 hours	38.36	10.46	80.21	6.98	5.23
Backhoes	3	10 hours	18.84	3.78	27.63	3.78	1.89
Smooth Drum Roller	2	10 hours	6.44	1.84	18.40	1.84	0.92
Power Broom (Sweeper)	2	10 hours	11.49	2.65	17.68	1.77	0.88
Paving Machine	1	10 hours	15.90	3.18	38.16	3.18	1.59
Total			228.56	54.84	512.02	39.50	32.46
On-Road Construction Equipment							
Water Trucks	8 trip ends	5 miles/trip end	2.20	0.15	1.28	0.01	0.04
Haul Trucks	36 trip ends	22 trips at10 miles 14 trips at 60 miles	24.09	3.05	34.85	0.39	0.87
Total			26.29	3.20	36.13	0.40	0.91
Worker Commute Vehicles							
Construction Worker Commutes	100 trip ends	13.6 miles/trip end	0.32	0.61	0.23	NE[1]	0.06
Total			0.32	0.61	0.23	NE[1]	0.06
Stationary Construction Equipment							
Air Compressors	2	10 hours	8.45	1.54	13.82	1.54	0.77
Welders	3	10 hours	7.42	1.35	12.15	1.35	0.68
Asphalt Grinder	1	10 hours	18.6	2.80	22.32	1.86	1.40
Plate Compactors	2	10 hours	6.16	1.76	17.60	1.76	0.88
Total:			40.63	7.45	65.89	6.51	3.75

Note: Criteria pollutants that have estimated negligible values are designated NE (negligible emissions)

ESTIMATED FUGITIVE DUST EMISSIONS
Excavation—Pipeline Installation Associated with Reach A

Pollution Source	Disturbance Area[1] (acres/day)	Emissions Factor[2] (pounds/acre/day)	PM-10 Generation (pounds/day)
Disturbed Soil from pipe installation	0.06	13.2	0.79
Excavation piles/Backfilling	0.01	42.3	0.42
Total	0.07		1.21

Notes: [1] Assumes a maximum of approximately 80 feet per day of trenching with a trench width of approximately 8.5 feet, excavation piles approximately 8 feet wide by 4 feet high, 8 feet wide disturbed area where the pipe will be stacked, and a 12-feet-wide area of additional disturbance associated with vehicle and equipment movement.
[2] Assumes 50% reduction as a result of implementing SCAQMD Rule 403

ESTIMATED EMISSIONS FROM ASPHALT OFFGASSING

Pollution Source	Area Covered in Asphalt (Acres/day)	Emissions Factor[1] (pounds/Acre)	ROC Emissions (pounds/day)
Asphalt Applications	0.02	2.62	0.05

Notes: [1] Emission factors from Table A9-13-B in the SCAQMD Air Quality Handbook.

Microtunneling—Pipeline Installation Associated with Reach A

Equipment Type	Number of Equipment Units	Hours of Operationor Miles/day	CO lb/day	VOC lb/day	NO_X lb/day	SO_X lb/day	PM10 lb/day
Off-Road Construction Equipment							
Crane (85 tons)	1	10 hours	19.35	6.45	49.45	4.30	4.30
Loader	1	10 hours	12.79	2.33	26.74	2.33	1.74
Total			32.14	8.78	76.19	6.63	6.04
On-Road Mobile Construction Equipment							
Water Trucks	4 trip ends	5 miles/trip end	1.10	0.08	0.64	0.01	0.02
Haul Trucks	48 trip ends	34 trips at10 miles 14 trips at 60 miles	28.91	3.55	38.90	0.43	0.97
Total			30.01	3.63	39.54	0.44	0.99
Worker Commute Vehicles							
Construction Worker Commutes	100 trip ends	13.6 miles/trip end	0.32	0.61	0.23	NE[1]	0.06
Total			0.32	0.61	0.23	NE[1]	0.06
Stationary Construction Equipment							
Large Generator Sets	2	24 hours	264.00	48.00	432.00	48.00	24.00
Total:			264.00	48.00	432.00	48.00	24.00

Note: Criteria pollutants that have estimated negligible values are designated NE (negligible emissions)

ESTIMATED FUGITIVE DUST EMISSIONS
Microtunneling—Pipeline Installation Associated with Reach A

Pollution Source	Disturbance Area[1] (acres/day)	Emissions Factor[2] (pounds/acre/day)	PM-10 Generation (pounds/day)
Disturbed Soil from boring operations	2.00	13.2	26.40
Boring debris stockpiles	0.02	42.3	0.85
Total	2.02		27.25

Notes: [1] Assumes a maximum of approximately one acre of disturbance at the jacking and receiving shafts, and the maximum size of boring debris stockpiles at any given time of approximately 30 feet wide by 30 feet long and 10-12 feet high.
[2] Assumes 50% reduction as a result of implementing SCAQMD Rule 403.

Pump Station Construction Associated with Reach A

Equipment Type	Number of Equipment Units	Hours of Operationor Miles/day	CO lb/day	VOC lb/day	NO_X lb/day	SO_X lb/day	PM10 lb/day
Off-Road Mobile Construction Equipment							
Grader	1	10 hours	7.20	2.70	18.91	1.80	0.90
Loader	1	10 hours	12.79	2.33	40.11	3.49	2.62
Backhoe	1	10 hours	6.28	1.26	9.21	1.26	0.63
Smooth Drum Roller	1	10 hours	3.22	0.92	9.20	0.92	0.46
Crane (40 ton)	1	10 hours	11.61	3.87	29.67	2.58	2.58
Total			41.10	11.08	107.10	10.05	7.19
On-Road Construction Equipment							
Water Trucks	8 trip ends	5 miles/trip	2.20	0.15	1.28	0.01	0.04
Haul Trucks	24 trip ends	14 trips at10 miles 10 trips at 60 miles	16.52	2.10	24.31	0.27	0.61
Total			18.72	2.25	25.59	0.28	0.65
Worker Commute Vehicles							
Construction Worker Commutes	100 trips	13.6 miles	0.32	0.61	0.23	NE[1]	0.06
Stationary Construction Equipment							
Asphalt Grinder	1	10 hours	18.60	2.80	22.32	1.86	1.40
Welders	2	10 hours	4.95	0.90	8.10	0.90	0.45
Plate Compactors	2	10 hours	6.16	1.76	17.60	1.76	0.88
Total:			29.71	5.46	48.02	4.52	2.73

Note: Criteria pollutants that have estimated negligible values are designated NE (negligible emissions)

ESTIMATED FUGITIVE DUST EMISSIONS
Pump Station Construction Associated with Reach A

Pollution Source	Disturbance Area[1] (acres/day)	Emissions Factor[2] (pounds/acre/day)	PM-10 Generation (pounds/day)
Disturbed Soil from grading	0.50	13.2	6.10
Disturbed Soil from pipe installation	0.02	13.2	0.26
Excavation piles/Backfilling	0.01	42.3	0.42
Total	0.53		6.78

Notes: [1] Assumes a maximum of approximately 25 feet per day of trenching with a trench width of approximately 8.5 feet, excavation piles approximately 8 feet wide by 4 feet high, 8 feet wide disturbed area where the pipe will be stacked, and a 12-feet-wide area of additional disturbance associated with vehicle and equipment movement.

[2] Assumes 50% reduction as a result of implementing SCAQMD Rule 403.

ESTIMATED EMISSIONS FROM ARCITECHTUAL COATINGS APPLICATION
Pump Station Construction Associated with Reach A

Pollution Source	Surface Area Painted [1] (1000 ft^2/day)	Emissions Factor[2] (pounds/1000 ft^2)	Clean-up Emissions[2] (pounds/1000 ft^2)	ROC Emissions (pounds/day)
Paint Applications	0.20	44.38	4.44	9.76

Notes: [1] Assumes a total of 2,000 square feet of area receiving paint over a period of 10 days. This includes exterior and interior of building as well as paint applications on particular equipment.

[2] Emission factors from Table A9-13-B in the SCAQMD Air Quality Handbook.

ESTIMATED EMISSIONS FROM ASPHALT OFFGASSING

Pollution Source	Area Covered in Asphalt (Acres/day)	Emissions Factor[1] (pounds/Acre)	ROC Emissions (pounds/day)
Asphalt Applications	0.20	2.62	0.52

Notes: [1] Emission factors from Table A9-13-B in the SCAQMD Air Quality Handbook.

Reach C Construction Emissions Estimates:

Excavation—Pipeline Installation Associated with Reach C

Equipment Type	Number of Equipment Units	Hours of Operationor Miles/day	CO lb/day	VOC lb/day	NO_X lb/day	SO_X lb/day	PM10 lb/day
Off-Road Mobile Construction Equipment							
Excavators (Komatsu 750)	2	10 hours	67.86	15.66	161.82	10.44	10.44
Excavators (Komatsu 600)	2	10 hours	58.06	13.40	138.45	8.93	8.93
Crane (40 ton)	1	10 hours	11.61	3.87	29.67	2.58	2.58
Loaders	2	10 hours	25.58	4.65	72.08	4.65	3.49
Backhoes	2	10 hours	12.56	2.51	18.41	1.67	0.84
Smooth Drum Roller	2	10 hours	6.44	1.84	18.40	1.84	0.92
Power Broom (Sweeper)	2	10 hours	11.49	2.65	17.68	1.77	0.88
Paving Machine	1	10 hours	15.90	3.18	38.16	3.18	1.59
Total			209.50	47.76	494.67	35.06	29.67
On-Road Construction Equipment							
Water Trucks	8 trip ends	5 miles/trip end	2.20	0.15	1.28	0.01	0.04
Haul Trucks	32 trip ends	22 trips at10 miles 10 trips at 60 miles	19.48	2.42	27.02	0.30	0.67
Total			21.68	2.57	28.30	0.31	0.71
Worker Commute Vehicles							
Construction Worker Commutes	100 trip ends	13.6 miles/trip end	0.32	0.61	0.23	NE[1]	0.06
Total			0.32	0.61	0.23	NE[1]	0.06
Stationary Construction Equipment							
Air Compressors	2	10 hours	8.45	1.54	13.82	1.54	0.77
Welders	3	10 hours	7.42	1.35	12.15	1.35	0.68
Asphalt Grinder	1	10 hours	18.6	2.80	22.32	1.86	1.40
Plate Compactors	1	10 hours	3.08	0.88	8.80	0.88	0.44
Total:			37.55	6.57	57.09	5.63	3.29

Note: Criteria pollutants that have estimated negligible values are designated NE (negligible emissions)

ESTIMATED FUGITIVE DUST EMISSIONS
Excavation—Pipeline Installation Associated with Reach C

Pollution Source	Disturbance Area[1] (acres/day)	Emissions Factor[2] (pounds/acre/day)	PM-10 Generation (pounds/day)
Disturbed Soil from pipe installation	0.06	13.2	0.79
Excavation piles/Backfilling	0.01	42.3	0.42
Total	0.07		1.21

Notes: [1] Assumes a maximum of approximately 116 feet per day of trenching with a trench width of approximately 7.5 feet, excavation piles approximately 8 feet wide by 4 feet high, 8 feet wide disturbed area where the pipe will be stacked, and a 12-feet-wide area of additional disturbance associated with vehicle and equipment movement.

[2] Assumes 50% reduction as a result of implementing SCAQMD Rule 403.

ESTIMATED EMISSIONS FROM ASPHALT OFFGASSING

Pollution Source	Area Covered in Asphalt (Acres/day)	Emissions Factor[1] (pounds/Acre)	ROC Emissions (pounds/day)
Asphalt Applications	0.02	2.62	0.05

Notes: [1] Emission factors from Table A9-13-B in the SCAQMD Air Quality Handbook.

Boring—Pipeline Installation Associated with Reach C

Equipment Type	Number of Equipment Units	Hours of Operationor Miles/day	CO lb/day	VOC lb/day	NO_X lb/day	SO_X lb/day	PM10 lb/day
Off-Road Construction Equipment							
Crane (85 tons)	1	10 hours	19.35	6.45	49.45	4.30	4.30
Loader	1	10 hours	12.79	2.33	26.74	2.33	1.74
Total			32.14	8.78	76.19	6.63	6.04
On-Road Mobile Construction Equipment							
Water Trucks	4 trip ends	5 miles/trip end	1.10	0.08	0.64	0.01	0.02
Haul Trucks	46 trip ends	36 trips at10 miles 10 trips at 60 miles	25.38	3.01	31.75	0.35	0.79
Total			26.48	3.09	32.39	0.36	0.81
Worker Commute Vehicles							
Construction Worker Commutes	100 trip ends	13.6 miles/trip end	0.32	0.61	0.23	NE[1]	0.06
Total			0.32	0.61	0.23	NE[1]	0.06
Stationary Construction Equipment							
Large Generator Sets	2	24 hours	264.00	48.00	432.00	48.00	24.00
Total:			264.00	48.00	432.00	48.00	24.00

Note: Criteria pollutants that have estimated negligible values are designated NE (negligible emissions)

ESTIMATED FUGITIVE DUST EMISSIONS
Boring—Pipeline Installation Associated with Reach C

Pollution Source	Disturbance Area[1] (acres/day)	Emissions Factor[2] (pounds/acre/day)	PM-10 Generation (pounds/day)
Disturbed Soil from boring operations	2.00	13.2	26.40
Boring debris stockpiles	0.02	42.3	0.85
Total	2.02		27.25

Notes: [1] Assumes a maximum of approximately one acre of disturbance at the jacking and receiving shafts, and the maximum size of boring debris stockpiles at any given time of approximately 30 feet wide by 30 feet long and 10-12 feet high.
[2] Assumes 50% reduction as a result of implementing SCAQMD Rule 403.

APPENDIX B

URBEMIS 2001 OUTPUT FILE FOR LONG-TERM EMISSIONS

URBEMIS 2001 For Windows 6.2.1

File Name:C:\Program Files\URBEMIS 2001\Projects2k\RiversideCorona Operation.urb
Project Name: Riverside/Corona Operation

Project Location: South Coast Air Basin (Los Angeles area)

DETAIL REPORT
(Pounds/Day - Summer)

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	PM10	SO2
General light industry	0.60	0.50	6.87	0.35	0.00
TOTAL EMISSIONS (lbs/day)	0.60	0.50	6.87	0.35	0.00

Includes correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES
Analysis Year: 2005 Temperature (F): 90 Season: Summer
EMFAC Version: EMFAC2001 (10/2001)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
General light industry	3.20 trips / employees	5.00	16.00

Vehicle Assumptions:
Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	61.40	4.70	94.50	0.80
Light Truck < 3,750 lbs	9.30	11.00	88.90	0.10
Light Truck 3,751- 5,750	16.70	1.80	97.60	0.60
Med Truck 5,751- 8,500	7.20	12.50	79.20	8.30
Lite-Heavy 8,501-10,000	1.10	18.20	72.70	9.10
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.10	9.10	27.30	63.60
Heavy-Heavy 33,001-60,000	0.70	0.00	0.00	100.00
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.00	0.00	0.00	100.00
Motorcycle	1.40	90.90	9.10	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	0.70	0.00	100.00	0.00

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	0.0	0.0	0.0	17.0	62.0	62.0
Rural Trip Length (miles)	0.0	0.0	0.0	0.0	0.0	0.0
Trip Speeds (mph)	35.0	40.0	40.0	35.0	35.0	35.0
% of Trips - Residential	20.0	37.0	43.0			
% of Trips - Commercial (by land use)						
General light industry				94.0	3.0	3.0

Changes made to the default values for Operations

The operational emission year changed from 2002 to 2005.
The home based work selection item changed from 8 to 7.
The home based work urban trip length changed from 11.5 to 0.
The home based work rural trip length changed from 11.5 to 0.
The home based shopping selection item changed from 9 to 8.
The home based shopping urban trip length changed from 4.87 to 0.
The home based shopping rural trip length changed from 4.87 to 0.
The home based other selection item changed from 9 to 8.
The home based other urban trip length changed from 6.02 to 0.
The home based other rural trip length changed from 6.02 to 0.
The commercial based commute trip speed changed from 40 to 35.
The commercial based commute selection item changed from 9 to 7.
The commercial based commute urban trip length changed from 10.3 to 17.
The commercial based commute rural trip length changed from 10.3 to 0.
The commercial based non-work trip speed changed from 40 to 35.
The commercial based non-work selection item changed from 9 to 7.
The commercial based non-work urban trip length changed from 5.5 to 62.
The commercial based non-work rural trip length changed from 5.5 to 0.
The commercial based customer trip speed changed from 40 to 35.
The commercial based customer selection item changed from 9 to 7.
The commercial based customer urban trip length changed from 5.5 to 62.
The commercial based customer rural trip length changed from 5.5 to 0.
The double counting other trip limit changed from to -7.52.

APPENDIX C

ELECTRICITY USAGE EMISSIONS WORKSHEET

AIR QUALITY EMISSIONS WORKSHEET

ELECTRIC POWER CONSUMPTION

Proposed Project Facility	Power Consumption[1] (megawatt hrs/day)
Pump Station (350 hp total)	3.91
20 wells at 400 hp each (8,000 hp total)	48.00
Total	51.91

Notes: [1] Assumes pump station pumps average usage rate is 24 hours per day at 62% of capacity and that 750 watt-hours per horsepower is used with conversion factors to convert watt-hours to megawatt-hours. Assumes each well is running an average of 8 hours per day at a consumption rate of 300 kilowatts per hour.

Electricity Usage Emissions

Pollutant	Emission Factor[1] (lbs/megawatt hour)	Use (megawatt hours/day)	Total Emissions (pounds per day)
CO	0.20	51.91	10.38
ROC	0.01	51.91	0.52
NO_X	0.15[2]	51.91	7.79
SO_X	0.12	51.91	6.23
PM_{10}	0.04	51.91	2.08

Notes: [1] Emission factors from SCAQMD CEQA Air Quality Handbook, Table A9-11-B.
[2] Emission factor for NOx is derived from SCAQMD Rule 1135 requiring SCE to emit no more than 0.15 pounds of NOx per Megawatt hour of electric power produced within the SCAB

APPENDIX D

SCREEN 3 OUTPUT REPORT

02/25/03
16:19:06

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 96043 ***

Pump Station at Waterman Av. and Orange Show Road

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE            =        POINT
   EMISSION RATE (G/S)    =      .694000E-03
   STACK HEIGHT (M)       =       5.4900
   STK INSIDE DIAM (M)    =        .0760
   STK EXIT VELOCITY (M/S)=      18.3000
   STK GAS EXIT TEMP (K)  =     793.0000
   AMBIENT AIR TEMP (K)   =     293.0000
   RECEPTOR HEIGHT (M)    =       1.5800
   URBAN/RURAL OPTION     =        RURAL
   BUILDING HEIGHT (M)    =        .0000
   MIN HORIZ BLDG DIM (M) =        .0000
   MAX HORIZ BLDG DIM (M) =        .0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX =     .163 M**4/S**3;  MOM. FLUX =     .179 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

  DIST     CONC             U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
   (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)  DWASH
-------  ----------  ----  -----  -----  ------  ------  ------  ------  -----
    15.   .1744        1     3.0    3.0   960.0    7.33    4.88    2.38    NO
   100.   .8320        3     1.0    1.0   320.0   11.00   12.56    7.61    NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND    15. M:
    97.   .8327        3     1.0    1.0   320.0   11.00   12.33    7.47    NO

 DWASH=   MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB
```

```
**********************************
*** SCREEN DISCRETE DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
Min**15.	.1744	1	3.0	3.0	960.0	7.33	4.88	2.38	NO
20.	.3660	1	3.0	3.0	960.0	7.33	6.31	3.09	NO
25.	.4940	1	2.5	2.5	800.0	7.69	7.73	3.82	NO
30.	.5834	1	2.0	2.0	640.0	8.24	9.11	4.54	NO
35.	.6421	1	1.5	1.5	480.0	9.16	10.49	5.28	NO
40.	.6720	1	1.5	1.5	480.0	9.16	11.82	5.96	NO
45.	.6903	2	1.5	1.5	480.0	9.16	9.35	5.15	NO
50.	.7240	2	1.5	1.5	480.0	9.16	10.29	5.66	NO
55.	.7335	2	1.5	1.5	480.0	9.16	11.22	6.16	NO
60.	.7475	2	1.0	1.0	320.0	11.00	12.19	6.77	NO
65.	.7610	2	1.0	1.0	320.0	11.00	13.10	7.27	NO
70.	.7886	3	1.5	1.5	480.0	9.16	9.02	5.47	NO
75.	.8029	3	1.5	1.5	480.0	9.16	9.61	5.82	NO
80.	.8062	3	1.5	1.5	480.0	9.16	10.19	6.16	NO
85.	.8102	3	1.0	1.0	320.0	11.00	10.84	6.60	NO
90.	.8252	3	1.0	1.0	320.0	11.00	11.41	6.94	NO
95.	.8320	3	1.0	1.0	320.0	11.00	11.99	7.27	NO
Max**97.	.8327	3	1.0	1.0	320.0	11.00	12.22	7.41	NO
100.	.8320	3	1.0	1.0	320.0	11.00	12.56	7.61	NO
105.	.8265	3	1.0	1.0	320.0	11.00	13.13	7.94	NO
110.	.8167	3	1.0	1.0	320.0	11.00	13.70	8.27	NO
115.	.8035	3	1.0	1.0	320.0	11.00	14.27	8.60	NO
120.	.7877	3	1.0	1.0	320.0	11.00	14.83	8.93	NO
125.	.7701	3	1.0	1.0	320.0	11.00	15.40	9.26	NO
130.	.7522	4	1.5	1.5	480.0	9.16	10.51	5.94	NO
135.	.7519	4	1.5	1.5	480.0	9.16	10.88	6.13	NO
140.	.7491	4	1.5	1.5	480.0	9.16	11.25	6.32	NO
145.	.7543	4	1.0	1.0	320.0	11.00	11.67	6.62	NO
150.	.7618	4	1.0	1.0	320.0	11.00	12.04	6.80	NO

```
DWASH=   MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB
```

```
*******************************************
*  SUMMARY OF TERRAIN HEIGHTS ENTERED FOR  *
*    SIMPLE ELEVATED TERRAIN PROCEDURE     *
*******************************************
```

TERRAIN HT (M)	DISTANCE RANGE (M) MINIMUM	MAXIMUM
0.	15.	100.
0.	15.	--
0.	20.	--
0.	25.	--
0.	30.	--
0.	35.	--
0.	40.	--
0.	45.	--
0.	50.	--
0.	55.	--
0.	60.	--
0.	65.	--
0.	70.	--
0.	75.	--
0.	80.	--
0.	85.	--
0.	90.	--
0.	95.	--
0.	100.	--
0.	97.	--
0.	105.	--
0.	110.	--
0.	115.	--
0.	120.	--
0.	125.	--
0.	130.	--
0.	135.	--
0.	140.	--
0.	145.	--
0.	150.	--

```
*************************************
*** SUMMARY OF SCREEN MODEL RESULTS ***
*************************************
```

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.8327	97.	0.

```
****************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****************************************************
```

Appendix C

Biological Assessment Report

WESTERN MUNICIPAL WATER DISTRICT
RIVERSIDE-CORONA FEEDER
PROPOSED MAIN ALIGNMENT ROUTE

BIOLOGICAL ASSESSMENT

Prepared for

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PSBS #U206

21 August 2003

R. Mitchel Beauchamp, M. Sc., President

WESTERN MUNICIPAL WATER DISTRICT
RIVERSIDE-CORONA FEEDER
PROPOSED MAIN ALIGNMENT ROUTE

BIOLOGICAL ASSESSMENT

21 August 2003

SUMMARY

A general biological survey was performed of the approximately 30-mile long proposed water feeder pipeline route in southwestern San Bernardino County and northwestern Riverside County. The survey revealed six vegetation type/habitat communities: Southern Willow Scrub, Mule-Fat Scrub, Riversidean Sage Scrub, Non-native Grassland, Urban/Developed, and Orchards.

The proposed project alignment lies within the Riverside Lowlands Bioregion, as designated by the draft Western Riverside Multiple Species Habitat Conservation Plan (MSHCP 2002). In general, the alignment passes through urbanized areas or along the lower, western margins of a series of low hills or mountains in the Santa Ana River Valley. In some cases, the alignment crosses perpendicular to less urbanized valleys, canyons, or drainages that have limited potential to serve as local or subregional wildlife movement areas. However, since most of these canyons already contain roads, freeways or other improvements, and open into urbanized valley areas, they are not expected to support substantial wildlife habitats in the proposed project alignments. Potential, high-value wildlife areas, associated with the proposed alignment, are limited and are discussed in more detail in the report.

Sensitive plant or animal species are those considered sensitive by one or more of the following: U. S. Fish and Wildlife Service, California Department of Fish and Game, County of Riverside, and a private group, the non-governmental California Native Plant Society. Species listed as Threatened or Endangered by the state or federal government have a higher level of legal protection than those not so listed. Based on the field assessment and review of the information in Appendix 4, two listed plants have the potential to occur within the project area of impact, but so far have not been encountered. These are the Santa Ana River Woolly-star and Slender-horned Spineflower, both federally listed species.

A general zoological survey did not observe any sensitive animal species. However, a review of the wildlife habitats along the alignments, and of Appendix 5, indicates that some sensitive wildlife species may occur near, or on, one or more of the reaches along the proposed alignment. Those sensitive federally-listed species with a potential to occur are the Arroyo Toad, Southwestern Willow Flycatcher, Least Bell's Vireo, Coastal California Gnatcatcher, Stephens' Kangaroo Rat and San Bernardino Kangaroo Rat.

Other sensitive species, but not species listed as Threatened or Endangered, with a high potential of occurrence include: San Diego Coast Horned Lizard, Belding's Orange-throated Whiptail, Coastal Whiptail, White-tailed Kite, Sharp-shinned Hawk, Cooper's Hawk, Downy Woodpecker, Loggerhead Shrike, California Horned Lark, Nashville Warbler, MacGillivray's Warbler, Yellow-breasted Chat, Grasshopper Sparrow, Lincoln's Sparrow, Coyote, Long-tailed Weasel, and Bobcat (see Appendix 5 for sensitivity ratings, etc.). Other sensitive species may also occur, but have a low or moderate potential to occur.

Because of the limited project footprint and mitigation measures, no significant impacts are anticipated to non-listed species. Recommended mitigation measures for potential impacts to listed species of wildlife should reduce those impacts to a non-significant level.

Due to the narrow geographic nature of the project, the potential loss of habitats within the project alignment is not considered substantial or significant. However, recommendations to avoid, minimize, and mitigate potential effects are presented.

INTRODUCTION

PURPOSE OF THE STUDY

Pacific Southwest Biological Services, Inc., (Pacific Southwest), at the request of A. A. Webb & Associates, conducted a general biological survey along the approximately 30-mile long route for a regional water supply line in San Bernardino and Riverside Counties. The purpose of the assessment was to inventory and evaluate biological resources along the route and to analyze potential impacts of the proposed project. This report summarizes the findings of the survey and provides an analysis of potential impacts to sensitive resources. Recommended mitigation measures to avoid and/or reduce impacts to below a level of significance, where appropriate, are included. It is anticipated that the information herein will be available for public agency review, including the California Department of Fish and Game, should it become necessary to process a Streambed Alteration Agreement under the 1600 Series section of that agency's Codes.

PROJECT LOCATION

The proposed routes extend across six local jurisdictions, including unincorporated portions of Riverside County and the Cities of San Bernardino, Colton, Grand Terrace, Riverside, and Corona (Figures 1 & 2). The proposed routes are located in the area of southern California known as the Inland Empire, involving the drainage of the Santa Ana River and some of its southern tributaries.

PROJECT DESCRIPTION

The construction of a regional water line is proposed to improve water supply reliability to this region of southern California. The proposed routes pass through largely developed areas and are concentrated in paved streets and roads or along the Gage Canal system. Several areas of the alignments, however, pass through areas of potential biological sensitivity and are the subject of this report. The proposed pipeline will be installed using boring methods under all channels and riparian areas, with the exception of where the proposed pipeline will encroach into the Gage Canal channel. An open cut (trench) may also be employed at this location. Dewatering could

occur at all micro-tunneling and boring sites, depending on local groundwater conditions. See attached project description of proposed alignment (Appendix 1).

SURVEY METHODS, LIMITATIONS AND DEFINITIONS

METHODS

Prior to the field survey, a search was made of the California Department of Fish and Game's (CDFG) California Natural Diversity Data Base (CNDDB) for the U. S. Geological Survey 7.5' Corona South, Corona North, Riverside West, San Bernardino South, and San Bernardino North, California quadrangles. Additionally, a search was made of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) to determine other sensitive and Covered species from that plan that could occur within the project vicinity. These searches revealed several federally- or state-listed or potentially Covered species that could occur on or in the vicinity of the property (Appendices 2 & 3). In addition, inquiry was made to the U. S. Fish and Wildlife Service (Service) and California Department of Fish and Game (CDFG) for information on federally and state Threatened and Endangered species potentially occurring in the vicinity. Several sensitive plants and animals are known from the region; these were assessed as to their potential presence during the field survey. Several drainage crossings are involved with the alignments. The varying levels of biotic resources at these crossings were assessed.

The route of the proposed main alignment was initially surveyed from north to south by vehicle and on foot, as appropriate, 9 March 2003 during the period 0900-1500 hours by senior biologist and principal botanist R. Mitchel Beauchamp and field assistant Rafael Vázquez. The focus was on botanical and riparian resources. Those portions of the route within roadways were driven, while those portions through vegetated areas were surveyed on foot. For the purpose of this field assessment, it was assumed that the potential construction impacts from trenching would be confined to a footprint of 50 feet, at maximum, for side cast (of excavated material) and spoil, trench, and temporary travel way. The route was subsequently also surveyed by biologist Cornelius W. Bouscaren 21 March 2003 during the period 0838-1235 hours, focusing on zoological resources. During the zoological survey, the temperature range was 68-75°F, a light haze was prevailed, and winds were calm. Although the entire route, from south to north, was covered by vehicle, only those few areas with natural vegetation remaining were examined on foot. Methods included watching and listening for wildlife, and observing indirect signs. "Pishing," a technique commonly used to attract the interest of passerine birds and draw them into view, was occasionally employed. Binoculars (8.5x44) were used to assist in the detection and identification of wildlife.

SURVEY LIMITATIONS

Complete biological inventories of sites often require a large number of field hours during different seasons, as well as nocturnal sampling for some animal groups such as small mammals. Depending on the season during which the field visit is conducted, amphibians, snakes, many mammals, owls and other nocturnal birds, and annual plants are groups that can be difficult to inventory. Many groups of vertebrates are difficult to find during short-term field surveys. Some, such as migratory or nomadic birds, may be absent from the site while the

fieldwork is being conducted. Other species occur at low densities and may easily have been missed. Species that are declining or have naturally patchy distribution may not be present in areas of what appears to be suitable habitat. However, through literature review, study of museum records, and knowledge of the habitat requirements and distribution patterns of individual species, the probability of a given species being present on a site can often be quite accurately predicted.

DEFINITIONS

Vegetation Communities

Vegetation habitats or communities are assemblages of plant species that usually coexist in the same area. The classification of vegetation communities is based upon the life form of the dominant species within the community and the associated flora. The nomenclature for vegetation communities follows Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986), as modified by Oberbauer (1996).

Wildlife Habitats

Wildlife habitats differ from vegetation communities in that a wildlife habitat may contain several vegetation communities that are similar in structure but different in the plant species composition, location and soil substrate. This distinction becomes an important factor when assessing the sensitivity of a particular wildlife habitat. In addition, the interaction of various wildlife species occurs between many different wildlife habitats. This becomes more evident where these habitats overlap in areas known as ecotones. These ecotones support a combination of species from two or more adjoining habitats that generally increases the number and diversity of species within these areas. Wildlife habitats encountered on the project site approximate the vegetation communities discussed below.

Species Nomenclature

The scientific nomenclature used in this report is from the following standard references: vascular plants (Beauchamp 1986, Hickman 1993); vegetation communities (Holland 1986, Oberbauer 1996); wildlife habitats (Mayer *et al.* 1988); reptiles (Crother 2000); birds (American Ornithologists' Union 1998); and mammals (Jameson and Peeters 1988).

Sensitivity Ratings

Sensitive species are those considered sensitive by one or more of the following: U. S. Fish and Wildlife Service, California Department of Fish and Game, County of Riverside, and a private group, such as the California Native Plant Society or National Audubon Society. State and federal protection classifications are Endangered and Threatened, while Species of Concern are not considered "protected" under the state and federal endangered species acts. The County of Riverside has created a list of species considered for coverage (conservation) in the draft MSHCP. Covered species would have an added level of protection under the MSHCP, when approved, but do not have additional legal protection at this time. Some species on the draft MSHCP covered species list are indicators of some level of habitat function and are not in themselves rare, threatened, or endangered (*e.g.*, Coyote). For more detail, see Appendices 4 & 5.

State and Federal Wetlands Jurisdictional Standards

For a wetlands to fall under U. S. Army Corps of Engineers (Corps) jurisdiction, it must be characterized by three criteria: (1) hydrology providing permanent or periodic inundation by groundwater or surface water, (2) hydric soils, and (3) hydrophytic vegetation. For a wetland to fall under CDFG jurisdiction, only one of these criteria is required. Designation that a wetland falls under CDFG jurisdiction means that a Streambed Alteration Agreement must be obtained from that agency prior to any construction resulting in impacts to the wetland. An expanded summary of wetland regulations is included (Appendix 6).

SURVEY RESULTS

GENERAL PHYSIOGRAPHY

The alignment extends southwesterly from the City of San Bernardino to the City of Corona, very roughly paralleling the course of the Santa Ana River drainage. Elevation at the north end of the alignment on the north side of the Santa Ana River is approximately 990 feet above mean sea level. Elevation at the southern terminus in Corona is approximately 903 feet. A high point of approximately 1,170 feet occurs at Little Pigeon Pass on Barton Road at the Grand Terrace escarpment.

BIOGEOGRAPHIC CONTEXT AND POTENTIAL WILDLIFE CORRIDORS IN PROJECT SUBAREA

The proposed project falls within extreme southern San Bernardino and north-central Riverside Counties, generally along the urban margins of the Santa Ana River, and south of this major regional waterway. That portion in Riverside County is characterized as the Riverside Lowlands Bioregion by the draft MSHCP (MSHCP 2002). The Santa Ana River, even though surrounded by urbanized uses and crossed by a number of bridges, still serves as an important riparian habitat that allows linear movement of local wildlife. The draft MSHCP identifies the downstream reach of Santa Ana River in Riverside County as a Core habitat because it generally supports the life history requirements of one or more Covered [i.e., conserved] species. A similar condition applies to that reach in San Bernardino County within the project area.

The project's northeastern limit is on the north side of the Santa Ana River, just east of the intersection of U. S. Interstate Highways 215 and 10, in the City of San Bernardino. South of the Santa Ana River, the proposed route runs south to the western margins of a series of low mountains and hills. Several major valleys lead out of these hills, into the greater Santa Ana River valley. These valleys generally trend from southeast to northwest. The valleys, with generally rural land uses, may serve as local corridors for the limited local movement of wildlife because they are relatively undeveloped. These valleys include the following areas (from north to south, generally along the project route):

1. San Timoteo Canyon
2. Reche Canyon
3. Spring Brook
4. Box Springs Canyon (location of I-215, Escondido Freeway);
5. Unnamed valley occupied by Alessandro Boulevard (northwest of its intersection with Trautwein Road)

6. Mockingbird Canyon (location of Van Buren Boulevard)
7. Unnamed valley (location of La Sierra Avenue), east of Arlington Mountain, from the Lake Mathews area, across the Riverside Canal, into the valley occupied by the Riverside Freeway (State Route 91)
8. Temescal Wash/Canyon

The proposed pipeline terminates along Compton Avenue, at the northeastern edge of a large bajada (alluvial fan) originating in the Santa Ana Mountains in the Cleveland National Forest. This bajada has been in intense agricultural use, or Urban/Developed, for some time.

The proposed project alignments generally follow the western edges of the mountains and hills, between the mountains and the generally urbanized valley floor, as discussed above. The side canyons or valleys function only to a small degree as subregional or local wildlife movement areas. This is because urbanized areas contain substantial barriers to wildlife movement and contain little usable habitat for native wildlife.

Based on topography and the somewhat reduced urbanization at some valley or canyon entrances, the following drainages may still allow some limited wildlife movement between the canyons and margins of the greater Santa Ana River valley:

1. Reche Canyon
2. Spring Brook
3. Mouth of Mockingbird Canyon (very localized movement because of urbanization north of Lincoln Avenue)
4. Unnamed valley occupied by La Sierra Avenue
5. Temescal Wash

Existing urbanization and (especially) major highways and freeways are substantial barriers to animal movement in the project subregion. These major barriers include the following:

1. San Bernardino Freeway (U. S. Interstate Highway 10)
2. Riverside Freeway (State Route 91); cross streets (generally aligned in an southeast to northwest direction)
3. Combined Highway 60/215
4. Alessandro Boulevard
5. Van Buren Boulevard in Mockingbird Canyon
6. Corona Freeway (U. S. Interstate Highway 15)

Given the existing patterns of urbanization within the project vicinity, exhibiting very limited wildlife habitat, and especially the small footprint of the construction zone, little adverse effect on wildlife and wildlife habitat is anticipated from project implementation. However for additional information, see discussions under each proposed construction reach.

Wildlife corridors, actual or potential, are found at the Santa Ana River crossing in Reach A, the Spring Brook crossing along the Gage Canal siphon in Reach B, the top of the Firethorn Avenue stretch of the alignment and the floodplain of Mockingbird Canyon Creek in Reach E, and the crossing of the minor unnamed drainage in Reach H.

EXISTING HABITATS

Vegetation communities and habitats encountered during the survey include Southern Willow Scrub, Mule-Fat Scrub, Riversidean Sage Scrub, Non-native Grassland, Urban/Developed, and Orchards. All of these communities may be affected to a limited extent by the proposed project.

Southern Willow Scrub

Southern Willow Scrub is generally characterized by dense, broad-leafed riparian thickets dominated by one or more of Arroyo Willow (*Salix lasiolepis*), Goodding's Black Willow (*S. gooddingii*), and Red Willow (*S. laevigata*), with an occasional Fremont Cottonwood (*Populus fremontii*) and Western Sycamore (*Platanus racemosa*) present. Most stands are too dense to allow much understory development.

Mule-fat Scrub

Mule-Fat Scrub is generally characterized as a depauperate, tall, herbaceous riparian scrub strongly dominated by Mule-Fat (*Baccharis salicifolia*), a shrub commonly found in canyon bottoms, moist stream sides, and irrigation ditches, often forming thickets. This is an early seral community maintained by frequent flooding.

Riversidean Sage Scrub

Riversidean Sage Scrub is the most xeric expression of Sage Scrub south of Point Conception. Typical stands are fairly open with characteristic components California Buckwheat (*Eriogonum fasciculatum*), California Sagebrush (*Artemisia californica*), California Encelia (*Encelia californica*), and White Sage (*Salvia apiana*).

Non-native Grassland

Non-native Grassland is characterized as a dense to sparse cover of annual grasses, often associated with numerous species of showy-flowered native annual forbs ("wildflowers"), especially in years of favorable rainfall. Typical species include Slender Wild Oat (*Avena barbata*), Ripgut Grass (*Bromus diandrus*), Soft Chess (*Bromus hordeaceus*), Red Brome (*Bromus madritensis* ssp. *rubens*), Filaree (*Erodium* spp.), California Poppy (*Eschscholzia californica*), Fascicled Tarplant (*Hemizonia fasciculata*), a variety of Lupines (*Lupinus* spp.), and a variety of Phacelias (*Phacelia* spp.).

Urban/Developed

The majority of the proposed project runs along paved roadways, adjacent to residential, commercial, or industrial development that provides habitat for a minimum of native wildlife.

Orchards

Orchards are a form of Extensive Agriculture. Extensive Orange (*Citrus sinensis*) and Lemon (*Citrus limon*) orchards occur in this area of southern California.

COMMON, THREATENED, AND ENDANGERED SPECIES POTENTIALLY OCCURRING IN PROJECT VICINITY

Common flora and fauna observed or expected to occur along the alignment are listed in Appendices 2 & 3. The field assessment was carried out in early spring, when few breeding or summer-resident species were present; the expected species list is based on more than 25 years' experience performing field surveys in southern California. All sensitive species potentially occurring, including state and federally listed Threatened and Endangered species, are indicated in Appendices 4 & 5. Included in these appendices are their typical habitat requirements, conservation status (including if considered for coverage in the MSHCP), and probability for occurrence on, or absence from, the project site. Note that many species considered for coverage are migratory and might occur in the project vicinity only briefly.

BIOLOGICAL RESOURCES (VEGETATION COMMUNITIES, PLANTS, AND WILDLIFE)

This narrative follows the north-south route of the biological investigation.

Reach A – City of San Bernardino to Reche Canyon Road

This alignment involves crossing under the Santa Ana River, then trenching through parking lots and paved roadways. The Santa Ana River drainage serves as major wildlife habitat and as a linear wildlife movement corridor. At the proposed river crossing, the vegetation consists of a mix of Southern Willow Scrub and Mule-Fat Scrub. Southern Willow Scrub is generally characterized by dense, broad-leafed riparian thickets dominated by one or more of Arroyo Willow, Goodding's Black Willow, and Red Willow, with an occasional Fremont Cottonwood and Western Sycamore present. Most stands are too dense to allow much understory development. Mule-Fat Scrub is generally characterized as a depauperate, tall, herbaceous riparian scrub strongly dominated by Mule-Fat. This is an early seral community maintained by frequent flooding.

The riparian vegetation communities associated with the proposed project alignment are regarded as sensitive communities, as are all riparian communities in southern California. They also provide potential nesting habitat for the federally listed Least Bell's Vireo (*Vireo bellii pusillus*) and Southwestern Willow Flycatcher (*Empidonax traillii extimus*). Both species are obligate riparian nesting species. The potential for both species to occur at this location is high. A nesting pair of each was observed very near this location in 2001 (San Bernardino County Department of Public Works 2002). Surveys currently underway (2003) have found these species at the same locations (S. Lawrey, pers. comm.). The federally listed Slender-horned Spineflower (*Dodecahema leptoceras*) has a low potential to occur at this location. The federally listed Santa Ana River Woolly-star (*Eriastrum densifolium* ssp. *sanctorum*) has a moderate potential to occur at this location. This annual is reported to occur along the Santa Ana River "everywhere" upstream of the railroad bridge at the Mission Creek confluence to Seven Oaks Dam (San Bernardino County Department of Public Works 2002). The federally listed San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) has a high potential to occur at this crossing. At the crossing location, the drainage of the Santa Ana River in the project area is within Designated Critical Habitat for the San Bernardino Kangaroo Rat. The federally listed Arroyo Toad (*Bufo californicus*) has a high potential to occur at this location. The Santa Ana River provides the only suitable open field or wetland habitat for the Bald Eagle *(Haliaeetus leucocephalus*), a federally Threatened and state Endangered raptor, along the project alignment.

Other sensitive, but not listed, species expected to occur at this location are the Cooper's Hawk (*Accipiter cooperii*), Downy Woodpecker (*Picoides pubescens*), Yellow Warbler (*Dendroica petechia*), Wilson's Warbler (*Wilsonia pusilla*), Yellow-breasted Chat (*Icteria virens*), Coyote (*Canis latrans*), and Long-tailed Weasel (*Mustela frenata*). The White-tailed Kite, a state Fully Protected species, is a native raptor that can be expected in areas adjacent to riparian habitat such as this.

Reach B – Reche Canyon Road to Rustin Avenue/Marlborough Avenue

This reach of the alignment involves crossing the Spring Brook drainage, a westward-flowing tributary of the Santa Ana River, along the Gage Canal siphon south of Spring Street in the City of Riverside. The Spring Brook drainage is a potential local wildlife corridor. Mule-Fat Scrub vegetation occurs in this drainage. Although this native vegetation is degraded by the presence of non-native species, such as Giant Reed (*Arundo donax*), Peruvian Pepper Tree (*Schinus molle*), and Tree Tobacco (*Nicotiana glauca*), it remains potential marginal nesting habitat for the Least Bell's Vireo. The potential for occurrence of this species at this location is low. The same wildlife species expected on Reach A may also occur on this reach, but the potential is low for all of them because this riparian vegetation is less developed.

A narrow band of Riversidean Sage Scrub occurs adjacent to the proposed alignment on the steep south bank of Spring Brook at the crossing location. This vegetation community is the most xeric expression of Sage Scrub south of Point Conception. Typical stands are fairly open with characteristic components California Buckwheat, California Sagebrush, California Encelia, and White Sage. This vegetation extends to the east on this bank along the drainage. This is potential habitat for the federally listed Coastal California Gnatcatcher (*Polioptila californica californica*), a species listed as Threatened by the Service. However, this potential is severely limited by its relative isolation and the presence of citrus orchards adjacent to the north, Non-native Grassland dominated by Rancher's Fiddleneck (*Amsinckia intermedia*) adjacent to the south, and industrial and residential development to the west and northwest. Marginal potential habitat for the federally listed Stephens' Kangaroo Rat (*Dipodomys stephensi*) occurs in this reach. Other non-listed sensitive species with a moderate to high potential to occur at this location include the San Diego Coast Horned Lizard (*Phrynosoma coronatum blainvillii*), Belding's Orange-throated Whiptail (*Cnemidophorus hyperythrus beldingi*), Coastal Whiptail (*Cnemidophorus tigris stejnegeri*), Cooper's Hawk, Dulzura Kangaroo Rat (*Dipodomys simulans*), and Coyote.

Reach C – Rustin Avenue/Marlborough Avenue to Arlington Avenue/Fairview Avenue

This alignment is in paved roadways (Urban/Developed habitat) that have no native biotic resources. No sensitive species are expected to occur on this reach.

Reach D – Arlington Avenue/Fairview Avenue to Cleveland Avenue/Irving Street

This alignment is in paved roadways (Urban/Developed) that have no native biotic resources. No sensitive species are expected to occur on this reach.

Reach E – Mockingbird Branchline – Turnout 3

The top of the Firethorn Avenue stretch of the alignment passes through a native plant cover of Saltbush (*Atriplex* sp.) and Box-thorn (*Lycium andersonii*) shrubs. The drainage

involved with this feature is in a culvert under the paved roadway at the point where the pipeline would intersect with it. The native plant cover at this escarpment is relatively intact and in good condition. For these reasons, it may serve as a minor corridor for local wildlife movement, although the surrounding land use is predominantly Orchards, primarily Orange trees. The vegetation at this location is not unique or otherwise sensitive. No sensitive species are expected to occur at this location.

Farther down the alignment, on the west side of Van Buren Boulevard, the floodplain of Mockingbird Canyon Creek has been channelized by grading of the sandy bed so that the proposed pipe alignment is outside the state and federal jurisdictional area as defined by bed and bank. However, Southern Willow Scrub and Mule-Fat Scrub occur in this drainage, providing limited potential nesting habitat for the federally listed Least Bell's Vireo and Southwestern Willow Flycatcher. The potential for the former to occur at this location is moderate; the potential for the latter is low. The same wildlife species expected on Reach A may also occur on this reach, but the potential is moderate for all of them because this riparian vegetation is less developed. Mockingbird Canyon likely serves as a corridor for wildlife movement to and from Mockingbird Reservoir to the northwest.

Reach F – Cleveland Avenue/Irving Street to Fillmore Avenue/Indiana Avenue

The proposed alignment is largely in paved streets (Urban/Developed), except for a short stretch along Cleveland Avenue, north of Short Street, where it is in a dirt road through Orchards. The alignment crosses a minor, unnamed northwest-flowing drainage, which has been diverted downstream to join the Riverside Canal. The proposed crossing is at the upper, southern portion of Lyon Street in a dip-section structure. The drainage channel is jurisdictional under CDFG criteria since it has a soft bottom, but it lacks wetland vegetation, and consequently is not jurisdictional wetland under Corps criteria. This designation usually means that a Streambed Alteration Agreement must be obtained from CDFG prior to channelization or other impacts to a drainage. No sensitive species are expected to occur at this location.

Reach G – Arlington Branchline – Turnout 4

This short branch is in paved streets and runs under an active rail line (both Urban/Developed). The drainage north of the rail line is in a concrete channel and is not jurisdictional under either CDFG or Corps criteria. No native biotic resources occur. No sensitive species are expected to occur on this reach.

Reach H – Fillmore Street/Indiana Avenue to Corona

This alignment runs through paved streets (Urban/Developed) for the majority of the reach. The proposed project will be constructed underneath the Temescal Wash utilizing boring techniques along the Magnolia Avenue alignment. The draft MSHCP identifies Temescal Wash as Proposed Constrained Linkage 4. It defines a Constrained Linkage as follows: "A constricted connection expected to provide for movement of identified Planning Species between Core Areas, where options for assembly of the connection are limited due to existing patterns of use." Linkage 4 would connect public lands in the Lake Mathews/Estelle Mountain area in the northwestern region of the Plan Area (originally assembled as a Core Reserve for the state and federally listed Stephens' Kangaroo Rat Habitat Conservation Plan), via an existing channel, south of State Route 91, to the Santa Ana River (Service 1990).

The alignment then runs along the western base of the Corona Landfill in the City of Corona, adjacent to a brow ditch. The concrete ditch is non-jurisdictional; the vegetation on the landfill is Non-native Grassland. This community is characterized as a dense to sparse cover of annual grasses, often associated with numerous species of showy-flowered native annual forbs ("wildflowers"), especially in years of favorable rainfall. Typical species include Slender Wild Oat, Ripgut Grass, Soft Chess, Red Brome, Filaree, California Poppy, Fascicled Tarplant, a variety of Lupines, and a variety of Phacelias. Several raptors may occasionally forage over this Grassland, including the White-tailed Kite, Northern Harrier (*Circus cyaneus*), Ferruginous Hawk (*Buteo regalis*), Golden Eagle (*Aquila chrysaetos*), and Prairie Falcon (*Falco mexicanus*). Potential for the Loggerhead Shrike (*Lanius ludovicianus*), California Horned Lark (*Eremophila alpestris actis*), and Grasshopper Sparrow (*Ammodramus savannarum*) to occur on the Non-native Grassland is high, although none of these species are listed as threatened or endangered.

South of the landfill, a minor unnamed drainage carrying flows from the east side of Interstate Highway 15 to the large pond to the east of the Belair Street residential area supports Mule-Fat Scrub and Southern Willow Scrub. Although this is potential nesting habitat for the sensitive riparian bird species, it is sufficiently degraded by the major presence, in close proximity, of several mature Mexican Fan Palms (*Washingtonia robusta*) and a Peruvian Pepper Tree at this location, as to render this as highly marginal habitat for the state and federally listed Least Bell's Vireo and Southwestern Willow Flycatcher.

SENSITIVE RESOURCES EVALUATION AND IMPACT ASSESSMENT

BIOLOGICAL RESOURCES

Refer to Appendices 4 &5, where the probability of occurrence of all sensitive flora and fauna known to occur in the vicinity of the proposed project is evaluated.

Reach A – City of San Bernardino to Reche Canyon Road

The Southern Willow Scrub and Mule-Fat Scrub complex along the alignment at the proposed Santa Ana River crossing constitutes a regionally rare, therefore sensitive, habitat. Micro-tunneling construction techniques are proposed for this crossing, to a depth of 40 feet below the surface. The work is expected to take approximately 45 days. The proposed dewatering activities may result in significant indirect impacts to the health of riparian communities within the Santa Ana River. To avoid these potential impacts, it is suggested that the dewatering activities take place during the period 1 October through the end of February. This is within the season when the dominant plant species of these riparian communities are dormant. Dewatering outside of this period would subject these communities to stress, desiccation, and potential defoliation. In addition, adherence to this suggested schedule avoids the generally accepted breeding chronology for nesting by the Least Bell's Vireo and Southwestern Willow Flycatcher in southern California (Service 1998, Sogge *et al.* 1997), obviating the need for focused surveys that may be required, due to the project's potential to have significant noise impacts to these two listed migratory species. This suggested schedule also avoids the breeding season of the federally listed Arroyo Toad, generally regarded as mid-March through 1 July (Service 1999), thereby avoiding potential impacts to this species as well. Impacts to the Arroyo Toad during the breeding season would be direct, including physical damage to mature individuals and interference with breeding activities. Should it not be feasible

to adhere to this schedule, additional mitigation measures would be recommended (see below), in addition to focused surveys for these three species. The floodplain of the Santa Ana River is the habitat for the listed Santa Ana Woolly-star and Slender-horned Spine-flower. The crossing site is within the historic range of these two species. The proposal for micro-tunneling, using disturbed areas as portals, should preclude impacts to these plants.

Both entrance and exit portals for the micro-tunneling are proposed for highly disturbed or Urban/Developed locations, so that no direct impacts to sensitive flora or vegetation are anticipated. Where feasible, these locations will also be placed behind existing berms, thereby minimizing potential noise impacts to noise-sensitive wildlife species in the riparian habitat. Tunneling is expected to occur at such a depth below the surface of the earth that no impacts to fossorial (burrowing) rodents from vibrations are expected. Noise effects from tunneling may potentially occur to such mammals, but we are unaware of any impact standards in this arena. This includes the San Bernardino Merriam's Kangaroo Rat, which uses simple, shallow burrows. This species forages on the surface, eating small dried seeds; thus it does not rely on fresh plant growth for survival. However, without specific information on the tunneling technology to be used at this location, and measured effects to changes in groundwater and soil moisture, this opinion remains speculative.

The proposed pump station location will be near the intersection of Orange Show Road and Waterman Avenue. This location is north of, but in proximity to, the designated Critical Habitat for the listed San Bernardino Kangaroo Rat. No impacts are expected to occur to this species from construction or operation of the pump station, because this rodent is generally restricted to the drainage area. The location of the proposed pump station is approximately 2,500 feet north of the drainage, and approximately 14 feet elevated above the drainage; this differential in both distance and elevation preclude impacts to this rodent.

Reach B – Reche Canyon Road to Rustin Avenue/Marlborough Avenue

The quality of both the riparian habitat and the upland vegetation community in the vicinity of the Spring Brook drainage crossing is sub-optimal. The Mule-Fat Scrub, the dominant vegetation in the drainage, is degraded by the presence of non-native species. The quality of the Riversidean Sage Scrub is reduced by its small size, relative isolation, and presence of non-native vegetation.

Should dewatering occur at this location, the Mule-fat Scrub, a wetland-associated vegetation community, may be adversely affected by the proposed project on a minor, temporary basis. This may involve stress, desiccation, and potential defoliation. Such impacts would be self-correcting once normal hydrology resumes.

Although potential habitat for the Least Bell's Vireo occurs at this crossing, the riparian habitat is degraded and the species is not expected to occur here, so that no impacts are expected. The native upland vegetation in the vicinity is of such limited extent and poor quality that although it is potential habitat for the Coastal California Gnatcatcher and Stephens' Kangaroo Rat, these species are not expected to occur and no impacts are expected. Occurrence of the Cooper's Hawk and Coyote at the site would occasion no impacts to these highly mobile species.

Minor temporary impacts may occur to the San Diego Coast Horned Lizard, Belding's Orange-throated Whiptail, Coastal Whiptail, and Dulzura Kangaroo Rat.

Reach E – Mockingbird Branchline – Turnout 3

The vegetation along the majority of the alignment is not unique or otherwise sensitive, and is not expected to support sensitive species. No physical impacts are anticipated to the drainage of Mockingbird Canyon Creek. The Southern Willow Scrub and Mule-Fat Scrub in this drainage provide moderate potential nesting habitat for the listed Least Bell's Vireo and low potential nesting habitat for the listed Southwestern Willow Flycatcher. The differential is explained by somewhat different nesting habitat requirements for these two species. Other, more common and non-listed species may also nest in this riparian habitat. Construction of the proposed project may result in significant noise impacts to the above sensitive bird species if the nesting season is not avoided. If the nesting season cannot be avoided, noise impacts to nesting birds can be reduced or eliminated using standard techniques developed for this purpose.

Reach H – Fillmore Street/Indiana Avenue to Corona

The Non-native Grassland on and adjacent to the Corona Landfill is of good quality and can be expected to be used by non-listed but sensitive species that frequent both native and non-native grasslands such as the Loggerhead Shrike, California Horned Lark, and Grasshopper Sparrow. Potential impacts to these species would be minor, amounting at most to temporary displacement from the immediate vicinity of construction activity.

South of the Corona Landfill, a minor unnamed drainage carries flows from the east side of Interstate Highway 15 to the large pond to the east of the Belair Street residential area, and supports Mule-Fat Scrub and Southern Willow Scrub. This drainage is under the jurisdiction of the California Department of Fish and Game, U. S. Army Corps of Engineers, and California Regional Water Quality Control Board. Because of the degraded character of the riparian vegetation at the crossing location, potential for both the listed Least Bell's Vireo and Southwestern Willow Flycatcher to nest at this location is low. Despite the degradation, this narrow riparian area probably serves a limited function as a local wildlife corridor. More common but sensitive species such as the Cooper's Hawk, Downy Woodpecker, Yellow Warbler, Wilson's Warbler, and Yellow-breasted Chat have a moderate potential to occur at this location. No impacts to the riparian vegetation are anticipated unless dewatering occurs. Should dewatering occur at this location, the riparian vegetation may be adversely affected by the proposed project on a minor, temporary basis. This may involve stress, desiccation, and potential defoliation. Such impacts would be self-correcting once normal hydrology resumes. Neither the Least Bell's Vireo or Southwestern Willow Flycatcher is expected to nest at this location; dewatering would cause no impacts to these species. Impacts to other wildlife occurring at this site would similarly be minor and temporary.

JURISDICTIONAL DRAINAGE IMPACTS

Although exact details of boring are currently not fixed, an estimate for impacts is provided below.

Reach A – City of San Bernardino to Reche Canyon Road

The Santa Ana River at the proposed crossing is under the jurisdiction of the CDFG, Corps, and California Regional Water Quality Control Board. (A summary of wetlands regulations is included as Appendix 6).

Micro-tunneling techniques, in themselves, will result in no direct impacts to wildlife or vegetation. Dewatering may have adverse impacts to the riparian vegetation communities, the magnitude of which will depend on the seasonal timing and duration of the activities. Impacts are anticipated to be minor and temporary, possibly involving stress, desiccation, and potential defoliation. Such impacts would be self-correcting once normal hydrology resumes.

Reach B – Reche Canyon Road to Rustin Avenue/Marlborough Avenue

This alignment involves the Gage Canal siphon south of Spring Street, where native Mule-Fat Scrub vegetation is present. Boring techniques are planned for this crossing to avoid bed and bank, and to avoid or minimize impacts to riparian vegetation. An open cut, rather than boring, is proposed, where boring may not be feasible for this drainage crossing. This may involve direct impacts to jurisdictional riparian vegetation. At the time of writing this report, further technical analysis is in progress. As a worst-case scenario, the area of impact is assumed to be a construction area 50 feet in width (50 feet of linear channel of Spring Brook) by 150 feet (length of crossing where boring is not feasible): 7,500 square feet of CDFG Streambed habitat and Corps non-wetland waters.

Reach F – Cleveland Avenue/Irving Street to Fillmore Avenue/Indiana Avenue

The alignment is largely in paved streets, except for a short stretch along Cleveland Avenue, north of Short Street, in a dirt road through Orchards. The alignment crosses a minor unnamed northwest-flowing drainage, which downstream has been diverted to join the Riverside Canal. The crossing is at the upper, southern portion of Lyon Street in a dip section structure. The drainage channel is jurisdictional under California Department of Fish and Game criteria. Both entrance and exit portals for the tunneling would be placed in Urban/Developed locations. Although impacts to this jurisdictional drainage will occur, it is anticipated that no permits will be required, even if dewatering occurs at this location, because this is a *de minimus* situation.

Reach H – Fillmore Street/Indiana Avenue to Corona

There are no jurisdictional impacts to the Constrained Linkage of Temescal Wash, because the proposed project will be installed under the concrete-lined Wash utilizing boring techniques along Magnolia Avenue.

South of the Corona Landfill, a minor unnamed drainage carrying flows from the east side of Interstate Highway 15 to the large pond to the east of the Belair Street residential area supports Mule-Fat Scrub and Southern Willow Scrub. Both entrance and exit portals for the tunneling would be placed in Non-native Grassland locations. Dewatering may occur at this location. No impacts to the jurisdictional drainage are anticipated.

Summary of Anticipated Jurisdictional Impacts:

Area: 7,500 square feet (0.17 acre) Linear Channel: 50 feet

IMPACTS TO SENSITIVE BIOLOGICAL RESOURCES, AND MITIGATION

Because of the proximity of the site to known locations of listed species, including the Coastal California Gnatcatcher, San Bernardino Kangaroo Rat, Santa Ana River Woolly-star, and Slender-horned Spineflower, the U. S. Fish and Wildlife Service will probably require pre-construction focused surveys for these species to determine presence/absence at the site. However, the boring portal sites are highly disturbed and the likelihood of the presence of these species is low. No impacts to these species are expected.

Impact 1. Construction Noise Effects Construction equipment associated with the proposed project will generate noise levels in excess of 60 dBA CNEL in riparian areas that may host noise sensitive species. It is generally asserted that noise-sensitive bird species cannot breed successfully in an environment that is subjected to noise levels in excess of exceed 60 dBA CNEL. Project construction noise may result in indirect significant impacts to the listed Arroyo Toad, Least Bell's Vireo, Southwestern Willow Flycatcher, and Coastal California Gnatcatcher.

Mitigation Should construction be proposed to occur during the breeding season for the Arroyo Toad (min-March Through 1 July), a protocol-level survey should be conducted at the Santa Ana River (Reach A), to determine presence/absence. Should construction be proposed to occur during the breeding season for the Least Bell's Vireo or Southwestern Willow Flycatcher (15 March through 15 September), protocol-level surveys shall be conducted prior to construction at the following locations: the Santa Ana River (Reach A), Spring Brook (Reach B), the riparian vegetation along the Mockingbird Canyon alignment (Reach E), and the drainage located south of the Corona Landfill (Reach H). Should construction occur during the breeding season for the Coastal California Gnatcatcher (15 March through 15 September), a protocol-level survey shall be conducted prior to construction in the Santa Ana River in the vicinity of the proposed project. Should any of these species be detected, a temporary noise barrier shall be used during construction, at the appropriate location(s), in coordination with CDFG and the Service. The noise barrier shall attenuate noise levels to 60 dBA or less at the edge of breeding habitat. If protocol-level surveys indicate these species are not present, this measure will not be required.

In addition to use of the temporary noise barrier, a qualified on-site noise monitor shall be present during all construction activities conducted near habitat that has been identified to host the Arroyo Toad, Least Bell's Vireo, Southwestern Willow Flycatcher, or Coastal California Gnatcatcher.

Construction staging areas shall be outside of riparian areas and away from (to the greatest distance feasible) riparian areas.

Construction activities adjacent to riparian areas shall be minimized.

Impact 2. Hydrology-related Effects Micro-tunneling and boring activities under the Santa Ana River and all other drainages may result in the leakage of construction-related materials and subsequently degrade sub-surface flows and/or surface flows of the Santa Ana River or other drainages.

Mitigation The project-wide 1601 Streambed Alteration Agreement prepared in accordance with CDFG requirements shall include mitigation measures that are sufficient to reduce direct and indirect impacts to riparian habitat to a level below significant. The Agreement may include some or all of the following:

- Avoid impacts where possible by shifting the project location or construction timing.
- Minimize impacts.
- Remove invasive species.
- Purchase off-site habitat credits.
- Creation and/or restoration of natural communities.
- Avoid sensitive habitats by placing construction staging areas as far away from them as is feasible.
- Limit construction activity to daylight hours to minimize potential impacts related to artificial lighting.
- Require the presence of a qualified biological monitor during all construction activities that are within or near sensitive habitats and areas that have been identified to host the Arroyo Toad, Least Bell's Vireo, Southwestern Willow Flycatcher, Coastal California Gnatcatcher, Stephens' Kangaroo Rat, or San Bernardino Kangaroo Rat.

Due to the limited extent of impact to non-wetland waters, a Nation-wide Section 404 Permit will apply to the project for linear utility projects. The Corps may require the implementation of measures similar to those listed for the Section 1601 Streambed Alteration Agreement as part of the Section 404 Permit approval process. Implementation of these measures will mitigate potential impacts to the bed and banks of the Santa Ana River and all other drainages to a level below significant.

In conjunction with the Corps' Section 404 Permit, a Section 401 Permit will also be required by the California Regional Water Quality Control Board. The Section 401 Permit will regulate activities that may result in a discharge into navigable waters, or "waters of the United States". Any such discharge must also comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the federal Clean Water Act. Compliance with these provisions should result in certification from the Regional Board that verifies that the project complies with all water quality standards.

California State Water Resources Control Board (SWRCB) Dewatering Permits will be submitted for dewatering activities associated with all boring and micro-tunneling activities that occur under the Santa Ana River and all

other drainages. The following is a list of typical measures required in a dewatering permit:

- Characterize the quality of the water that will be discharged
- Treat water to be discharged to SWRCB standards prior to discharge
- Delineate extent of contamination
- Specify contaminants
- Identify beneficial uses
- Identify treatment
- Depending on the extent of the impact, mitigation measures listed for the 1601 and 404 Permits may also apply

Impact 3. Indirect Effects to Riparian and Associated Habitats Dewatering activities may result in significant indirect impacts to sensitive species by potentially altering their habitat (riparian and upland habitats). These species include the Arroyo Toad, Least Bell's Vireo, Southwestern Willow Flycatcher, Coastal California Gnatcatcher, Stephens' Kangaroo Rat, and San Bernardino Kangaroo Rat.

Mitigation Conduct focused surveys for the Arroyo Toad, Least Bell's Vireo, Southwestern Willow Flycatcher, Coastal California Gnatcatcher, Stephens' Kangaroo Rat, and San Bernardino Kangaroo Rat to determine presence/absence.

- If any of the above species are present, complete documentation and submit an application for an Incidental Take Permit (through a Section 7 process involving the Corps). Mitigation measures sufficient to mitigate potential impacts to Threatened and Endangered species to a level below significant will be included.
- If dewatering occurs outside of the period 1 October through February (period of riparian vegetation dormancy), impacts to the vegetation can be lessened by surface irrigation daily, midday, for a period of 30 minutes for the duration of the dewatering. Monitoring may be necessary to verify adherence to this measure.

Impact 4. Jurisdictional Drainage Effects Construction of the proposed project in the area of the Spring Brook drainage may disturb approximately 7,500 square feet of existing Riparian Habitat, and may result in the deposit of fill material into the definable channel of this drainage.

Mitigation Measures similar to those already discussed (see Impact 2), may be required by Permits from the appropriate agencies.

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Figure 1. Project Vicinity, Riverside Corona Feeder - ★

N

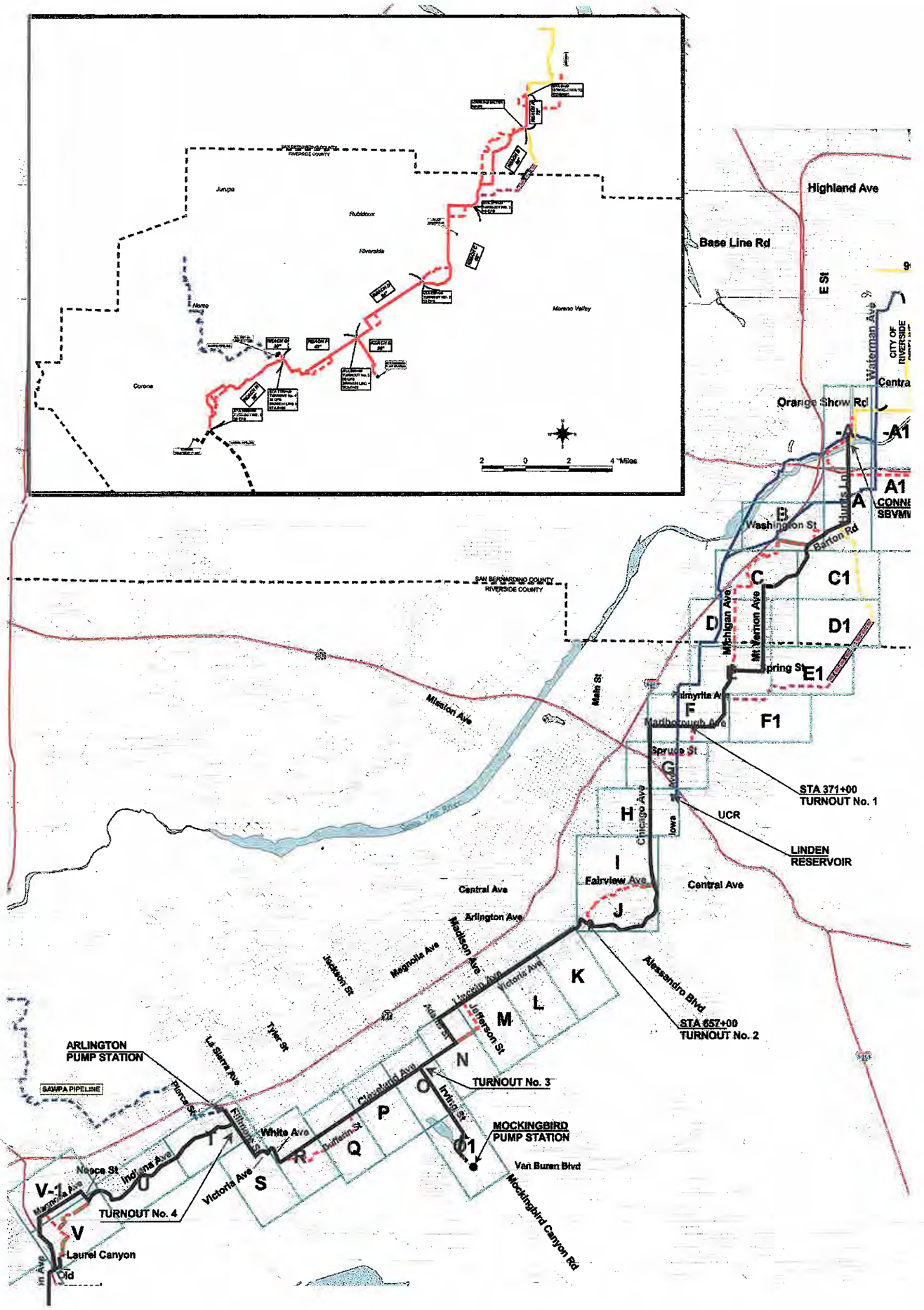

Figure 2. Project Area Surveyed, USGS 7.5' Corona South, Corona North, Riverside West & San Bernardino South, CA Quadrangles

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Not to Scale

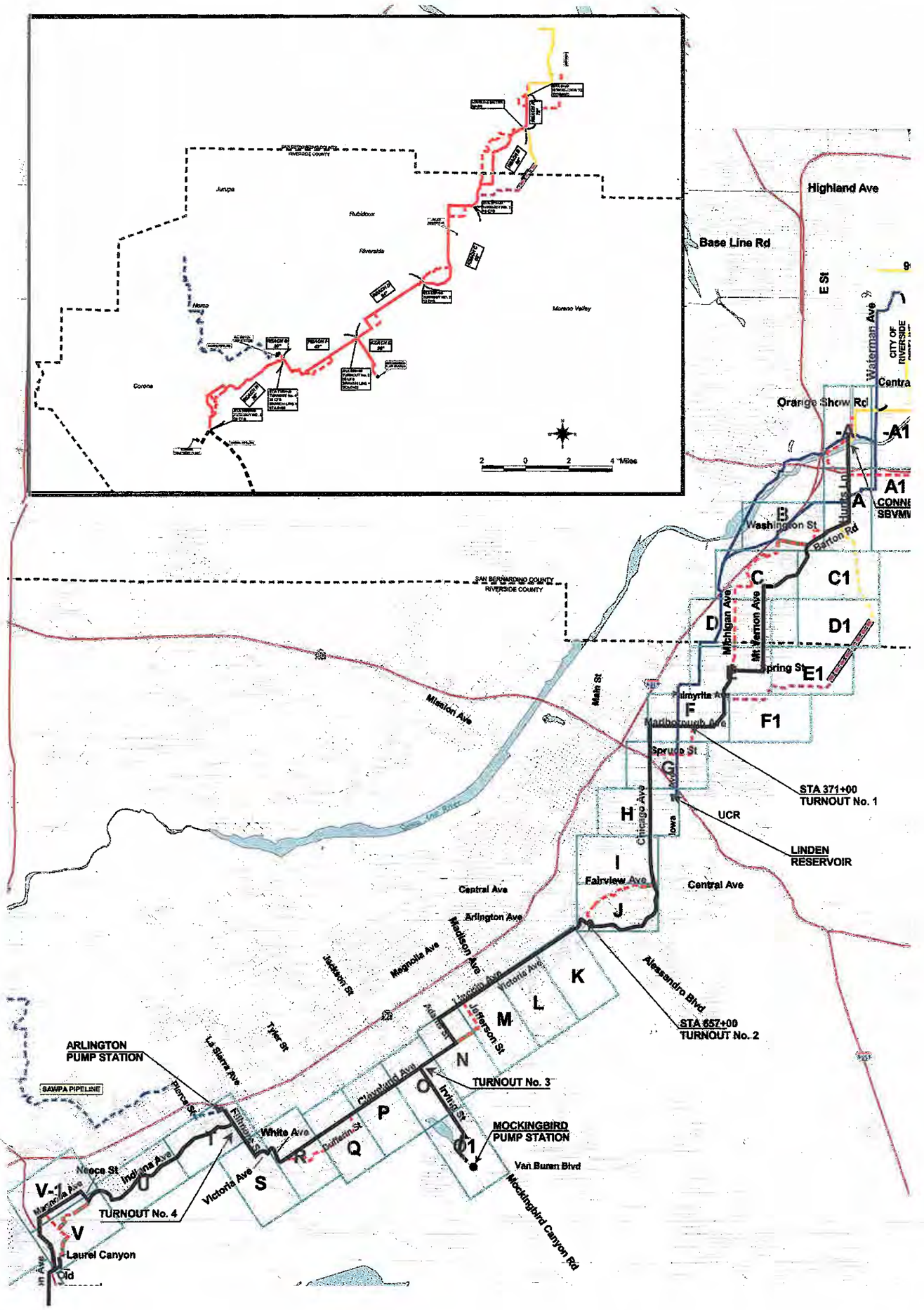

Figure 2. Project Area Surveyed, USGS 7.5' Corona South, Corona North, Riverside West & San Bernardino South, CA Quadrangles

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Not to Scale

Appendix 1. Project Description

I. Project Description

As shown in Figure 1, the RCF Project will extend across six jurisdictions, including unincorporated portions of Riverside County and the Cities of San Bernardino, Colton, Grand Terrace, Riverside and Corona.

Infrastructure proposed to be constructed as part of the Riverside Corona Feeder (RCF) Project will include: a 30 mile long feeder pipeline with one mainline meter and five metered turnouts, a 2,500 horsepower (hp) pump station designed to lift water from the City of Riverside's Waterman Pipeline into the RCF which operates at an hydraulic gradient level (HGL) of 1250± and 20-350 HP x 2,200 gallons per minute (GPM) new or existing groundwater production wells to be located within the San Bernardino Basin Area.

The RCF will operate under gravity flow conditions, from the connection to SBVMWD's 1250-foot pressure zone in the City of San Bernardino to its southerly terminus in the City of Corona. The RCF reaches are sized for maximum design velocities in the range of 3.5-5.3 feet per second (fps). When all five turnouts are delivering their maximum design deliveries, totaling 100 cubic feet per second (cfs), the HGL will be 1,056-feet at the RCF terminus in the City of Corona.

The RCF will connect to and obtain 50 CFS capacity from San Bernardino Valley Municipal Water District's (SBVMWD) proposed 28,000-foot, 72-inch diameter Baseline Feeder Extension North/South Pipeline at the southerly terminus of the SBVMWD pipeline. The RCF will also connect to and obtain 50 CFS capacity from the City of Riverside's proposed 10,000-foot, 60-inch diameter Waterman Avenue Pipeline Replacement Project which is at a Hydraulic Gradient Line (HGL) of 1060'±. This connection will necessitate the construction and operation of a 2,500 hp, 50 cfs pump station to lift the water into WMWD's proposed RCF project at a HGL of 1250'±

The majority of the RCF will be constructed utilizing traditional trenching techniques. Segments of the feeder that will not be installed utilizing trenching techniques include the Santa Ana River crossing, under busy roadways, under rail crossings, under drainages and under other sensitive areas. Micro-tunneling techniques will be utilized to install the RCF under the Santa Ana River and boring techniques will be utilized at all of the other locations mentioned above.

The RCF will extend south from a point north of the Santa Ana River near the intersection of the Warm Creek Bypass maintenance road and the City of Riverside's Rice Thorne pipeline, underneath the Santa Ana River, through a commercial and industrial area parking lot, within multiple road right of ways, under Interstate 10, within the Gage Canal right-of-way, within the right-of-way of proposed roads that are currently dirt roads used for agricultural activities, under the Arlington Flood Control Channel, under several rail lines and flood control easements, just inside the boundaries of the El

Sobrante Land Fill within the City of Corona and under Interstate 15. The majority of the RCF would be constructed within road right-of-ways.

The proposed pump station will be constructed within the City of San Bernardino limits on a vacant lot near the intersection of Orange Show Road and Waterman Avenue. The exact locations of the existing and/or proposed wells have not yet been determined.

The 30-mile long RCF project has been divided into reaches A-H (Figure *). Each of reach is described below.

Reach A – 8,000-feet of 72-inch diameter pipeline

Reach A would be constructed from the southerly terminus of the SBVMWD Baseline Feeder North/South, at a point north of the Santa Ana River near the intersection of the Warm Creek Bypass maintenance road and the City of Riverside's Rice Thorne Pipeline in the City of San Bernardino. From that point, it would extend southerly across the Santa Ana Riverbed east of Interstate 215. A 72-inch pipeline would be installed across the riverbed utilizing micro-tunneling techniques within a 92-inch structure. SBVMWD will obtain 50 CFS of capacity in this portion of the RCF.

South of the Santa Ana River, Reach A will continue south through a commercial business park parking lot, within the right-of-way of Hunts Lane and southwesterly on Barton Road to the proposed 100 CFS mainline meter facility on Barton Road just east of Reche Canyon Road. The RCF will be placed underground utilizing boring techniques where it will travel under Hospitality Lane, Interstate 10, the Union Pacific rail line that crosses Hunts Lane just south of Club Center Drive and under the flood control facility located just west of Reche Canyon Road. SBVMWD will be able to connect at Reche Canyon Road to divert their share of the water capacity in the 72-inch pipe to proposed SBVMWD Master Plan facilities.

Reach B - 29,000-feet of 60-inch diameter pipeline

Reach B would continue from the mainline meter facility on Barton Road in a southwesterly direction, then south in Mount Vernon Avenue, west in West Spring Street, south in and/or adjacent to the Gage Canal right-of-way, and west in Marlborough Avenue to Turnout No. 1, which would be located near the intersection of Rustin Avenue and Marlborough Avenue in the City of Riverside. Boring techniques will be utilized where the RCF is proposed to cross under a riparian area located within and/or adjacent to the Gage Canal right-of-way, under the Union Pacific rail lines just east of the intersection of Rustin Avenue and Marlborough Avenue. Turnout No. 1 will have a capacity of 10 CFS (4,500 GPM).

Reach C - 29,000-feet of 60-inch diameter pipeline

Reach C would be constructed from Turnout No. 1, west in Marlborough Avenue, then south in Chicago Avenue, west in Arlington Avenue, to Turnout No. 2 which would be

located near the intersection of Arlington Avenue and Fairview Avenue in the City of Riverside. The RCF will be placed underground utilizing boring techniques where it will travel under Iowa Avenue, a Union Pacific rail line located just east of Chicago Avenue, Spruce Street, Interstate 215, Third Street, University Avenue, Martin Luther King Boulevard, and Central Avenue. Turnout No. 2 will have a capacity of 10 CFS (4,500 GPM).

Reach D - 24,000-feet of 54-inch diameter pipeline

Reach D would continue west in Arlington Avenue from Turnout No. 2, then south in Victoria Avenue, southwest in Lincoln Avenue, southeast in Adams Street, southwest in Cleveland Avenue to the intersection of Cleveland Avenue and Irving Street to Turnout No. 3 which would be located near the intersection of Cleveland Avenue and Irving Street in the City of Riverside. Boring techniques will be utilized to construct the RCF under Mary Street, Madison Avenue and a rail line northeast of St. Lawrence Street. Turnout No. 3 will have a capacity of 35 cfs (15,750 GPM), and will deliver water into the Reach E branch pipeline.

Reach E - 11,000-feet of 36-inch diameter branch pipeline

Reach E is a branch pipeline that would extend from Turnout No. 3 southeast in Irving Street to a point approximately 200-feet northwest of Firethorn Avenue. Boring techniques will be utilized to install a 36-inch pipeline that will cross under the open Gage Canal, traverse downhill just southwest of the intersection of Irving Street and Firethorn Avenue southwest to Firethorn Avenue and across Van Buren Boulevard to the Mockingbird Pump Station.

Reach F - 24,000-feet of 42-inch diameter pipeline

Reach F would extend southwest in Cleveland Avenue from the intersection of Cleveland Avenue and Irving Street, southeast on La Sierra Avenue, west in Dufferin Avenue, northwest on Lyon Avenue, southwest in Victoria Avenue, northwest in Fillmore Street to Indiana Avenue to Turnout No. 4 which would be located at the intersection of Fillmore and Indiana Avenues in the City of Riverside. Boring techniques will be utilized to bore under Van Buren Boulevard, a riparian drainage located within the right-of-way, but un-constructed portion of Cleveland Avenue, and a drainage facility (under construction) located at the intersection of Dufferin Avenue and Lyon Avenue. Turnout No. 4 will have a capacity of 20 cfs (9,000 GPM) and will be located near the the intersection of Indiana Avenue and Fillmore Street in the City of Riverside.

Reach G - 2,000-feet of 30-inch diameter branch pipeline

Reach G is a branch pipeline that would extend from Turnout No. 4, then northwest in Fillmore Street from the intersection of Fillmore Street and Indiana Avenue across the Arlington Flood Control Channel to the Arlington Pump Station (Turnout No. 4). Boring

techniques will be utilized to bore under rail lines and the Arlington Flood Control Channel.

Reach H - 32,000-feet of 36-inch diameter pipeline

Reach H would begin at the intersection of Fillmore Street and Indiana Avenue and will extend southwest on Indiana Avenue, northwest on Neece Street, southwest on Magnolia Avenue, (including on Leeson Lane), south through an industrial park parking lot, southeast through the El Sobrante Land Fill, entering the north end of Belair Street, continuing south in Belair Street, west in Old Temescal Road, under Interstate 15, south on Compton Avenue to the intersection of Compton Avenue and Ontario Avenue. Boring techniques will be utilized to construct the RCF under flood control facilities near Lincoln Street, McKinley Street, American Way and the north end of Belair Street. Bores will also be utilized to construct the RCF under a rail line near Sherborn Street and under Interstate 15 on Old Temescal Road. Turnout No. 5 will have a capacity of 25 CFS (11,250 GPM) and will be located near the intersection of Ontario and Compton Avenues in the City of Corona.

WMWD's proposed RCF Project will operate under gravity flow conditions, from the connection to SBVMWD's 1250-foot pressure zone in San Bernardino to the RCF terminus in the City of Corona. The proposed reaches are sized for maximum design velocities in the range of 3.5 feet per second (FPS) to 5.3 FPS, and when all five turnouts are delivering their maximum design deliveries totaling 100CFS, the HGL at the RCF terminus in Corona will be 1056 feet.

II. Proposed Alternative Alignments

CEQA Guidelines, Section 15126.6, identify the parameters within which consideration and discussion of alternatives to the proposed project should occur. As stated in this section of the guidelines, alternatives must focus on those that are reasonably feasible and which attain most of the basic objectives of the project. Each alternative must be capable of avoiding or substantially lessening any significant effects of the proposed project. The rationale for selecting the alternatives to be evaluated and a discussion of the "no project" alternative are also required, per Section 15126.6.

A. Alternatives Considered But Not Carried Out Further for Analysis

B. Alternatives under Consideration

III. Compliance with the Environmental Quality Act

This EIR is intended to serve as an informational document for public agency decision-makers and the general public regarding the objectives and components of the proposed Riverside-Corona Water Distribution Program, which is the proposed project for the purpose of CEQA. This document will address the potential significant adverse environmental impacts that may be associated with build out of the proposed project, and identify feasible mitigation measures and alternatives that may be adopted to reduce or eliminate these impacts.

According to Section 15002 of *CEQA Guidelines,* the basic purposes of CEQA are to:

- Inform government decision-makers and the public about potential significant environmental effects of proposed activities;
- Identify ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment be requiring changes in projects through the use of alternatives or mitigation measures when the governing agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

According to *CEQA Guidelines* (Section 15168(a)), a State or local agency should prepare a Program EIR, rather than a Project EIR, when the lead agency proposes series of activities that are related either (1) geographically; (2) as logical parts in the chain of contemplated actions; (3) in connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or (4) individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects that can be mitigated in similar ways.

Tiering refers to the concept of a multilevel approach to preparing environmental documents (*CEQA Guidelines,* Section 15152). This program EIR can be thought of as a "first tier", and for certain elements – a "second tier" document. It evaluates the large-scale impacts on the environment that can be expected to result from the adoption of the proposed project, and to a certain degree the site-specific impacts that each of series of actions that will follow may have. The majority of the site-specific analyses will be encompassed in second-tier documents, such as negative declarations and supplemental EIRs, which typically evaluate the impacts of a single activity undertaken to implement the overall plan.

In this case, the Program EIR will address the Riverside/Corona Feeder, which is the proposed project. This EIR considers a series of related actions that are related geographically and are needed to achieve the implementation of the proposed project.

CEQA requires that certain subjects be documented in an environmental impact analysis. The following explanation is provided to assist the reader in locating these subjects.

Section 1.0 (Summary) The summary includes a brief project description, a summary of each significant effect with proposed mitigation measures and alternatives that would reduce or avoid significant effects, a discussion of areas of controversy known to the Lead Agency and issues raised by agencies and the public, and issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects.

Section 2.0 (Introduction) The Introduction includes a detailed project description, project location, project objectives, a discussion of the EIR's purpose, background, and legal requirements, other permits that may be required to implement the proposed project, consistencies and inconsistencies of the proposed project with existing regional plans.

Section 3.0 contains a list of effects found not to be significant in the Notice of Preparation and shows the analysis of effects found not significant during the EIR process.

Section 4.0 contains the environmental analysis of each of the potentially significant effects. The analysis includes a discussion of the environmental setting, the potential impacts, and proposed mitigation measures. The discussion is organized under the following framework:

> Existing Setting. Information in the existing setting contains a detailed discussion of the local and regional environmental conditions (both environmental and man-made) in existence at the time the EIR was prepared. Existing setting information provides the reader with a baseline from which future impacts are analyzed, and provides a standard against which to measure these impacts.
>
> Thresholds of Significance. Determinations regarding the significance of potential impacts resulting from implementation of the proposed project are provided.
>
> Impacts. An analysis of potential impacts of the proposed project construction and operation is presented in this section. This discussion focuses on the impacts of implementation of the proposed project, and includes potential short-term/long-term and direct/indirect project impacts, and consistency with applicable planning documents or regulations including the San Bernardino County General Plan.

Mitigation Measures. The measures proposed to mitigate any potential impacts of the proposed project are identified, and include, where appropriate, references to their timing and the party(ies) responsible for implementation.

Level of Significance after Mitigation. Provides a conclusionary statement as to whether or not implementation of the proposed mitigation will reduce the proposed project's impacts to a less than significant level.

Section 5.0 contains discussions of additional topics required by CEQA, including cumulative impacts, growth inducing impacts, unavoidable adverse impacts and growth inducing impacts. This section also contains discussion of alternatives to development of the proposed project and evaluates the significant cumulative environmental effects.

Section 6.0 contains listings of organizations and persons consulted in preparation of the EIR and reference documents used.

IV. Other Approvals Required to Implement the Proposed Project

This Program EIR addresses the potential environmental effects of the implementation of the proposed RCF Project. WMWD is the Lead Agency for the purposes of CEQA because it has the principal responsibility for deciding whether or not to approve the RCF Project, and how it will be implemented. As the Lead Agency, WMWD is responsible for preparing the environmental documentation for the proposed project in compliance with California Environmental Quality Act.

This EIR is the primary reference document for the formulation and implementation of a mitigation monitoring program for the proposed RCF Project. Environmental impacts cannot be always mitigated to a level that is considered less than significant. In accordance with section 15093(b) of the *CEQA Guidelines*, if a lead agency approves a project that has significant impacts that are not substantially mitigated (i.e., significant unavoidable impacts), the agency shall state in writing the specific reasons for approving the project based on the final CEQA documents and any other information in the public record for the project. This is defined in Section 15093 of the *CEQA Guidelines* as a "statement of overriding considerations".

a) Other Agencies that are Expected to use the Program EIR in their Decision Making Process

b) Permits and other Approvals Required to Implement the Project Related Environmental Review and Consultation Requirements Required by Federal, State, or Local Laws, Regulations or Policies.

The following public officials and agencies will use this EIR when considering the following actions.

U.S. Army Corps of Engineers

- A 404 permit will be required if the proposed project involves fill in the definable bed, bank or channel (as indicated by the ordinary high water mark) of the Santa Ana River and any other stream or drainage feature due to installation of a pipeline crossing.

Regional Water Quality Control Board, Santa Ana Region (RWQCB)

- National Pollutant Discharge Elimination System (NPDES) Construction Permits will be required.
- A 401 Permit will be required if the proposed project involves fill in the definable bed, bank or channel of the Santa Ana River or any other drainage feature.
- A Waste Discharge Permit will be required if ground dewatering is necessary during tunneling activities.

California Department of Fish and Game

- A 1600 Streambed Alteration Agreement will be required.
- A California Endangered Species Act (CESA) permit will be required if the project results in the "take" of a state listed threatened or endangered species.

United States Fish and Wildlife Service

- Either a Section 7 or a Section 10(a) consultation (relative to federal involvement in the project) will be required if the project results in the "take" of a federally listed threatened or endangered species.

California Department of Transportation (Caltrans)

- Encroachment permits for crossings of State Route 60 and Interstate 10 will be required.
- Water Pollution Control Plans (WPCP) will also be required.

South Coast Air Quality Management

- The project will be required to comply with District Rule 403 requirements controlling construction related fugitive dust emissions.

Union Pacific and Burlington Northern Sante Fe Railways

- Encroachment permits will be required for rail line crossings.

San Bernardino and Riverside County Flood Control and Water Conservation Districts

- Encroachment permits will be required for boring underneath the Santa Ana River and other drainage channels.

County of Riverside and Cities of San Bernardino, Riverside, Grand Terrace, Colton, Corona

- Encroachment permits will be required to construct the pipeline in road/right-of-ways.

The California Department of Health Services, Office of Drinking Water (CDHS)

- CDHS will review and have approval authority for potable water facility plans and specifications.

The California Department of Transportation, County of Riverside Department of Transportation, County of San Bernardino Department of Engineering, and each of the cities with facilities proposed within their jurisdiction

- These agencies will review and have approval authority over construction of any improvements in public roadways.

Utility Purveyors

- Several utility purveyors will require encroachment permits for any facilities encroaching upon underground utility easements in the project area.

B. Scoping of the Program Environmental Impact Report

1. Findings of the Notice of Preparation

a) Effects Found Not Significant

The California Environmental Quality Act (CEQA) provides that an EIR shall focus on the significant effects on the environment, discussing the effects with emphasis in proportion to their severity and probability of occurrence. Effects dismissed in an initial study as clearly insignificant and unlikely to occur need not be discussed further in the EIR unless information inconsistent with the finding in the initial study is subsequently received.

Section of 21100 (c) of the Public Resources Code states that an EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR. Section 15128 of the CEQA Guidelines adds, "Such a statement may be contained in an attached copy of an Initial Study."

The Initial Study prepared for the Riverside Corona Feeder project (Appendix A) concluded that the proposed project would not result in significant impacts to the following: Aesthetics, Agricultural Resources, Land Use/Planning, Population and Housing, Public Services, Transportation and Traffic, Utilities and Service Systems, Mineral Resources and Recreation. These issue areas are not discussed further in this

EIR. The basis for elimination of each relevant impact in these issue areas is documented in the appended Notice of Preparation (NOP) document (Appendix A).

Appendix 2. Common Plants Expected or Observed, Riverside-Corona Feeder Proposed Main Alignment

DICOTYLEDONS

Adoxaceae – Adoxus Family
Sambucus mexicana DC. Blue Elderberry

Aizoaceae - Carpet-weed Family
**Carpobrotus edulis* (Molina) N.E. Brit. Hottentot-fig

Anacardiaceae - Sumac Family
**Schinus molle* L. Peruvian Pepper Tree

Apiaceae - Carrot Family
**Foeniculum vulgare* Mill. Fennel

Asteraceae - Sunflower Family
Ambrosia psilostachya DC. Western Ragweed
Artemisia californica Less. California Sagebrush
Baccharis salicifolia (R. & P.) Pers. Mule-Fat
Baccharis sarothroides Gray Broom Baccharis
**Centaurea melitensis* L. Tocalote
**Chamomilla suaveolens* (Pursh.) Rydb. Pineapple Weed
**Conyza canadensis* (L.)Cronq. Horseweed
Encelia farinosa Torr. Brittlebush
Erigeron foliosus Nutt. var. *foliosus* Leafy Daisy
Gutierrezia californica (DC.) Torrey & Gray Broom Matchweed
**Hedypnois cretica* (L.)Willd. Crete Hedypnois
Hemizonia fasciculata (DC.)Torrey & Gray Fascicled Tarplant
Heterotheca grandiflora Nutt. Telegraph Weed
**Hypochoeris glabra* L. Smooth Cat's-ear
**Lactuca serriola* L. Wild Lettuce
Lessingia filaginifolia (Hook. & Arn.)M.A. Lane var. *filaginifolia* Cudweed Aster
**Sonchus oleraceus* L. Common Sow Thistle
Stephanomeria virgata Benth. Virgate Wreath Plant

Boraginaceae - Borage Family
Amsinckia menziesii (Lehm.) Nels.& J.F. Macbr. var. *intermedia* (F. & M.) Ganders Rancher's Fireweed
Cryptantha intermedia (Gray) Greene Nievitas Cryptantha
Heliotropium curvassavicum L. Salt Heliotrope

Brassicaceae - Mustard Family
**Hirschfeldia incana* (L.) Lagr.-Fossat Short-pod Mustard
**Raphanus sativus* L. Radish
**Sisymbrium irio* L. London Rocket

Cactaceae – Cactus Family
Opuntia vaseyi (J. Coulter)Britton & Rose Prickly-Pear

Caryophyllaceae - Pink Family
**Silene gallica* L. Common Catchfly
**Spergula arvensis* L. Stickwort Starwort

Appendix 2. Common Plants Expected or Observed, Riverside-Corona Feeder Proposed Main Alignment (Continued)

Chenopodiaceae - Goosefoot Family
Atriplex canescens (Pursh)Nutt. Shadscale
**Atriplex semibaccata* R. Br. Australian Saltbush
**Chenopodium album* L. Lamb's Quarters
**Salsola tragus* L. Russian Thistle

Convolvulaceae - Morning-Glory Family
**Convolvulus arvensis* L. Bindweed

Crassulaceae - Stonecrop Family
Crassula connata (Ruiz & Pav.) Berger Dwarf Stonecrop

Cucurbitaceae - Gourd Family
Cucurbita foetidissima HBK. Calabazilla
Marah macrocarpus (Greene) Greene var. *macrocarpus* Cucamonga Manroot, Wild-cucumber

Euphorbiaceae - Spurge Family
Chamaesyce albomarginata (Torrey & Gray) Small Rattlesnake Spurge
**Ricinus communis* L. Castor-bean

Fabaceae - Legume Family
Lotus scoparius ssp. *brevialatus* (Ottley) Munz Deerweed
**Medicago polymorpha* L. California Burclover
**Melilotus indica* (L.) All. Sourclover

Fagaceae – Oak Family
Quercus agrifolia Nee. Coast Live Oak

Geraniaceae - Geranium Family
**Erodium cicutarium* (L.) L'Hér. Red-stem Filaree
**Erodium moschatum* (L.) L'Hér. White-stem Filaree

Lamiaceae – Mint Family
**Marrubium vulgare* L. Horehound

Lauraceae - Laurel Family
**Cinnamomium camphora* Thunb. Camphor Tree

Malvaceae - Mallow Family
**Malva parviflora* L. Cheeseweed

Plantaginaceae - Plantain Family
**Plantago major* L. Common Plantain

Platanaceae - Sycamore Family
Platanus racemosa Nutt. Western Sycamore

Polygonaceae - Buckwheat Family
Eriogonum fasciculatum Benth. var. *foliolosum* (Nutt.) S. Stokes Interior Flat-top Buckwheat
**Rumex crispus* L. Curly Dock

Appendix 2. Common Plants Expected or Observed, Riverside-Corona Feeder Proposed Main Alignment (Continued)

Primulaceae - Primrose Family
**Anagallis arvensis* L. Scarlet Pimpernel

Rutaceae - Rue Family
**Citrus limon* (L.)Burm. F. Lemon
**Citrus sinensis* (L.)Osbeck. Orange

Salicaceae - Willow Family
Populus fremontii Wats. ssp. *fremontii* Fremont Cottonwood
Salix exigua Nutt. Narrow-leaved Willow
Salix gooddingii Ball Goodding's Black Willow
Salix laevigata Bebb Red Willow
Salix lasiolepis Benth. Arroyo Willow

Solanaceae - Nightshade Family
Lycium andersonii A. Gray Box-thorn
**Nicotiana glauca* Grah. Tree Tobacco

Tamaricaceae - Tamarisk Family
**Tamarix parviflora* DC. European Tamarisk

Ulmaceae – Elm Famiily
**Ulmus parvifolia* Jacq. Chinese Elm

Urticaceae - Nettle Family
**Urtica urens* L. Dwarf Nettle

MONOCOTYLEDONS
Arecaceae - Palm Family
**Washingtonia robusta* Wendle. Thread Palm

Liliaceae – Lily Family
Dichelostemma capitatum A. Wood. Blue Dicks

Poaceae - Grass Family
**Arundo donax* L. Giant Reed
**Avena barbata* Link Slender Wild Oat
**Bromus diandrus* Roth Ripgut Grass
**Bromus hordeaceus* L. Soft Chess
**Bromus madritensis* L. ssp. *rubens* (L.) Husnot Red Brome
**Cynodon dactylon* (L.) Pers. Bermuda Grass
**Gastridium ventricosum* (Gouan) Schinz & Thell. Nit Grass
**Hordeum murinum* ssp. *leporinum* (Link) Arcag. Glaucous Barley
**Schismus barbatus* (L.) Thell. Mediterranean Schismus
**Vulpia myuros* (L.) Gmelin var. *hirsuta* (Hacketl) Asch & Graetoner Foxtail Fescue

* - Denotes non-native plant taxa

Appendix 3. Common Animals Expected and Observed, Riverside-Corona Feeder Proposed Main Alignment

COMMON NAME	SCIENTIFIC NAME
CRUSTACEA	
Decapoda (Crayfish)	
Red Swamp Crawfish	*Procambarus clarkii*
LEPIDOPTERA (Butterflies and Moths)	
Danaidae (Milkweed Butterflies)	
Monarch	*Danaus plexippus*
Queen	*Danaus gilippus*
Nymphalidae (Brush-footed Butterflies)	
Chalcedon Checkerspot	*Euphydryas chalcedona chalcedona*
Gabb's Checkerspot	*Charidryas gabbii*
Mylitta Crescent	*Phycides mylitta*
Mourning Cloak	*Nymphalis antiopa*
Painted Lady	*Vanessa cardui*
West Coast Lady	*Vanessa virginiensis*
Red Admiral	*Vanessa atalanta*
Buckeye	*Junonia coenia*
Lorquin's Admiral	*Basilarchia lorquini*
California Sister	*Adelpha bredowii californica*
Papilionidae (Swallowtails and Parnassians)	
Anise Swallowtail	*Papilio zelicaon*
Western Tiger Swallowtail	*Papilio rutulus*
Pale Swallowtail	*Papilio eurymedon*
Pieridae (Whites, Sulfurs, Marbles, and Orange-tips)	
Common White	*Pontia protodice*
California Dog-face	*Zerene eurydice*
Orange Sulfur	*Colias eurytheme*
Nicippe Yellow	*Eurema nicippe*
Sara Orangetip	*Anthocharis sara*
Felder's Orangetip	*Anthocharis cethura*
Cabbage White	*Pieris rapae*
Harford's Sulphur	*Colias harfordii*
Riodinidae (Metalmarks)	
Behr's Metalmark	*Apodemia mormo virgulti*
Lycaenidae (Hairstreaks, Coppers, and Blues)	
Pigmy Blue	*Brephidium exilis*
Acmon Blue	*Icaricia acmon*
Western Tailed Blue	*Everes amyntula*
Southern Blue	*Glaucopsyche lygdamus australis*
Gray Hairstreak	*Strymon melinus*
Hesperiidae (Skippers)	
Funereal Dusky-wing	*Erynnis funeralis*

Appendix 3. Common Animals Expected and Observed, Riverside-Corona Feeder Proposed Main Alignment (Continued)

Satryridae (Satyrids)	
California Ringlet	*Coenonympha californica*
HYMENOPTERA (Ants, Wasps, and Bees)	
Formicidae (Ants)	
Argentine Ant	*Iridomyrmex humilis*
California Harvester Ant	*Pogonomyrmex californicus*
Pompilidae (Spider Wasps)	
Tarantula Hawk	*Pepsis* sp.
Red Gum Lerp Psyllid	*Glycaspis bramblecombei*
Parisitoid Wasp	*Psyllaephagus bliteus*
Mutillidae (Velvet-Ants)	
Velvet-Ant	*Dasymutilla* sp.
Anthophoridae (Carpenter Bees)	
Valley Carpenter Bee	*Xylocopa varipuncta*
California Carpenter Bee	*Xylocopa californica diamesa*
Apidae (True Bees)	
Bumble Bee	*Bombus* sp.
Honey Bee	*Apis mellifera*
FISHES	
Poeciliidae (Livebearers)	
Mosquitofish	*Gambusia affinis*
Centrarchidae (Sunfish)	
Green Sunfish	*Lepomis cyanellus*
Bluegill	*Lepomis macrochirus*
AMPHIBIANS	
Bufonidae (True Toads)	
California Toad	*Bufo boreas halophilus*
Arroyo Toad	*Bufo microscaphus*
Hylidae (Treefrogs and Relatives)	
Pacific Treefrog	*Pseudacris regilla*
Ranidae (True Frogs)	
Bullfrog	*Rana catesbeiana*

Appendix 3. Common Animals Expected and Observed, Riverside-Corona Feeder Proposed Main Alignment (Continued)

REPTILES

Phrynosomatidae

Western Fence Lizard	*Sceloporus occidentalis*
Side-blotched Lizard	*Uta stansburiana*
San Diego Horned Lizard	*Phrynosoma coronatum blainvillei*
Western Skink	*Eumeces skiltonianus*

Teiidae (Whiptails and Relatives)

Belding's Orange-throated Whiptail	*Cnemidophorus hyperythrus beldingi*
Coastal Whiptail	*Cnemidophorus tigris stejnegeri*

Anguidae (Alligator Lizards and Relatives)

Silvery Legless Lizard	*Anniella pulchra pulchra*
Southern Alligator Lizard	*Elgaria multicarinata*

Boidae (Boas)

Coastal Rosy Boa	*Lichanura trivirgata roseofusca*

Colubridae (Colubrids)

Ringneck Snake	*Diadophis punctatus*
Western Yellow-bellied Racer	*Coluber constrictor mormon*
Coachwhip	*Masticophis flagellum*
California Striped Racer	*Masticophis lateralis lateralis*
Gopher Snake	*Pituophis catenifer*
California Kingsnake	*Lampropeltis getula californiae*
Common Garter Snake	*Thamnophis sirtalis*

Viperidae (Vipers)

Southern Pacific Rattlesnake	*Crotalus viridis helleri*

BIRDS

Ardeidae (Herons and Bitterns)

Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Snowy Egret	*Egretta thula*
Cattle Egret	*Bubulcus ibis*
Green Heron	*Butorides virescens*
Black-crowned Night-Heron	*Nycticorax nycticorax*

Cathartidae (Vultures)

Turkey Vulture	*Cathartes aura*

Anatidae (Ducks, Geese, and Swans)

Mallard	*Anas platyrhynchos*

Accipitridae (Hawks, Eagles, Harriers, and Kites)

Osprey	*Pandion haliaetus*
White-tailed Kite	*Elanus leucurus*
Northern Harrier	*Circus cyaneus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*

Appendix 3. Common Animals Expected and Observed, Riverside-Corona Feeder Proposed Main Alignment (Continued)

Accipitridae (continued)	
Red-shouldered Hawk	*Buteo lineatus*
Red-tailed Hawk	*Buteo jamaicensis*
Falconidae (Falcons)	
American Kestrel	*Falco sparverius*
American Peregrine Falcon	*Falco peregrinus anatum*
Charadriidae (Plovers)	
Killdeer	*Charadrius vociferus*
Laridae (Gulls and Terns)	
Ring-billed Gull	*Larus delawarensis*
California Gull	*Larus californicus*
Columbidae (Pigeons and Doves)	
Rock Dove	*Columba livia*
Mourning Dove	*Zenaida macroura*
Tytonidae (Barn Owls)	
Barn Owl	*Tyto alba*
Strigidae (Typical Owls)	
Great Horned Owl	*Bubo virginianus*
Apodidae (Swifts)	
White-throated Swift	*Aeronautes saxatalis*
Vaux's Swift	*Chaetura vauxi*
Trochilidae (Hummingbirds)	
Anna's Hummingbird	*Calypte anna*
Alcedinidae (Kingfishers)	
Belted Kingfisher	*Ceryle alcyon*
Picidae (Woodpeckers)	
Nuttall's Woodpecker	*Picoides nuttallii*
Downy Woodpecker	*Picoides pubescens*
Northern Flicker	*Colaptes auratus*
Tyrannidae (Tyrant Flycatchers)	
Pacific-slope Flycatcher	*Empidonax difficilis*
Black Phoebe	*Sayornis nigricans*
Say's Phoebe	*Sayornis saya*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Cassin's Kingbird	*Tyrannus vociferans*
Western Kingbird	*Tyrannus verticalis*
Laniidae (Shrikes)	
Loggerhead Shrike	*Lanius ludovicianus*

Appendix 3. Common Animals Expected and Observed, Riverside-Corona Feeder Proposed Main Alignment (Continued)

Vireonidae (Vireos)	
Hutton's Vireo	*Vireo huttoni*
Warbling Vireo	*Vireo gilvus*
Corvidae (Jays, Crows, Ravens, and Magpies)	
Western Scrub-Jay	*Aphelocoma californica*
American Crow	*Corvus brachyrhynchos*
Common Raven	*Corvus corax*
Alaudidae (Larks)	
Horned Lark	*Eremophila alpestris*
Hirundinidae (Swallows)	
Tree Swallow	*Tachycineta bicolor*
Violet-green Swallow	*Tachycineta thalassina*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Barn Swallow	*Hirundo rustica*
Cliff Swallow	*Petrochelidon pyrrhonota*
Aegithalidae (Bushtits)	
Bushtit	*Psaltriparus minimus*
Troglodytidae (Wrens)	
Bewick's Wren	*Thryomanes bewickii*
House Wren	*Troglodytes aedon*
Regulidae (Kinglets)	
Ruby-crowned Kinglet	*Regulus calendula*
Turdidae (Thrushes)	
Western Bluebird	*Sialia mexicana*
Swainson's Thrush *Catharus ustulatus*	
Hermit Thrush	*Catharus guttatus*
American Robin	*Turdus migratorius*
Timaliidae (Wrentits)	
Wrentit	*Chamaea fasciata*
Mimidae (Mockingbirds and Thrashers)	
Northern Mockingbird	*Mimus polyglottos*
Sturnidae (Starlings)	
European Starling	*Sturnus vulgaris*
Motacillidae (Wagtails and Pipits)	
American Pipit	*Anthus rubescens*
Bombycillidae (Waxwings)	
Cedar Waxwing	*Bombycilla cedrorum*

Appendix 3. Common Animals Expected and Observed, Riverside-Corona Feeder Proposed Main Alignment (Continued)

Ptilogonatidae (Silky Flycatchers)	
Phainopepla	*Phainopepla nitens*
Parulidae (Wood-Warblers)	
Orange-crowned Warbler	*Vermivora celata*
Nashville Warbler	*Vermivora ruficapilla*
Yellow Warbler	*Dendroica petechia*
Yellow-rumped Warbler	*Dendroica coronata*
Black-throated Gray Warbler	*Dendroica nigrescens*
Townsend's Warbler	*Dendroica townsendi*
Hermit Warbler	*Dendroica occidentalis*
MacGillivray's Warbler	*Oporornis tolmiei*
Common Yellowthroat	*Geothlypis trichas*
Wilson's Warbler	*Wilsonia pusilla*
Yellow-breasted Chat	*Icteria virens*
Thraupidae (Tanagers)	
Western Tanager	*Piranga ludoviciana*
Emberizidae (Towhees and Sparrows)	
Spotted Towhee	*Pipilo maculatus*
California Towhee *Pipilo crissalis*	
Lark Sparrow	*Chondestes grammacus*
Savannah Sparrow *Passerculus sandwichensis*	
Fox Sparrow	*Passerella iliaca*
Song Sparrow	*Melospiza melodia*
White-crowned Sparrow	*Zonotrichia leucophrys*
Golden-crowned Sparrow	*Zonotrichia atricapilla*
Dark-eyed Junco	*Junco hyemalis*
Cardinalidae (Cardinals, Grosbeaks, and Buntings)	
Black-headed Grosbeak	*Pheucticus melanocephalus*
Blue Grosbeak	*Guiraca caerulea*
Lazuli Bunting	*Passerina amoena*
Icteridae (Blackbirds, Meadowlarks, and Orioles)	
Red-winged Blackbird	*Agelaius phoeniceus*
Western Meadowlark	*Sturnella neglecta*
Brewer's Blackbird	*Euphagus cyanocephalus*
Great-tailed Grackle	*Quiscalus mexicanus*
Brown-headed Cowbird	*Molothrus ater*
Hooded Oriole	*Icterus cucullatus*
Bullock's Oriole	*Icterus bullockii*
Fringillidae (Finches)	
House Finch	*Carpodacus mexicanus*
Lesser Goldfinch	*Carduelis psaltria*
American Goldfinch	*Carduelis tristis*
Passeridae (Old World Sparrows)	
House Sparrow	*Passer domesticus*

Appendix 3. Common Animals Expected and Observed, Riverside-Corona Feeder Proposed Main Alignment (Continued)

MAMMALS

Didelphidae (Opossums)	
Virginia Opossum	*Didelphis virginiana*
Vespertilionidae (Vespertilionid Bats)	
Yuma Myotis	*Myotis yumanensis*
California Myotis	*Myotis californicus*
Western Pipistrelle	*Pipistrellus hesperus*
Big Brown Bat	*Eptesicus fuscus*
Pallid Bat	*Antrozous pallidus*
Townsend's Western Big-eared Bat	*Plecotus townsendii townsendii*
Molossidae (Free-tailed Bats)	
Brazilian Free-tailed Bat	*Tadarida brasiliensis*
Western Mastiff Bat	*Eumops perotis californicus*
Leporidae (Rabbits and Hares)	
Desert Cottontail	*Sylvilagus audubonii*
San Diego Black-tailed Jackrabbit	*Lepus californicus bennettii*
Sciuridae (Squirrels, Chipmunks, and Marmots)	
California Ground Squirrel	*Spermophilus beecheyi*
Geomyidae (Pocket Gophers)	
Botta's Pocket Gopher	*Thomomys bottae*
Heteromyidae (Pocket Mice and Kangaroo Rats)	
California Pocket Mouse	*Chaetodipus californicus femoralis*
Pacific Kangaroo Rat	*Dipodomys agilis*
Muridae (Rats, Mice, and Voles)	
Western Harvest Mouse	*Reithrodontomys megalotis*
California Mouse	*Peromyscus californicus*
Deer Mouse	*Peromyscus maniculatus*
California Vole	*Microtus californicus*
Black Rat	*Rattus rattus*
Norway Rat	*Rattus norvegicus*
House Mouse	*Mus musculus*
Canidae (Foxes, Wolves, and Relatives)	
Coyote	*Canis latrans*
Procyonidae (Raccoons and Relatives)	
Raccoon	*Procyon lotor*
Mustelidae (Weasels, Badgers, and Relatives)	
Long-tailed Weasel	*Mustela frenata*
Striped Skunk	*Mephitis mephitis*
Felidae (Cats)	
House Cat	*Felis domestica*
Feral House Cat	*Felis cattus*
Bobcat	*Lynx rufus*

Appendix 4. Sensitive Plants from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CNPS	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Allium marvinii Yucaipa Onion	None/None/None	Covered	Clay openings in chaparral, elevation 760-1065 m; blooms Apr-May	Absent - No clay lenses occur along the routes.
Allium munzii Munz's Onion	FE/CT/1B (3-3-3)	Covered	Chaparral, coastal scrub, cismontane woodlands, pinyon-juniper woodland, valley & foothill grassland, esp in heavy clay soils, grows in grasslands & openings within shrublands or woodlands, 300-1035 m.	Absent - No clay lenses occur along the routes.
Ambrosia pumila San Diego Ambrosia	FE/None/1B (3-3-2)	Covered	Chaparral, coastal scrub, valley & foothill grassland, vernal pools, esp in sandy loam or clay soil, in valleys; persists where disturbance has been superficial, 20-415 m.	Absent - No intact alluvial areas occur along the routes.
Arabis johnstonii Johnston's Rock Cress	None/None/1B (3-2-3)	Covered	Chaparral, lower montane conif forest, oft on eroded clay. Known from/fewer than 10 sites in s San Jacinto Mtns, 1350-2150 m..	Absent - Elevations along the routes are too low for this plant.
Arctostaphylos rainbowensis Rainbow Manzanita	None/None/1B (3-3-3)	Covered	Chaparral; prev. called *A. peninsularis* or considered a hybrid between *A. glandulosa* & *A. glauca*; esp usu found in gabbro chaparral in RIV & SD Cos., 270-790 m.	Absent - The area of the routes lacks rocky, chaparral-dominated habitat.
Astragalus pachypus var. *jaegeri* Jaeger's Milk-Vetch	None/None/1B (3-3-3)	Covered	Chaparral, cismontane woodland, coastal scrub, valley & foothill grassland/sandy or rocky. Known from/about 6 occur's. Some habitat prob. lost during creation of Vail Lake. 365-915 m.	Absent - The area of the routes lacks intact sandy alluvial riverine benches.
Atriplex coronata var. *notatior* San Jacinto Valley Crownscale	FE/None/1B (3-3-3)	Covered	Playas, chenopod scrub, valley and foothill grassland, vernal pools. Endemic to RIV Co.	Absent - The area of the routes lacks alkaline, lacustrine-deposited soils.

Appendix 4. Sensitive Plants from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CNPS	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Atriplex parishii Parish's Brittlescale	FE/None/1B (3-3-2)	Covered	Alkali meadows, vernal pools, chenopod scrub, playas. Usually on drying alkali flats w/fine soils. Collected only once in CA since 1974 (1993).	Absent - The area of the routes lacks alkaline, lacustrine-deposited soils.
Atriplex serenana var. *davidsonii* Davidson's Saltscale	None/None/1B (3-2-2)	Covered	Coastal bluff scrub, coastal scrub/alkaline, 10-200 m.	Absent- The area of the routes is too far inland.
Berberis nevinii Nevin's Barberry	FE/CE/1B (3-3-3)	Covered	Chaparral, cismontane woodland, coastal scrub, riparian scrub; esp on steep, N-facing slopes or in low grade sandy washes, 290-1575m.	Absent - No chaparral-dominated vegetation occurs along the project routes. Not detected during survey.
Brodiaea filifolia Thread-leaved Brodiaea	FT/CE/1B (3-3-3)	Covered	Cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools, usu assoc w/annual grassland and vernal pools, oft surr by shrub habitats, clay soils, 35-855 m.	Absent - No clay lenses occur along the routes.
Brodiaea orcuttii Orcutt's Brodiaea	FSC/None/1B (1-3-2)	Covered	Vernal pools, valley & foothill grassland, closed-cone conif forest, cismontane woodland, chaparral, meadows, esp mesic, clay habitats, occ serpentine, in vernal pools & small drainages, 30-1615 m.	Absent - No clay lenses occur along the routes.
Calochortus palmerae var. *munzii* Munz's Mariposa Lily	None/None/1B (3-2-3)	Covered	Chaparral, lower montane conif forest. Known fr only a few occur's in San Jacinto Mtns., 1200-2200 m.	Absent- No intact shrublands occur on or along the routes.
Calochortus plummerae Plummer's Mariposa Lily	FSC/None/1B (2-2-3)	Covered	Coastal scrub, chaparral, valley & foothill grassland, cismontane woodland, lower montane conif forest. Rocky and sandy sites, us. granitic or alluvial material, 100-1700 m.	Absent- No intact shrublands occur on or along the routes.
Calochortus weedii var. *intermedius* Intermediate Mariposa Lily	FSC/None/1B (2-2-3)	Covered	Coastal scrub, chaparral, valley & foothill grassland, esp. dry, rocky open slopes & rocky outcrops, 120-850 m.	Absent- No intact shrublands occur on or along the routes.

Appendix 4. Sensitive Plants from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CNPS	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Caulanthus simulans Payson's Jewelflower	FSC/None/4 (1-2-3)	Covered	Chaparral, coastal scrub (RIV & SD Cos. only), esp. frequently in burned areas or in disturbed sites such as streambeds; also rocky, steep slopes, 90-2200 m.	Absent- No intact shrublands occur on or along the routes.
Ceanothus ophiochilus Vail Lake Ceanothus	FT/SE/1B (3-3-3)	Covered	Chaparral, gabbro seams on N-facing ridges on E sides of mountains, 620-825 m.	Absent- No intact chaparral habitat occurs on or occur along the routes.
Centromadia pungens ssp. *laevis* Smooth Tarplant	FSC/None/1B (2-3-2)	Covered	Valley & foothill grassland, chenopod scrub, meadows, playas, riparian woodland, esp. alkali meadow, alkali scrub; disturbed 0-480 m.	Absent - The area of the routes lacks alkaline, lacustrine-deposited soils.
Chorizanthe leptotheca Peninsular Spineflower	None/None/4 (1-2-2)	Covered	Coastal scrub, chaparral, lower montane conifer forest, alluvial fan, granitic soils	Absent- No intact chaparral habitat occurs on or along the routes.
Chorizanthe parryi var. *parryi* Parry's Spineflower	FSC/None/3 (?-2-3)	Covered	Coastal scrub, chaparral, esp. dry slopes & flats, occ in interface of 2 veg types, such as chaparral & oak woodland; dry, sandy soils, 40-1705 m.	Absent- No intact chaparral habitat occurs on or along the routes.
Chorizanthe polygonoides var. *longispina* Long-spined Spineflower	FSC/None/1B (2-2-2)	Covered	Chaparral, coastal scrub, meadows, valley & foothill grassland, esp. gabbroic clay, 30-1450 m.	Absent- No intact chaparral habitat occurs on or along the routes.
Chorizanthe procumbens Prostrate Spineflower	None/None/None	Covered	Coastal scrub, chaparral, 0-800 m.	Absent- No intact chaparral habitat occurs on or along the routes.
Convolvulus simulans Small-flowered Morning-Glory	None/None/4 (1-2-2)	Covered	Chaparral openings, coastal scrub, valley & foothill grassland/clay, serpentine seeps, 30-700 m.	Absent - No clay lenses occur along the routes.
Deinandra mohavensis *Mohave Tarplant*	None/CE/1B (2-1-3)	Covered	Chaparral (mesic), riparian scrub, 850-1600 m.	Absent - Elevations along the routes are too low for this plant.

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SPECIES NAME	STATUS Federal/State/CNPS	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Dodecahema leptoceras Slender-horned Spineflower	FE/CE/1B (3-3-3)	Covered	Chaparral, coastal scrub (alluvial fan scrub). Hist. from/LA, RIV, SBD Cos; extirp. fr/much of range. Flood-deposited terraces & washes; assoc. *Encelia, Dalea, Lepidospartum,* etc. 200-760 m.	Absent-No intact Allvial Fan Scrub or Walnut Woodland in project area. Not detected during survey.
Dudleya multicaulis Many-stemmed Dudleya	FSC/None/1B (1-2-3)	Covered	Chaparral, coastal scrub, valley & foothill grassland, esp. in heavy, often clayey soils or grassy slopes, 0-790 m.	Absent- No intact chaparral habitat occurs on or along the routes.
Dudleya viscida Sticky Dudleya	FSC/None/1B (2-2-3)	Covered	Coastal scrub, coastal bluff scrub, chaparral, esp on north & south-facing cliffs & banks, 10-550 m.	Absent- The area of the routes is too far inland.
Eriastrum densifolium ssp. *sanctorum* Santa Ana River Woollystar	FE/CE/1B (3-3-3)	Covered	Coastal scrub, chaparral, esp sandy soils on river floodplains or terraced fluvial deposits, 150-610 m.	Moderate, at Reach A, in Santa Ana River floodplain only. Not detected during survey, but observed within one mile upstream in 2001.
Erodium macrophyllum Round-leaved Filaree	None/None/2 (2-3-1)	Covered	Cismontane woodland, valley & foothill grassland. Clay soils, 15-1200 m.	Absent - No clay lenses occur along the routes.
Eryngium aristulatum var. *parishii* San Diego Button-celery	FE/CE/1B (2-3-2)	Covered	Vernal pools, coastal scrub, valley & foothill grassland, esp in SD mesa hardpan & claypan vernal pools & southern interior basalt flow vernal pools; usu surr by scrub, 15-620 m.	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes.
Galium angustifolium ssp. *jacinticum* San Jacinto Mountains Bedstraw	None/None/1B (3-1-3)	Covered	Lower montane conif forest, 1350-2100 m. Known fr only 3 occur's, Lake Fulmor & Black Mtn., San Jacinto Mtns, 1630-1940 m.	Absent - Elevations along the routes are too low for this plant.
Galium californicum ssp. *primum* California Bedstraw	None/None/1B (3-2-3)	Covered	Chaparral, lower montane conif. forest. Known only fr/RIV & SBD Cos. Grows in shade of trees & shrubs at lower edge of pine belt, in pine forest/chaparral ecotone, 360 m.	Absent - Elevations along the routes are too low for this plant.

Appendix 4. Sensitive Plants from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CNPS	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Harpagonella palmeri Palmer's Grapplinghook	None/None/4 (1-2-1)	Covered	Chaparral, coastal scrub, valley & foothill grassland, esp clay soils, open grassy areas, 15-830 m.	Absent - No clay lenses occur along the routes.
Heuchera hirsutissima Shaggy-haired Alumroot	None/None/1B (3-1-3)	Covered	Subalpine conif forest, upper montane conif forest/rocky, 183-3500 m.	Absent - Elevations along the routes are too low for this plant.
Holocarpha virgata ssp. *elongata* Graceful Tarplant	None/None/1B (3-1-2)	Covered	Chaparral?, cismontane woodland, coastal scrub, valley &foothill grassland. Known in RIV only fr Santa Rosa Plateau, 60-110 m.	Absent - No intact open field habitats occur along the routes.
Hordeum intercedens Vernal Barley	None/None/3 (?-2-2)	Covered	Coastal dunes, coastal scrub, valley & foothill grassland (saline flats & depressions), vernal pools, 5-1000 m.	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes
Hulsea vestita ssp. *callicarpha* Beautiful Hulsea	None/None/4 (1-2-3)	Covered	Chaparral, low montane conif forest/rocky or gravelly, granitic, 915-3050 m.	Absent - Elevations along the routes are too low for this plant.
Juglans californica var. *californica* Southern California Black Walnut	None/None/4 (1-2-3)	Covered	Chaparral, cismontane woodland, coastal scrub/alluvial, 50-900 m.	Absent - No intact Alluvial Fan Scrub or Walnut Woodland habitat in the project area.
Lasthenia glabrata ssp. *coulteri* Coulter's Goldfields	FSC/None/1B (2-3-2)	Covered	Coastal salt marshes, playas, valley & foothill grassland, vernal pools, usu in alkaline soils in playas, sinks, grassland, 1-1400 m.	Absent - The area of the routes lacks alkaline, lacustrine-deposited soils.
Lepechinia cardiophylla Heart-leaved Pitcher Sage	*None/None/1B (3-2-2)*	Covered	Closed-cone conif forest, chaparral, cismontane woodland, 550-1370 m.	Absent - Elevations along the routes are too low for this plant.
Lilium humboldtii ssp. *ocellatum* Ocellated Humboldt Lily	None/None/4 (1-2-3)	Covered	Chaparral, cismontane woodland, coastal scrub, lower montane conif forest, riparian woodland/openings, 30-1800 m.	Absent - Elevations along the routes are too low for this plant.

Appendix 4. Sensitive Plants from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CNPS	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Lilium parryi Lemon Lily	None/None/1B (2-2-2)	Covered	Lower montane conif forest, meadows & seeps, riparian forest, upper montane conif forest; esp. in wet, mountainous terrain, gem in forested areas; on shady edges of streams, in open boggy meadows & seeps, 1300-2790 m.	Absent - Elevations along the routes are too low for this plant.
Limnanthes gracilis var. *parishii* Parish's Meadowfoam	None/CE/1B (2-2-3)	Covered	Meadows & seeps, vernal pools. Known only fr RIV & SD Cos. Vernally moist areas & temporary seeps of highland meadows & plateaus, oft bordering lakes & streams, 600-1760 m.	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes
Microseris douglasii var. *platycarpha* Small-flowered Microseris	None/None/4 (1-2-2)	Covered	Cismontane woodland, coastal scrub, valley & foothill grassland, vernal pools/clay, 15-1070 m.	Absent - No intact open field habitats occur along the routes.
Mimulus clevelandii Cleveland's Bush Monkeyflower	None/None/4 (1-2-2)	Covered	Chaparral, lower montane conif forest/oft in dist areas, openings, 915-2000 m.	Absent - Elevations along the routes are too low for this plant.
Mimulus diffusus Palomar Monkeyflower	None/None/4 (1-1-1)	Covered	Chaparral, lower montane conif forest/sandy or gravelly, 1120-1830 m.	Absent - Elevations along the routes are too low for this plant.
Monardella macrantha ssp. *hallii* Hall's Monardella	None/None/1B (2-1-3)	Covered	Broad-leaved upland forest, chaparral, lower montane conif forest, cismontane woodland, valley & foothill grassland. Dry slopes & ridges in openings in habitat, 695-2195m.	Absent - Elevations along the routes are too low for this plant.
Muilla clevelandii San Diego Goldenstar	FSC/None/1B (2-2-2)	Covered	Chaparral, coastal scrub, valley & foothill grassland, vernal pools, esp. mesa grasslands, scrub edges; under 50 m.	Absent - No clay lenses occur along the routes.
Myosurus minimus ssp. *apus* Little Mousetail	FSC/None/3 (2-3-2)	Covered	Vernal pools. This ssp. has taxonomic probs. Distinguishing betw this and *M. sessilis* is difficult. Hybrid? Alkaline soils, 20-640 m.	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes

Appendix 4. Sensitive Plants from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CNPS	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Nama stenocarpum Mud Nama	None/None/2 (3-2-1)	Covered	Marshes & swamps. Lake shores, river banks, intermitt. wet areas, 5-500 m.	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes
Navarretia fossalis Spreading Navarretia	FT/None/1B (2-3-2)	Covered	Vernal pools, chenopod scrub, marshes & swamps, playas, esp in SD hardpan & SD claypan vernal pools, in swales & vernal pools, often surr . by other habitat types, 30-1300 m.	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes
Orcuttia californica California Orcutt Grass	FE/CE/1B (3-3-2)	Covered	Vernal pools, 15-660 m.	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes
Oxytheca caryophylloides Chickweed Oxytheca	None/None/4 (1-1-3)	Covered	Lower montane conif forest, pinyon & juniper woodland, 1200-2600 m.	Absent - Elevations along the routes are too low for this plant.
Penstemon californicus California Beardtongue	None/None/1B (3-2-2)	Covered	Chaparral, lower montane conif forest, pinyon and juniper woodland/sandy, 1170-2300 m.	Absent - Elevations along the routes are too low for this plant.
Phacelia stellaris Brand's Phacelia	None/None/1B (3-3-2)	Covered	Coastal dunes, coastal scrub, 5-400 m. Known fr/fewer than 5 occur's.	Absent- the area of the routes is too far inland.
Polygala comuta var. *fishiae* Fish's Milkwort	None/None/4 (1-1-2)	Covered	Chaparral, cismontane woodland, riparian woodland, 100-1100 m.	Absent - The site lacks intact rocky riparian habitat.
Potentilla rimicola Cliff Cinquefoil	None/None/2 (3-1-1)	Covered	Subalpine conif forest, upper montane conif forest. Known only fr RIV Co. & Baja. Granite crevices, rocky sites, 2390-3030 m.	Absent - Elevations along the routes are too low for this plant.
Quercus dumosa Nuttall's Scrub Oak	FSC/None/1B (2-3-2)	Covered	Closed-cone conif. forest, chaparral, coastal scrub, gen. On sandy soils near coast, occ. on clay loam, 15-400 m.	Absent- the area of the routes is too far inland.
Romneya coulteri Coulter's Matilija Poppy	None/None/4 (1-2-3)	Covered	Chaparral coastal scrub/oft in burns, 20-1200 m.	Absent - The site lacks intact chaparral or scrubland habitats.

Appendix 4. Sensitive Plants from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CNPS	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Satureja chandleri San Miguel Savory	None/None/4 (1-2-2)	Covered	Chaparral, cismontane woodland, coastal scrub, riparian woodland, valley & foothill grassland, esp gabbroic or metavolcanic substrate, 120-1005 m.	Absent - No gabbroic-derived soils occur in the project area.
Sibaropsis hammittii Hammitt's Claycress	None/None/1B (3-2-3)	Covered	Chaparral (openings), valley & foothill grassland/gabbroic-derived clays, 730-1065 m.	Absent - No clay lenses occur along the routes.
Trichocoronis wrightii var. *wrightii* Wright's Trichocoronis	None/None/2 (3-3-1)	Covered	Marshes & swamps, riparian forest, meadows & seeps, vernal pools. Mud flats of vernal lakes, drying river beds, alkali meadows, 5-435 m.	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Riverside Fairy Shrimp *Streptocephalus woottoni*	FE/None/CSC	Covered	Endemic to western RIV and SD Cos, in area of tectonic swales, earth slump basins, in grassland & coastal sage scrub; esp. inhabitat seasonally astatic pools, filled by winter/spring rains; hatch in warm water later in the season.	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes
Santa Rosa Plateau Fairy Shrimp *Linderiella santarosae*	None/None/None	Covered	Restricted to grassland vernal pools atop Santa Rosa Plateau in RIV Co., approx. 625 m.	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	FT/None/None	Covered	In astatic rain-filled (vernal) pools, esp inhabits small, clear-water sandstone-depression pools & grassy swale, earth slump, or basalt-flow depression pools	Absent - No level mesa areas with clay or indurate subsurface soils occur in or along the project routes
Delhi Sands Flower-loving Fly *Raphiomidas terminatus abdominalis*	FE/None/CSC	Covered	Fine sandy soil, oft w/partially or wholly consolidated dunes of Delhi sands. Sparse native vegetation and minimal disturbed habitat preferred	Absent - One area of Delhi Sands occurs south of the alignment at Jefferson/Cleveland alternative route but this area is not impacted and is currently in an active orchard condition.
Quino Checkerspot Butterfly *Euphydryas editha quino*	FE/None/None	Covered	Sunny openings in chaparral & coastal sage shrublands in parts of RIV & SD Cos; esp on hills & mesas near coast, w/high densities of host plants *Plantago erecta, P. insularis, Orthocarpus purpurescens.*	Absent - No intact Sage Scrub vegetation is impacted by the proposed alignment. A western alternative route south of the Sobrante Landfill impacts Scrubland habitat suitable for this insect.
Arroyo Chub *Gila orcutti*	FSC/None/CSC	Covered	LA Basin south coastal streams, esp slow water sections w/mud or sand bottoms	Absent - The Santa Ana River is the only suitable habitat for this native fish but there are no reports of this species in the affected reach.

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Santa Ana Sucker *Catostomus santaanae*	FT/None/CSC	Covered	Endemic to LA Basin so coast streams, prefer sand-rubble bottoms, cool, clear water & algae	Absent - The Santa Ana River is the only suitable habitat for this native fish but there are no reports of this species in the affected reach.
Coast Range Newt *Taricha torosa torosa*	None/None/CSC	Covered	Coastal drainages, esp in terrestrial habitats. Will migrate over 1 km to breed in ponds, reservoirs & slow-moving streams	Absent - The relatively low elevation of the project area precludes impacts to this native amphibian.
Western Spadefoot *Spea hammondii*	FSC/None/CSC	Covered	Grassland habitats, valley & foothill woodlands, requires vernal pools for breeding	Absent - No vernal pools along the route
Arroyo Toad *Bufo californicus*	FE/None/CSC	Covered	Semi-arid regions near washes or intermittent streams, incl. valley-foothill & desert riparian, desert wash, etc., esp rivers w/sandy banks, willows, cottonwoods, sycamores w/loose, gravelly areas	**High - Suitable habitat at the crossing location, the drainage of Santa Ana River, Reach A**
California Red-legged Frog *Rana aurora draytonii*	FT/None/CSC	Covered	Marshes, streams, lakes, reservoirs, ponds and other permanent water sources.	Absent - The relatively low elevation of the project area precludes impacts to this native amphibian.
Mountain Yellow-legged Frog *Rana muscosa*	FE/None/CSC	Covered	Listing for populations in SGAB, San Jacinto, & SBD Mtns only; always found within a few feet of water; tadpoles may require up to 2 yrs to complete aquatic development	Absent - The relatively low elevation of the project area precludes impacts to this native amphibian.
Southwestern Pond Turtle *Clemmys marmorata pallida*	FSC/None/CSC	Covered	Permanent or nearly permanent water in many habitat types; below 6000 ft, esp w/basking sites	**Absent-nopotential habitat for this native reptile along the primary alignment.**

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
San Diego Banded Gecko *Coleonyx variegates abbotti*	None/None/None	Covered	Variety of habitats, assoc w/ rocks & crevices	Absent - No intact Sage Scrub vegetation is impacted by the proposed alignment. A western alternative route south of the Sobrante Landfill does impact Scrubland habitat suitable for this reptile.
Granite Spiny Lizard *Sceloporus orcutti*	none/None/None	Covered	Rocky areas in arid & semiarid areas, coastal side of mountains, found on rocky chaparral-covered hillsides w/granitic rocks	Absent - No major rock outcrops will be impacted by the project.
Southern Sagebrush Lizard *Sceloperus graciosus vandenburgianus*	None/None/None	Covered	Montane chaparral, hardwood & conifer habitats, eastside pine & juniper habitats, & Great Basin shrub habitats of Cascades & Sierra Nev	Absent - No intact Sage Scrub vegetation is impacted by the proposed alignment. A western alternative route south of the Sobrante Landfill does impact Scrubland habitat suitable for this reptile.
San Diego Horned Lizard *Phrynosoma coronatum blainvillii*	FSC/None/CSC	Covered	Coastal sage scrub, chaparral in arid and semi-arid climate, esp. friable, rocky, or shallow sandy soils	**High - Disturbed habitat along the Gage Canal segments have the potential for the presence of this native reptile in areas adjacent to native vegetation.**
Granite Night Lizard *Xantusia henshawi henshawi*	None/None/None	Covered	Rocky arid & semiarid hillsides. Hides by day in crevices in rocks, freq. in areas of massive rocks	Absent-No major rock outcrops will be impacted by the project.
Belding's Orange-throated Whiptail *Cnemidophorus hyperythrus beldingi*	FSC/None/CSC	Covered	Coastal scrub (low elev.), chaparral, valley & foothill hardwood, esp washes & sandy areas w/patches of brush & rocks	**High. Disturbed habitat along the Gage Canal segments and in orchard areas have the potential for the presence of this native reptile.**

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Coastal Whiptail *Cnemidophorus tigris stejnegeri* (*multiscutatus*)	FSC/None/None	Covered	Deserts & semiarid areas w. sparse vegetation & open areas, also in woodland & riparian areas, esp. where ground may be firm soil, sandy, or rocky	**High. Disturbed habitat along the Gage Canal segments and in orchard areas have the potential for the presence of this native reptile.**
Southern Rubber Boa *Charina bottae umbratica*	FSC/ST/None	Covered	Restricted to SBD & San Jacinto Mtns, variety of montane forest habitats, esp. in vicinity of streams or wet meadows; req. loose, moist soil for burrows, rotting logs	Absent - No intact Sage Scrub vegetation is impacted by the proposed alignment. A western alternative route south of the Sobrante Landfill does impact Scrubland habitat suitable for this reptile.
San Bernardino Mountain Kingsnake *Lampropeltis zonata parvirubra*	FSC/None/CSC	Covered	Moist woods, conif forest, oak woodland & chaparral, often in south-facing rocky areas near streams, esp. near rotting logs	Absent - The relatively low elevation of the project area precludes impacts to this native reptile.
San Diego Mountain Kingsnake *Lampropeltis zonata pulchra*	None/None/CSC	Covered	Variety of habitats, incl. valley & foothill hardwood, conif, chaparral, riparian & wet meadows.	Absent - The relatively low elevation of the project area precludes impacts to this native reptile.
Northern Red Diamond Rattlesnake *Crotalus [exsul] ruber ruber*	FSC/None/CSC	Covered	Chaparral, woodland, grassland & desert areas, esp in rocky areas & dense vegetation	Absent - No intact Sage Scrub vegetation is impacted by the proposed alignment. A western alternative route south of the Sobrante Landfill impacts Scrubland habitat suitable for this reptile.
Double-crested Cormorant *Phalacrocorax auritus*	None/None/CSC	Covered	(Rookery site) Colonial nester on coastal cliffs, offshore islands, & along lake margins in interior. Nests along coast on sequestered islets, usu on ground w/sloping surface, or in tall trees along lake margins	Absent - No suitable water bodies occur on or along the routes that would support this bird.

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
American Bittern *Botaurus lentiginosus*	None/None/None	Covered	Occurs primarily in brackish and freshwater marshes along the coast and in the coastal lowland	Absent - No suitable water bodies occur on or along the routes that would support this bird.
Great Blue Heron *Ardea herodias*	None/None/None	Covered	Bays, lagoons, ponds, and lakes	Absent - No suitable water bodies occur on or along the routes that would support this bird.
Black-crowned Night Heron *Nycticorax nycticorax*	None/None/None	Covered	Forages around lagoons, estuaries, bay shores, ponds, & lakes. Roosts during midday in groves of trees, which may be quite some distance from water	Absent - No suitable water bodies or large tree stands occur on or along the routes that would support this bird.
White-faced Ibis *Plegadis chichi*	FSC/None/CSC	Covered	(Rookery site) Shallow freshwater marsh. Dense tule thickets for nesting interspersed w/areas of shallow water for foraging	Absent - No suitable water bodies or large tree stands occur on or along the routes that would support this bird.
Turkey Vulture *Cathartes aura (breeding)*	None/None/None	Covered	Specialized static soarer, forages over roads, fields, open forests, & other open habitats.	Moderate - This carrion feeder is to be expected in rural areas where road kills might be encountered. No nesting habitat occurs near the routes.
Osprey *Pandion haliaetus*	None/None/CSC	Covered	(Nesting) Ocean shore, bays, freshwater lakes, & larger streams. Large nests built in tree-tops within 15 mi of good fish-producing body of water	Absent - No suitable water bodies or large tree stands occur on or along the routes that would support this bird.
White-tailed Kite *Elanus leucurus*	FSC/CR, FP/None	Covered	Low rolling foothills/valley margins w/scattered oaks & river bottoms or marshes adj to deciduous woodland, esp. open grasslands, meadows, margins close to trees for nesting	**High in areas adjacent to riparian habitat, such as along the Santa Ana River (Reach A), Moderate south of the Sobrante Landfill (Reach H).**

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Bald Eagle *Haliaeetus leucocephalus*	FT/CT/None	Covered	Ocean shorelines, lake margins, river courses for both nesting and wintering	Low. The Santa Ana River provides the only suitable open field or wetland habitat along the route.
Northern Harrier *Circus cyaneus (breeding)*	None/None/CSC	Covered	Coastal salt marsh & fresh-water marsh, nests and forage in grasslands and farmlands	Low. The Santa Ana River provides the only suitable open field or wetland habitat along the route.
Sharp-shinned Hawk *Accipiter striatus*	None/None/CSC	Covered	Riparian woodlands, forests; forages at edges of open habitats.	**High. As winter visitor, suitable foraging areas occur along the project routes.**
Cooper's Hawk *Accipiter cooperi*	None/None/CSC	Covered	Woodland, usu. open, interrupted or marginal type, nests mainly in riparian areas	**High. Suitable foraging areas occur along the project routes.**
Northern Goshawk *Accipiter gentilis*	FSC/None/CSC	Covered	(nesting) Often in vicinity of conif forest. Uses old nests & maintains alternate sites. Usu nests on north slopes, near water. Red fir, lodgepole pine, Jeffrey pine, & aspen are typical nest trees.	Low. The relatively low elevation of the project area precludes impacts to this raptor.
Swainson's Hawk *Buteo swainsoni*	FSC/CT/None	Covered	(nesting) Breeds in stands w/few trees in juniper-sage flats, riparian areas, & in oak savannah. Req adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Absent - No suitable foraging areas occur along the project routes, except Sobrante Landfill.
Ferruginous Hawk *Buteo regalis*	None/None/CSC	Covered	Winters in so. CA. Forages over agricultural lands, grasslands, scrub.	Absent - No suitable foraging areas occur along the project routes, except Sobrante Landfill.
Golden Eagle *Aquila chrysaetos*	None/None/CSC	Covered	Foothills, mountains, grasslands, deserts, and shrub habitats.	Absent - No suitable foraging areas occur along the project routes, except Sobrante Landfill.

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Merlin *Falco columbarius*	None/None/CSC	Covered	Agricultural fields, grasslands, mudflats	Absent - No suitable foraging areas occur along the project routes, except Sobrante Landfill.
Peregrine Falcon *Falco peregrinus*	FSC/CE/NONE	Covered	(Nesting) near wetlands, lakes, rivers or other water; on cliffs, banks, dunes, mounds; also man-made structures. Nest a scrape or depression, or ledge in an open site	Moderate. The raptor could be encountered foraging about the project routes.
Prairie Falcon *Falco mexicanus* (breeding)	None/None/CSC	Covered	Dry, open terrain, level or hilly, breeding sites on cliffs	Absent. No suitable forging areas occur along the project routes, except Sobrante Landfill.
Mountain Quail *Oreortyx pictus*	None/None/None	Covered	Fairly common in chaparral, uncommon in pinon-juniper woodland, desert-edge scrub, and mixed conif woodland	Absent. The relatively low elevation of the project area precludes impacts to this native gamebird.
Mountain Plover (wintering) *Charadrius montanus*	FPT/None/CSC	Covered	(Wintering) Short grasslands, freshly plowed fields, newly sprouting rain fields, sod farms. Short vegetation, bare ground, flat topography. Prefers grazed areas & areas w/burrowing rodents	Absent - No habitat
Western Yellow-billed Cuckoo *Coccyzus americanus occidentalis*	None/CE/None	Covered	Riparian forest nester, along broad, lower flood-bottoms of larger river systems, esp nests in riparian jungles of willow, often w/cottonwoods	Extremely low. Santa Ana River is the only site along the routes that has potential habitat for this bird.
Burrowing Owl (*Athene [Speotyto] cunicularia hypugaea*)	FSC/None/None/C	Covered	Open dry annual or perennial grasslands, desert & scrublands w/low growing vegetation, uses ground squirrel burrows for nesting	Moderate. Several bare soils banks occur along the route where this ground-dwelling bird could be encountered, particularly along the Gage Canal segments.

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
California Spotted Owl *Strix occidentalis occidentalis*	FSC/None/CSC	Covered	Dense coniferous forest w/nesting cavities.	Absent - The relatively low elevation of the project area precludes impacts to this native bird.
Black Swift *Cyplesoides niger* (breeding)	FSC/CT/None	Covered	(Nesting) Coastal belt of Santa Cruz & Monterey Cos.; central & southern Sierra Nevada; SBD & San Jacinto Mtns. Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep cyns & sea-bluffs above surf; forages widely	Low. May forage
Williamson's Sapsucker *Sphyrapicus thyroides*	None/None/None	Covered	Montane conif woodland	Absent - elevation and vegetation not suitable
Downy Woodpecker *Picoides pubescens*	None/None/None	Covered	Restricted to lowland riparian woodland	**High. Suitable habitat at Santa Ana River and Mockingbird Canyon**
Southwestern Willow Flycatcher *Empidonax traillii extimus*	FE/SE/None	Covered	Extensive thickets of low, dense willows, often near streams	High at Santa Ana River (Reach A), Low at Mockingbird Canyon (Reach B), Marginal at Reach H
Loggerhead Shrike *Lanius ludovicianus*	FSC/None/CSC	Covered	Open habitats with scattered shrubs & other perches.	Moderate. Limited suitable habitat at Reach H.
Least Bell's Vireo *Vireo bellii pusillus*	FE/CE/None	Covered	Summer resident in So. Cal., inhabits low riparian growth in vic. of water or in dry river bottoms, below 2000 ft, usu. willow, baccharis, mesquite	High at Santa Ana River (Reach A), Marginal at Spring Brook drainage (Reach B), Moderate at Mockingbird Canyon (Reach E), Marginal at Reach H
California Horned Lark *Eremophila alpestris actia*	None/None/CSC	Covered	Barren ground with short grass or scattered bushes.	Moderate. Could potentially occur in disturbed, open habitat along the routes.

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Purple Martin *Progne subis*	None/None/CSC	Covered	(Nesting) Inhabits woodlands, low elevation conif forest of Douglas fir, Ponderosa pine, & Monterey pine. Nests in old woodpecker cavities mostly, also in man-made structures. Nest often located in tall isolated tree/snag	Moderate. Humans like to provide nesting sites for this large swallow
Tree Swallow *Tachynecta bicolor*	None/None/None	Covered	Occurs usu around lagoons, lakes, & ponds in coastal lowland	Moderate. May nest along Santa Ana River and in Mockingbird Canyon
Coastal Cactus Wren *Campylorhynchus brunneicapillus couesi*	None/None/CSC	Covered	So. Cal. coastal sage scrub, esp w/tall *Opuntia* cactus for nesting	Absent - No suitable cactus stands occur along the routes that would harbor this bird.
Coastal California Gnatcatcher *Polioptila californica californica*	FT/None/CSC/C	Covered	Coastal sage scrub, below 2,500 ft in So. Cal., esp low coastal scrub in arid washes, mesas & slopes	Low at Spring Brook (Reach B)
Nashville Warbler *Vermivora ruficapilla*	None/None/None	Covered	Occurs in wide variety of trees & shrubbery	**High. Occurs as migrant only**
Yellow Warbler *Dendroica petechia brewsteri*	None/None/SC	Covered	Riparian plant associations, prefers willows, cottonwoods, aspens, sycamores & alders for nesting & foraging, esp nests in montane shrubbery in open conifer forests.	Moderate. May nest at Santa Ana River and Mockingbird Canyon
MacGillivray's Warbler *Oporornis tolmei*	None/None/None	Covered	Weedy brush, park shrubbery, streamside thickets, & desert wash scrub	**High. Occurs as migrant only**
Wilson's Warbler *Wilsonia pusilla*	None/None/None	Covered	Any habitat w/trees or large shrubs, prefers lower to mid levels of broad-leaf trees	Moderate. May nest at Santa Ana River and Mockingbird Canyon

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
Yellow-breasted Chat *Icteria virens*	None/None/CSC	Covered	Summer resident in riparian thickets of willow & other brushy tangles near watercourses, nests in low, dense riparian habitat.	**High. May nest at Santa Ana River and Mockingbird Canyon**
Southern California Rufous-crowned Sparrow *Aimophila ruficeps canescens*	FSC/None/CSC	Covered	Coastal sage scrub, sparse chaparral, esp rel. steep, often rocky hillsides w/grass & forb patches	Absent - No habitat
Bell's Sage Sparrow *Amphispiza belli bellii*	FSC/None/CSC	Covered	Coastal chaparral, coastal sage scrub, and sagebrush desert habitat.	Absent - No habitat
Grasshopper Sparrow *Ammodramus savannarum*	None/None/None	Covered	Dense grassland w/tall forbs & scattered shrubs for singing perches.	Low. May occur at Sobrante Landfill
Lincoln's Sparrow *Melospiza lincolnii* (breeding)	None/None/None	Covered	Dense low underbrush, disturbed or edge situations where grasses or weeds are mixed w/shrubs	**High. Occurs as migrant only**
Tricolored Blackbird *Agelaius tricolor* (colony)	FSC/None/CSC	Covered	Breeds near fresh water in emergent wetlands w/dense cattails or tules. Feeds in grassland & cropland.	Low. May nest along Santa Ana River
Brush Rabbit *Sylvilagus bachmani*	None/None/None	Covered	Dense brush cover of thickets, vines, brambles or dense riparian species; blackberry & willow patches favored. Also early successional stages of oak & conifer habitats	Moderate. Limited suitable habitat.
San Diego Black-tailed Jackrabbit *Lepus californicus bennettii*	FSC/None/CSC	Covered	Variety of habitats including coastal sage scrub, chaparral, & desert scrub.	Low. Very limited suitable habitat.

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
San Bernardino Flying Squirrel *Glaucomys sabrinus californicus*	None/None/None	Covered	Conif forests, esp w/mature stands of fir w/open understory. SBD & San Jacinto Mtns. Nocturnal	Absent - The relatively low elevation of the project area precludes impacts to this native mammal.
Los Angeles Pocket Mouse *Perognathus longimembris brevinasus*	FSC/None/CSC	Covered	Lower elevation grasslands & coastal sage communities in LA Basin, esp open ground w/fine sandy soils	Low. Could potentially occur in disturbed, open habitat along the routes, particularly along the Gage Canal segments.
Northwestern San Diego Pocket Mouse *Chaetodipus fallax fallax*	None/None/CSC	Covered	Coastal scrub, chaparral, grasslands, sagebrush, etc. in southwestern CA, esp. sandy, herbaceous areas w/rocks or coarse gravel	Low. Could potentially occur in disturbed, open habitat along the routes, particularly along the Gage Canal segments.
Dulzura Kangaroo Rat *Dipodomys simulans*	None/None/None	Covered	Annual & perennial grasslands, also coastal scrub, sagebrush, esp w/buckwheat, chamise, brome grass & filaree	Moderate. Could potentially occur in disturbed, open habitat along the routes, particularly along the Gage Canal segments.
Stephens' Kangaroo Rat *Dipodomys stephensi*	FE/CT/None	Covered	Annual & perennial grasslands, also coastal scrub, sagebrush, esp w/buckwheat, chamise, brome grass & filaree	Low. Could potentially occur in disturbed, open habitat along the routes, particularly along the Gage Canal segments (Reach B).
Aguanga Kangaroo Rat *Dipodomys merriami collinus*	None/None/None	Covered	Annual & perennial grasslands, also coastal scrub, sagebrush, esp w/buckwheat, chamise, brome grass & filaree	Moderate. Could potentially occur in disturbed, open habitat along the routes, particularly along the Gage Canal segments.
San Bernardino Kangaroo Rat *Dipodomys merriami parvus*	FE/None/CSC	Covered	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans & flood plains; needs early to intermediate seral stages	High. Anticipated to be along the Santa Ana River but disruption of the banks for flood control have largely precluded suitable habitat for this endemic rodent.

Appendix 5. Sensitive Animals from General Project Area, with Potential for Occurrence

SPECIES NAME	STATUS Federal/State/CDFG	HCP STATUS: W-Riverside Co. MSHCP (Proposed 2002)	HABITAT REQUIREMENTS	PROBABILITY OF OCCURRENCE
San Diego Desert Woodrat *Neotoma lepida intermedia*	FSC/None/CSC	Covered	Mixed & chamise-redshank chaparral, sagebrush & other habitats. Prefers rocky areas to build stick nest	Absent - No intact Sage Scrub vegetation is impacted by the proposed alignment. A western alternative route south of the Sobrante Landfill impacts Scrubland habitat suitable for this mammal.
Coyote *Canis latrans*	None/None/None	Covered	Variety of habitats, including urban canyons	**High. This Canid is ubiquitous**
Long-tailed Weasel *Mustela frenata*	None/None/None	Covered	Mostly uses intermediate cover stages of conifer & deciduous habitats, interspersed w/lower seral stages & open forest, woodland areas & shrubs, fr/sea level to alpine meadows	**High. Could be anticipated along the Santa Ana River.**
Mountain Lion *Felis (Puma) concolor*	None/None/Protected	Covered	Widespread, uncommon resident ranging from sea level to alpine meadows. Variety of habitats except xeric regions of the deserts..	Extremely low. Could be in areas adjacent to the Reche Canyon area and Arlington Mountain.
Bobcat *Lynx rufus*	None/None/None	Covered	Wide range of habitats, incl. brush land, foothill chaparral, sagebrush and forests	**High. Probably absent from urbanized areas**

DEFINITIONS OF SENSITIVITY RATINGS

California Native Plant Society (CNPS)

List Status

List 1A	Plants presumed extinct in California. CEQA consideration mandatory
List 1B	Plants rare, threatened, or endangered in California and elsewhere. CEQA consideration mandatory
List 2	Plants rare, threatened, or endangered in California, but more common elsewhere. CEQA consideration mandatory
List 3	Plants about which we need more information - a review list. CEQA consideration strongly recommended
List 4	Plants of limited distribution - a watch list. CEQA consideration strongly recommended

CNPS R-E-D Code

R (Rarity)

1	Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time
2	Distributed in a limited number of occurrences, occasionally more if each occurrence is small
3	Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported

E (Endangerment)

1	Not endangered
2	Endangered in a portion of its range
3	Endangered throughout its range

D (Distribution)

1	More or less widespread outside California
2	Rare outside California
3	Endemic to California

State-Listed/Designated Plants and Animals

CE	State-listed, endangered
CT	State-listed, threatened
CR	State-listed, rare
CC	Candidate for State listing
CSC	California Special Concern Species (Department of Fish and Game)

Federally-Listed/Designated Plants and Animals

FE	Federally-listed, endangered
FT	Federally-listed, threatened
PE	Federally-proposed, endangered
PT	Federally-proposed, threatened
FC	Candidate for Federal listing
FSC	Federal Special Concern Species
C2*	Threat and/or distribution data are insufficient to support federal listing, but the plant is presumed extinct
C3c	Too widespread and/or not threatened

Multiple Species Conservation Program Covered Species List

yes	Covered
no	Not covered

SUMMARY OF WETLAND REGULATIONS

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The U. S. Army Corps of Engineers (Corps) regulates activities pursuant to Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. The California Department of Fish and Game (CDFG) regulates activities under the Fish and Game Code Sections 1600-1607. The California Regional Water Quality Control Board (RWQCB) regulates activities under Section 401 of the Federal CWA and the California Porter-Cologne Water Quality Control Act. Additionally, local governments may have local regulations affecting wetlands habitats.

U. S. Army Corps of Engineers

The Corps has regulatory authority over the discharge of dredged or fill material into the waters of the United States under Section 404 of the CWA. The term "waters of the United States" includes (1) all waters that have, are, or may be used in interstate or foreign commerce (including sightseeing or hunting), including all waters subject to the ebb and flow of the tide; (2) wetlands; (3) all waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; the use, degradation or destruction of which could affect interstate or foreign commerce; (4) all impoundments of water mentioned above; (5) all tributaries of waters mentioned above; (6) the territorial seas; and (7) all wetlands adjacent to the waters mentioned above. Under this definition, and in the absence of wetlands, the limits of the Corps' jurisdiction in non-tidal waters extend to the ordinary high water mark (OHWM), which is defined as "...that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

Wetlands, a subset of jurisdictional waters, are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." The Corps has developed a methodology for determining the boundaries of jurisdictional wetlands that is published in the document known as the *1987 Manual* (Environmental Laboratory 1987). The methodology set forth in the manual is based on the following three indicators that are normally present in wetlands: (1) hydrology providing permanent or periodic inundation by groundwater or surface water, (2) hydric soils, and (3) hydrophytic vegetation. In order to be considered a wetland according to Corps criteria, an area must exhibit at least minimal characteristics within all three of these parameters.

California Regional Water Quality Control Board

The RWQCB is the primary agency responsible for protecting water quality in California. The RWQCB regulates discharges to surface waters under the federal CWA and the California Porter-Cologne Water Quality Control Act. The RWQCB's jurisdiction extends to all waters of the State and to all waters of the United States, including wetlands.

Section 401 of the CWA gives the RWQCB the authority to regulate, through 401 Certification, any proposed federally-permitted activity that may affect water quality. Among such activities are discharges of dredged or fill material permitted by the Corps under CWA Section 404. Certification or waiver must be based on a finding that the proposed discharge will comply with water quality standards.

California Department of Fish and Game

The State of California regulates activities in rivers, streams, and lakes pursuant to Sections 1600-1607 of the Fish and Game Code. These sections discuss the process by which an individual, government agency, or public utility must notify the CDFG prior to any activity that would "substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake..." Following such notification, the CDFG must inform the individual, agency, or utility of the existence of any fish and wildlife resource that may be substantially adversely affected by the activity. The CDFG must also include a proposal for measures to protect fish and wildlife resources. This proposal is called a "Streambed Alteration Agreement" (a Section 1601 Agreement for public agencies and utilities, and a Section 1603 Agreement for private party activities).

Jurisdictional limits of the CDFG are not as clearly defined by regulation as those of the Corps. While they closely resemble the limits described by Corps regulations, they exclude isolated wetlands (those not associated with a stream, river, or lake, such as isolated vernal pools) and include riparian habitat supported by a river, stream, or lake regardless of the presence or absence of hydric soils and saturated soil conditions. Generally, CDFG takes jurisdiction to the bank of the stream or to the outer limit of the adjacent riparian vegetation, whichever is greater. However, the Fish and Game Commission has provided the definition of the jurisdictional extent of the Section 1600 regulations as an Appendix to the Fish and Game Code. This definition follows that of the U.S. Fish and Wildlife Service and requires only one of the three Corps criteria.

Activities Requiring Permits

Any development proposal that involves impacting the drainages, streams, or wetlands on the site through filling, stockpiling, conversion to a storm drain, channelization, bank stabilization, road or utility line crossings, or any other modification would require permits from the Corps, CDFG, and RWQCB, before any development could commence on the project site. Both permanent and temporary impacts are regulated and would trigger the need for permits. Processing of the Section 401 permit and Section 1603 agreement can occur concurrently with the Corps permit process and can utilize the same information and analysis. The Corps will not issue its authorization until RWQCB completes the Section 401 Water Quality Waiver or Certification.

Applications to both the CDFG and RWQCB require submittal of a valid California Environmental Quality Act (CEQA) document along with the application.

Appendix D

Western Replenishment and Extraction Agreement

WESTERN REPLENISHMENT AND EXTRACTION AGREEMENT*

Agreement made this _____ day of _____, 2004, between San Bernardino Valley Municipal Water District ("Valley District") and Western Municipal Water District of Riverside County ("Western").

WHEREAS, Western and Valley District are parties to the Judgment in the case of *Western Municipal Water District of Riverside County v. East San Bernardino County Water District, et al.*, No. 78426, Superior Court of Riverside County ("Western case"), in which the Court retains continuing jurisdiction; and

WHEREAS, that Judgment adjudicates certain water rights in the San Bernardino Basin Area ("Basin Area"), sometimes referred to as the Bunker Hill Basin, and confers certain rights and obligations upon Valley District and Western; and

WHEREAS, the Judgment is administered and enforced by a Watermaster, consisting of a committee of two persons, one representative nominated by Valley District, and one by Western; and

WHEREAS, in accordance with the Judgment, the Watermaster makes annual reports to the Court, including an accounting for all pumping, the replenishment required, and credits in the Basin Area; and

* For inclusion in the Draft EIR on the Riverside-Corona Feeder Project

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WHEREAS, the Judgment specifically reserves the rights of Valley District, Western, and any other party to exercise such rights as they may have or obtain under law to spread, store underground, and recapture imported water; and

WHEREAS, Section VI(b)6 of the Judgment provides that Valley District and Western may agree to additional extractions from the Basin Area, subject to the availability of imported water for replenishment; and

WHEREAS, Valley District holds a contract with the State of California for the delivery of imported water from the State Water Project, and such deliveries are used in part to replenish the Basin Area; and

WHEREAS, Valley District and The Metropolitan Water District of Southern California ("Metropolitan") have entered into a Coordinated Operating Agreement dated July 10, 2000, and Attachment 2 thereto dated May 14, 2001; called and referred to herein as the "Coordinated Use Agreement"; and

WHEREAS, pursuant to such Agreements between Metropolitan and Valley District, and all attachments thereto, Metropolitan can take delivery through Valley District facilities of water imported from the State Water Project under its own contract, and has the right and obligation to purchase certain quantities of imported water from Valley District for delivery to its service area, including delivery to Western through the Riverside Corona Feeder; and

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WHEREAS, Section 9.2 of the Coordinated Use Agreement provides that Valley District, using excess capacity in its Foothill Pipeline, shall convey both its own and Metropolitan's water purchased from the State Water Project at the Devil Canyon Power Plant afterbay to mutually agreed upon locations, including locations along the Foothill Pipeline.

WHEREAS, water delivered pursuant to Section 9.2 may be purchased from Metropolitan by Western at the regular price per acre-foot for replenishment service provided for in Metropolitan's Administrative Code; and

WHEREAS, Section 9.4 of the Coordinated Use Agreement provides that Metropolitan, in accord with its Water Surplus and Drought Management Plan, shall make available to Western, Inland Empire Utilities Agency, and the Orange County Water District up to 15,000 acre-feet per year of replenishment water through the Foothill Pipeline, at the cost of Metropolitan's purchase of State Water Project water from Valley District, plus five percent; and

WHEREAS, Western is a member agency of Metropolitan and has made arrangements to purchase imported replenishment water from Metropolitan, to be delivered at mutually agreed upon locations, including locations along the Foothill Pipeline, pursuant to the Agreements between Metropolitan and Valley District referenced above;

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NOW, THEREFORE, in consideration of the mutual covenants of the parties, and based upon the recitals above, IT IS HEREBY AGREED AS FOLLOWS:

1. Western Purchase of Imported Water. Whenever Western notifies Valley District that it has purchased imported water from Metropolitan pursuant to either Section 9.2 or Section 9.4 of the Coordinated Use Agreement, or any extension thereof, Valley District shall cause such imported water to be used for replenishment of the Basin Area, consistent with any overall management plan adopted for the Basin Area. The timing of such replenishment shall be at the discretion of Valley District.

2. Replenishment Locations. Valley District shall have the option to cause Western's purchase of imported water from Metropolitan to be used for replenishment at any location it may choose, including, but not limited to:

(a) Foothill Pipeline

- Sweetwater Turnout
- Badger Turnout
- Waterman Turnout
- Patton Turnout
- City Creek Turnout
- Santa Ana Low Turnout

(b) Devil Canyon – Azusa Pipeline

- Lower Lytle Creek Basins Turnout

(c) Santa Ana River Crossing Pipeline

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- Seven Oaks Dam Borrow Site Turnout

(d) Greenspot Pipeline

- Mill Creek Spreading Turnout

Such replenishment may also be accomplished through in lieu measures.

3. Replenishment Costs. In view of Valley District's right to select the replenishment location, the timing thereof, and the groundwater level benefits associated therewith, Western shall have responsibility only for the actual net costs associated with the delivery and spreading of the replenishment water purchased from Metropolitan hereunder. Any funds or the value of any benefits received by Valley District from third parties, that reflect benefits to such third parties from the replenishment operations, shall be deducted from the costs paid by Valley District. Western shall reimburse Valley District for any remaining out-of-pocket costs associated with the delivery and spreading of Western's replenishment water.

4. Extraction by Western. Western shall have the right, from time to time at its option, to extract from the Basin Area amounts of water equal to the amounts of imported water that have been purchased from Metropolitan pursuant to Section 1, without charge except for its pumping costs. Western may extract such water from its own wells or wells owned by others, and from existing or from new wells. The water produced from such wells may be exported for beneficial use outside of the Basin Area.

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5. Assignment of Western's Extraction Rights. Western at its option may assign and transfer its right to extract such imported water to any plaintiff in the Western case, and such assigned right shall be in addition to any right that such producer may hold, and shall not be constrained by the injunctive provisions of the Judgment in the Western case.

6. Recordation Act. Western shall make all filings required under the Water Recordation Act, Water Code Section 4999, *et seq*., or any amendments thereto, whether such imported water is extracted from wells owned by Western or by others, or whether the extraction right has been temporarily assigned to others.

7. Watermaster Reports. The Watermaster shall include in its annual reports to the Court all amounts of imported water replenished directly or by in lieu measures pursuant to this Agreement, all amounts extracted, the wells and owners thereof by which such water is extracted, and the accumulation or reduction of any credits in the Basin Area. The Watermaster shall not include, however, the extractions made pursuant to this Agreement in its determinations of replenishment necessary to offset exports of water to areas not tributary to Riverside Narrows, as required in Section X of the Judgment.

8. Court Approval. This Agreement shall be subject to the approval of the Court in the Western case, pursuant to its continuing jurisdiction thereof.

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APPROVED the day and year hereinabove written.

SAN BERNARDINO VALLEY
MUNICIPAL WATER DISTRICT

By: _____

WESTERN MUNICIPAL WATER
DISTRICT OF RIVERSIDE COUNTY

By:_____

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Appendix E

Phase I Cultural Resources Investigation

ARCHAEOLOGICAL SURVEY REPORT:

A PHASE I CULTURAL RESOURCES INVESTIGATION FOR THE PROPOSED CORONA FEEDER MASTER PLAN PROJECT AREA, RIVERSIDE COUNTY, CALIFORNIA

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ARCHAEOLOGICAL SURVEY REPORT:
A PHASE I CULTURAL RESOURCES INVESTIGATION FOR THE PROPOSED CORONA FEEDER MASTER PLAN PROJECT AREA, RIVERSIDE COUNTY, CALIFORNIA

by,

Jeanette A. McKenna, Principal
McKenna et al., Whittier CA

INTRODUCTION

McKenna et al. (Appendix A) initiated this Phase I cultural resources investigation of the proposed Riverside-Corona Feeder Master Plan project area at the request of Albert A. Webb Associates, Riverside, California. McKenna et al. initiated this study in February of 2003 and completed the research and field studies between February and March of 2003. The study was supervised by Jeanette A. McKenna, Principal Investigator for McKenna et al., and the field studies were conducted by David Brunzell, Archaeological Associate for McKenna et al.

The proposed Riverside-Corona Feeder project area covers a relatively large area in western Riverside County, including linear alignments within existing street and some alignments along dirt access roads. This study involved numerous roadways that include roads currently under the jurisdiction of Caltrans (District 08) of the U.S. Army Corps of Engineers (e.g. the santa Ana River). Therefore, the following data has been compiled to provide compliance with both the California Environmental Quality Act (CEQA), as amended, and the Section 106 process of the National Historic Preservation Act (NHPA).

LOCATION AND SETTING

The project area is located in the western portion of Riverside County and a small portion of San Bernardino County. The alignment begins north of the Santa Ana River, near the intersection of the Warm Creek Bypass maintenance road, and continues south along Hunts Lane to Barton Road. The alignment continues west along Barton Road and south on Mount Vernon Avenue (crossing into Riverside County), Spring Street, Palmyrita Avenue, Marlborough Avenue, and Spruce Street (Figure 1-11). The alignment then follows Chicago Avenue to Lincoln Avenue, Adams Street, and Cleveland Avenue.

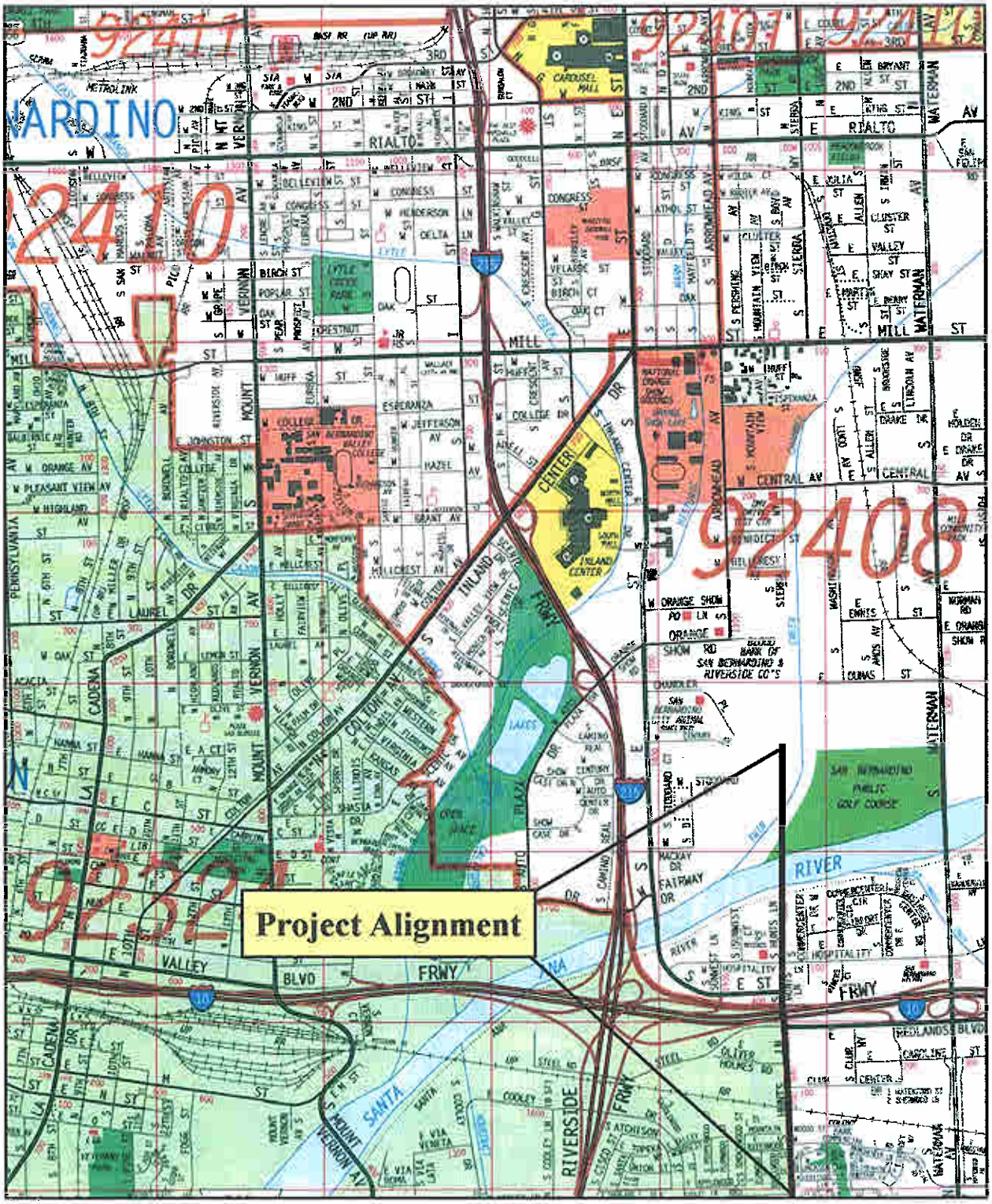

Figure 1. Northern Extent of Proposed Corona Feeder Alignment.

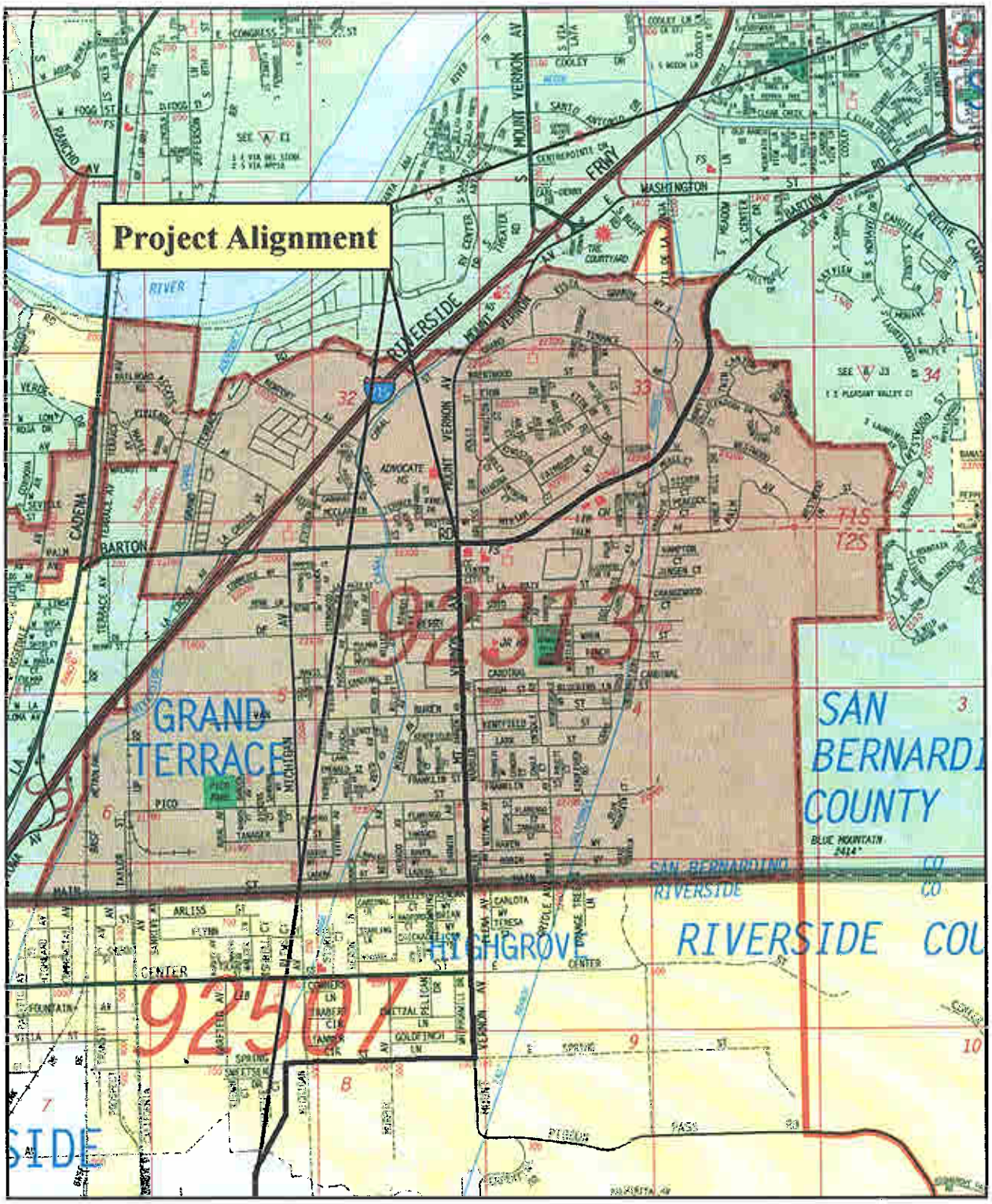

Figure 2. Northern Extent of Proposed Corona Feeder Alignment.

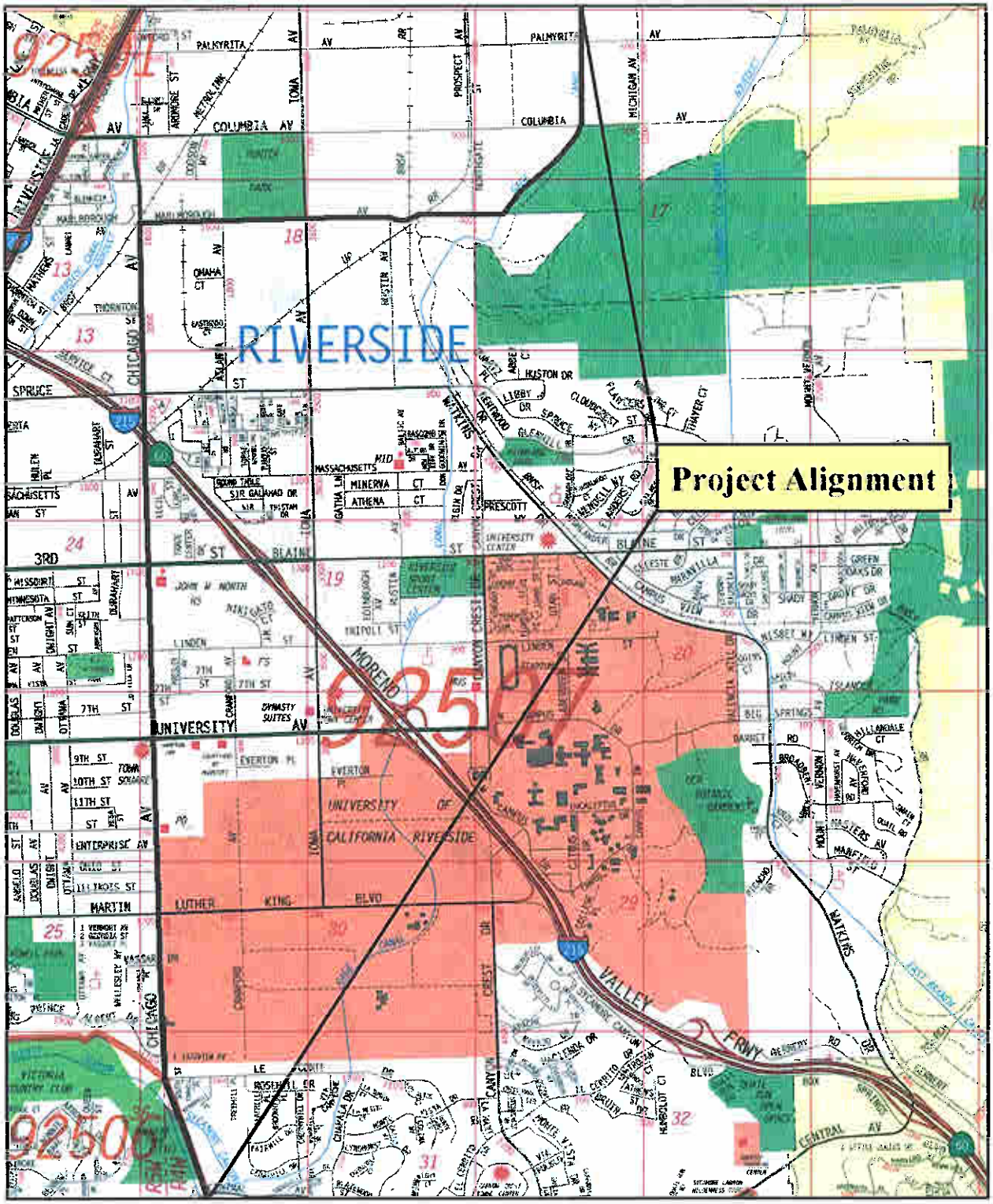

Figure 3. Central Portion of Proposed Corona Feeder Alignment.

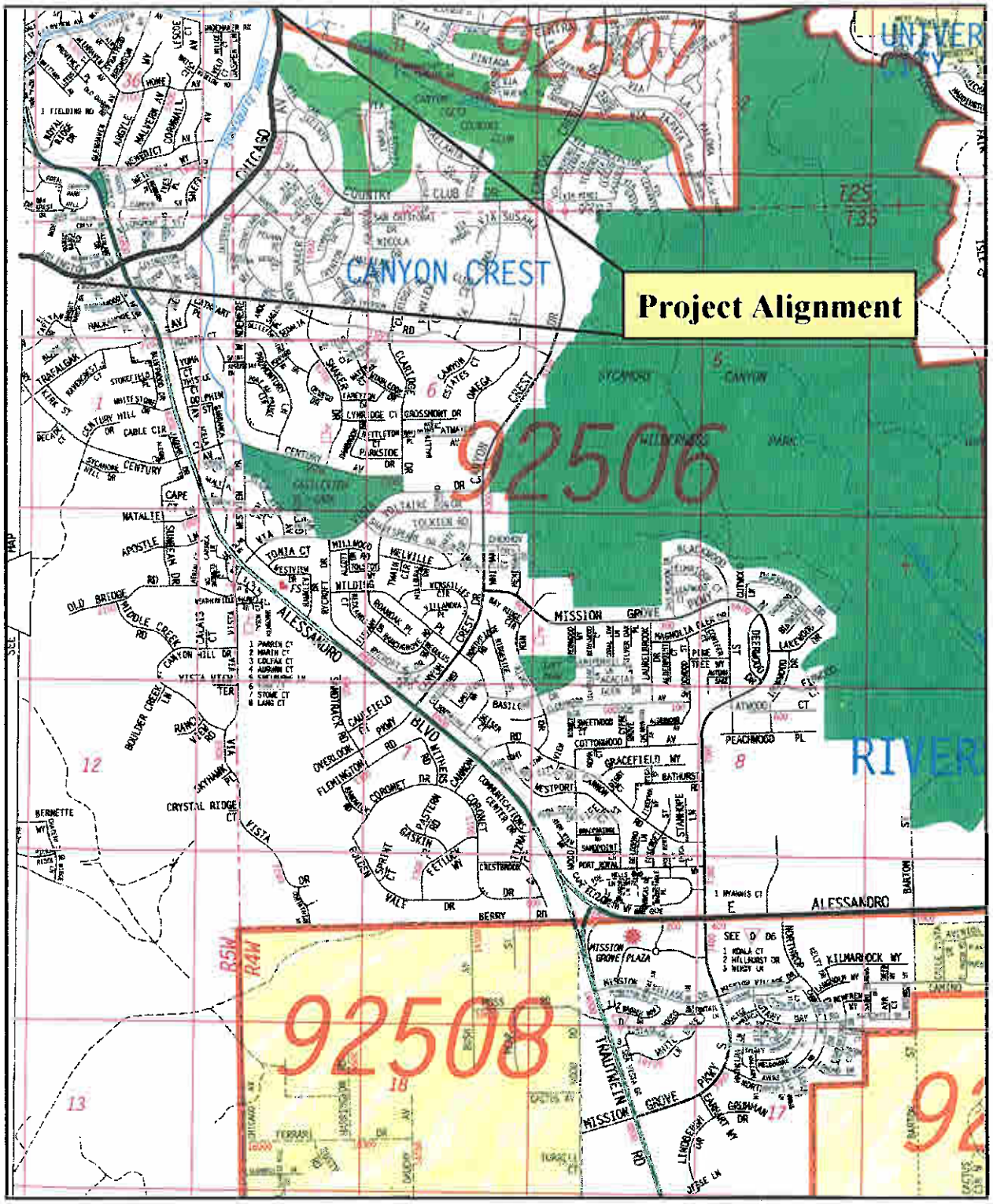

Figure 4. Central Portion of Proposed Corona Feeder Alignment.

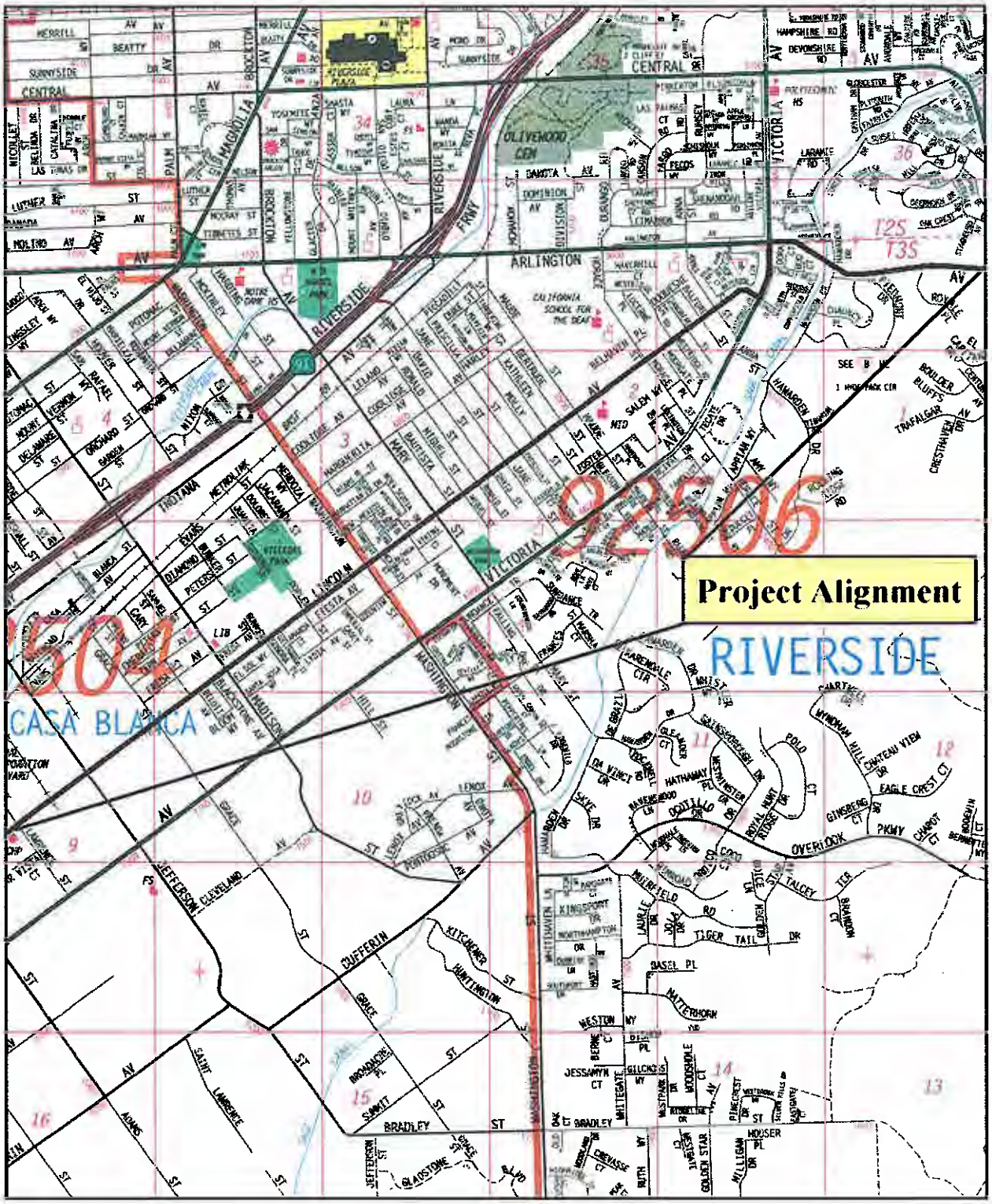

Figure 5. Central Portion of Proposed Corona Feeder Alignment.

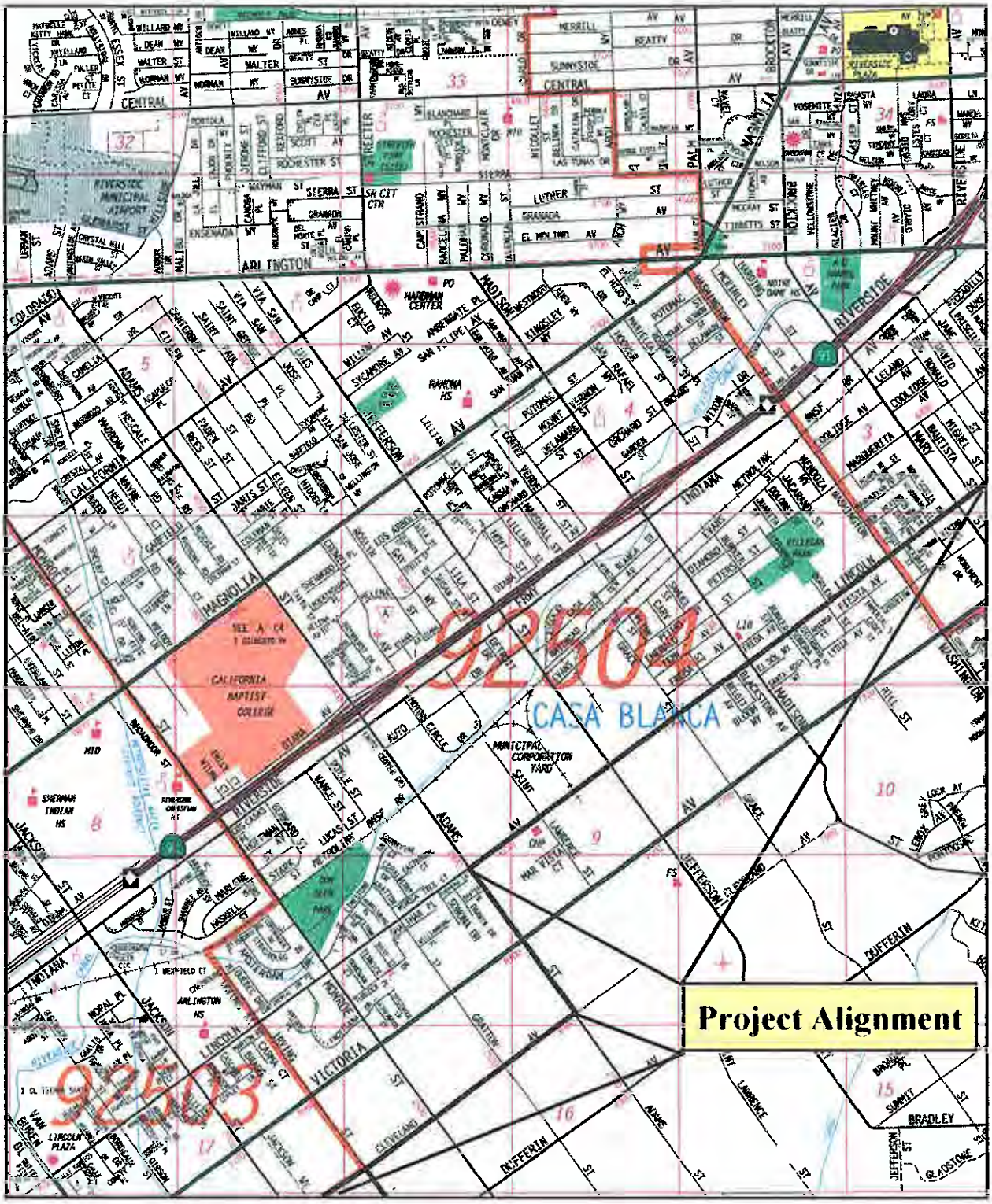

Figure 6. Central Portion of Proposed Corona Feeder Alignment.

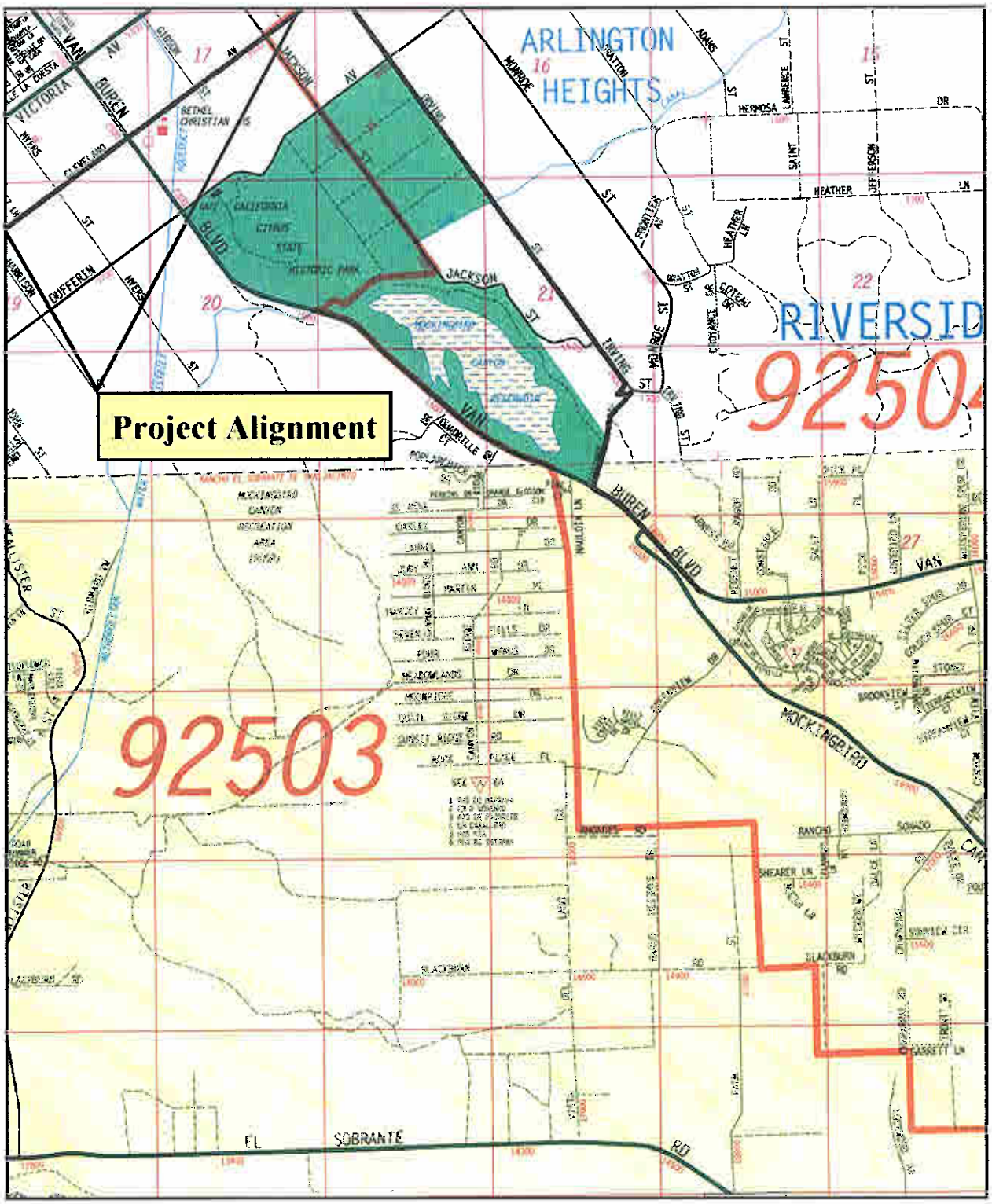

Figure 7. Central Portion of Proposed Corona Feeder Alignment.

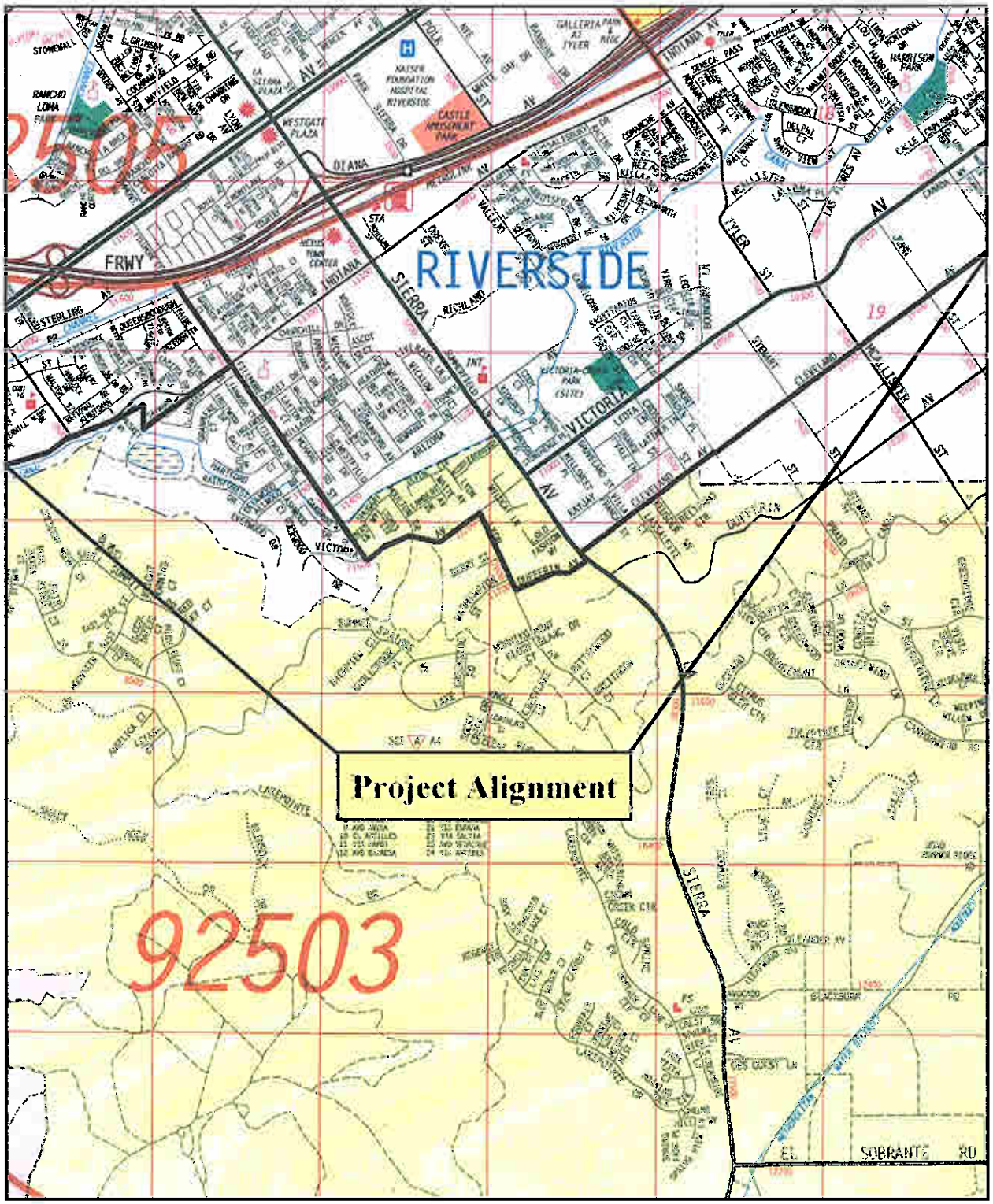

Figure 8. Central Portion of Proposed Corona Feeder Alignment.

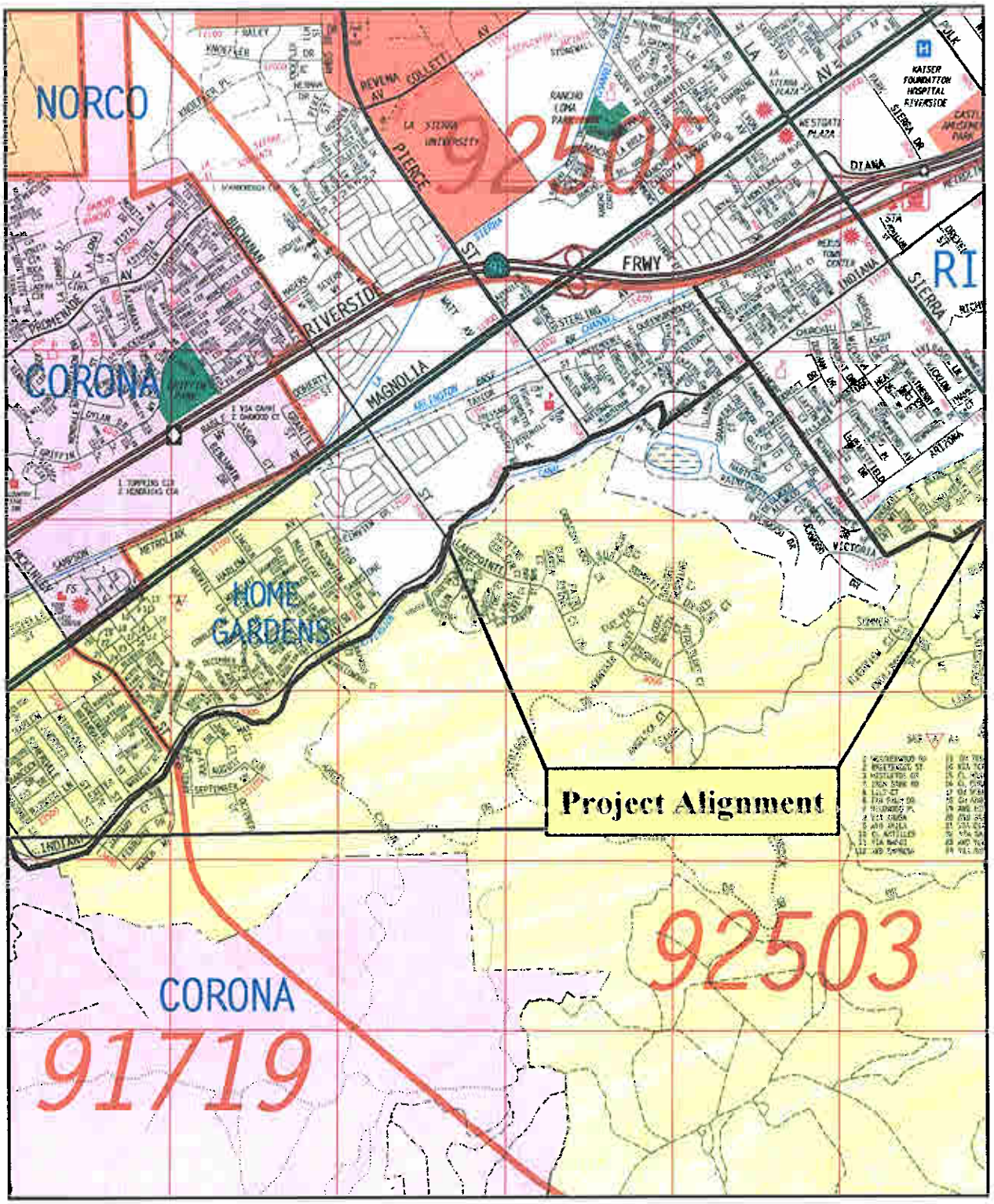

Figure 9. Central Portion of Proposed Corona Feeder Alignment.

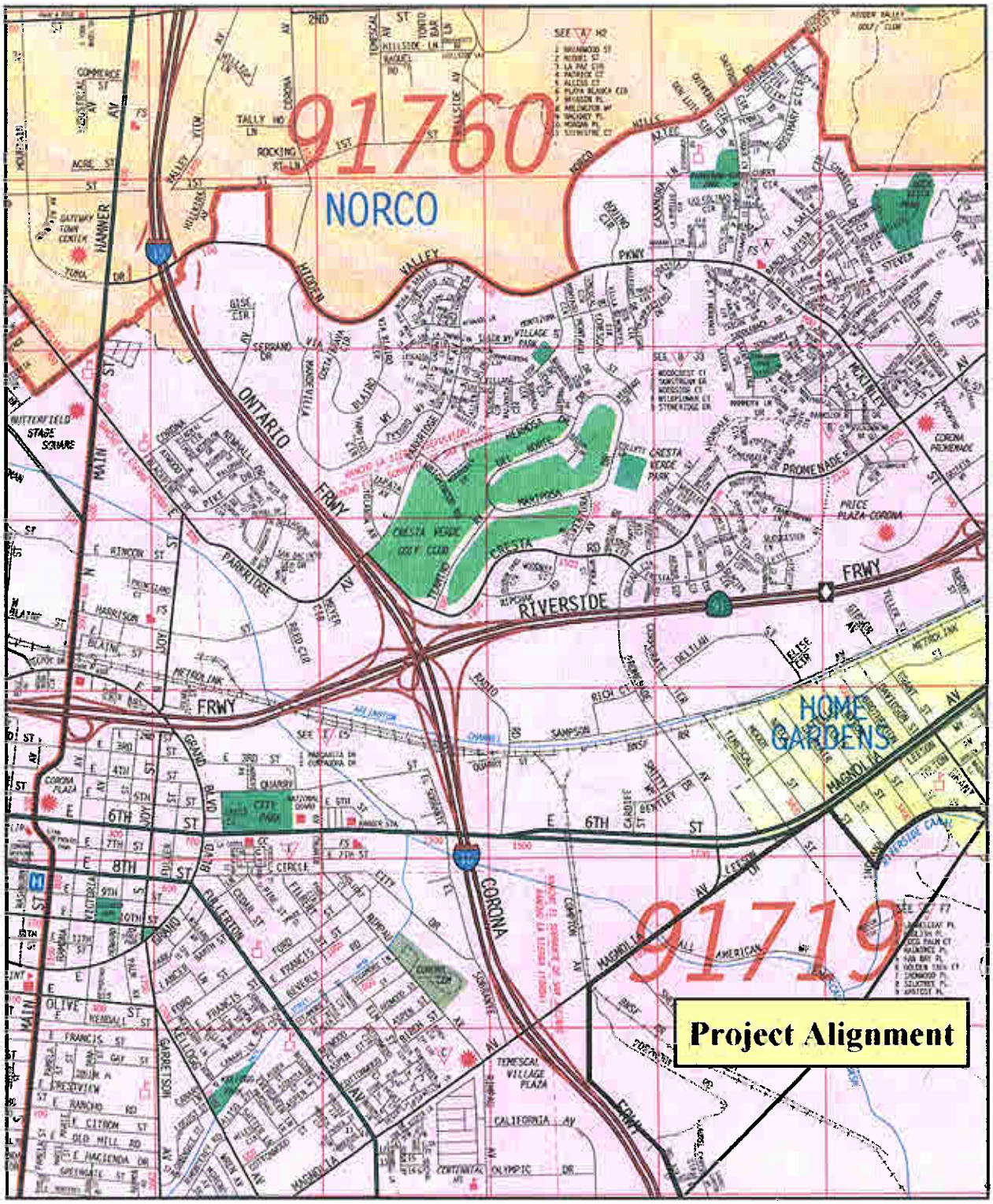

Figure 10. Central Portion of Proposed Corona Feeder Alignment.

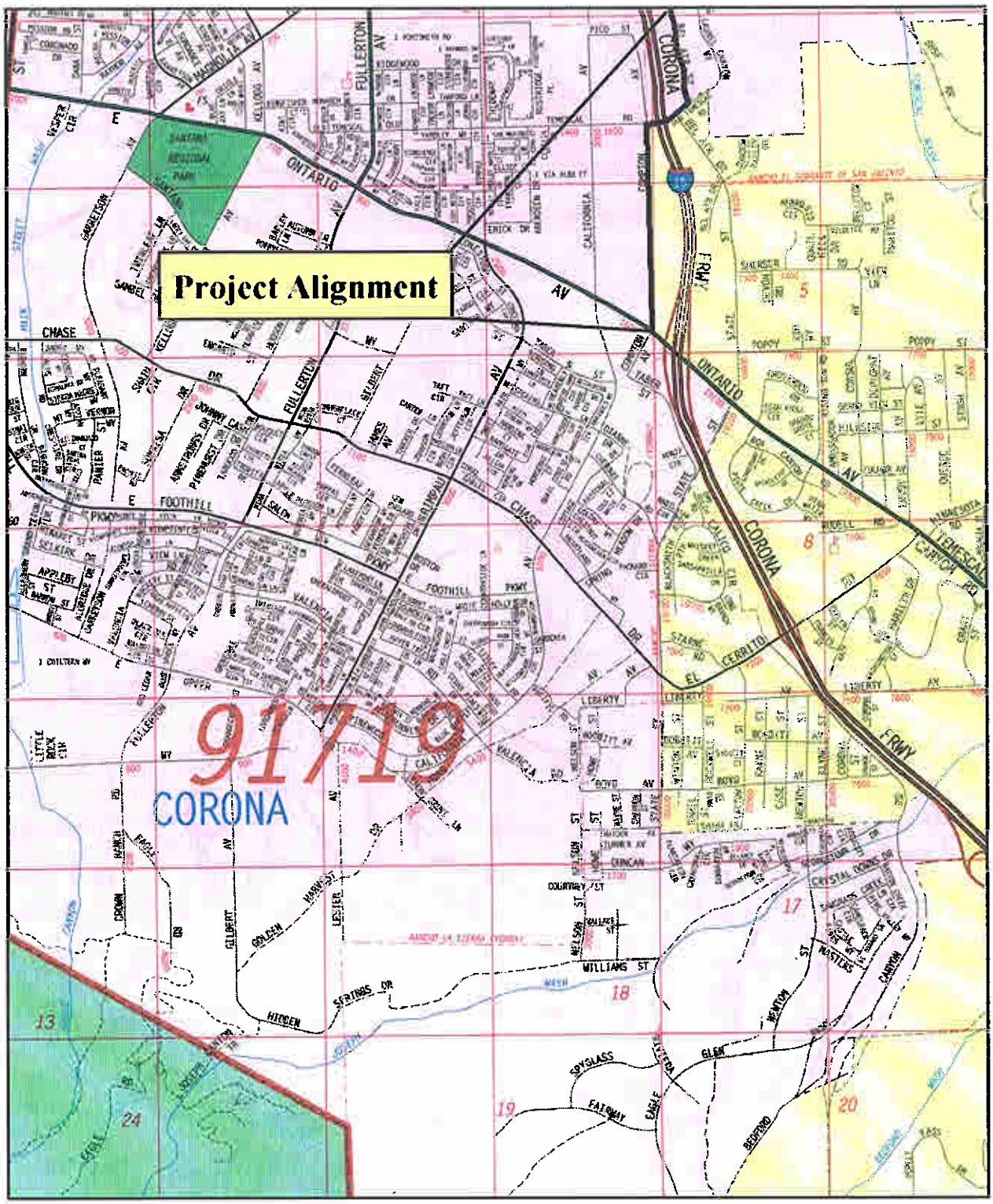

Figure 11. Southern Extent of Proposed Corona Feeder Alignment.

Figure 1. Project Vicinity, Riverside Corona Feeder - ★

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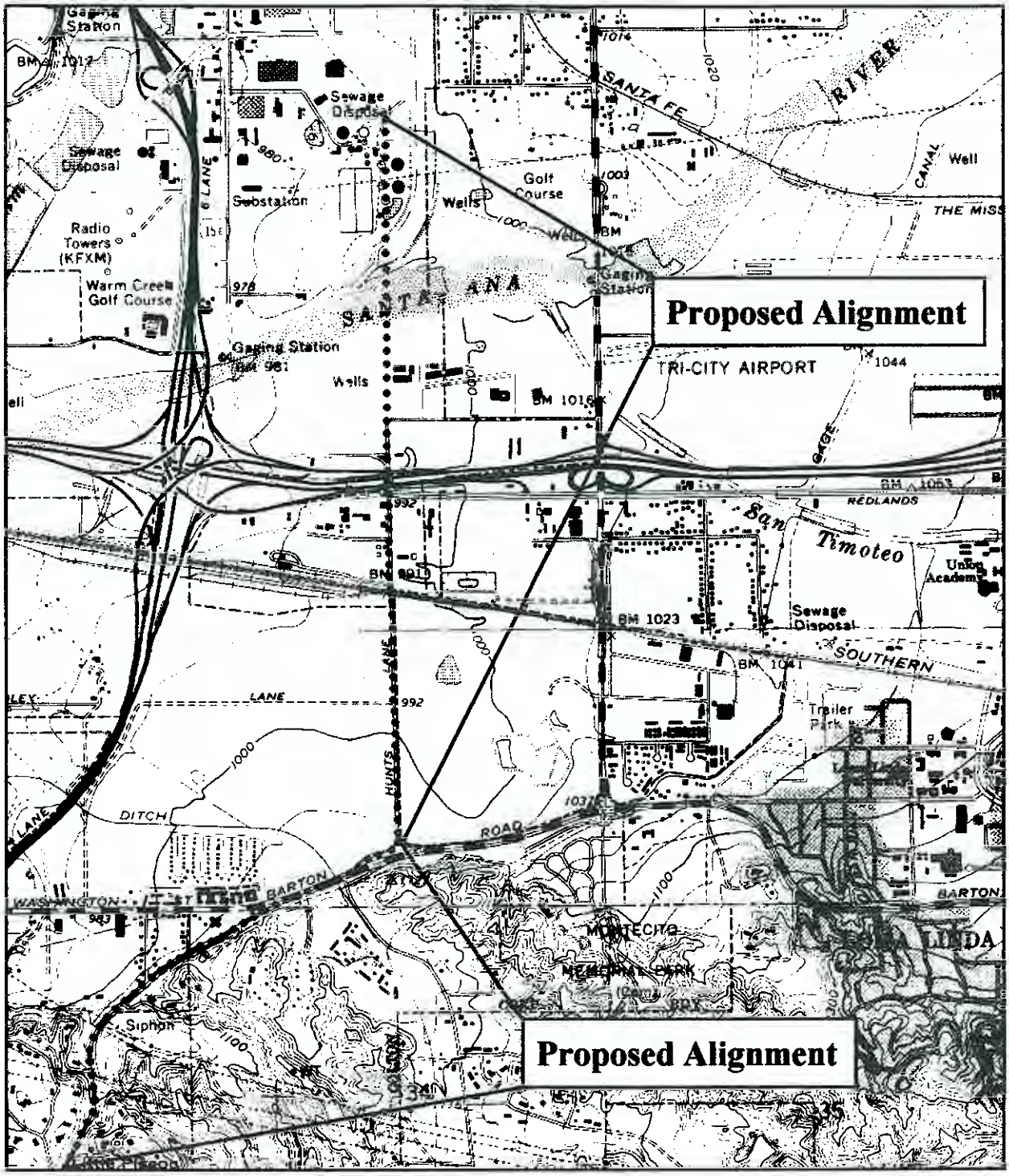

Figure 12. Northern Segments of the Corona Feeder (USGS San Bernardino South Quadrangle, rev. 1980).

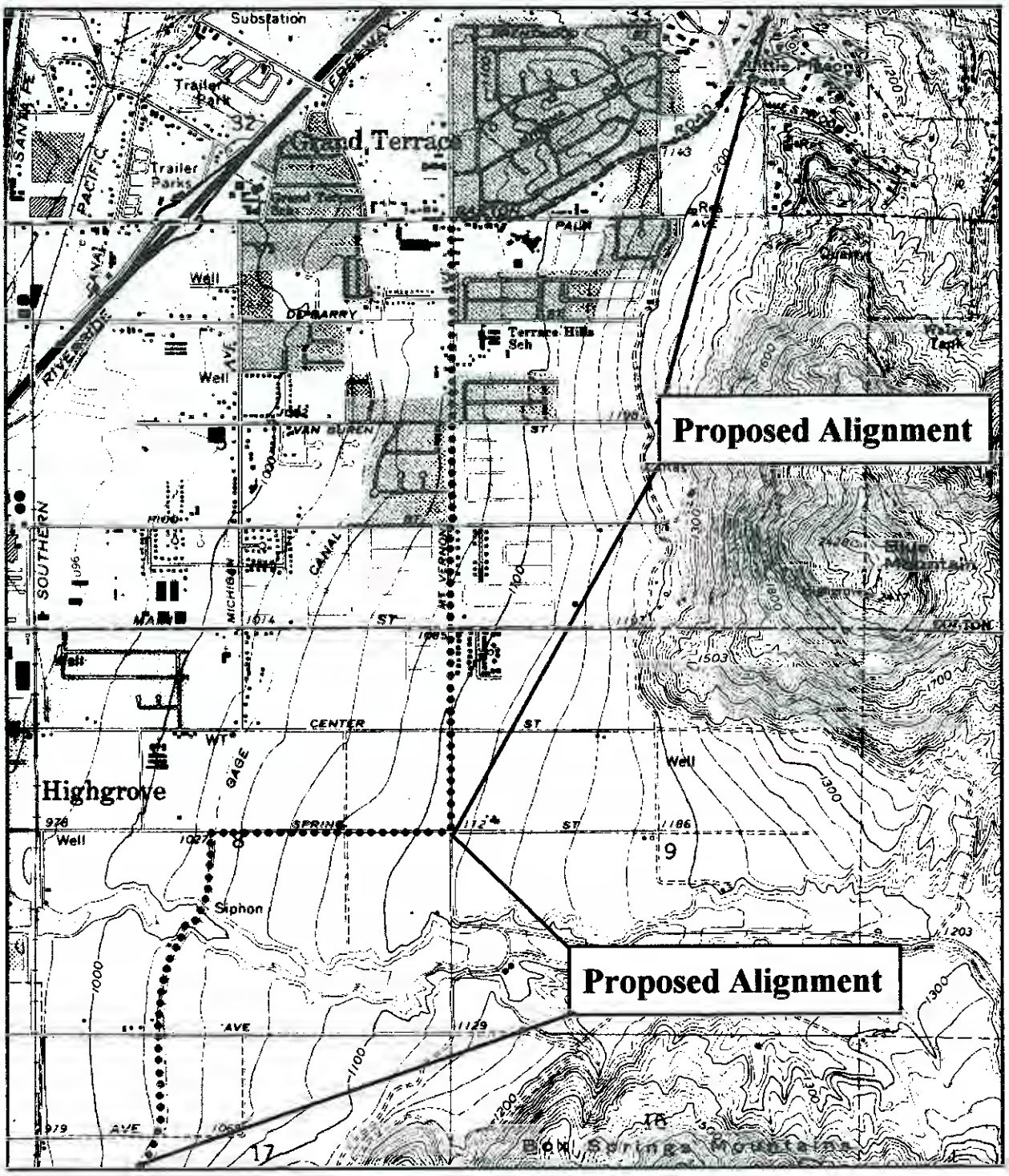

Figure 13. Northern Segments of the Corona Feeder (USGS San Bernardino South Quadrangle, rev. 1980).

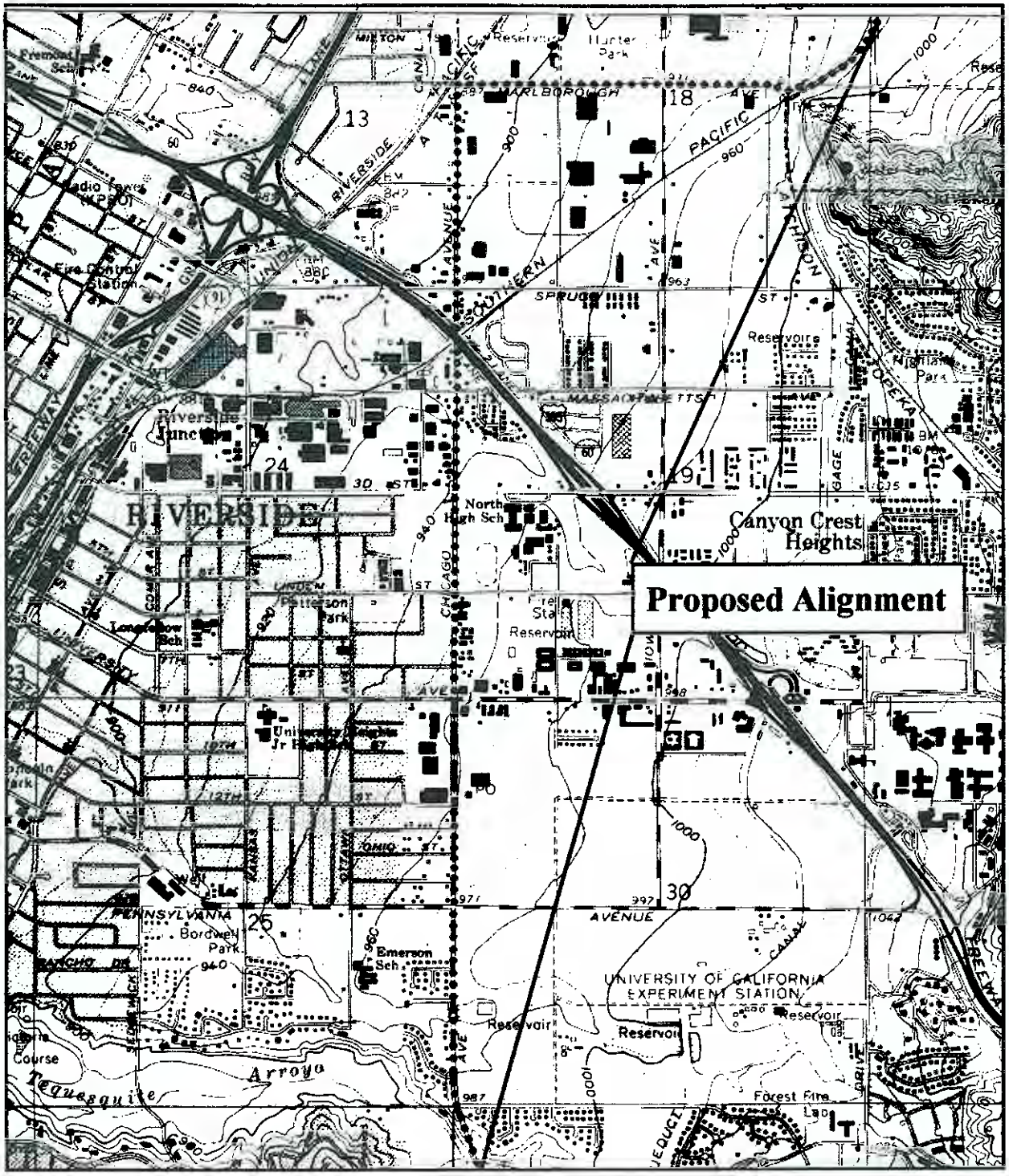

Figure 14. Central Segments of the Corona Feeder (USGS Riverside East Quadrangle, rev. 1980).

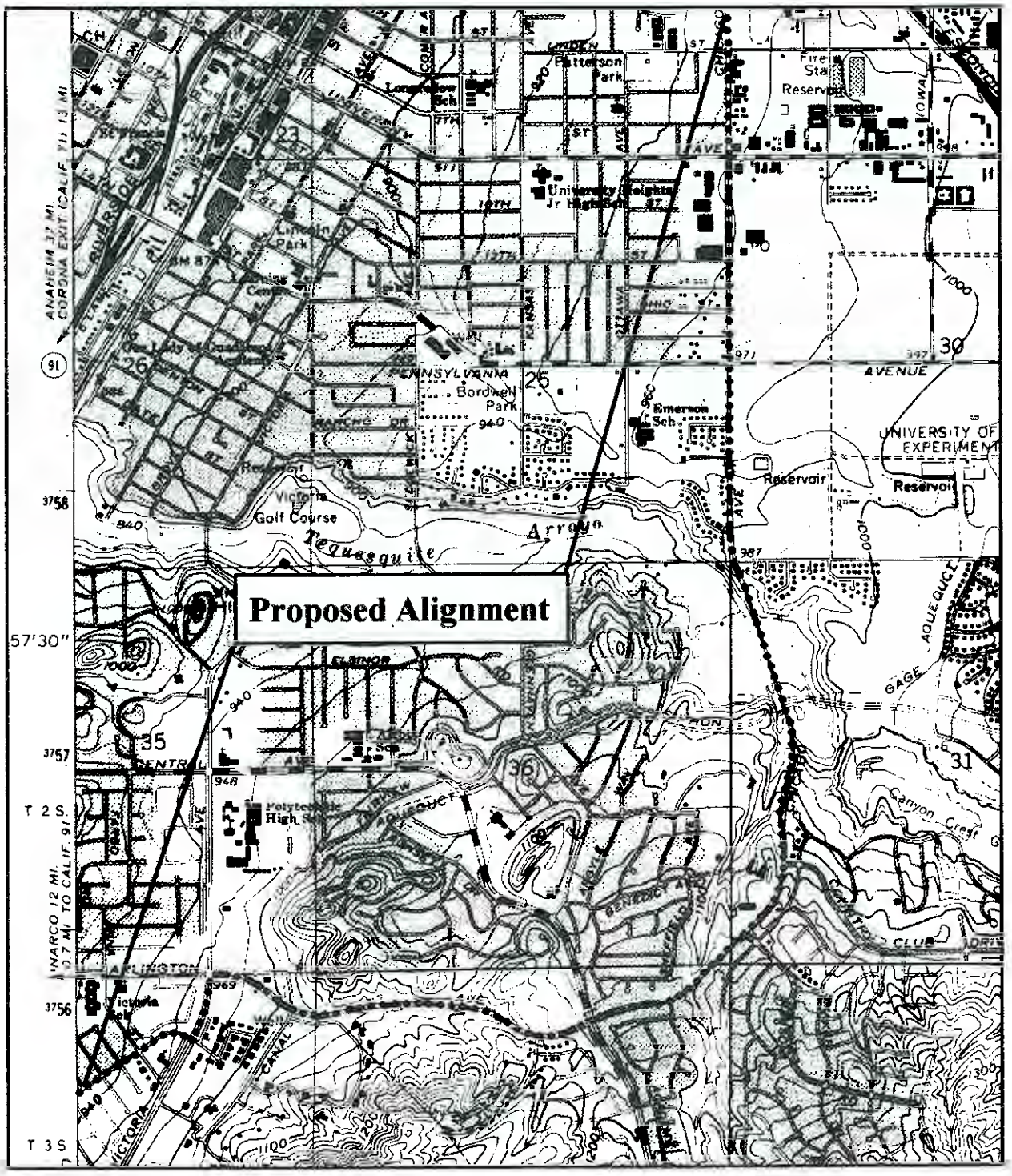

Figure 15. Central Segments of the Corona Feeder (USGS Riverside East Quadrangle, rev. 1980).

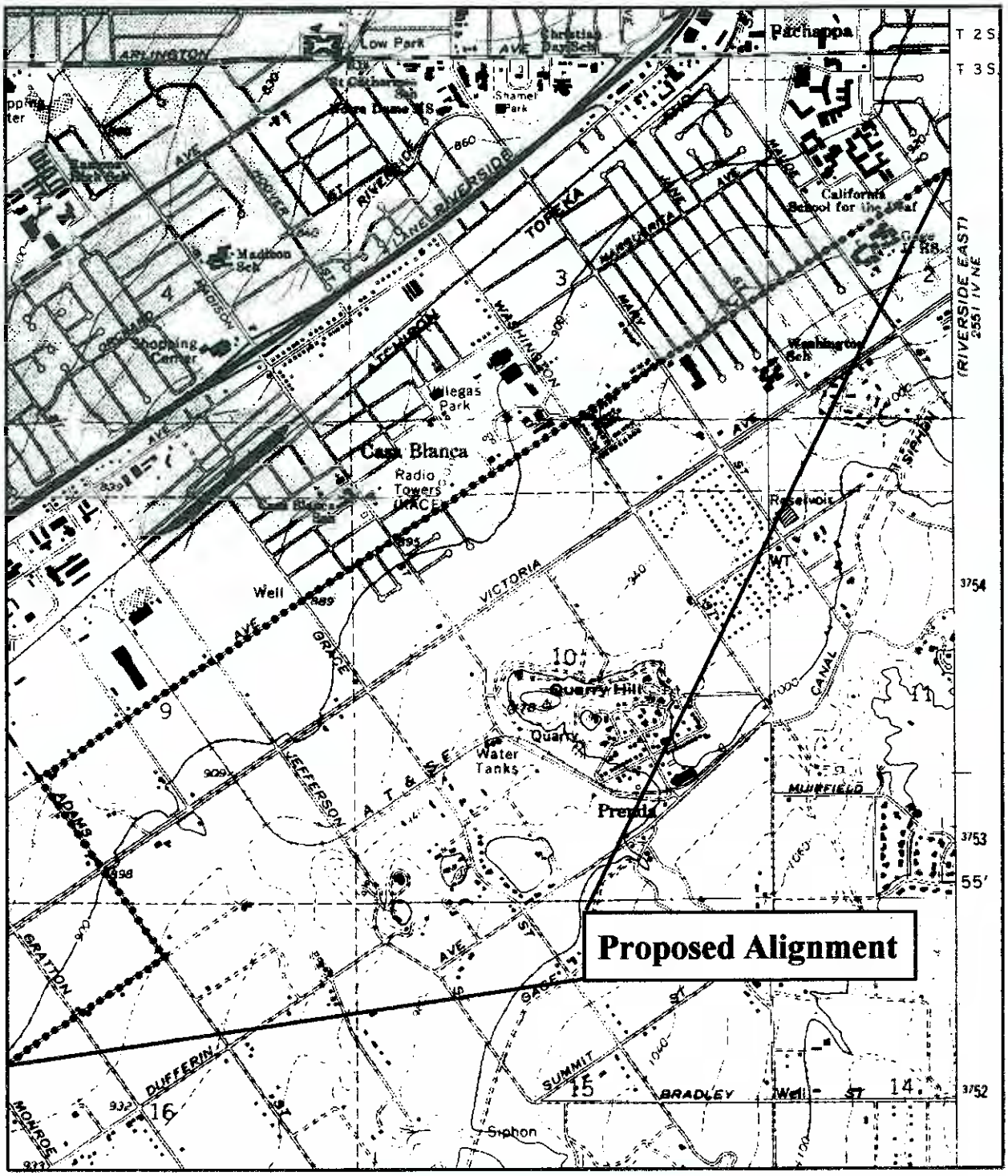

Figure 16. Central Segments of the Corona Feeder (USGS Riverside West Quadrangle, rev. 1980).

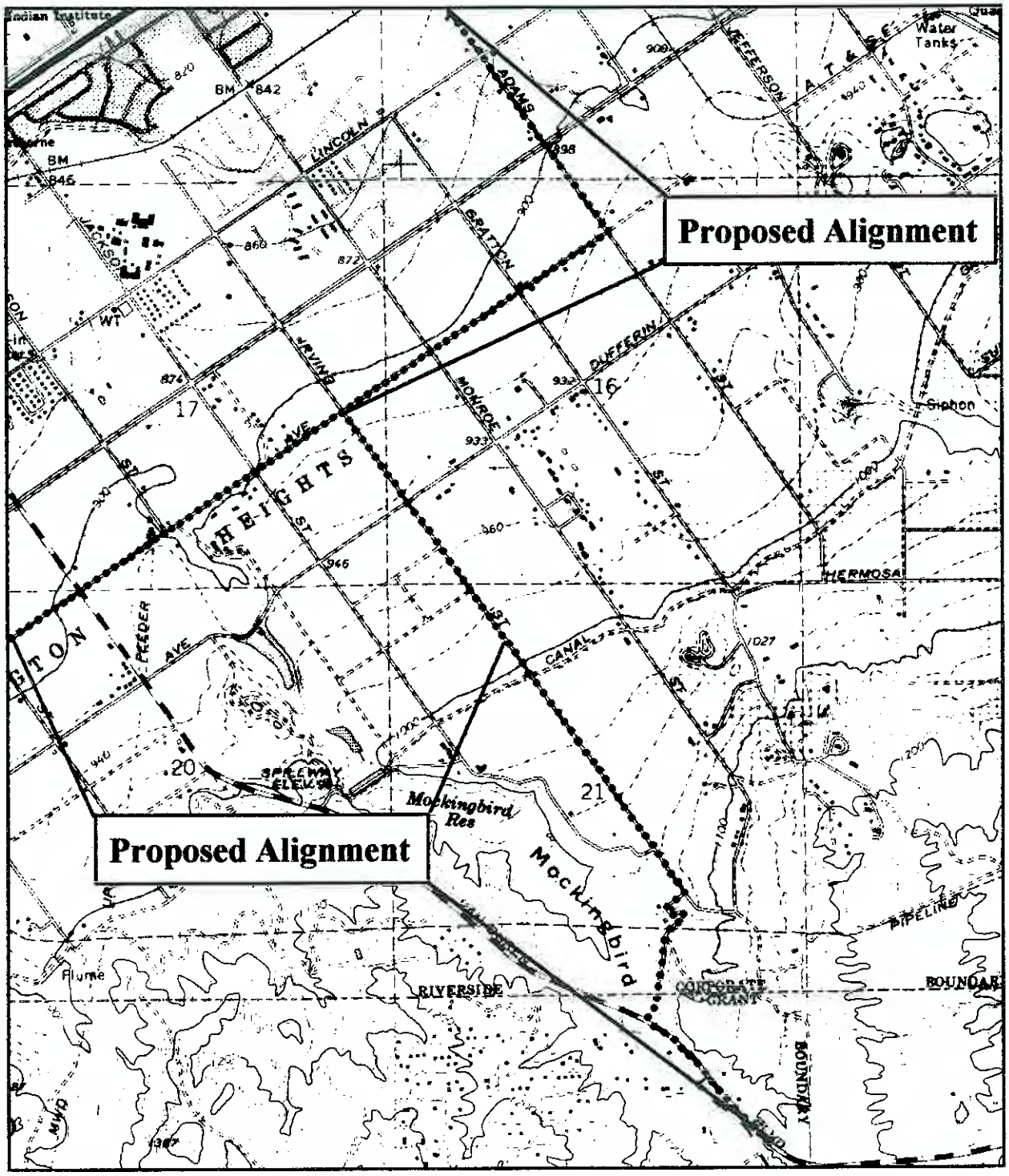

Figure 17. Central Segments of the Corona Feeder (USGS Riverside West Quadrangle, rev. 1980).

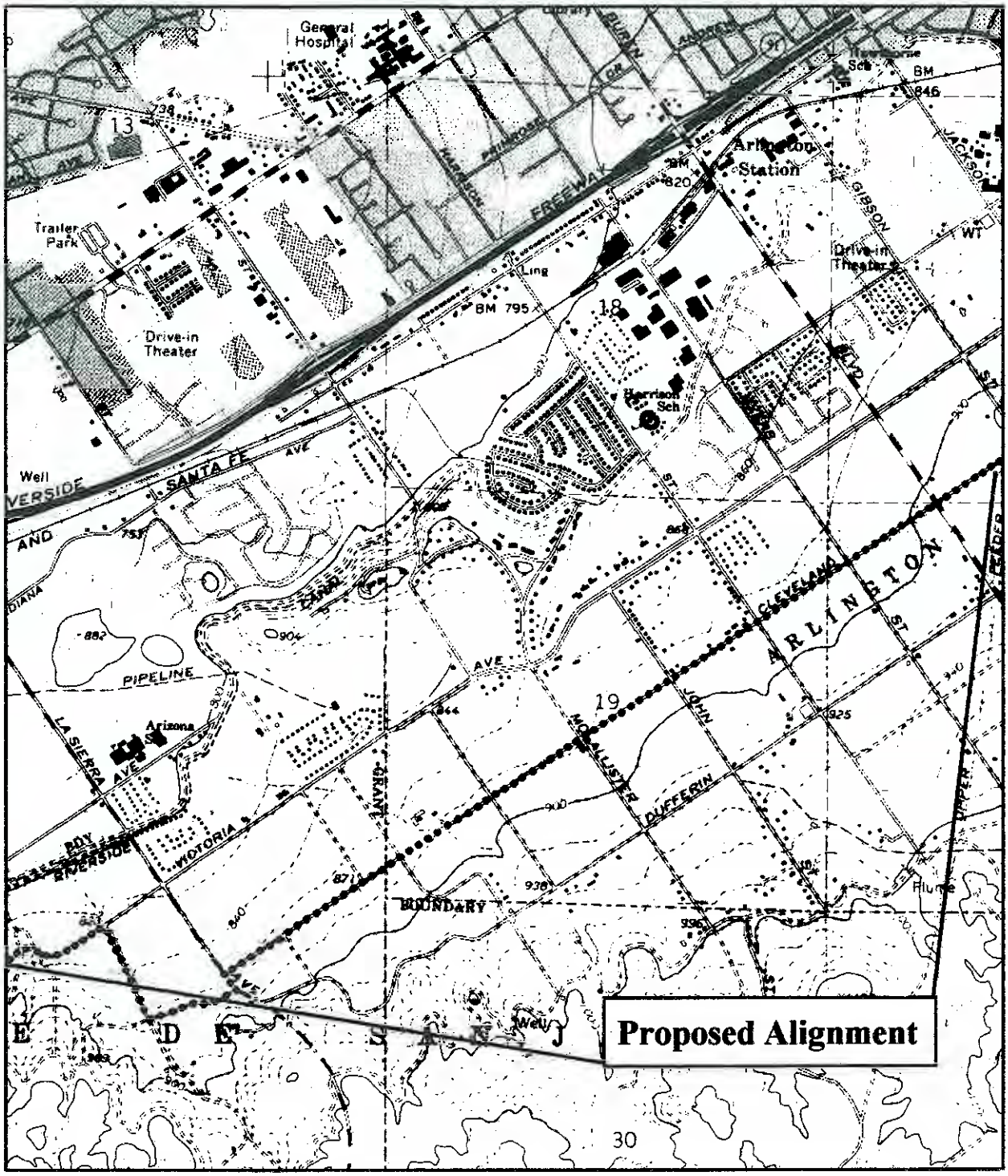

Figure 18. Central Segments of the Corona Feeder (USGS Riverside West Quadrangle, rev. 1980).

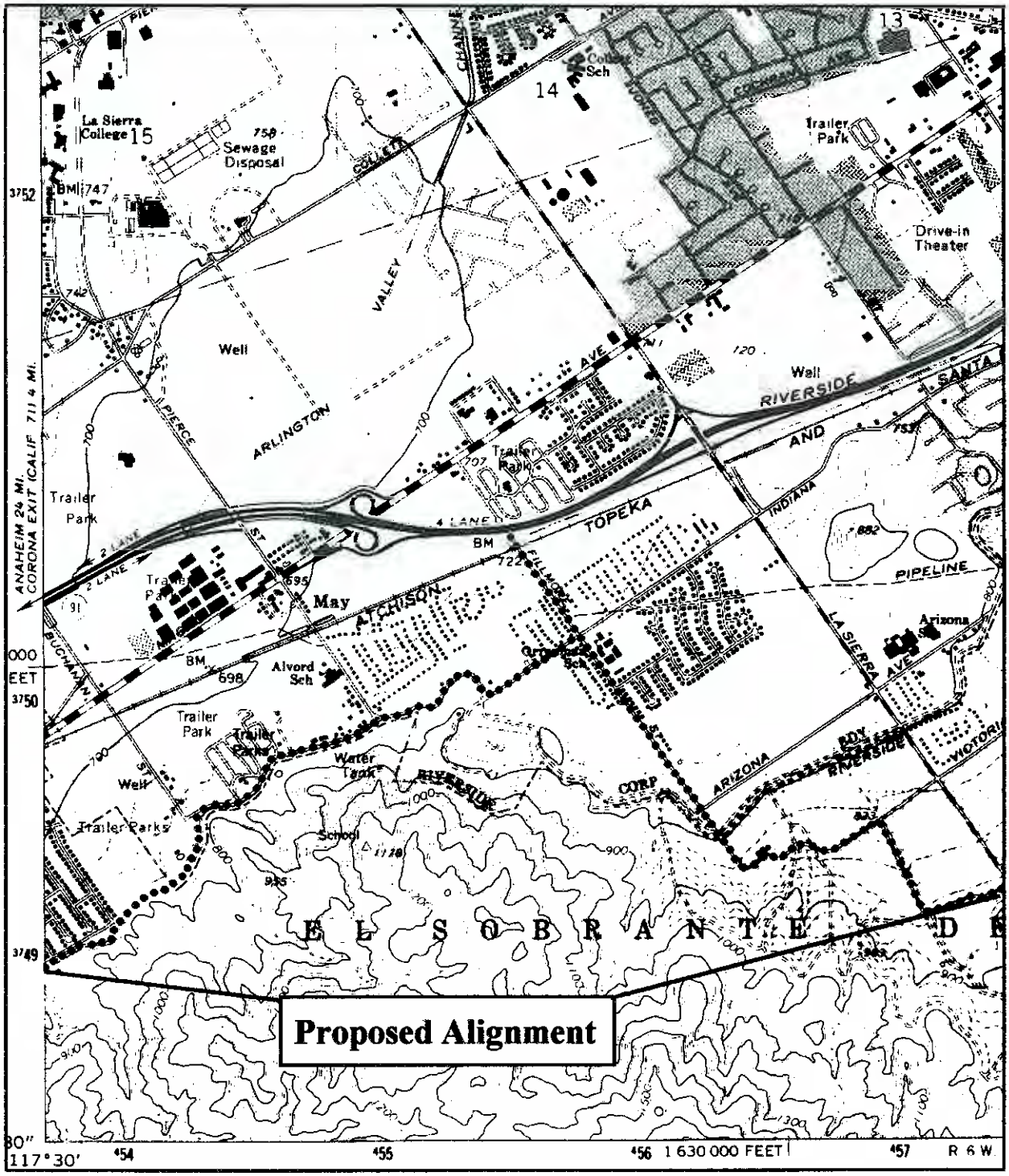

Figure 19. Central Segments of the Corona Feeder (USGS Riverside West Quadrangle, rev. 1980).

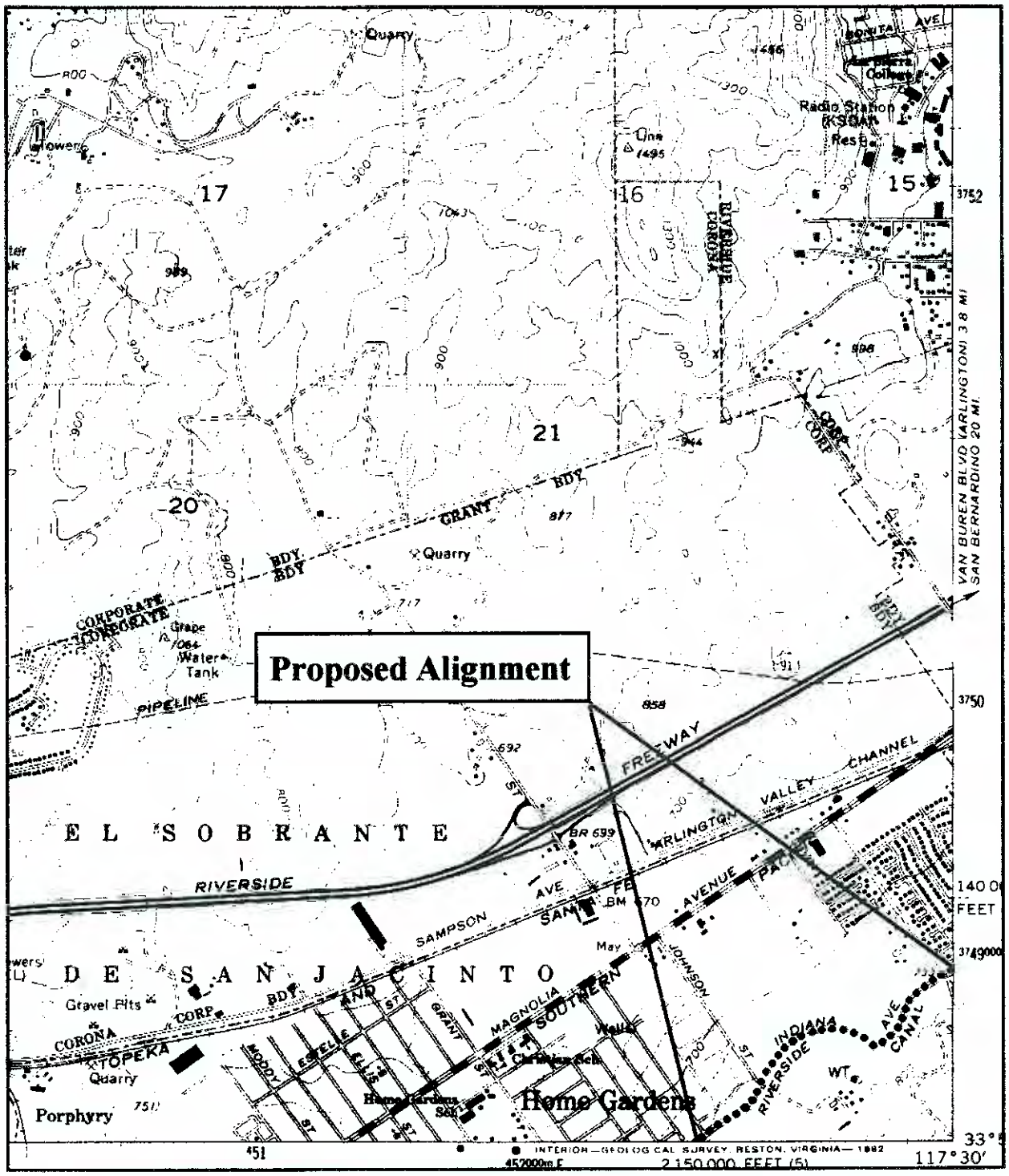

Figure 20. Central Segments of the Corona Feeder (USGS Corona North Quadrangle, rev. 1981).

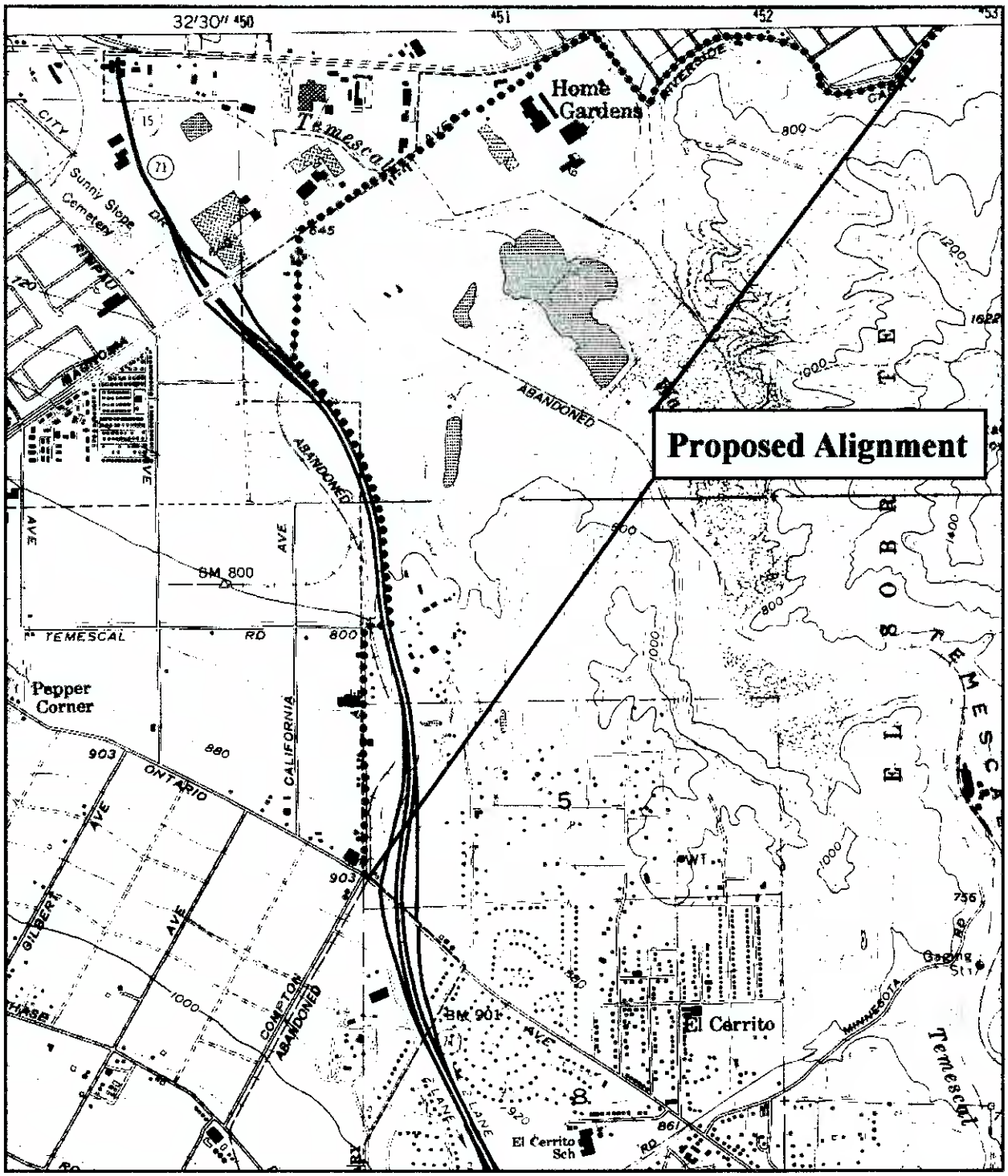

Figure 21. Southern Segments of the Corona Feeder (USGS Corona South Quadrangle, rev. 1982).

1908 and 1925; Lando 1978) agree by general consensus is that the area was occupied seasonally by Gabrieliño, Serrano, and/or Cahuilla groups. The northwestern portion of Riverside County has been identified and characterized by the presence of Uto-Aztecan Stock speakers of the Takic language family (Shipley 1978:90), as follows:

- Cupan Group
  - Gabrieliño-Fernandeño language.
    Dialects: Gabrieliño, Fernandeño, and others
  - Luiseño-Juaneño language.
    Dialects: Luiseño, Juaneño.
  - Cahuilla Language.
    Dialects: Desert, Mountain, and Pass
- Serran Group
  - Serrano Language.
    Dialects: Serrano and Vanyume.
  - Kitanemuk Language.

Given the language associations, it is more likely that the project area will be associated with Gabrieliño and less likely associated with the Serrano, Luiseon, or Cahuilla, the Gabrieliño are discussed here.

Gabrieliño Prehistory

The ethnographic area associated with the Gabrieliño (*Tongva*) includes areas of the Los Angeles, San Gabriel, Rio Hondo, and Santa Ana River drainages (roughly Los Angeles County of today and portions of western Riverside and San Bernardino Counties (McCawley 1996:23; Kroeber 1925:621; and Bean and Smith 1978:538).

The Gabrieliño are known as a society identified by Late Prehistoric/Proto-historic ethnographic records and archaeological data identifying Late Prehistoric occupation of Southern California. Changes identified between the earlier periods and the Late Prehistoric are evident in the archaeological record and in variations seen in technologies, social/community patterns and, in some cases, population estimates. Populations preceding the Gabrieliño, and likely directly related to the Gabrieliño, can be archaeologically identified as separate or variant forms of the evolving culture.

Early studies of the Gabrieliño (see Smith and Teggart 1909; Benedict 1924; Bolton 1927; Robinson 1939; and Kroeber 1925) emphasized anthropological/ethnographic studies while more recent investigations have relied on archaeological data (e.g. Drover 1980; Koerper, Drover, and Langenwalter 1983; McKenna 1985 and 1986; Hudson 1969 and 1971; Rice and Cottrell 1976; Wallace 1955; Warren 1968; Greenwood 1978; and Mason et al. 1994). The majority of data currently available to archaeologists can be referenced in publications of the Society for California Archaeology (1990 to 1996). The term "Gabrieliño" is a reference to the direct association between the Native American population of the San Gabriel Valley and the Mission San Gabriel de Archangel. The Mission was originally located in the Whittier Narrows area but relocated shortly after its founding because of unstable ground along the Rio Hondo/San Gabriel River channels. The ethnographic boundaries for the Gabrieliño are presented by Bean and Smith (1978:538) and refined by McCawley

Late Prehistoric Horizon: A.D. 750 to European Contact; characterized by the presence of small projectile points; use of the bow and arrow; steatite containers and trade items, asphaltum; cremations; grave goods; mortars and pestles; and bedrock mortars.

The investigations of sites in the Newport Bay/Irvine area of Orange County (Mason and Peterson 1994) have yielded significant data resulting in refinements of the coastal chronological sequences. Mason and Peterson's conclusions were based on the radiocarbon dates from 326 samples representing thirty-one archaeological sites or cultural contexts. Summarizing their results, Mason and Peterson (1994:55) found that the majority of sites were occupied during the Milling Stone (Horizon) period or the Late Prehistoric (Horizon) period "... without much overlap ...". Only four sites yielded results suggesting occupation during more than one cultural period (e.g CA-ORA-64). In a few instances, dates suggested occupation during the Intermediate (Horizon) period. Mixtures of dates appeared in limited areas and could be directly associated with areas of agricultural activities. The frequency distribution of radiocarbon dates from the Mason and Peterson investigations were grouped in blocks of fifty year intervals and yielded a range from of dates from 200 B.P. (before present) to 9280 B.P. (dates from CA-ORA-246 indicate occupation of the Newport Bay area as early as the Paleo-Coastal period or (Early Man Horizon).

Mason and Peterson's conclusions (1994:57) do not necessarily change the basic chronology, but distinguish more individualistic periods of occupation that are not necessarily evident in the analysis of an artifact assemblage. Mason and Peterson's refined chronology is presented in Table 1.

Table 1. Refined Coastal Chronology as Defined by Mason and Peterson (1994).

Cultural Horizons	Defined 1986	Cultural Periods	Redefined 1994	Temporal Correlations
Paleo-Coastal	Pre-6000 B.C.	Paleo-Coastal	Pre-8000 B.P.	Pre-6000 B.C.
Milling Stone	6000 to 1000 B.C.	Milling Stone 1	8000 to 5800 B.P.	6000 to 3800 B.C.
		Milling Stone 2	5800 to 4650 B.P.	3800 to 2650 B.C.
		Milling Stone 3	4650 to 3000 B.P.	2650 to 1000 B.C.
Intermediate	1000 B.C. to A.D. 750	Intermediate	3000 to 1350 B.P.	1000 B.C. to A.D. 650
Late Prehistoric	A.D. 750 to European Contact	Late Prehistoric 1	1350 to 650 B.P.	A.D. 650 to 1350
		Late Prehistoric 2	650 to 200 B.P.	A.D. 1350 to Contact

(1996). The Mission San Gabriel serviced the entire San Gabriel Valley; ranging from the coast to the San Gabriel/San Bernardino Mountains and from northern Los Angeles County to just north of San Juan Capistrano. The northern and eastern extent of their territory included the San Gabriel and San Bernardino Mountains and areas generally associated with the Serrano of the mountain and desert regions.

The Gabrieliño utilized numerous plants and animals for food, shelter, and medicines. Citing Kroeber (1976: 649-650), they used seeds most often, followed by foliage, shoots, fruits, and berries. Mountain shrubs, ash, elder, and willow were used for shelters and tool materials (e.g. bows). Over twenty plants were used regularly for medicinal purposes. Fauna used as food sources included deer, rabbits, wood rats, squirrels, quail, and ducks. Animals specifically not used were dog, coyote, bear, tree squirrel, pigeon, dove, mud hen, eagle, buzzard, raven, lizards, frogs, and turtles (Kroeber 1976:652). Along the coast, the Gabrieliño regularly exploited the wetlands and ocean resources.

The Gabrieliño used numerous styles of bows, bedrock mortars, portable mortars, pipes, chisels, metates, manos, and various forms of chipped stone tools. Prior to the establishment of the Mission system, populations tended to live in larger villages with a series of "daughter" or "satellite" sites (limited activity areas) with lesser populations. Seasonal migration was practiced for the exploitation of resources and protection from seasonal weather conditions (Scientific Resource Surveys 1979:7). Habitation structures were constructed of branches, grasses, and mud and interior hearths were used for heat. Cooking was generally conducted outdoors with hearths generally used for food preparation.

Archaeological data and correlations with ethnographic data have resulted in the determination of a generalized chronology for prehistoric Southern California. The project area is located within the inland areas of Gabrieliño territory while chronological data has emphasized coastal occupations. Nonetheless, current archaeological data has indicated that the coastal chronological data derived by Wallace (1955), Warren (1968), and later by Koerper and Drover (1983) can be applied to this region (Mason 1984; McKenna 1986). The coastal chronology generally accepted for Southern California has been as follows:

> Early Man Horizon: Pre-dating 6,000 B.C.; is characterized by the presence of large projectile points and scrapers, suggesting a reliance on hunting rather than gathering;
>
> Milling Stone Horizon: 6,000 to 1,000 B.C.; characterized by the presence of hand stones, milling stones, choppers, and scraper planes; tools associated with seed gathering and shell fish processing with limited hunting activities; evidence of a major shift in the exploitation of natural resources;
>
> Intermediate Horizon: 1,000 B.C to A.D. 750; reflects the transitional period between the Milling Stone and the Late Prehistoric Horizons; little is known of this time period, but evidence suggests interactions with outside groups and a shift in material culture reflecting this contact;

The Mason and Peterson discussions emphasize that the early definitions of "horizons" were based on artifact assemblages and these correlations have not been altered by the redefined chronology. Through the application of radiocarbon dating and comparative site analyses, studies have resulted in identifying relatively discrete subdivisions within the Milling Stone and Late Prehistoric sites. Variations appear within these two horizons/ periods which can be explained by temporally discrete occupations.

Future studies of sites yielding statistically valid artifact assemblages and radiocarbon samples can be conducted to further the understanding of Native American activities throughout Southern California. These studies can also assist in understanding the relative lack of data for the Intermediate Horizon/Period. The revised Mason and Peterson chronology can also be used in correlating inland sites, such as those which may involve Juaneño population in northwestern Riverside County.

[NOTE: although McKenna et al. emphasizes an ethnographic association between the project area and the Gabrielino, the Luiseno claim to the area cannot be ignored. Evidence of either group (as well as others, may be present within the project area.]

The History of the Area

The earliest known records of European contact with Southern California Native Americans date to the mid-1500s, representing minor contact during early explorations by the Spanish. Intensive contact was not established until the 1770s, when Father Garces traversed the Mojave Desert and entered coastal Southern California through the Cajon Pass (Walker 1986).

In the 1770s, the Spanish padres, under the direction of Junipero Serra, began the process of establishing a series of missions throughout Alta California, as California was then known. Noted earlier, the project area is within the boundaries of lands held by the Mission San Gabriel de Archangel. The mission continued to hold these large tracts until the Mexican government declared its independence from Spain and issued orders for the secularization of the Missions (ca. 1824).

By 1833-34, the majority of Mission lands were taken from the Catholic Church and reissued to individuals who had served as either Spanish or Mexican soldiers, settlers, financiers, etc. The Mexican government hoped to initiate a pattern of settlement in Alta California by relocating populations from other Mexican settlements to recently established Alta California settlements (Hanna 1951; McWilliams 1973; Dumke 1944; and Scott 1977). Maps provided by Avina (1932); the Bureau of Land Management; and Beck and Haase (1977) illustrate the extent of the Rancho/ Grant system. In this case, the project area alignments are within the historic Rancho San Bernardino, Ranch El Sobrante de San Jacinto, and just east of the Rrancho Jurupa (Stearns). Each of these areas was sparsely occupied during the Spanish/Mexican periods and used predominantly for cattle grazing.

This area of western Riverside County remained sparsely populated into the 1900s, when streets were established on a north/south and east/west grid. The relatively flat flood plain located south of the Santa Ana River provided ample agricultural and cattle land, eventually becoming a concentration of

dairy farms. The area remains largely undeveloped, but with the establishment of Interstate 15, increased development resulted in the removal of orchards and agricultural lands.

METHODOLOGY

To adequately address the current study area, the following tasks were completed:

Task 1. Archaeological Records Check: A standard archaeological check was completed by the University of California, Riverside Eastern Information Center (Appendix B). This repository maintains all filed cultural resource documents pertaining to this property, which is within the County of Riverside. The results are used to place the project area within a context for preliminary review and evaluation.

Task 2. Paleontological Overview: A paleontological overview was prepared by Dr. Samuel McLeod of the Natural History Museum of Los Angeles County (Appendix C).

Task 3. Native American Consultation: McKenna et al. contacted the Native American Heritage Commission (NAHC) in Sacramento, to inquired into the potential of either the presence or absence of sacred sites in the area (Appendix D) and a listing of Native American representatives within the Riverside County that are interested in projects that might have impacts on cultural resources. The appropriate representatives were contacted by mail. Response, if any, have been incorporated into this report.

Task 4. Historic Background Research: Historic background research was completed by McKenna et al. by the use of an in-house library; published literature on local and regional history; archival records available through the Bureau of Land Management, Riverside; the County Assessor's Office and Recorder's Office of Riverside County; the University of California, Riverside, Historic Map Library; and historic USGS topographic maps pertaining to the project area.

Task 5. Field Survey: the field investigation was conducted in February-March of 2003, by David Brunzell, M.A., RPA, of McKenna et al. The Phase I survey involved an intensive pedestrian survey of the properties identified as undeveloped and a windshield survey of the roadways identified within the right-of-ways. The survey was supplemented by field notes and a photographic record (Appendix E).

Task 6. Analysis and Report Preparation: McKenna et al. reviewed and analyzed all data compiled during the course of this investigation. All pertinent data has been

incorporated into this technical report. This report has been prepared in a format recommended by the Office of Historic Preservation, Sacramento (Archaeological Resource Management Reports; the UC Riverside, Eastern Information Center, and the report guidelines of the Riverside County Environmental Consultants Qualifications and Information requirements (on file, McKenna et al.). All pertinent data has been incorporated into this technical report.

PREVIOUS RESEARCH

The Corona Feeder project alignments included properties located within both San Bernardino and Riverside Counties. Therefore, an archaeological records check was completed for each county. With respect to the alignments within San Bernardino County, research identified a minimum of twenty-seven cultural resource investigations within one half mile of the alignments along Hunt Lane, Barton Road and Mount Vernon Avenue (Portillo 1975; Harris 1976; Hearn 1977a-b; Greenwood 1977; Greenwood and Associates 1978; Chavez 1978a-d; Driver 1979; Westec Services 1980; Lerch 1982; Foster and Greenwood 1985; Hampson et al. 1988; Hampson and Swanson 1989; McKenna 1990; Wlodarski 1991 and 1993; Hallaran and Ford 1991; and Foster et al. 1991). In addition, nine general overviews have been completed for the area (Leonard 1975; Rosenthal 1079; Tobey et al. 1977; Scott 1976; Simpson et al. 1977; Foster and Greenwood 1985; Goldberg and Arnold 1988; Harley 1988; and Haenszel 1992).

As a results of the various investigations, a single prehistoric archaeological site was identified (CA-SBR-SBR-2999). This site, described by Smith in 1938, was identified as a Native American habitation site associated with neophytes of the San Gabriel Mission (hence the association with the Gabrielino Indians) - also located within the Hunts ranch complex. The site, located southeast of Colton Avenue and Hunts Lane, was reportedly destroyed by agricultural activities. A State historical marker has been placed in the general vicinity of the site (California Register of Historical Landmarks - P36002999; CHL-617).

Five historic sites, seven pending sites, and ten possible historic structure locations were also reported. The historic sites include: CA-SBR-2999H (Hunts Ranch, etc.); CA-SBR-6099 (refuse scatter); CA-SBR-10330H (Union Pacific/Southern Pacific Railroad); CA-SBR-6847H (The Old Kite Route); and CA-SBR-7168H (The Gage Canal). The pending sites include P-1074-84H (the Hunt and Cooley Ditch); P-1074-85H (Camp Carlton Ditch); P-1074-87H (Riverside Highland Water Company facilities); P-1074-88H (Rancheria Ditch/Vivienda Water Co.);P-1074-90H (Johnson Swamp Ditch; P-1074-99H (Whitlock Ditch); and P36-016417 (San Bernardino-Sonora Road).

Of all of these resources, only the Gage Canal is located within the immediate project area. The Corona Feeder project alignment crosses the historic alignment of the Gage Canal at Barton Road (south of Washington Street) and appears to be very close to the canal alignment at Mount Vernon Avenue at Van Buren Street. The Gage Canal is not visible in either of these locations and, therefore, the relative significance of the canal has not been established in these areas.

The Riverside Highland Water Company conveyance alignment is tentatively located in the vicinity of Barton Road (north of Palm Avenue), but no physical evidence of this feature has been identified to date and, therefore, the resource has not been evaluated.

The Gage Canal was constructed between 1885 and 1889 by Matthew Gage. It ran 11.91 miles, bring water from the Santa Ana River to Gage's property in Section 30 of Township 2 South, Range 4 West. It was later extended another 8.22 miles into Riverside County, providing irrigation water for citrus crops. Portions of the alignment are now buried and not visible from the surface. In an evaluation of the Gage Canal, Starzak and Zeir (1997) concluded that the Gage Canal - in the area evaluated - is **NOT** a significant resource because of lack of integrity. Other areas of the canal (not yet evaluated) may be significant if proven to be intact and retaining integrity. Starzak and Zeir applied federal level criteria in their evaluation, which reads as follows:

> The approach to the current research was all designed to address the potential eligibility of each site or concentration of sites for nomination to the National Register of Historic Places. This level of investigation, generally known as a Section 106 evaluation, is based on the criteria presented in the federal Code of Federal Regulations 36 CRF 60.4, as follows:
>
> > The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites., buildings, structure, and objects that possess integrity of locations, design, setting, materials, workmanship, feeling, and association, and:
> >
> > (a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
> >
> > (b) That are associated with the lives of persons significant in our past; or
> >
> > (c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> >
> > (d) That have yielded, or may be likely to yield, information important in prehistory or history.

In general, Starzak (1992) concluded that intact portions of the Gage Canal would be eligible for the National Register of Historic Places under Criterion (a), an association with significant events stemming from the development of water conveyance systems and the development of the agricultural base within San Bernardino/Riverside County in the late 1800s. It is also significant for the use of

Japanese laborers for the actual construction. All resources identified as eligible for the National Register of Historic Places would automatically be eligible for listing on the California Register of Historic Resources.

Summarizing the data obtained from the University of California, Riverside, Eastern Information Center, a minimum of fifty-nine studies have been conducted within or adjacent to the current project area (Table 2). The majority of these reports were for block studies (defined property boundaries) and did not involve roadways or proposed streets. In some cases, however, the project areas crossed roads and involved small segments of the current project area.

Table 2. Cultural Resource Investigations Completed within One-Half Mile of the Project Area.

Report No.	Citation	Description	Sites
1080029	Gardner 1971	Mary Street Dam and Channels	Yes
1080094	Gardner 1973	Lincoln Street Channel Stage II Flood Control	Yes
1080142	Barker 1974	Central Avenue Shopping Center	No
1080239	Brown 1976	Corona water Supply Studies	Yes
1080272	Brown 1978	The Horseshoe Project	Yes
1080273	Brown 1977	The Horseshoe Project	Yes
1080277	Cottrell 1977	237 Acre Survey, Southwest Riverside Co.	Yes
1080805	ARMC 1980	Corona Assessment District	Yes
1081033	Brown 1980	The Morris Tract	No
1081140	Chavez 1978	Four Corners Pipeline Project	No
1081223	Drover 1981	Arlington Zone Change	Yes
1081279	SRS 1979	Campeau Project, Riverside Co.	Yes
1081353	Drover 1981	La Sierra Zone Change	No
1081940	Arch. Research, Inc. 1974	Box Springs Feeder	Yes
1081941	Lerch 1983	SAWPA Water Conveyance System	Yes
1082025	Drover 1983	Tentative Tract 12649, Highgrove	No
1082074	Pink, Brown, and Evans 1983	Greenway Farms	Yes
1082394	Hammond 1985	Widening of Interstate 15	No

Table 2. Cultural Resource Investigations Completed within a One Mile Radius of the Project Area.

Report No.	Citation	Description	Sites
1082749	ARU 1988	16420 Sally Lane Assessment	No
1082889	Parr and Wilke 1989	Alessandro Heights Project Area	Yes
1083006	Schneider 1989	Tentative parcel 24945, Corona	No
1083142	deMunck 1989	Parcels 277-172-001 and -002, El Cerrito	No
1083247	Chavez 1978	Rialto Crude Oil Tank Farm, etc.	Yes
1083642	Love 1990	Pigeon Pass Road, Highgrove	No
1083730	Keller 1990	Tract 26708, Riverside County	No
1083751	Peak and Associates 1990	AT&T Fiber Optic Cable	Yes
1083752	Peak and Associates 1990	Phase III AT&T Fiber Optic	Yes
1083923	Keith Companies 1988	SR-91 Improvements	No
1083974	SRS 1988	Corona Quarry, Riverside County	No
1083984	Driver 1991	Western Municipal Water District, Woodside	Yes
1084024	Padon 1991	Rte 60/91/215 Interchange	Yes
1084072	Padon 1991	Rte 60/91/215 Interchange	Yes
1084162	Hallaran 1991	The Gage Canal	Yes
1084185	Drover 1992	Lake Mathews Water Reclamation Line Project	No
1084187	Weber 1992	1300 Central Avenue, Riverside	Yes
1084193	Hayden 1992	Sugarloaf Reservoir Site	Yes
1084236	Hayden 1992	Sugarloaf Reservoir Site	Yes
1084317	Seymour 1993	Home gardens Sanitary District	No
1084329	Wlodarski 1993	RCIC I-215 Improvement Project	Yes
1084355	Taskiran 1993	Vons Market	No
1084465	Foster et al. 1991	Inland Feeder Project	Yes
1084724	Keller 1994	Parcel Map 28040	No
1084802	White 1995	Emtman No. 2 Reservoir Site	No

Table 2. Cultural Resource Investigations Completed within a One Mile Radius of the Project Area.

Report No.	Citation	Description	Sites
1085070	Tang 1997	HRER, Indiana Avenue	Yes
1085336	Love and Tang 1998	Temescal Valley Regional Interceptor	Yes
1085375	Love and Tang 1999	Temescal Valley Pipeline Phase III	No
1085421	Love and Tang 1999	Canyon Crest Country Club Maintenance Bldg.	No
1085424	Love, Tang and Hogan 1999	Tentative Tract 28829	Yes
1085432	Keller 1998	MP-002-989	No
1085486	Love, Tang and Hogan 1999	Victoria Avenue Without Wires	No
1085487	Love, Wiewall and Heck 1999	Ashton Ranch Estates	No
1085488	Love, Wiewall and Heck 1999	Executive Home Builders, Riverside	No
1085676	Love and Tang 2000	Evaluation, 2612 Madison Street	No
1085677	Keller 1999	Tentative Parcel Map 29477	No
1085679	Duke 1999	Pacific Bell Mobile Services	No
1085720	Keller 2000	Marlborough Tech Center	Yes
1085736	Jones and Stokes 2000	Williams Communications, Inc. Fiber Optics	Yes
1085748	Love et al. 2000	Robert Aust Industrial Office Park	Yes
1085778	Jones and Stokes 1999	Williams Communications, inc. Fiber Optics	Yes

Of the fifty-nine studies completed within one-half mile of the proposed alignment in Riverside County, only five studies involve locations specifically along the project alignment. Another twelve studies cross the project alignments. A total of 33 archaeological sites and 39 historical properties are located within one half mile of the project alignments, but the project alignments abut or cross only four resources, including: CA-RIV-4768H (the Gage Canal); CA-RIV-4791H (the Riverside Canal); CA-RIV-3832H (AT&SF Railroad Alignment); and CA-RIV-9774 (Southern Pacific Railroad). Data currently on file shows that the Gage Canal is eligible for listing on the National Register of Historic Places. CA-RIV-3832H (historic AT&SF railroad alignment) was evaluated but determined to be ineligible for listing. Both of these resources have been evaluated and determined eligible for listing on the California Register of Historic Resources. Neither the Southern Pacific Railroad nor the Riverside Canal have been evaluated for eligibility on either the federal or state level.

Based on the information provided through the archaeological records checks, the general area of the proposed project is considered to be on a LOW level of sensitivity for the presence of prehistoric archaeological resources and MODERATELY sensitive for historic archaeological resources. The areas geographically closer to the nearby foothills are more sensitive for prehistoric resources and the flood plain areas are more conducive to historic resources.

Four historic resources are adjacent to or crossed by the project alignments, including the Gage Canal, the Riverside Canal, and two railroad alignments. Neither railroad alignment will be adversely impacted by the proposed project alignment and impacts to the Riverside Canal will be avoided by the alignment paralleling the canal and not involving specific portions of the canal.

The resource of concern is the Gage Canal. The project alignment crosses the Gage Canal alignment in San Bernardino County and parallels the Gage Canal in Riverside County. That portion of the canal in San Bernardino County is considered an insignificant portion of the resource, as it has been altered and buried by previous development and lacks integrity. In Riverside County, the canal is open and intact, rendering the Riverside County alignment a significant resource that should be protected from adverse impacts.

Historic buildings may be located on the peripheries of the alignments (one either side of the linear alignments), but given the nature of the proposed improvements, these structures should not be adversely impacted by the project.

RESULTS OF THE INVESTIGATIONS

As a result of the recent investigations, McKenna et al. found that the project alignments are within areas of San Bernardino and Riverside Counties that developed relatively late, following the demise of the historic rancho system and the early development of agricultural communities of southwestern San Bernardino County and northwestern Riverside County. The majority of the streets are oriented northeast/southwest and northeast/southwest, accommodating the topography surrounding the foothills bounding the southern valley. Structures are scattered throughout the area; modern developments abut the freeway (Interstate 15); and there are improvements to many of the existing roadways.

No new cultural resources were identified as a result of this investigation. A total of four resources are reported adjacent to or within the project alignments. The Riverside Canal (CA-RIV-4791H) runs along the southern alignment of the project area, but the project alignment does not involve the actual canal right-of-way. Rather, the project alignment parallels the Riverside Canal. No adverse impacts are expected with respect to the Riverside Canal and, therefore, through avoidance, no additional studies are warranted at this time.

The project alignment crosses two railroad alignments, one of which has been determined eligible for listing on the state register. The proposed project should be designed to avoid impacts to both alignments, thereby lessening impacts to levels of insignificance.

The project alignment crosses the Gage Canal at least once in San Bernardino County and parallels the canal within Riverside County. The portion of the canal in San Bernardino County has been determined to be insignificant, but the alignment within Riverside County is intact and significant. Therefore, impacts to the Riverside County alignment should be avoided to lessen impacts to a level of insignificance.

The paleontological overview reported that no fossil localities have been reported for this area, but there are some locations within the general area that may be fossil bearing. The likelihood of identifying fossil resources in this area is extremely LOW and, therefore, McKenna et al. concludes that paleontological resources will not be impacted by the proposed project.

Responses from Native Americans (Gabrielino and Pechanga) have shown that both groups claim ethnographic associations. Anthony Morales, Chair of the Gabrielino/Tongva, voiced his concerns for the project area to yield evidence of prehistoric Gabrielino/Tongva resources and requested that he be kept informed of any such resources that may be identified as a result of the project. Since the Gabrielino/Tongva have not yet been federally recognized, their involvement in such consultations is considered appropriate, but not legally mandated.

The Pechanga have responded in a written response (Miranda, April 9, 2003) through California Indian Legal Services of Escondido (see Appendix D). In their response, the Pechanga stated that they do not oppose the proposed project, but wish to participate in the decision-making process via requested mitigation measures. Specifically, the measures presented by the Pechanga involve agreements to use Pechanga monitors and curate all prehistoric resource materials with the Pechanga. Although requested, the proponent is not necessarily obligated to accept these conditions.

RECOMMENDATIONS

Since the project area has been identified as an area unlikely to yield paleontological resources, McKenna et al. does not recommend paleontological monitoring, but does recommend that the proponents be aware that fossil bearing soils may be impacted by excavations and if such soils are encountered and/or fossil are identified during any excavations, a qualified paleontologist should be contacted and permitted to recover and evaluate the find(s) in accordance with current standards and guidelines.

No prehistoric archaeological resources are known to be located within the proposed project alignments, but such resources may be identified during excavations. Therefore, McKenna et al. recommends that the proponent arrange for archaeological monitoring in sensitive areas (e.g. near the Santa Ana River crossing and within undeveloped areas along the alignments). The archaeological monitoring should be full time in undeveloped areas and part-time along other areas of the alignments (the extent and duration to be determined once the construction schedule is defined). The archaeological monitoring program should be completed in conjunction with Native American monitoring in sensitive locations. The native American monitor may be of either Gabrielino or Luiseno descent and the use of Pechanga monitors can be used at the discretion of the proponent.

McKenna et al. is concerned, however, about the request for control/possession of any archaeological remains. Current standards require archaeologist to curate materials in federally recognized repositories (e.g. the San Bernardino County Museum or the University of California, Riverside, Archaeological Research Unit). Unless the Pechanga can show recognition of a federally approved repository, the archaeological consultant can not/should not agree to curate the materials with the tribe.

Due to the MODERATE level of sensitivity for the presence of historic archaeological resources within the project area, McKenna et al. recommends that archaeological monitoring be conducted along the alignments, especially in the areas of the Gage Canal, Riverside Canal, and railroad crossings. Spot monitoring/part-time monitoring can be conducted in the less sensitive areas. The extent and duration of the actual monitoring can be determined at the time the construction schedule is determined. Should any archaeological resources be identified during the excavations for the Corona Feeder project, the archaeological monitor must be permitted to evaluate the resources in accordance with Federal and State guidelines.

If human remains are uncovered at any time, the County Coroner must be notified and all activities in the area of the find must be halted. If the Coroner determines the remains are of Native American origin, the Native American Heritage Commission will be notified and consultation with the local Native American representatives will be initiated to determine the disposition of the remains in accordance with State and County guidelines.

CERTIFICATION

CERTIFICATION. I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date	Jeanette A. McKenna, Principal Investigator, McKenna et al.

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April 9, 2003

Mr. Don Harriger
Western Municipal Water District
450 Allesandro Blvd.
Riverside, CA 92508

Sent via Facsimile and U.S. Mail

Re: Comments on WMWD Riverside-Corona Feeder Project EIR Initial Study

Dear Mr. Harriger:

The Pechanga Band of Luiseño Indians, a federally recognized Indian tribe and sovereign government, is formally requesting, pursuant to Public Resources Code §21092(b)(3), to be notified and involved in the CEQA environmental review process for the duration of the Riverside-Corona Feeder Project (hereinafter, "the Project")

On behalf of the Pechanga Band of Luiseño Indians (hereinafter, "Pechanga"), we submit the following comments on the Project. Additional comments will be submitted directly by Pechanga or through their attorneys. We request that all such comments be part of the official record for the approval of this project.

PROJECT GENERALLY

Pechanga is not opposed, at this time, to the approval of this Project. Pechanga is primarily concerned with the proposed and subsequent development of this area and its impact on Luiseño cultural resources. The Pechanga people have called this area home since time immemorial and can trace our ancestors to the areas that will be directly impacted by this Project. This land and its resources are an integral part of our present-day cultural values, and, as such, we have an evident interest in this project, both generally and legally. The Pechanga people are entrusted by our elders to protect and preserve all of our cultural resources for future generations. As such, the Pechanga Tribe is specifically concerned about the protection of unique and irreplaceable cultural resources, such as Luiseño archeological sites and cultural resources which may be displaced by ground-disturbing work on the project, and, above all, the proper and lawful treatment of Native American remains and sacred items that may be discovered in the course of work.

PROJECT IMPACTS ON CULTURAL RESOURCES

The Initial Study states that cultural resources impacts "will be discussed further in the cultural resource study that will be prepared as part of the forthcoming Environmental Impact Report" (½3/03 Initial Study pg. 16). Pechanga will have more specific comments regarding environmental impacts at that time, however, we are of the understanding that there are known archeological/Luiseño cultural sites within the area of the alignment, and request that WMWD adopt mitigation measures that will account for inadvertent discoveries pursuant the California Environmental Quality Act (CEQA Guidelines §15064.5).

REQUESTED MITIGATION MEASURES/CONDITIONS OF APPROVAL

For the reasons above we are requesting the mitigation measures to ensure the required protections for cultural resources under CEQA and the Public Resources Code:

1. Prior to the issuance of grading permits, the WMWD/Developer is required to enter into a Pre-Excavation Agreement with the Pechanga Band of Luiseño Indians. This Agreement will address the treatment and disposition of cultural resources and human remains that may be uncovered during construction as well as provisions for tribal monitors.

2. Tribal monitors from the Pechanga Band shall be allowed to monitor all grading, excavation and ground-breaking activities, including further surveys, to be compensated by WMWD/Developer.

3. The landowner agrees to relinquish ownership of all cultural resources, including all Luiseño sacred items, burial goods and all archeological artifacts, that are found on the Project area to the Pechanga Band of Luiseño Indians for proper treatment and disposition.

4. All sacred sites within the Project area are to be avoided and preserved.

Working together with the Pechanga Tribe on a government-to-government basis will ensure that this Project moves forward expeditiously. We appreciate this opportunity to assist WMWD in the preservation and protection of the invaluable Luiseño resources.

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Sincerely,
CALIFORNIA INDIAN LEGAL SERVICES

Laura Y. Miranda
Attorneys for the Pechanga Tribe

cc: Ms. Roma Stromberg, Albert A. Webb Associates

WESTERN MUNICIPAL WATER DISTRICT

RIVERSIDE-CORONA FEEDER PROJECT

PRELIMINARY DESIGN REPORT

for

REACH B - NORTH

3/17/05

Executive Summary

Western Municipal Water District (Western) is preparing an EIR for CEQA compliance for the Riverside-Corona Feeder, a major pipeline from San Bernardino to Corona. A preliminary alignment for a proposed 60-inch diameter pipeline has been determined a 14,300 l.f. portion of Reach B from Washington Avenue in Colton to the Riverside County Line through the Cities of Colton and Grand Terrace. Right-of-way, underground utility interferences and traffic control measures have been reviewed. The proposed pipeline can be constructed with trenching/pipe laying activities taking approximately 83 working days assuming adequate working area. Limited daytime road closures will be required along Barton Road from Walin to Glendora where the right-of-way narrows. Daytime traffic can be effectively re-routed onto Mt. Vernon and Washington during the construction period. The construction period will significantly lengthen if the construction footprint is narrowed to allow additional traffic lanes during construction.

Background

Western Municipal Water District (Western) has prepared a Draft Program Environmental Impact Report (DPEIR) for CEQA compliance for the Riverside-Corona Feeder, a major pipeline from San Bernardino to Corona. The City of Grand Terrace (City) has expressed its concerns about the possible traffic disruption during the construction of a portion of Reach B from Washington Avenue in Colton to the Riverside County Line. Reach B is shown in Attachment 1, Figure I-2b from the DPEIR. This Reach is currently planned as a 60-inch diameter pipeline. In order to address the City's concerns, Western has asked Albert A. Webb Associates to prepare a preliminary design report to determine a possible horizontal alignment taking into account the City's Concerns, required DHS separations, project constructability, traffic control considerations, and cost.

Scope

Albert A. Webb Associates has prepared a preliminary design report, determining a preliminary horizontal alignment for the northern segment Reach B of the Riverside-Corona Feeder as shown in Attachment 2. The proposed alignment under study is approximately 14,300 l.f. starting at the intersection of Washington Avenue and Barton Rd, following Barton Rd to the intersection with Mt Vernon, and continuing south on Mt Vernon to Main St and the San Bernardino/Riverside county line. For the purposes of this report, the preliminary Horizontal Alignment will be divided in two reaches, the Mt Vernon Reach and the Barton Rd Reach.

The main objectives in selecting a preliminary horizontal alignment were clearance from existing utilities, minimum impact on traffic flow during construction and cost/constructability issues. The horizontal alignment shown on the attached drawings takes into account such objectives.

Construction Techniques/Impact

A typical construction plan for this type of pipeline has four phases; potholing of utilities, trenching and laying of the pipe, welding of joints / installation of miscellaneous appurtenances and final paving/lane striping.

Potholing of Utilities: Typically, some of the underground utilities are not actually in the location as shown on the plan both vertically and horizontally. The Contractor must verify the location of these utilities by potholing well ahead of the actual pipeline installation. Potholing requires some minor traffic disruptions when the backhoe or other equipment is working within the right-of-way to expose the utility lines. The potholes are then backfilled and temporary paving is installed to allow traffic flow prior to trenching.

Trenching and Laying of the pipe: This phase is typically the most disruptive to traffic. It is anticipated that approximately 200 linear feet of pipeline will be installed per day under optimum conditions. The trench will be excavated, the pipe installed, backfill materials placed / compacted and the base paving installed each day. The trench will be closed at the end of each workday. The construction zone has been estimated to be 40 feet wide and 500 feet long during daytime construction operations. Additional lanes are closed during the day to accommodate the construction zone. Flagmen may be used to direct traffic depending on the width of right-of-way available. This trenching operation moves along the pipeline alignment, impacting adjacent properties for only two or three working days. The large excavators, pipe cranes and other support equipment are mobilized to the site only once and are moved along as the trench progresses. This equipment is stored within the right-of-way each night with appropriate delineators and K-rails for traffic control. The road is opened back up to at least one lane in each direction at night.

Welding of joints and installation of miscellaneous appurtenances: Once the pipeline is installed and the trench backfilled, another crew follows behind welding joints and finishing installation of air valves, blow offs or other appurtenances. Again this phase requires some minor traffic disruptions during the work day only.

Final paving/lane striping: After all testing is complete and the inspectors are satisfied with pipeline installation, the road can be final paved and re-striped. This will impact traffic during the work day. Large reaches are paved at one time. For example, it is anticipated that all of Mt Vernon will be paved at one time. The final paving could be placed in smaller sections, but that would impact the cost to mobilize the paving sub-contractor for each paving section.

For a 60-inch diameter pipeline, the anticipated trench width is 10 feet. It is anticipated that nearly vertical trench walls will be necessary to achieve this objective. Depending on soil types, the contractor will use various techniques including trench shoring to maintain a minimum trench width.

A full working day is assumed to be a full 8 hours Monday through Friday. Since the road is opened each night after construction, the Contractor must set up and tear down his operation everyday. Each work day includes site mobilization, traffic control set-up,

pipe trenching/laying, traffic control tear down and site de-mobilization. For each hour that the work day is reduced, pipe trenching/laying time is reduced by 25%.

Based on the size of the equipment used for excavation, soils removal and pipe handling, a 30 foot wide working zone from the edge of the trench is required for optimum construction efficiency and safety. The total construction footprint will be 40 feet wide include the trench. Under typical conditions assuming a 30 foot wide working zone, approximately 200 linear feet of pipe can be laid in one full working day. A narrower construction zone will slow down construction efficiency and reduce the length of pipe that can be laid in one day to 80 or 120 linear feet.

The proposed traffic control plan is based on a 10 foot wide trench plus a 30 foot wide construction zone to maintain optimum construction efficiency.

Base Maps and Utility Research

The Base Map information used for this study was obtained from record maps, improvement plans, field visits and other available sources. Right-of-way information was obtained from record maps. No aerial topographic and planametric analysis was performed. All curb and gutter, traffic and bike lanes shown were estimated from GIS photo data.

Utility Research performed for this study is included on the preliminary design plans. While our preliminary design shows best utility information that was available when this report was prepared, it is important to note that Road Improvement Plans and Storm Drain Information from the City of Grand Terrace had not yet been provided. Location of any unknown facilities not shown on the preliminary plans may impact the final horizontal alignment. The Utility Research performed for this study is discussed in more detail in Attachment 3.

Traffic Control Plan

As part of the construction of this reach, the Contractor would be required to implement a detailed traffic control plan. Approval of the traffic control plan(s) would be required by both the City of Colton and the City of Grand Terrace within their respective jurisdictions. The traffic control plan can either be prepared by the design engineer and included as part of the bid documents or prepared by the Contractor as part of the construction contract under a specific bid item. Attachment 4 is a preliminary traffic control plan indicating by section the construction footprint and the number of lanes to be open during construction.

Mt Vernon Reach

Proposed Horizontal Alignment

The Mt Vernon Reach starts at the intersection of Mt Vernon and Main St, as seen on Figure 1. At this intersection, the proposed alignment is located 19.0 ft east of the road centerline.

Figure 1: Mt Vernon and Main St, looking north on Mt Vernon.

Through most of the Mt Vernon Reach, the road maintains an 88.0 ft wide right-of-way. However, there is a short segment of approximately 650 ft from Raven Way to Pico St, where the existing right-of-way width is only 77.0 ft, with 33 ft on the east and 44 ft on the west (See Figure 2). While construction of the proposed pipeline through this short section will remain on the east side of Mt Vernon, the alignment must shift 4 ft closer to the road centerline in order to allow for a safe clearance from utility poles. For this section, traffic control measures will include leaving only the southbound slow lane open for traffic flow with the usage of a flag man to allow two way traffic with some delays, closing both bike lanes for increased safety, maintaining all construction activities during daytime, and providing daily trench cover. Traffic flow would be restored to two lanes southbound and one lane north bound during night hours. Construction from Raven Way to Pico St is expected to last approximately three working days, assuming a rate of 200 l.f. of constructed pipe per day.

Figure 2: Mt Vernon and Pico St, looking south on Mt Vernon.

North of the above-mentioned intersection, the proposed alignment will shift to a distance of 21.5 ft east of the road centerline, and it will maintain such offset until just south of Mt Vernon and Van Buren St, at which point the proposed pipeline will cross to the west side, approximately 24.5 ft west of centerline (See Sheets No2 and No 3 of Attachment 2). While keeping the pipeline on just one side of the road would be ideal, there is an existing 6-inch gas line branching from Van Buren St and running parallel to Mt Vernon for the remainder of the Reach. This gas line is located about 25 ft east of the center of the road. There is also an existing 8-inch sewer pipe about 6 ft east of the road centerline, which leaves less than 19 ft to place the proposed 60-inch water pipe. North of Van Buren, the proposed alignment will remain on the west side of the road until the intersection with Barton Rd, as seen on Sheets No 4 and No 5 of Attachment 2. There are not many major utility conflicts on Mt Vernon between Pico St to Barton Rd. It is anticipated that one lane will be open in each direction during construction with additional lanes open at night.

Finally, the intersection of Mt Vernon and Barton Rd represents the end of the Mt Vernon Reach. This intersection is also one of the major concerns due to its high vehicle volume during peak hours, as well as numerous existing utilities. Although trenchless methods such as Jack-and Bore may appear to be an appropriate solution, the large pits required for placing and receiving pipes would disrupt traffic flow in a greater manner than a localized open cut trench. Construction is expected to last four working days through this intersection. Fortunately, as seen on Figure 3, both Barton Rd and Mt

Vernon have wide right-of-ways, thus allowing for greater flexibility for traffic control plans and alignment design.

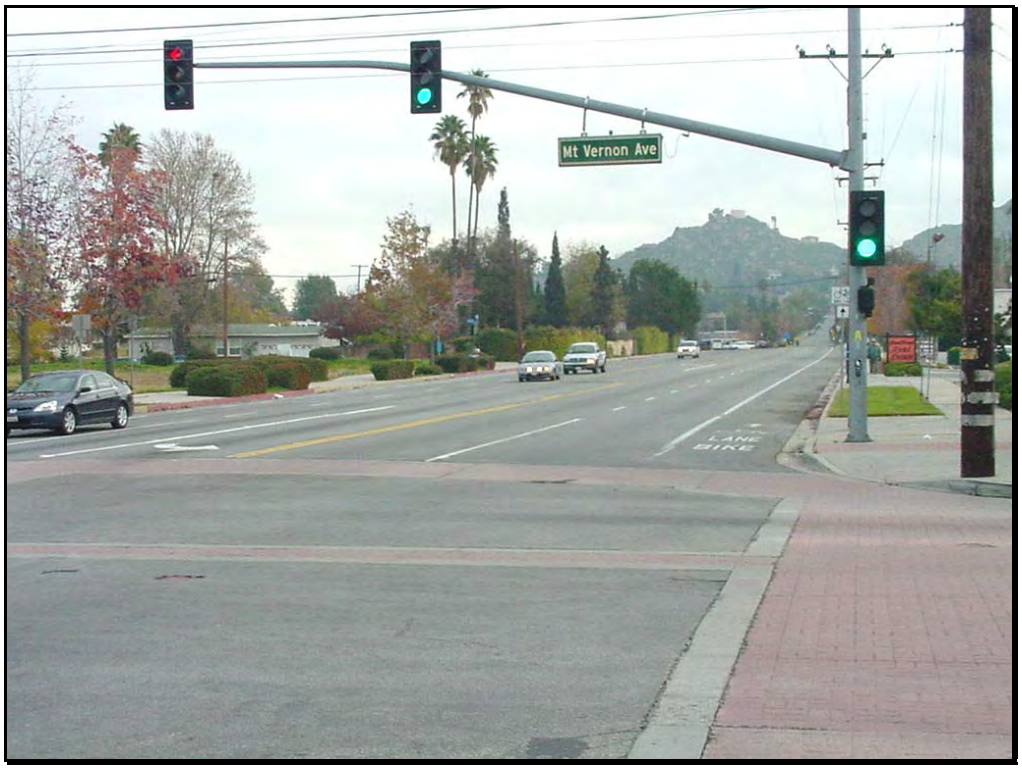

Figure 3: Mt Vernon and Barton St, looking east on Barton Rd.

Estimated Construction Schedule – Trenching/Pipe Laying Only

Mt Vernon Reach

Item	**Approximate Distance (ft)**	**Construction Rate (ft/day)***	**Days to Complete (days)***
Between Main St and Barton Rd	5,000	200	25
Main St Intersection	30	N/A	1
Raven Way Intersection	60	N/A	1
Pico St Intersection	60	N/A	1
Van Buren St Intersection	60	N/A	1
DeBerry St Intersection	60	N/A	1
Center City Ct Intersection	60	N/A	1
Barton Rd Intersection	110	N/A	4
TOTAL			**35**

* The construction rate and numbers of days need for completion are dependent on several factors, including the amount of workable space allowed for construction purposes, utility interferences and soil conditions.

Barton Road Reach

Proposed Horizontal Alignment

The Barton Road Reach is approximately 9,200 ft long, starting at Washington Street in the City of Colton and ending at the intersection of Barton Rd and Mt Vernon in the City of Grand Terrace. The right-of-way width varies from 50 ft to 100 ft. Barton Rd is used by commuters as a detour to Highway 215 and is the main entrance to the City from the east. The critical sections of Barton Road are from Walin to Honey Hill. This section is not wide enough to allow safe and efficient construction without closing the road during construction. Although the City would prefer to keep Barton Rd opened during construction, it is important to recognize that reducing the available area for construction will at least the double the time needed for pipe trenching/laying in the narrow sections of Barton Road from 25 days to 50 days. The following are suggested as alternatives that would help alleviate the impact on regular commuters while allowing for road closure:

- **Reroute Through Traffic through Washington St to Mt Vernon –** If early construction warnings and enough information is provided to commuters, traffic could be directed through Washington St to Mt Vernon and visa versa without major backups along Barton Rd. This would allow the Contractor to close Barton Rd during construction, which will significantly shorten the time necessary to finish construction. Local traffic would be accommodated. The road would be opened each night.
- **Restrict Construction activities to non-peak hours –** Construction activities can be allowed during non-peak hours only. While this alternative would help reduce traffic disruption, it would also increase the time needed for construction since mobilization and demobilization of equipment require a set amount of time. As a result, actual working time is increased by 29 working days on the Barton Road reach.
- **Use Center Dr as a detour for north/east bound traffic –** When construction occurs between Center Dr and Washington St, Center Dr or Walin can be used to reroute the northbound traffic during peak and non-peak hours.

The Barton Road Reach is divided up into 5 sections for purposes of this study.

Washington to Walin: This section starts at the intersection of Barton Rd and Washington St (See Figure 4).

Figure 4: Barton Rd and Washington St, looking northeast on Barton Rd

As seen on Sheets 12 and 13, the Barton Rd Reach starts with a right-of-way of roughly 80.0 ft wide, with 50.0 ft north and 30.0 ft south of the centerline. At this intersection, the proposed alignment is located about 35.0 ft north of the road centerline, maintaining such offset for 1,100 ft until the intersection of Barton Rd and Walin St. The right-of-way for the Gage Canal is immediately to the south of the right-of-way. During day time construction, Eastbound traffic would be diverted along Washington to Mt Vernon, and one lane of west bound traffic could be maintained or traffic diverted onto Walin or Center. Alternatively, flagmen could be utilized to maintain two way traffic on the remaining single lane. At night, both lanes of traffic would be opened.

Wallin to Hilltop: As seen on Sheets 11 and 12, the right-of-way narrows down to 50 ft. Figures 5 and 6 illustrate the narrow space available for both traffic and construction. The Gage Canal right-of-way, utility poles and a slope are located on the southeast side of the road, and the proposed pipeline on the far northwest side of the road. During construction, the road must be closed. There is simply not enough room to allow construction equipment to maneuver with even one lane open. There is essentially no opportunity to widen the right-of-way because of adjacent slopes, development and utilities. Eastbound traffic would be diverted along Washington to Mt Vernon and westbound traffic would have to be diverted back at Mt Vernon and Barton along Mt Vernon to Washington. Local traffic would have access.

Figure 5: Barton Rd between Washington St and Walin St, looking southeast on Barton Rd.

Figure 6: Barton Rd and Hilltop Dr Intersection, looking northeast on Barton Rd

Hilltop to Honey Hill: From Hilltop Dr to Glendora Dr, Barton Rd has a narrow pavement width with only one lane in each direction. See Sheets 9, 10 and 11 of Attachment 1. However, in some areas, the right-of-way widens on both sides of the pavement to accommodate the downslopes. The proposed alignment is located 20.0 ft west of the road centerline. As seen on Figure 7, a portion of this reach has the potential for adding a new lane to the east side of Barton Rd. Where this lane might be added, a traffic lane could be kept open during construction for one way traffic flow or two way traffic flow with flagmen. Immediately north of Glendora, the right-of-way narrows again (See Figure 8). There is little opportunity to widen the pavement and therefore the road would have to be closed for construction. From Glendora Dr to Honey Hill, the existing right-of-way widens to 80.0 ft. (See Figure 9) One lane of traffic would be possible through this section.

Figure 7: Barton Rd between Hilltop Dr and Glendora Dr, looking north on Barton Rd

Figure 8: Barton Rd north of Glendora Dr Intersection, looking north on Barton Rd

Figure 9 Barton Road north of Honey Hill to Glendora

Honeyhill to Palm: In this section, Barton Rd right-of-way is a 100.0 ft wide. (see figure 10) The proposed alignment is generally on the north/west side of the right-of-way. The pipeline jogs to avoid existing utilities. One lane of traffic in both directions will be available during construction.

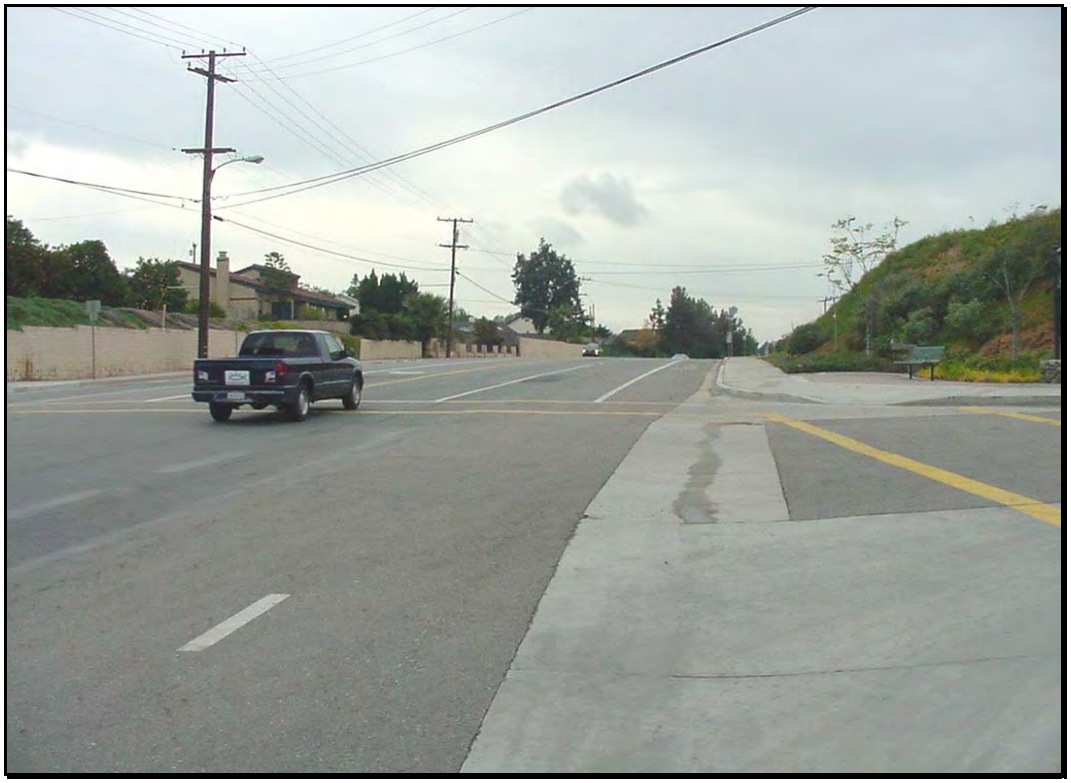

Figure 10 Barton Road looking south from Grand Terrace Road

Palm to Mt Vernon: Again in this section, Barton Rd right-of-way is a 100.0 ft wide. The proposed alignment is 6 feet south of the centerline of the right-of-way. Traffic lanes would be temporarily re-striped in this reach to allow one lane of traffic in both directions during construction.

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Estimated Construction Schedule – Trenching/Pipe Laying Only

As mentioned before, the time necessary to build the pipeline though this or any section of the Barton Rd Reach is dependent on the available area provided for construction activities. The reasonable construction schedule assuming an adequate construction footprint and full working days is given below.

Barton Reach

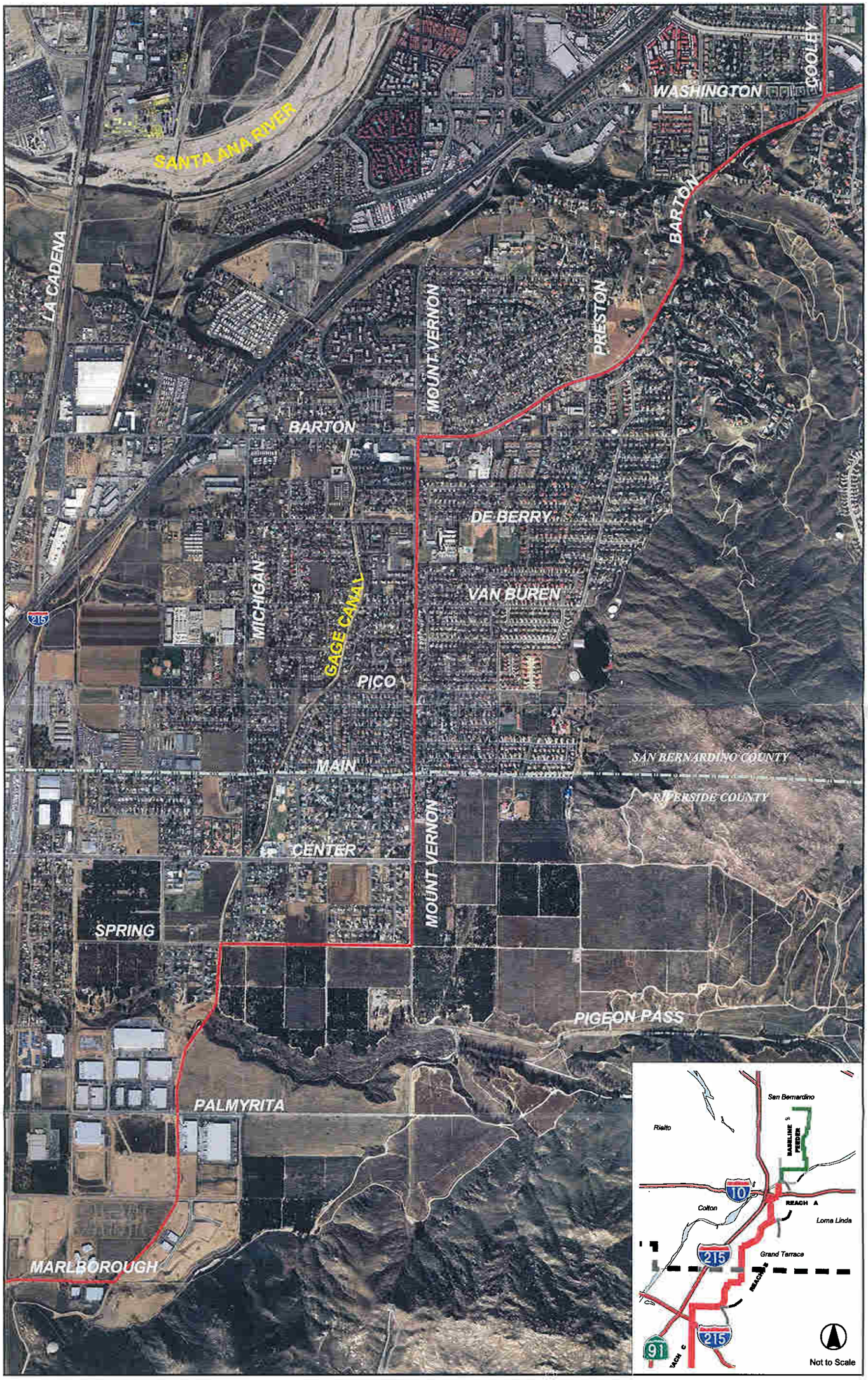
Item	**Approximate Distance (ft)**	**Construction Rate (ft/day)***	**Days to Complete (days)***
Between Washington and Walin	1,100	200	6
Walin to Hilltop	1,050	200	6
Hilltop to Honey Hill	2,600	200	13
Honey Hill to Palm	3,450	200	18
Palm to Mt Vernon	1,000	200	5
TOTAL			**48**

* The construction rate and numbers of days need for completion are dependent on several factors, including the amount of workable space allowed for construction purposes, utility interferences and soil conditions.

Conclusions

The City of Grand Terrace has presented concerns about the construction of the Riverside–Corona Feeder project. In order to address such concerns, Western Municipal Water District has asked Albert A. Webb Associates to perform a preliminary study to determine the best possible horizontal alignment which would attend to the City's concerns. Through our preliminary study, Albert A. Webb Associates has determined that there are some areas which need closer attention

ATTACHMENT 1
Figure I-2b from DPEIR



Source: AirPhoto USA February 2002
Scale : 1" = 1,500'

ALBERT A. WEBB ASSOCIATES ENGINEERING CONSULTANTS

PROPOSED RIVERSIDE/CORONA FEEDER

Figure I-2b

Reach B

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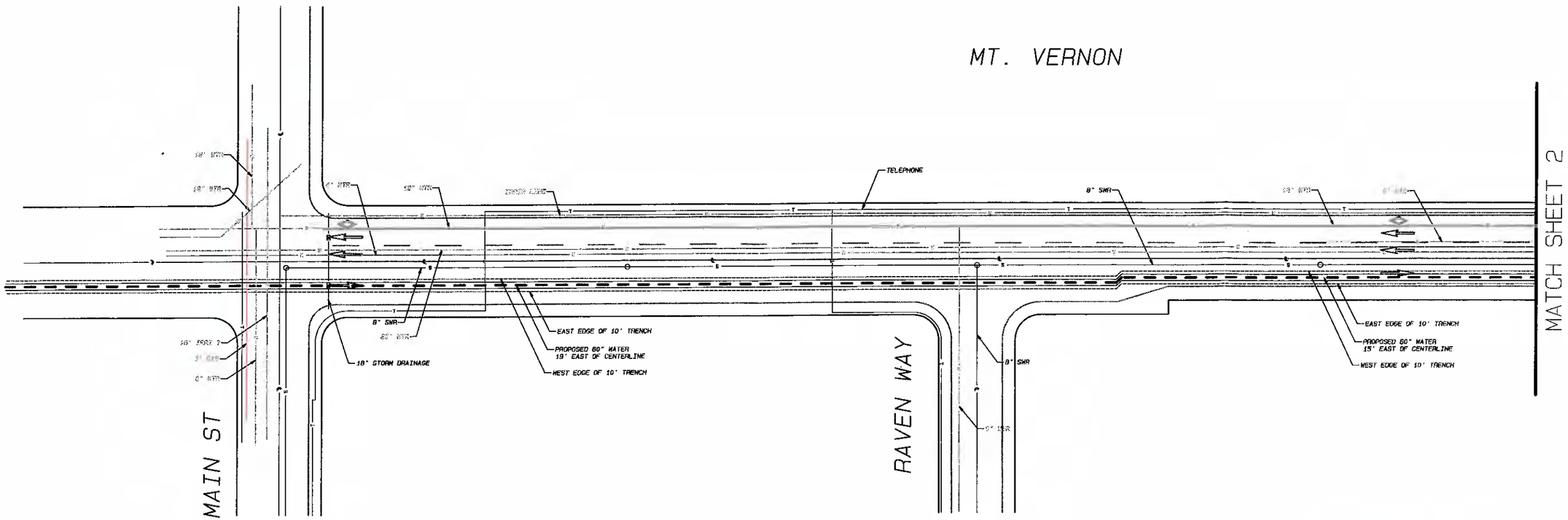
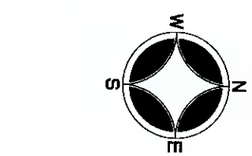
ATTACHMENT 2

Proposed Horizontal Alignment





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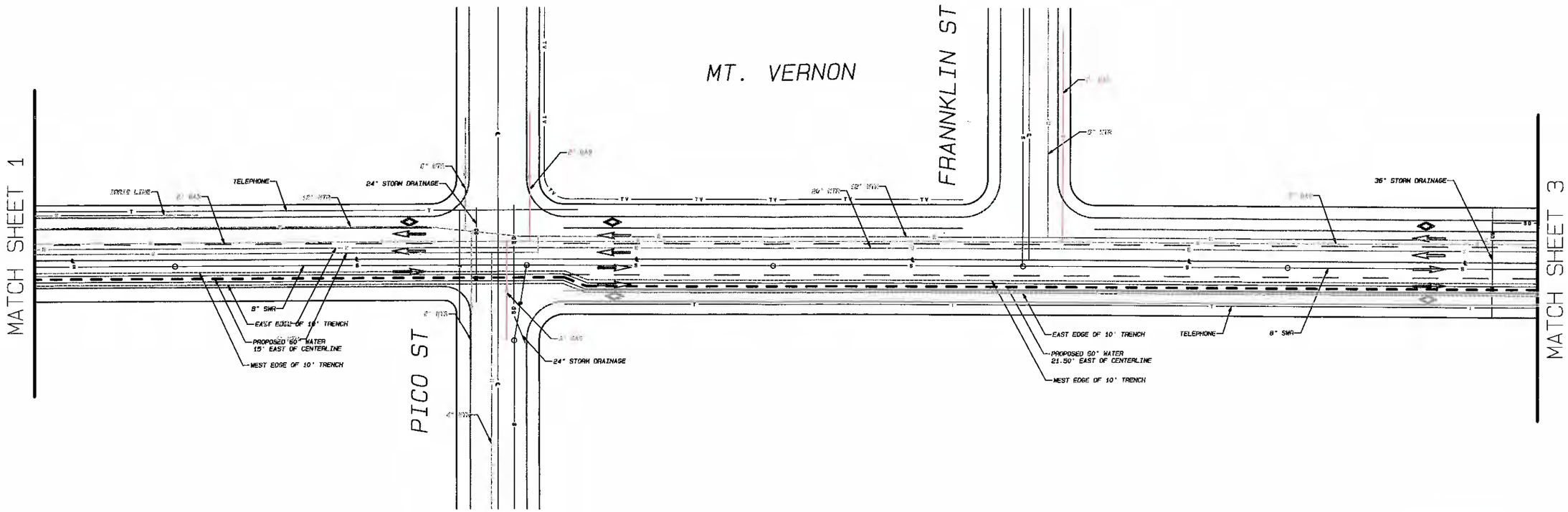

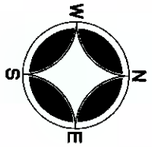

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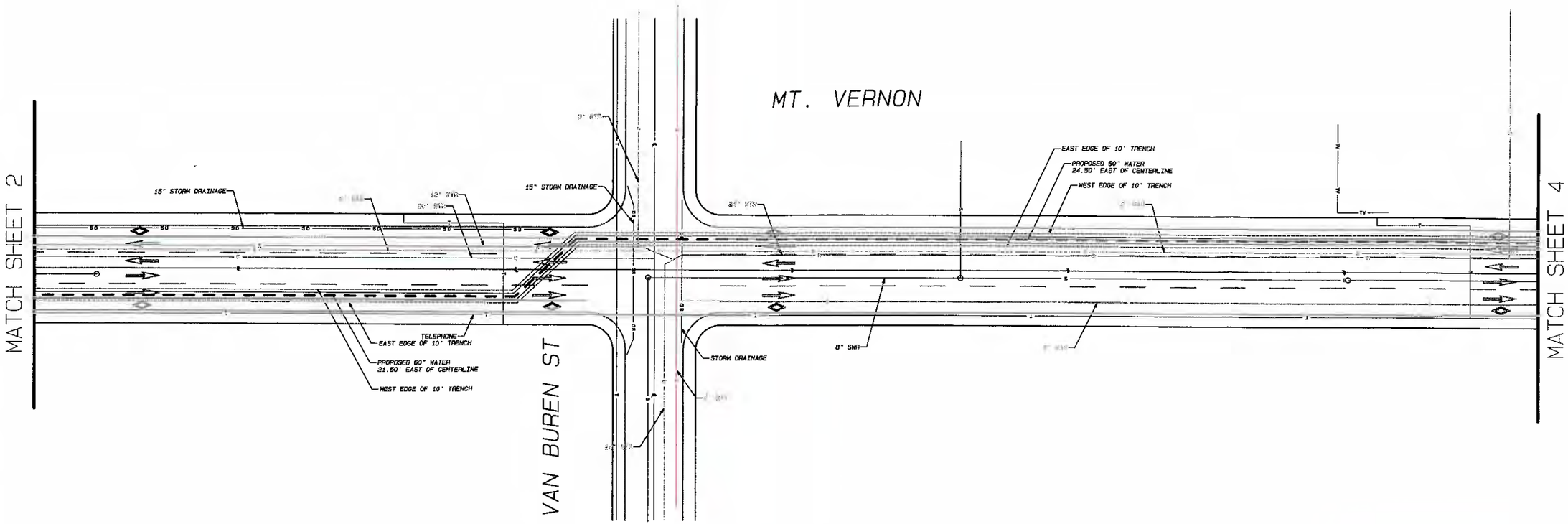

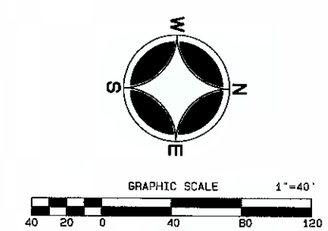

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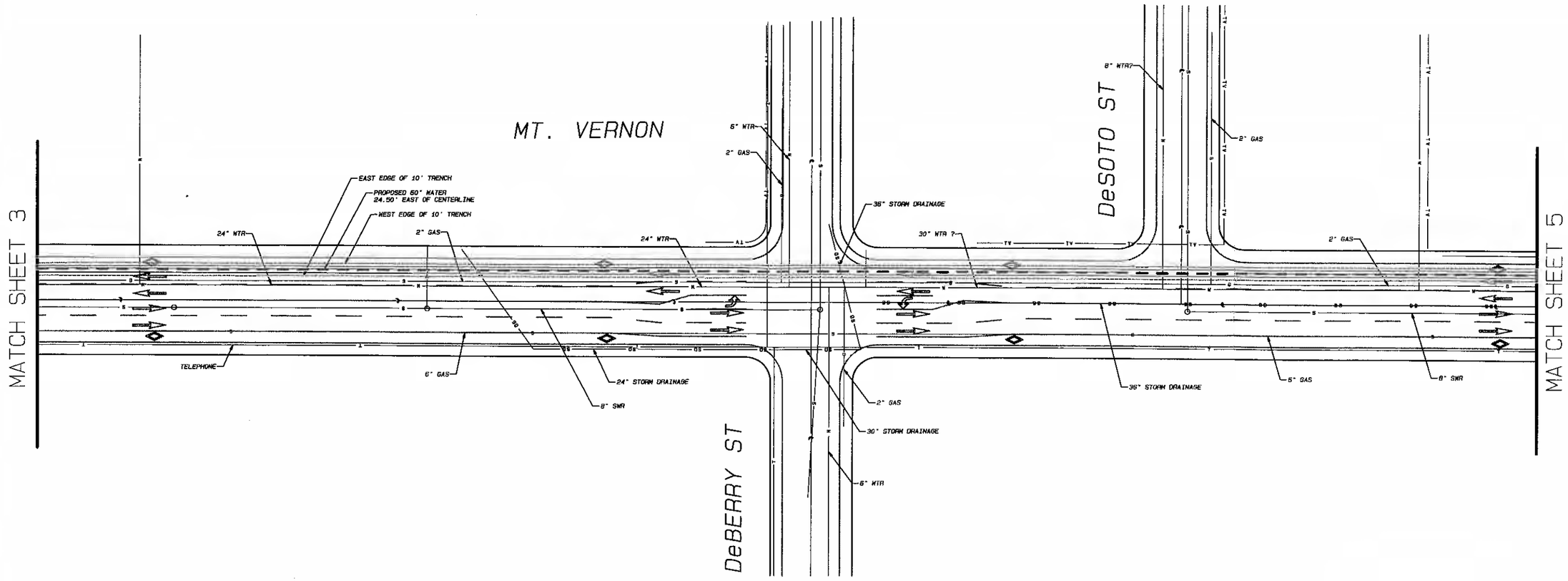

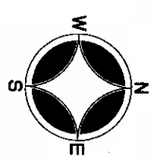

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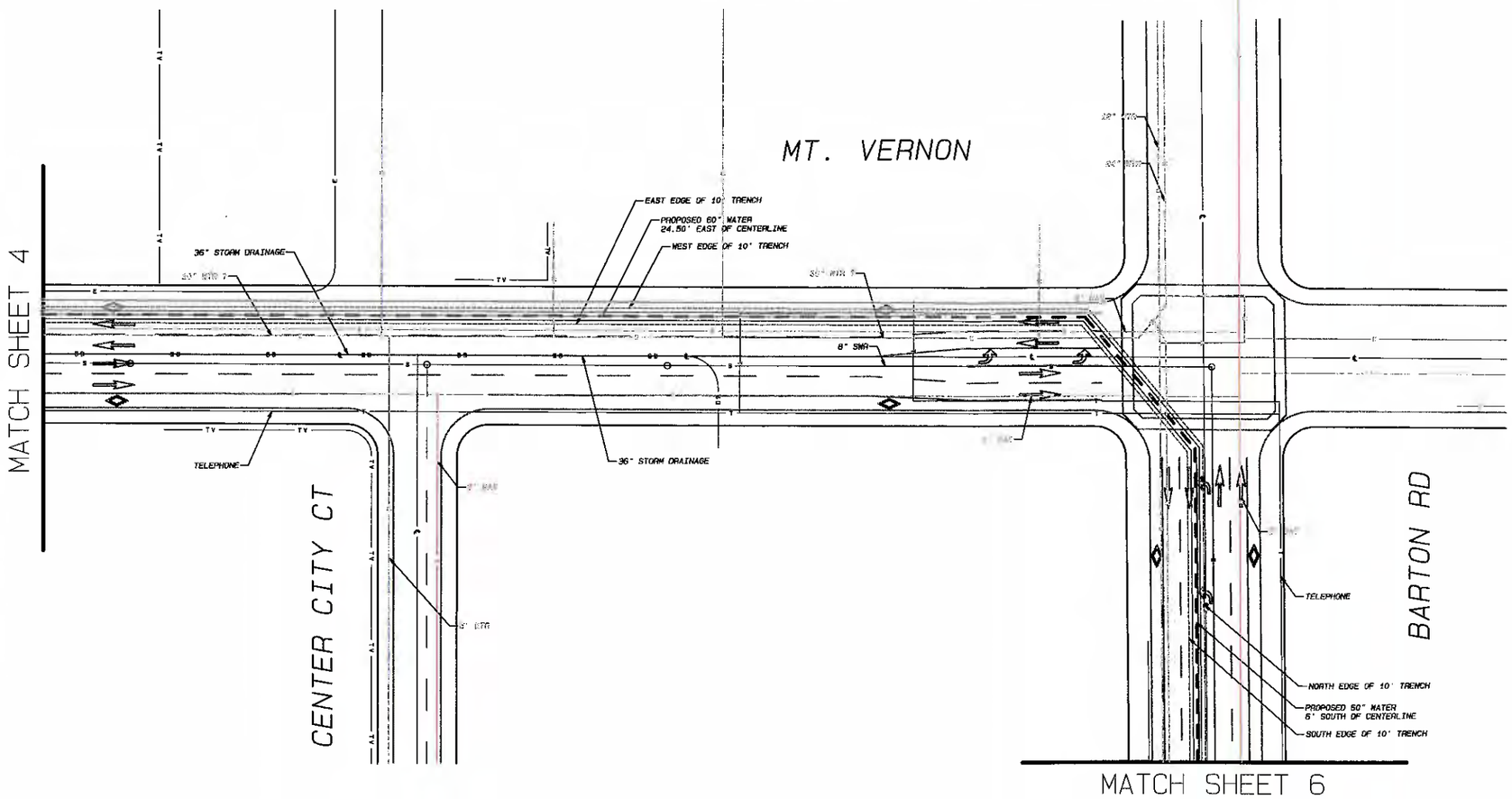

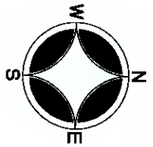

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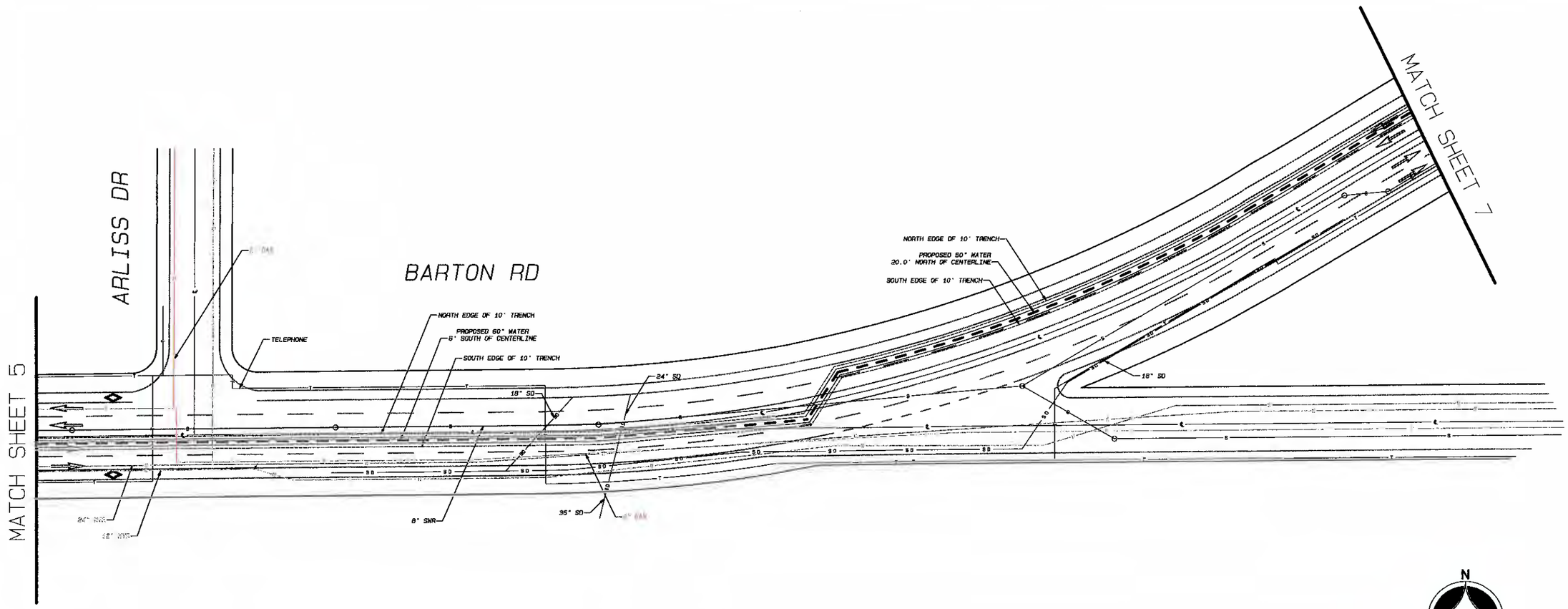

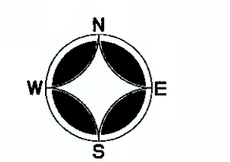

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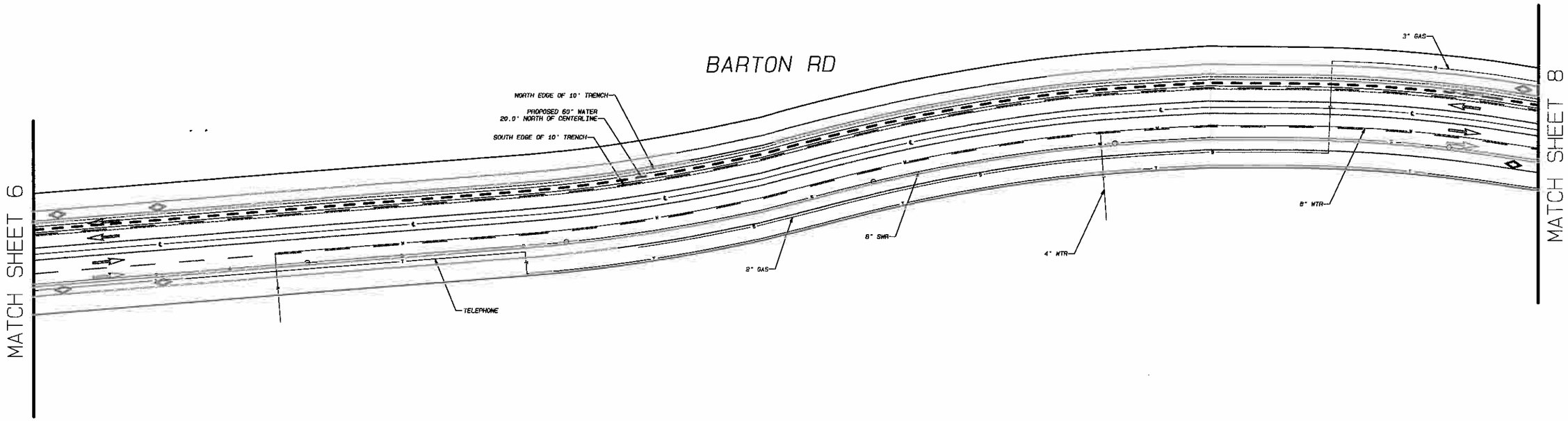

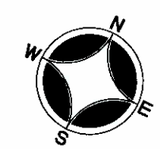

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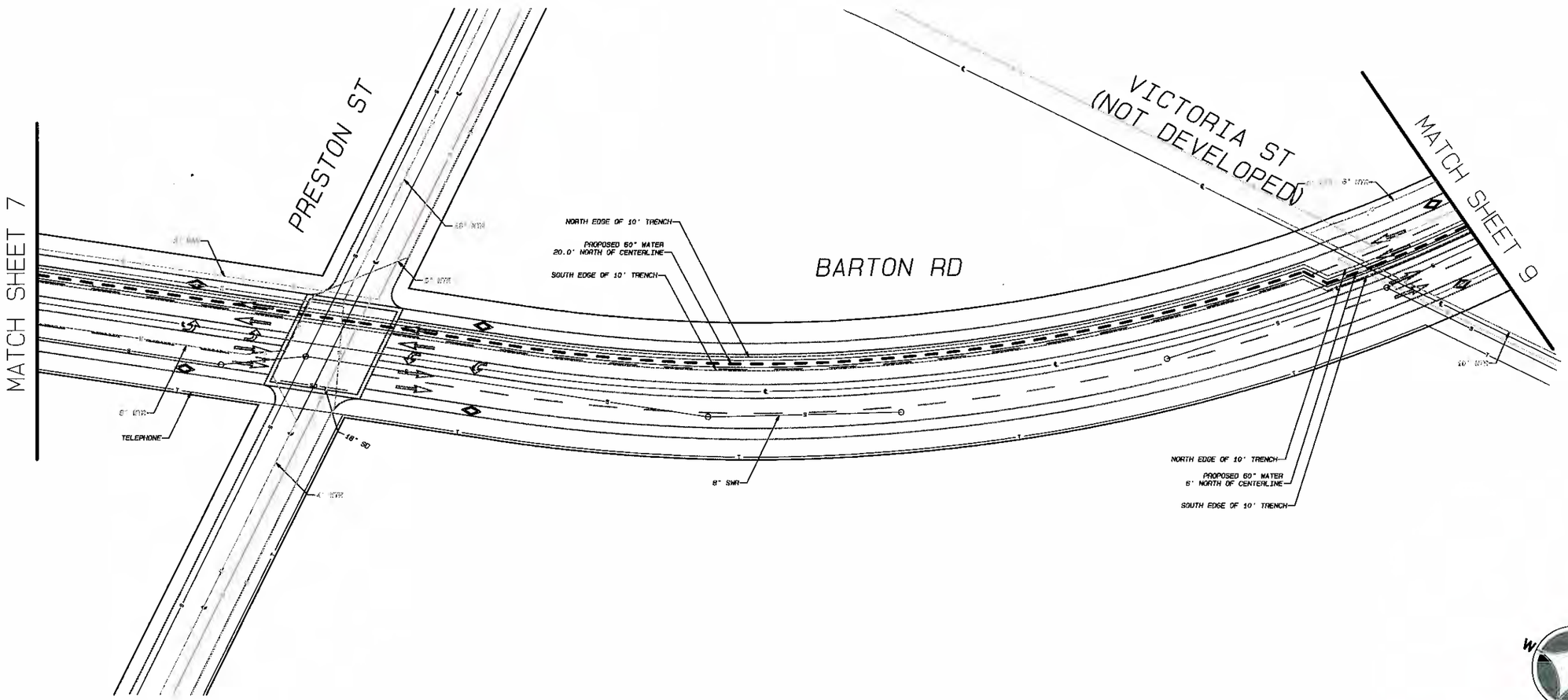

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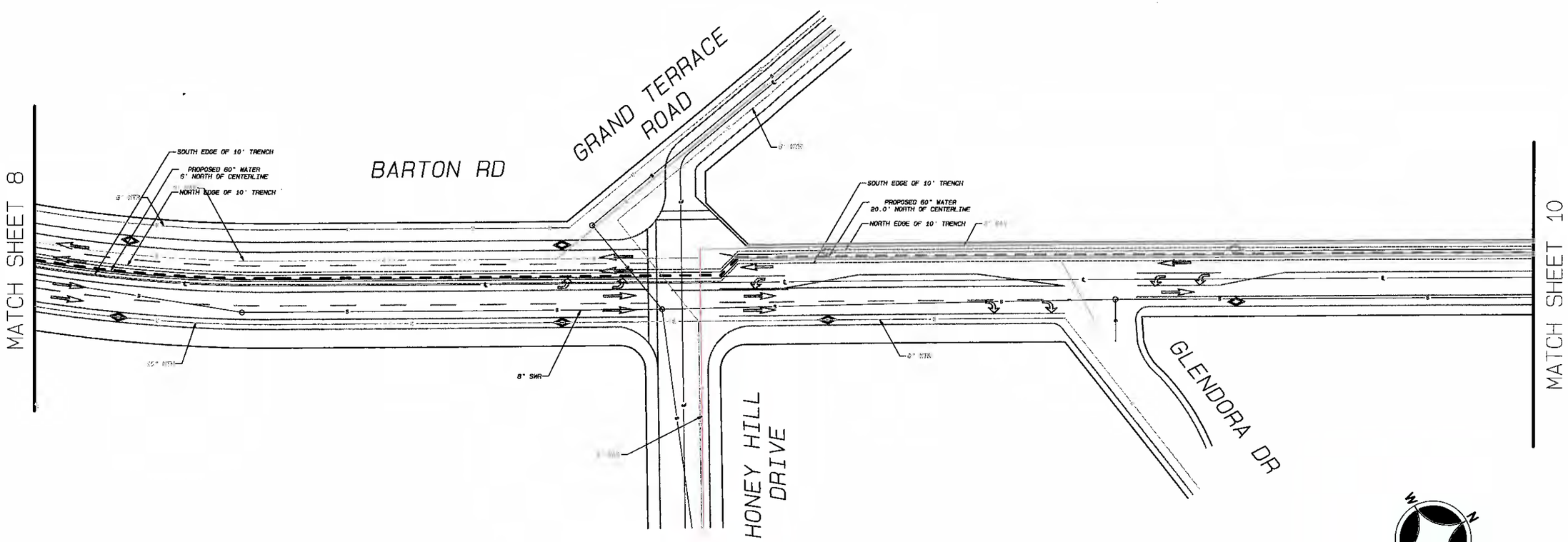

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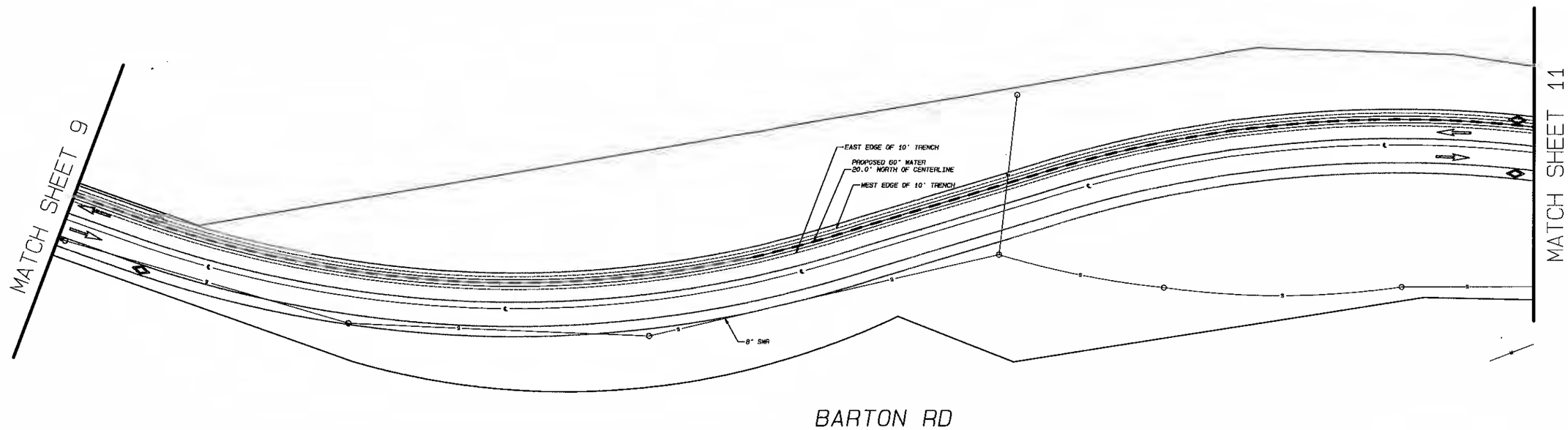

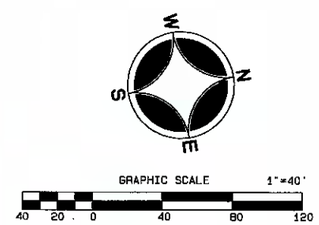

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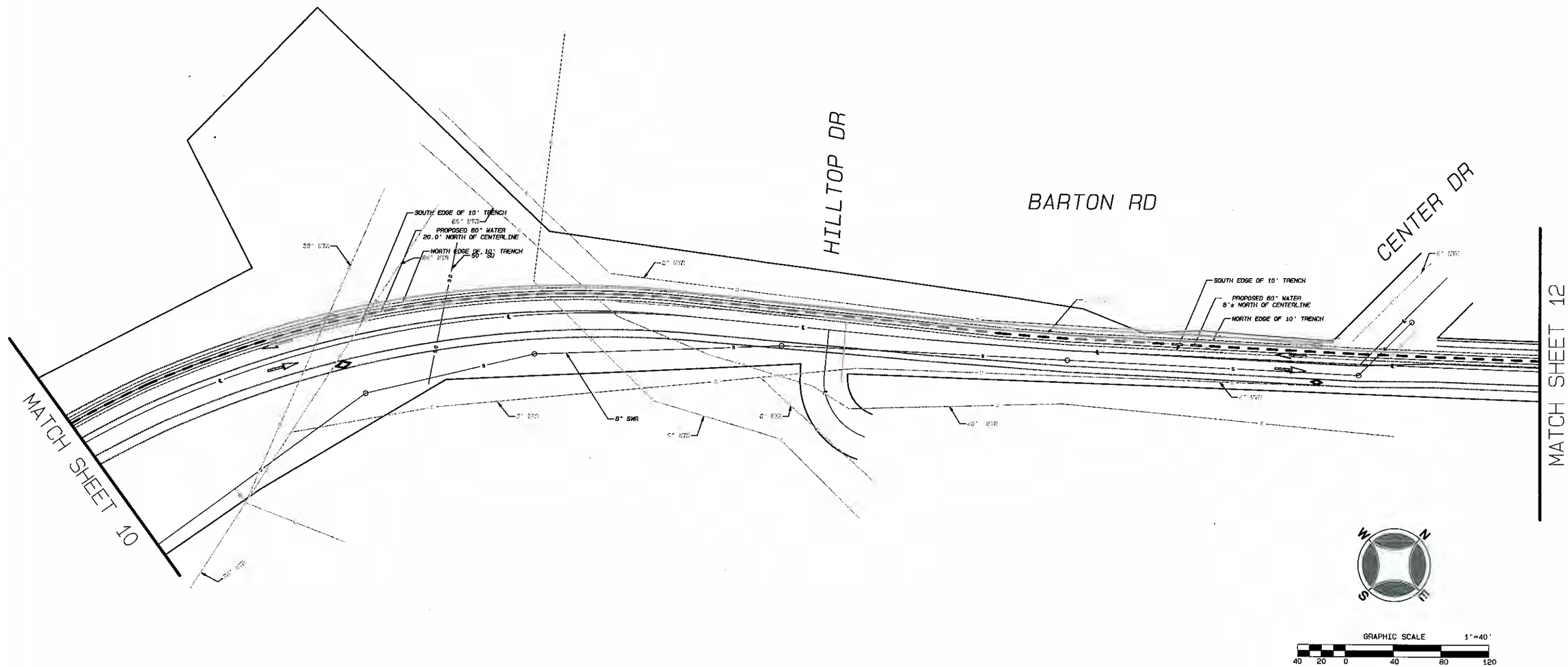

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CIVIL ENGINEERS
3788 McCRAY ST.
RIVERSIDE CA. 92506
(909) 686-1070

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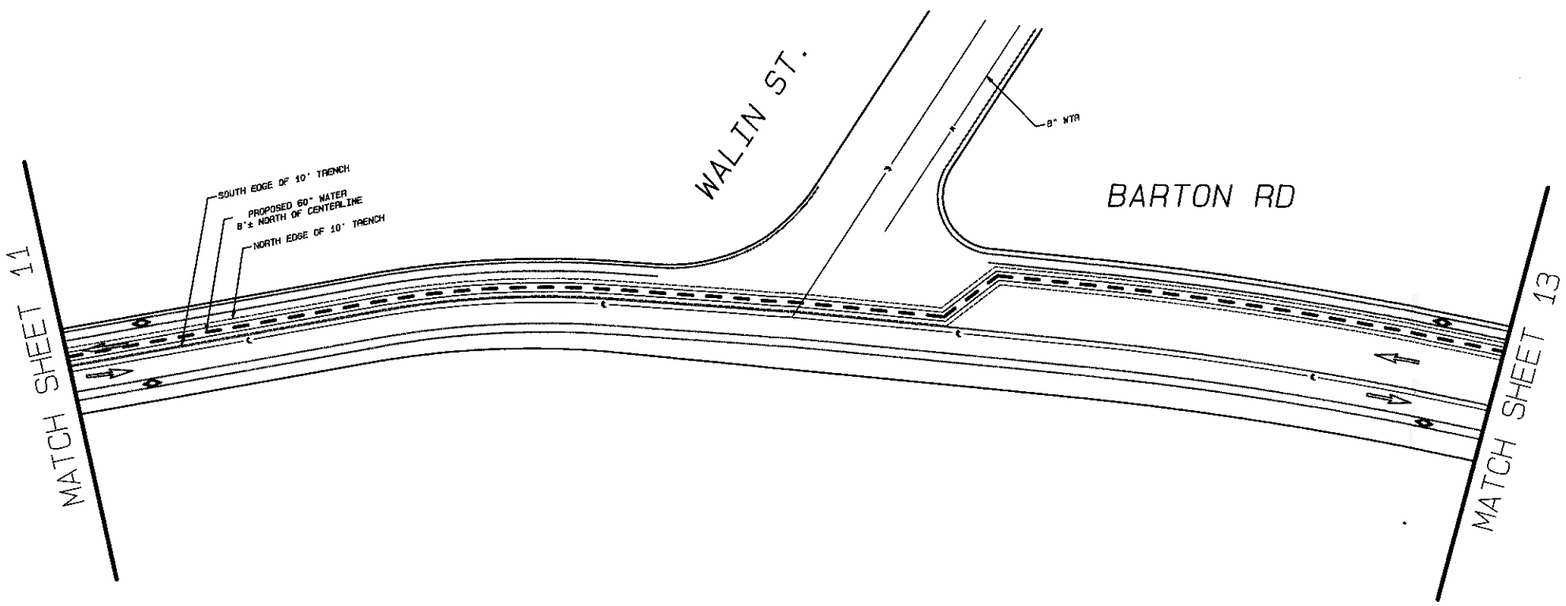

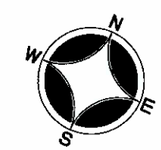

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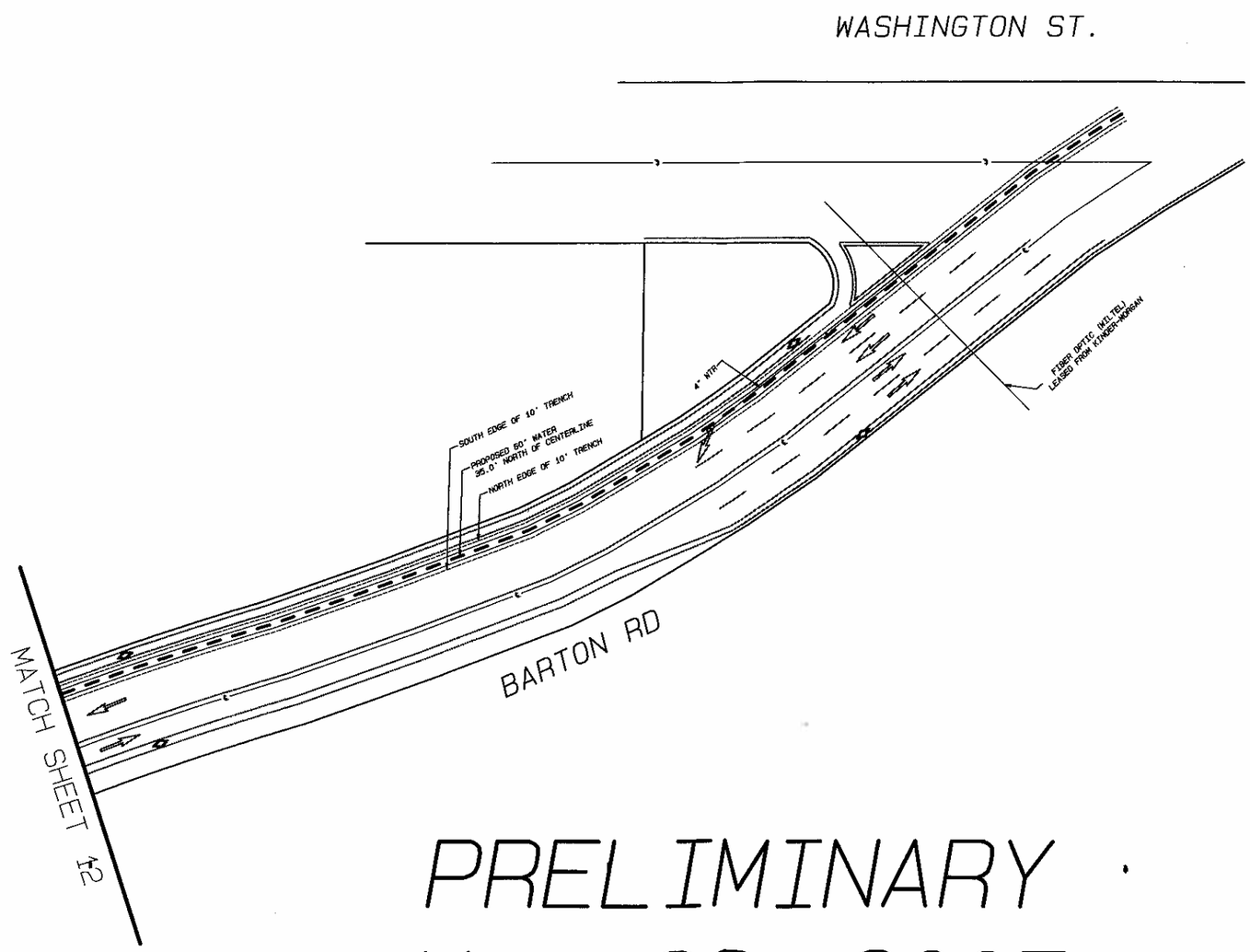

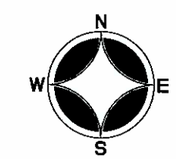

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ATTACHMENT 3

Utility Research

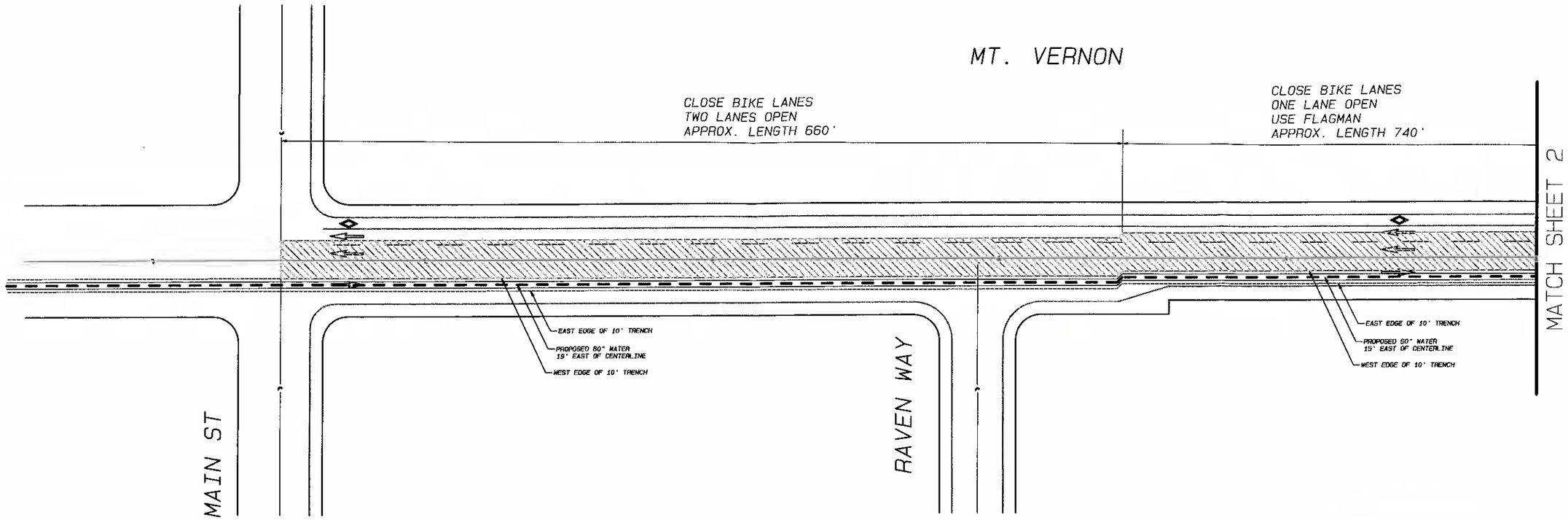
The Utility Research performed for this study included creating a design ticket from USA Dig Alert and contacting the necessary agencies by mail to request all pertinent utility information. The research also included telephone communications and personal visits to the City of Grand Terrace and the City of Colton. While our design shows all the available utility information we were able to find, it is important to note that we have not received the Road Improvement Plans and Storm Drain Information from the City of Grand Terrace by the time of this report.

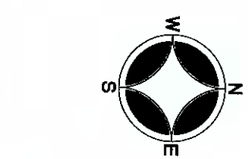
The Utility Research embarked grids E5, E4, F4, F3, G3, G2, and H2 of sheet 646 of the Thomas Guide. The design ticket from USA Dig Alert revealed the following agencies as having utilities within the proposed project site:

- State of California, Dept Water Resources
- City of Colton
- The Gage Canal Company
- City of Grand Terrace
- SBC/PAC Bell
- City of San Bernardino Water
- UTI for Adelphia – Ontario
- UIT for CA Dept Water Resources
- UTI for SC Edison – Redlands District
- UTI for Verizon – Victorville
- City of Loma Linda
- Elsinore Valley MWD
- Golden State for Time Warner Telecom
- Kinder Morgan Energy Partners/SFPP
- Riverside Highland Water
- SC Gas- Fontana
- UTI for Adelphia – San Bernardino
- UTI for City of Riverside Water
- UIT for Verizon – Redlands
- Wiltel Communications

ATTACHMENT 4

Construction Footprint





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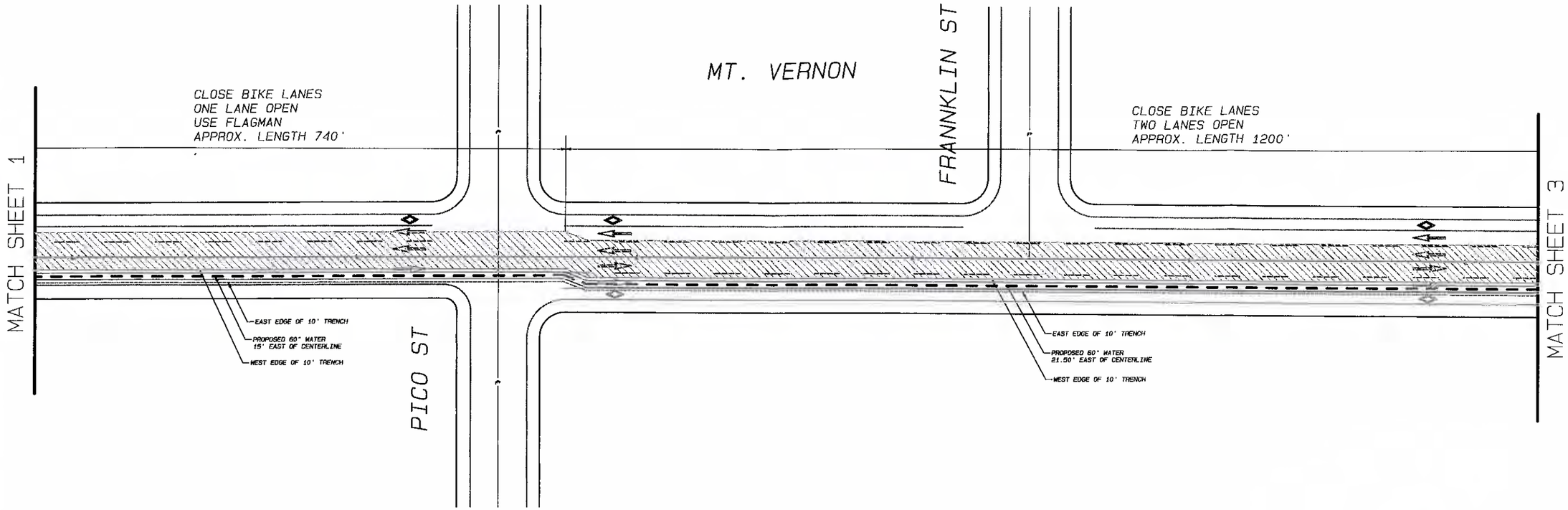

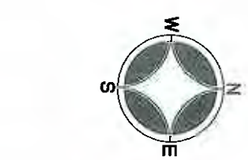

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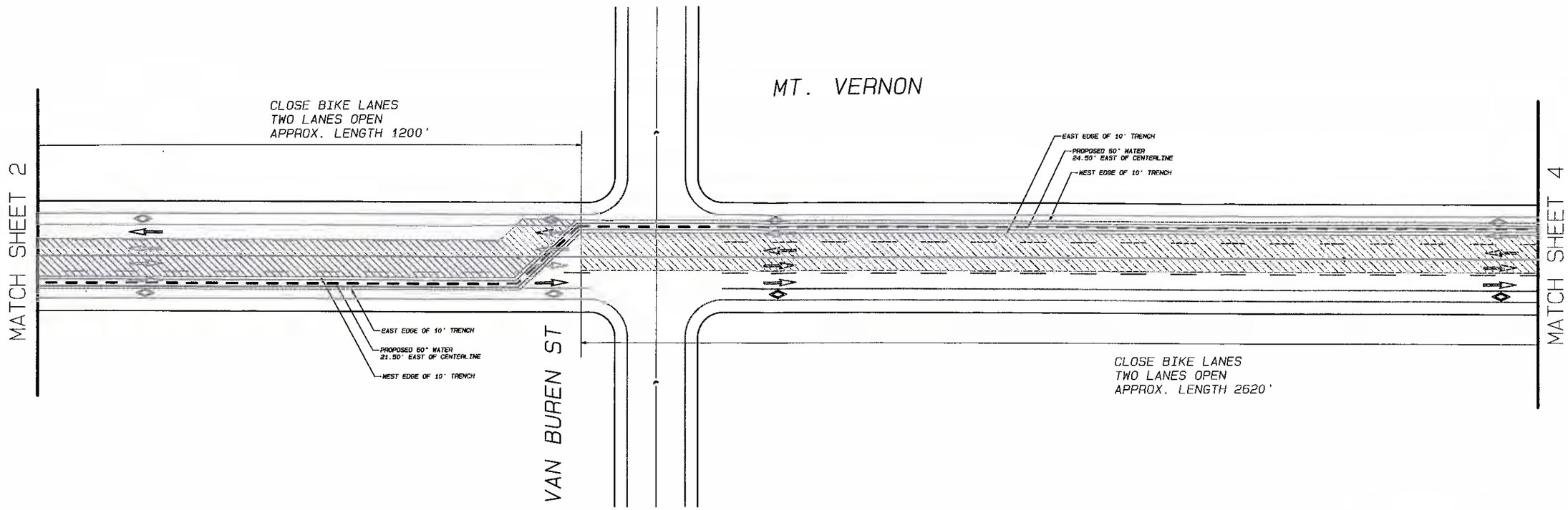

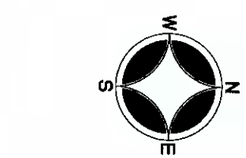

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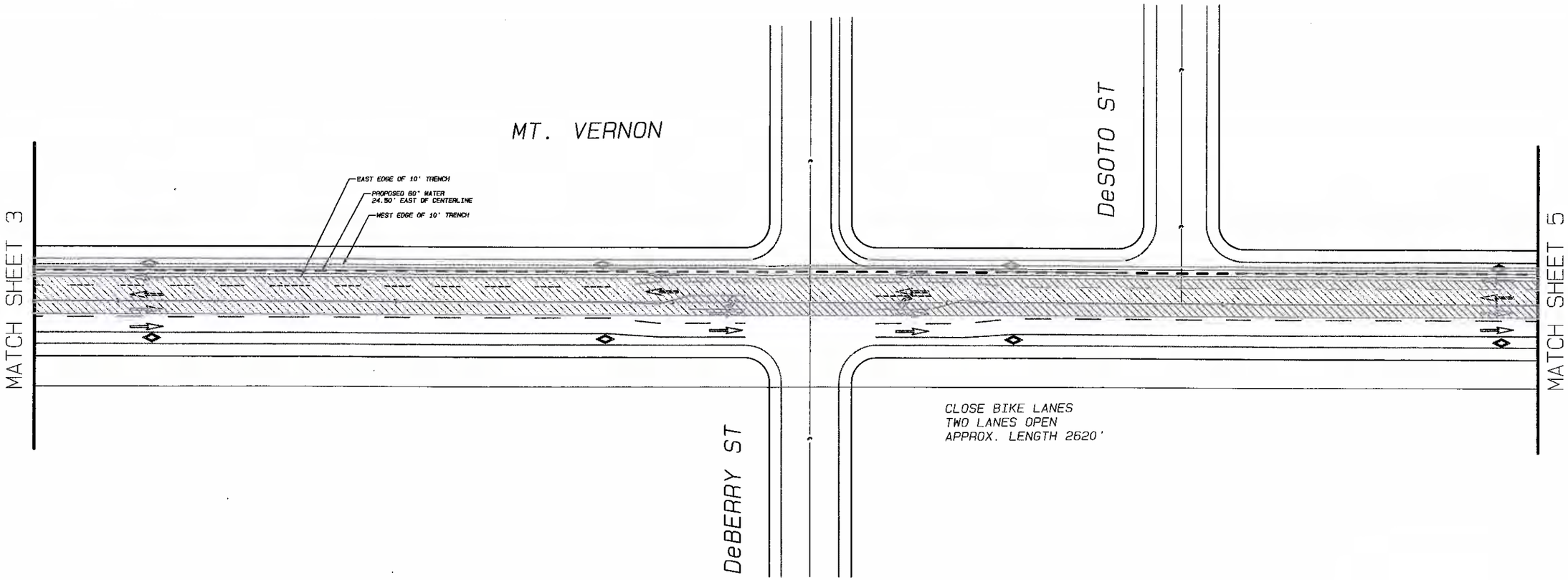

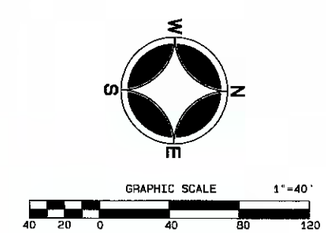

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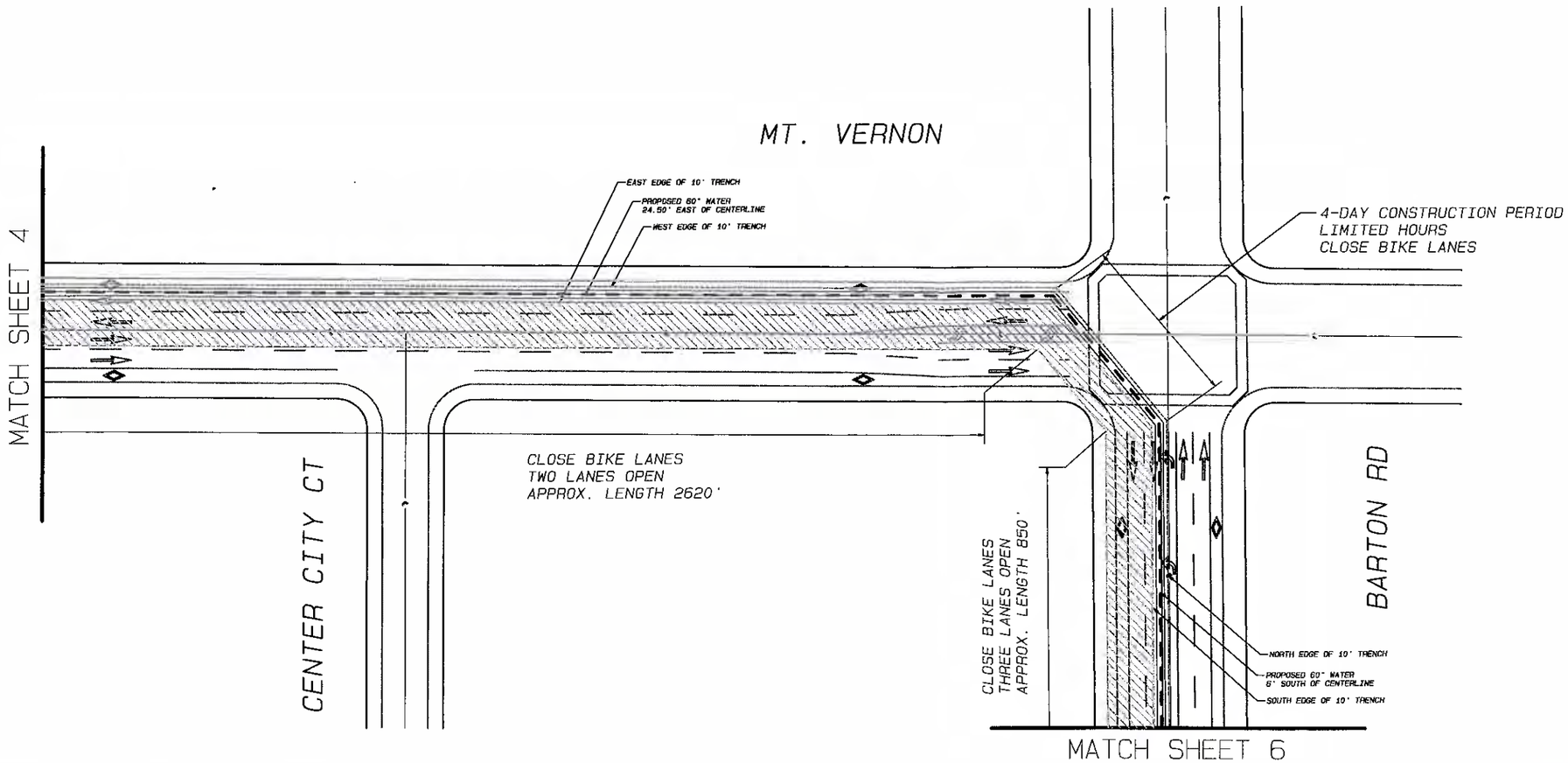

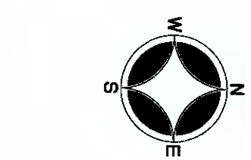

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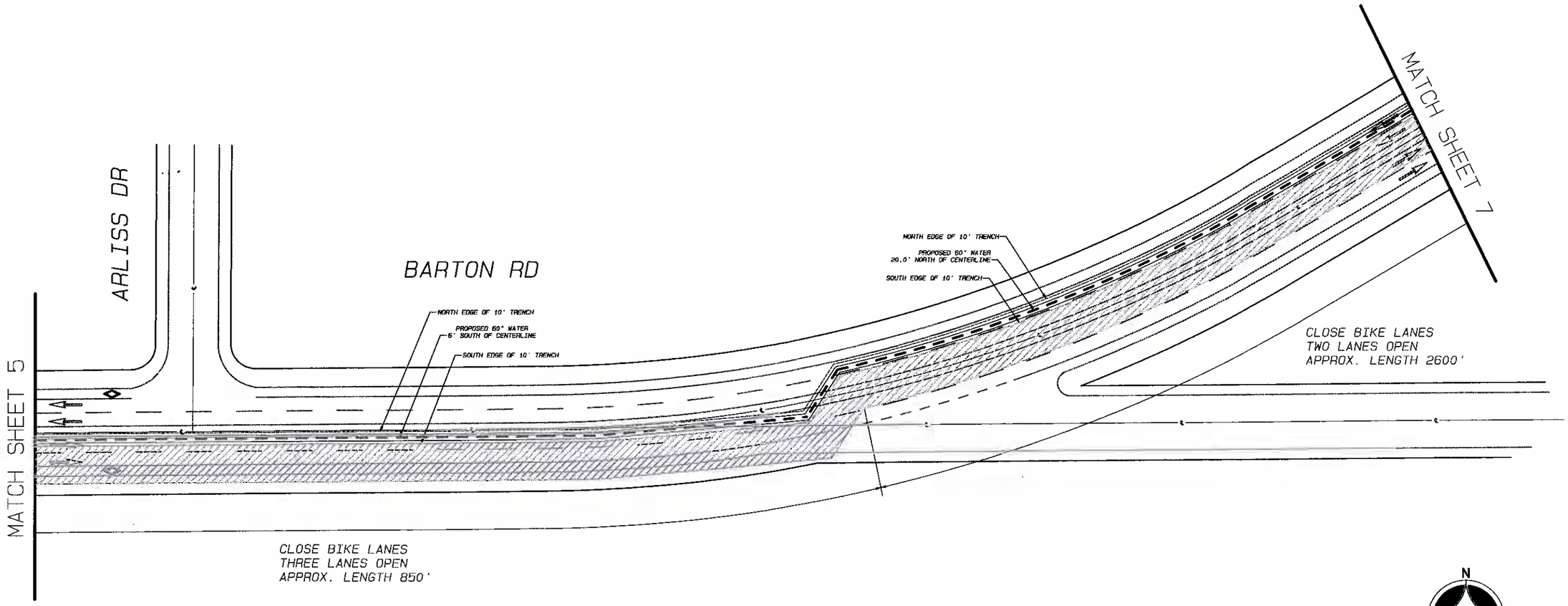

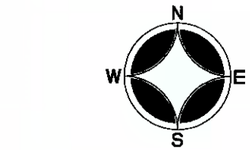

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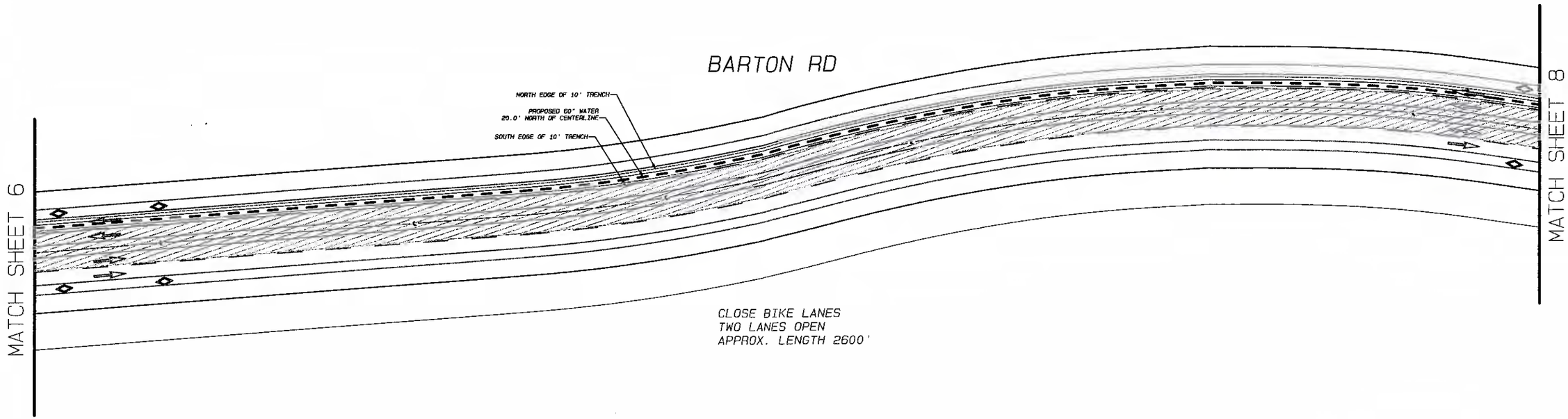

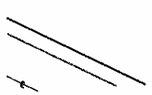

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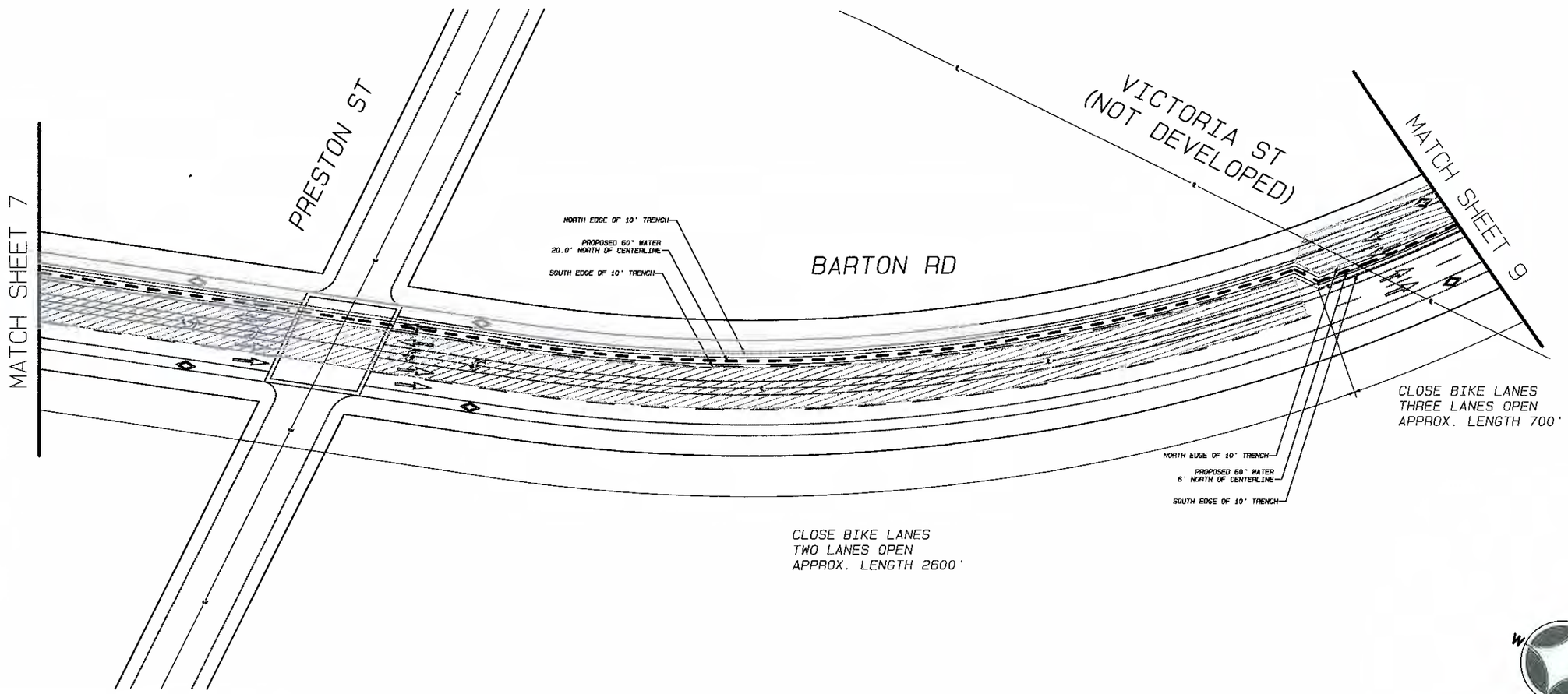

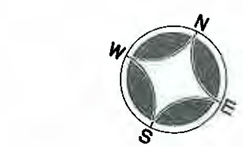

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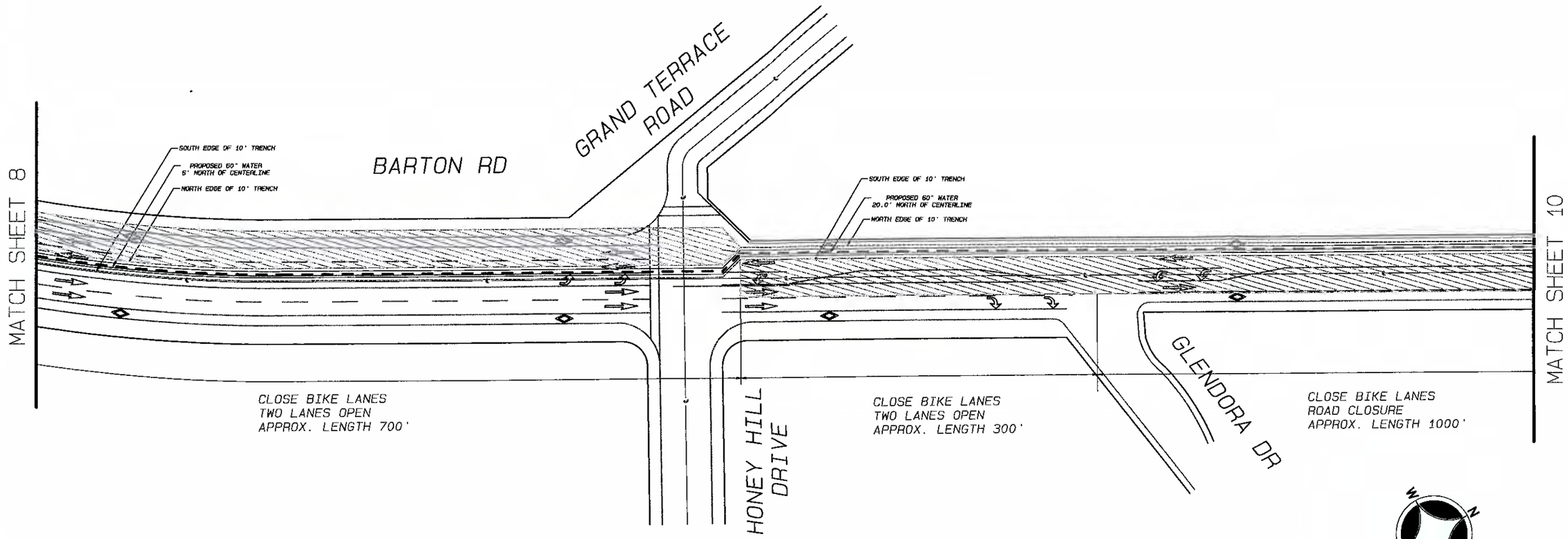

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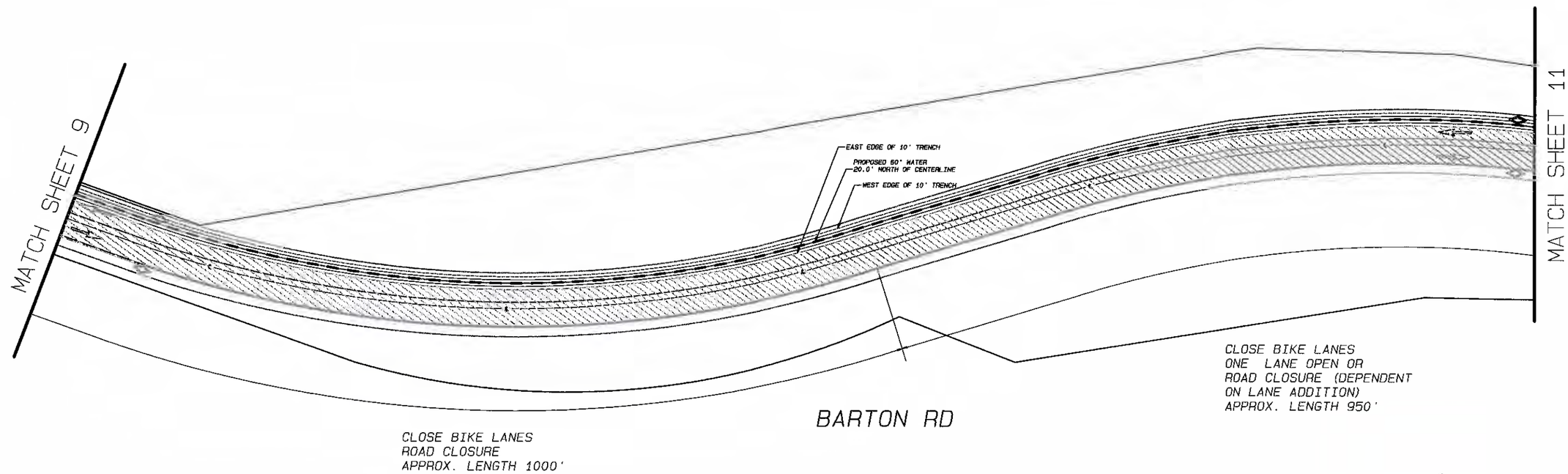

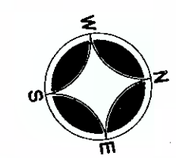

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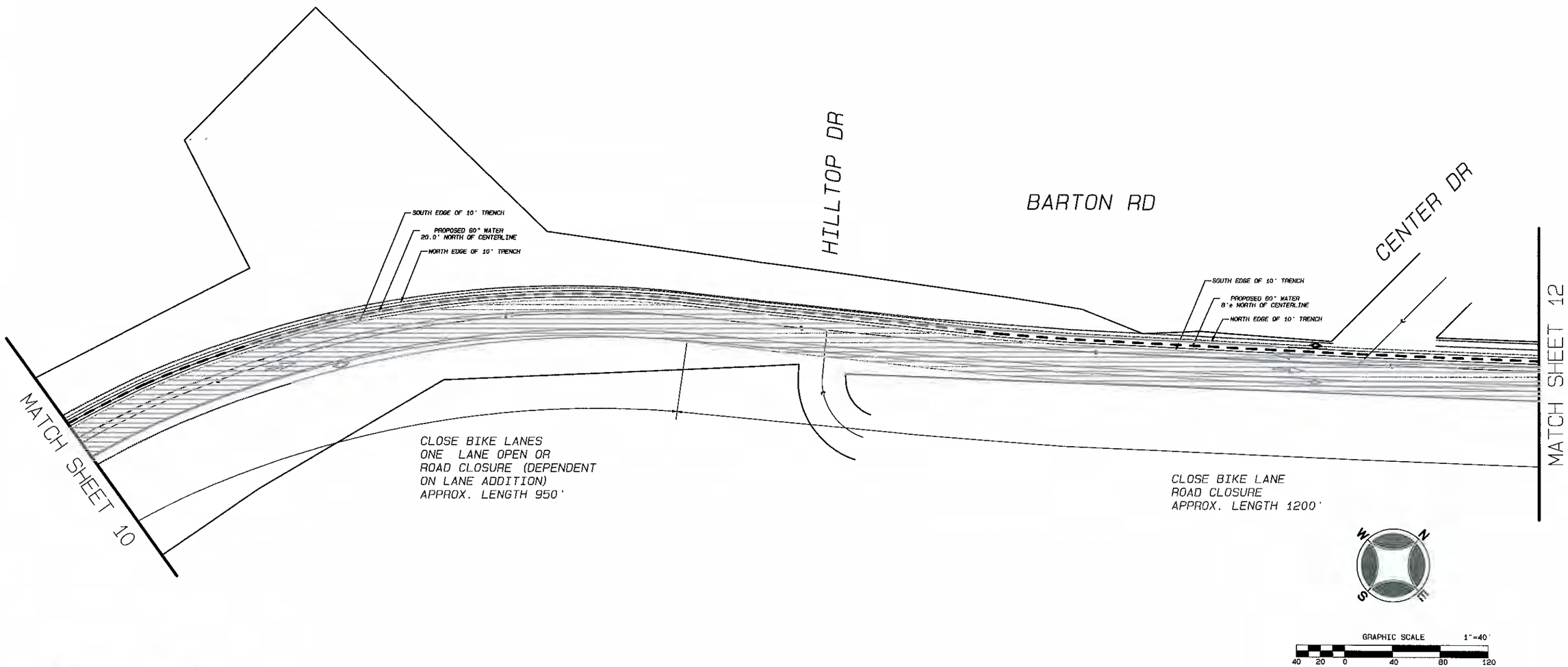

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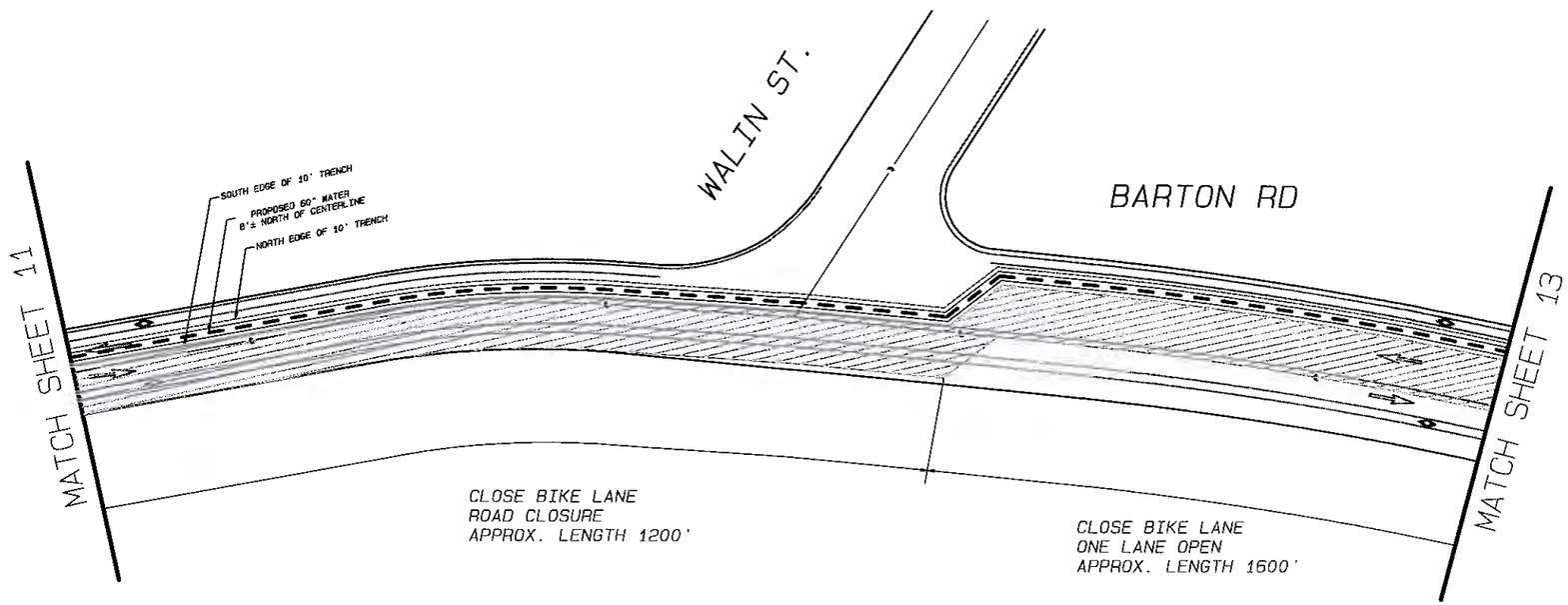

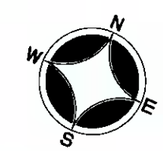

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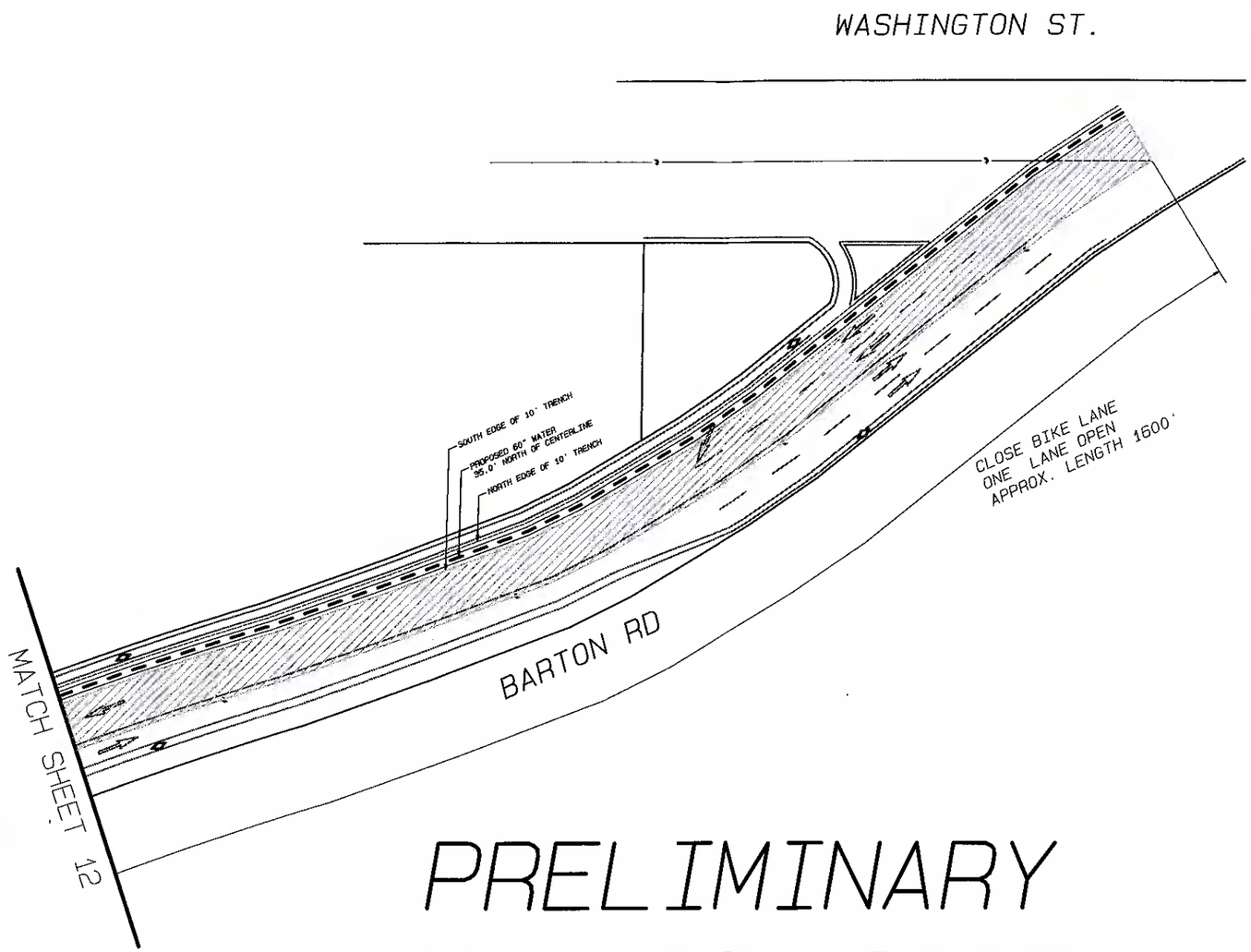

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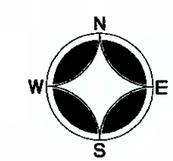

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Western Municipal Water District

Riverside-Corona Feeder
School Flooding Study

April 2005

ALBERT A.
WEBB
ASSOCIATES
ENGINEERING CONSULTANTS

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HIGHGROVE ELEMENTARY SCHOOL 2
JOHN W. NORTH HIGH SCHOOL 2
VICTORIA ELEMENTARY SCHOOL 3
GAGE MIDDLE SCHOOL/EDUCATIONAL OPPORTUNITY CENTER 4
CLEVELAND AND MYERS SCHOOL SITE (PROPOSED) 4

EXHIBIT A, SCHOOL SITES
ATTACHMENT 1, HYDRAULIC CALCULATIONS

Riverside-Corona Feeder
School Flooding Study

Analysis of Potential Flood Hazards to Existing and Proposed Riverside Unified School District Sites from the Riverside/Corona Feeder Project March 7, 2005

In response to a letter from the Riverside Unified School District (RUSD), Western Municipal Water District (WMWD) retained Albert A. Webb Associates to prepare this report to analyze potential flood hazards to existing and proposed public schools within the RUSD that might occur as a result of rupture of the Riverside/Corona Feeder Project (RCF). This report includes the existing and proposed RUSD school sites identified by RUSD as located within 1500 feet of the proposed pipeline alignment.

The RCF Project includes a pipeline approximately 30 miles in length. The proposed diameter of the pipeline varies from 72 inches in the upper reaches to 36 inches in the lower reaches, with some branch lines at 30 inches. RUSD jurisdiction is located within the central reaches of the proposed pipeline. The proposed flow rate of the pipe varies from 100 cfs to 25 cfs over its entire length. Within the RUSD, the largest diameter of the project pipeline is 60 inches and the smallest is 36 inches. The pressure of the water in the pipeline is approximately 80 to 100 psi (pounds/square inch) in the vicinity of all the school sites.

The analysis within this report is based on the assumption that the pipeline would rupture adjacent to the school sites, and that the entire proposed flow rate would escape from the pipeline and spill out onto adjacent roads and property. Topographic information required for the analysis was obtained from City of Riverside GIS data.

The school sites that were analyzed are depicted on Exhibit "A". The following sites were included in the analysis:

- Helen Keller Elementary School (Proposed)
- Highgrove Elementary School
- John W. North High School
- Victoria Elementary School
- Gage Middle School/Educational Opportunity Center
- Cleveland and Myers School Site (Proposed)

Hydraulic modeling software was used to analyze each site and the results of the hydraulic calculations are included in Attachment 1.

The following site-by-site analysis describes in detail the results of the rupture analysis related to the RCF Project for each of the nearby schools.

Helen Keller Elementary School (Proposed)

Spring Street, approximately 1,400 feet east of Mount Vernon

The proposed RCF alignment is located in the intersection of Spring Street and Mount Vernon Avenue, approximately 1,400 feet westerly and downhill from the proposed school site. Spring Street slopes westerly, away from the school site, with an average slope of 2%. Should the proposed RCF rupture, the maximum flow rate that could be expected at this location is 100 cubic feet per second (cfs). This flow would be completely contained within the street right-of-way and drain away from the school site in a westerly direction in Spring Street. In addition, it should be noted that the school site is approximately 40 feet higher than the intersection of Spring Street and Mount Vernon. Based on the distance of the site from the pipeline, the slope of the land and the elevation difference between the school site and the pipe, a rupture of the proposed RCF near the Hellen Keller Elementary School site poses no threat to students and/or structures on the school site.

Highgrove Elementary School

Southeast corner of Center Street and Garfield Ave. – 690 Center Street

The proposed RCF alignment is located in Spring Street, approximately 750 feet south of school buildings and approximately 450 south of the playground. Spring Street falls in a westerly direction with an average slope of 2%. Should the proposed RCF rupture, the maximum flow that could be expected at this location is 100 cfs. This flow would be completely contained within the Spring Street right-of-way and flow in a westerly direction approximately 450 feet from the southerly boundary of the school property. This being the case, a rupture of the proposed RCF in this location poses no threat to students and structures at Highgrove Elementary school.

John W. North High School

Southeast corner of Third Street and Chicago Avenue – 1550 Third Street

The proposed RCF alignment is located in Chicago Avenue where it is adjacent to the playing fields at the westerly boundary of the high school. Chicago Avenue slopes away from the school site with a slope of 0.8%. Thus, properties located along the west side of Chicago Avenue are lower than properties on the east side of the street. Should the proposed RCF rupture, the maximum flow that could be expected at this location is 90 cfs. This flow would rise 0.07 feet (less than 1 inch) above the existing street right of way. The existing topography falls away from the school site in a northwesterly direction. In addition, all major school facilities and buildings are elevated an additional 8 to 12 feet above the elevation of the street and a minimum of 300 feet east of Chicago Avenue.

Since flows would generally travel away from the school site, less than 1 inch of water would enter the school property, existing buildings are located over 300 feet from the street/pipeline, and the open playing fields are located adjacent to Chicago Avenue, the proposed RCF poses minimal threat to students and/or structures at North High School.

Victoria Elementary School

Southwest corner of Arlington Avenue and Anna Street – 2910 Arlington Avenue

The proposed RCF alignment is located east of Victoria Elementary in Arlington Avenue and southeast of the school in Lincoln Avenue. A hydraulic analysis was performed at both locations.

The proposed pipeline is located in the intersection of Arlington Avenue and Victoria Avenue, approximately 1,250 feet east of Victoria Elementary. Arlington Avenue runs along the northern boundary of the school site and falls to the west with a slope of approximately 2.5%. Should the proposed RCF rupture, the maximum flow that could be expected at this location is 90 cfs. This flow would be completely contained within the existing street right-of-way. Since potential RCF flows would not be outside of the street right-of-way, the proposed RCF poses minimal threat to students and structures on the adjacent school property.

The RCF pipeline is proposed to be constructed from the Arlington/Victoria Avenue intersection down Victoria Avenue to Lincoln Avenue. If the line were to rupture in the one block along Victoria, water would travel down either Arlington or Lincoln or both in quantities equal to or lesser than the analyzed flows.

The proposed pipeline is located in Lincoln Avenue approximately 720 feet southeast of Victoria Elementary School. Lincoln Avenue falls to the southwest at a slope of about 0.5%. Review of topography and the site in the field reveal that if the RCF ruptured in Lincoln uphill of Anna Street, at least 50% of the flows would continue down Lincoln Avenue away from the school and no more than 50% of the flows would flow down Anna Street which falls toward the school site at a slope of about 0.5%. The maximum flow that could be expected at this location is 80 cfs; thus 40 cfs would flow down Lincoln and 40 cfs would flow down Anna Street toward the school in a "worst case" analysis. The flow would be completely contained within the existing street right of way. Since potential RCF flows would be carried within the Anna Street right of way, the proposed RCF poses minimal threat to students and structures on the school property.

Gage Middle School/Educational Opportunity Center

Adjacent to Lincoln Avenue between Horace and Maude Streets

The proposed RCF alignment travels along Lincoln Avenue between Gage Middle School and the Educational Opportunity Center. Lincoln Avenue has a slope of 0.4% in this reach. Should the proposed RCF rupture, the maximum flow that could be expected at this location is 80 cfs. This flow would not rise above the existing street right-of-way. Gage Middle School is elevated approximately five feet above Lincoln Avenue and the adjacent right-of-way. The Education Opportunity Center is lower than Lincoln Avenue. Since flow would not be outside of the right of way and Gage buildings are elevated, it is concluded that the RCF poses minimal or no threat to students and structures at Gage Middle School. Since modeled flows indicate that the water would be carried within Lincoln Avenue right of way, it is concluded that a rupture of the RCF poses minimal threat to the Education Opportunity Center, as well. However, because the Educational Opportunity Center is built at an elevation lower than the street, some water might enter parking lots at driveway openings.

Cleveland and Myers School Site (Proposed)

Southwest corner of Cleveland Avenue and Myers

The proposed RCF alignment is in Cleveland Avenue along the northerly boundary of the proposed school site. Topography falls away from the proposed school site to the north. Cleveland Avenue has an existing low spot in the road in front of the proposed school site and has an existing slope of 0.7% going into and out of the low spot. Should the proposed RCF rupture, the maximum flow that could be expected at this location is 45 cfs. This flow would be completely contained within the street right-of-way and drain to the low point. If water exceeded the right of way elevation as it ponded in the low point, it would flow away from the school site in a northerly direction since the topography falls away from the proposed school site to the north. This being the case, the proposed RCF poses minimal or no threat to students and structures at the adjacent school site.

Riverside-Corona Feeder
School Flooding Study

Exhibit A

School Sites

Riverside-Corona Feeder
School Flooding Study

Attachment 1

Hydraulic Calculations

```
****************************************************************************
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                          Analysis prepared by:

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                          Riverside, Ca. 92223
      Phone (909)686-1070                          Fax (909) 788-1256

----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 18:08 02/17/2005
============================================================================


 ************************* DESCRIPTION OF STUDY *************************
* STREET CAPACITY CALCULATIONS FOR SPRING STREET 1400 FEET WESTERLY OF     *
* THE PORPOSED HELEN KELLER ELEMENTARY SCHOOL TO DETERMINE DEPTH OF FLOW   *
* IN THE STREET IN THE EVENT THAT THE RIVERSIDE/CORONA FEEDER RUPTURES
* Q=100 CFS, MAX DEPTH = 0.7'
 ************************************************************************

****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.020000
    CONSTANT STREET FLOW(CFS) =  100.00
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   22.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   20.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES

  ***STREET FLOWING FULL***
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   22.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.80
    PRODUCT OF DEPTH&VELOCITY =    4.51
============================================================================
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----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 17:19 02/17/2005
============================================================================


 *************************** DESCRIPTION OF STUDY **************************
* STREET CAPACITY CALCULATIONS FOR SPRING STREET IN FRONT OF HIGHGROVE      *
* ELEMENTARY SCHOOL TO DETERMINE DEPTH OF FLOW IN THE STREET IN THE EVENT   *
* THAT THE RIVERSIDE/CORONA FEEDER RUPTURES. Q=100 CFS, MAX. DEPTH = 0.7'   *
 ***************************************************************************

****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.020000
    CONSTANT STREET FLOW(CFS) =  100.00
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   22.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   20.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES

  ***STREET FLOWING FULL***
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   22.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.80
    PRODUCT OF DEPTH&VELOCITY =    4.51
============================================================================
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       Phone (909)686-1070                          Fax (909)788-1256

----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 17:26 02/17/2005
============================================================================


 ************************** DESCRIPTION OF STUDY **************************
* STREET CAPACITY CALCULATIONS FOR CHICAGO STREET IN FRONT OF J.W. NORTH   *
* HIGH SCHOOL TO DETERMINE DEPTH OF FLOW IN THE STREET IN THE EVENT THAT   *
* THE RIVERSIDE/CORONA FEEDER RUPTURES. Q=90 CFS, MAX. DEPTH = 0.7'        *
 ***************************************************************************

****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.008000
    CONSTANT STREET FLOW(CFS) =    90.00
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   44.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   42.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   32.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.20
    PRODUCT OF DEPTH&VELOCITY =    3.22
============================================================================
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        Phone (909)686-1070                          Fax (909)788-1256

-----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 17:31 02/17/2005
=============================================================================


 ************************** DESCRIPTION OF STUDY **************************
* STREET CAPACITY CALCULATIONS FOR ARLINGTON AVENUE IN FRONT OF VICTORIA   *
* ELEMENTARY SCHOOL TO DETERMINE DEPTH OF FLOW IN THE STREET IN THE EVENT  *
* THAT THE RIVERSIDE/CORONA FEEDER RUPTURES. Q=90 CFS, MAX. DEPTH = 0.7'   *
 ***************************************************************************

*****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
-----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.025000
    CONSTANT STREET FLOW(CFS) =    90.00
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =    28.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =    26.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =    0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =    2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.03125
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES
=============================================================================
    STREET FLOW MODEL RESULTS:
-----------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =    26.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =     6.23
    PRODUCT OF DEPTH&VELOCITY =     3.48
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                          Analysis prepared by:

                        Albert A. Webb Associates
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                           Riverside, CA 92506
                               951-686-1070

----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 17:04 03/21/2005
============================================================================

 *************************** DESCRIPTION OF STUDY ***************************
* STREET CAPACITY CALCULATIONS FOR ANNA STREET IN FRONT OF VICTORIA ELEMNT *
* TO DETEMINE DEPTH OF FLOW IN STREET IF CORONA/RIVERSIDE FEEDER RUPTURES  *
* IN LINCOLN AVE.  IT IS ASSUMED THAT 40 CFS WILL GO SOUTHWESTERLY DOWN
  LINCOLN AVE AND THAT THE OTHER 40 CFS WILL FLOS NORTHWESTERLY DOWN ANNA
  Q=40 CFS MAX DEPTH =0.7'
 ****************************************************************************

****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.005000
    CONSTANT STREET FLOW(CFS) =   40.00
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   22.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   20.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES

  ***STREET FLOWING FULL***
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   22.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.08
    PRODUCT OF DEPTH&VELOCITY =    1.92
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----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 10:40 03/04/2005
============================================================================


 ************************* DESCRIPTION OF STUDY *************************
* STREET CAPCITY CALCULATIONS FOR LINCOLN AVENUE IN FRONT OF GAGE MIDDLE   *
* SCHOOL AND E.O.C. TO DETERMINE DEPTH OF FLOW IN THE STREET IN TEH EVENT  *
* THAT THE RIVERSIDE/CORONA FEEDER RUPTURES. Q=80 CFS, MAX DEPTH = 0.90'   *
 ***************************************************************************

****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.004000
    CONSTANT STREET FLOW(CFS) =   80.00
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   24.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   22.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.67
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.16700
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES

  ***STREET FLOWING FULL***
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   24.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.68
    PRODUCT OF DEPTH&VELOCITY =    3.10
============================================================================
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       Phone (909)686-1070                          Fax (909)788-1256

----------------------------------------------------------------------------
  TIME/DATE OF STUDY: 17:44 02/17/2005
============================================================================


 *************************** DESCRIPTION OF STUDY **************************
* STREET CAPACITY CALCULATIONS FOR CLEVELAND AVENUE IN FRONT OF THE FUTURE *
* CLEVELAND/MYERS SCHOOL SITE TO DETERMINE DEPTH OF FLOW IN THE STREET IN  *
* THE EVENT THAT THE RIVERSIDE/CORONA FEEDER RUPTURES. Q=45 CFS, D=0.7'    *
 ***************************************************************************

****************************************************************************
>>>>STREETFLOW MODEL INPUT INFORMATION<<<<
----------------------------------------------------------------------------
    CONSTANT STREET GRADE(FEET/FEET) = 0.007000
    CONSTANT STREET FLOW(CFS) =   45.00
    AVERAGE STREETFLOW FRICTION FACTOR(MANNING) = 0.015000
    CONSTANT SYMMETRICAL STREET HALF-WIDTH(FEET) =   22.00
    DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   20.00
    INTERIOR STREET CROSSFALL(DECIMAL) = 0.020000
    OUTSIDE  STREET CROSSFALL(DECIMAL) = 0.020000
    CONSTANT SYMMETRICAL CURB HEIGHT(FEET) =   0.50
    CONSTANT SYMMETRICAL GUTTER-WIDTH(FEET) =   2.00
    CONSTANT SYMMETRICAL GUTTER-LIP(FEET) =  0.03125
    CONSTANT SYMMETRICAL GUTTER-HIKE(FEET) =  0.12500
    FLOW ASSUMED TO FILL STREET EVENLY ON BOTH SIDES

  ***STREET FLOWING FULL***
============================================================================
    STREET FLOW MODEL RESULTS:
----------------------------------------------------------------------------
    NOTE: STREET FLOW EXCEEDS TOP OF CURB.
          THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
          THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
          THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   22.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.47
    PRODUCT OF DEPTH&VELOCITY =    2.16
============================================================================
```

March 29, 2005

Mr. Jeffrey D. Sims
District Engineering Manager
Western Municipal Water District
P.O. Box 5286
Riverside, CA 92517-5286

Re: Riverside-Corona Feeder Project – Phase I Groundwater Modeling Results

Dear Jeff:

This letter presents the Phase I groundwater modeling results for the Western Municipal Water District's (Western's) Riverside-Corona Feeder Project. The purpose of the Phase I work was to determine the potential future impact of an initial operation scenario for the Riverside-Corona Feeder Project on the ground water levels and groundwater quality in the San Bernardino Basin Area (SBBA).

Background

The purpose of the Riverside-Corona Feeder Project is to convey potable water from the SBBA to serve the needs of Western and other water purveyors within its service area. The project will include approximately 30 miles of major feeder pipeline capable of delivering up to 40,000 acre-ft per year of groundwater at 100 cubic feet per second (cfs) from the SBBA to Western's customers and to water purveyors within the Western boundaries. Other project elements will include several turnouts along the major feeder, a 2,500 horsepower (hp) pump station and 20 new or existing wells. The proposed infrastructure will allow Western to purchase State Water Project (SWP) water from Metropolitan Water District of Southern California

GEOSCIENCE SUPPORT SERVICES INCORPORATED
Ground Water Resources Development
P.O. Box 220, Claremont, CA 91711
FAX 909-920-0403
909-920-0707

(MWD) when it is available and recharge it in the SBBA. The Project also allows Western to extract groundwater from the SBBA when it is needed.

Scope of Work

Specific tasks conducted in Phase I included:

- Task 1 – Develop Project Extraction Schedule
- Task 2 – Run Model Iteration of MODFLOW, MODPATH and MT3DMS
- Task 3 – Summarize Modeling Results

Modeling Assumptions

The same groundwater flow MODFLOW, particle tracking MODPATH and solute transport MT3DMS models[1] that were used for the analysis in the Muni/Western Santa Ana River (SAR) Water Right Applications DEIR (Water Right DEIR) were used for this study. The following assumptions apply to this Phase I study:

- The same period of forecast (2001-2039) that was used for the analysis in the Water Right DEIR was used for this study.
- The same hydrology that was used in the Water Right DEIR for the No Project analysis was used for this study. No Project assumptions include:
    - Historical diversions by senior water rights claimants,
    - Historical diversions by the San Bernardino Valley Water Conservation District,
    - Releases for environmental restoration, and
    - No seasonal storage at Seven Oaks Dam.

[1] For descriptions of these models, refer to the Santa Ana River Water Right Applications for Supplemental Water Supply Draft Environmental Impact Report (San Bernardino Valley Municipal Water District and Western Municipal Water District, 2004).

- The same model inputs that relate to future water demands, replenishment to meet judgment requirements and the allocation of resources that were used in the Water Right DEIR for the No Project analysis were used for this study.

- Extractions for delivery through the Riverside-Corona Feeder and replenishment of SWP water were added to the model inputs derived from the No Project allocation model analysis.

Extraction Schedules and New Extraction Wells

A forecast from 2001 through 2039 of the extraction and delivery of water through the Riverside-Corona Feeder Project was provided by Western. This forecast was based on the long-term general increase in water demand associated with growth and the availability of imported water for direct delivery by MWD. The Project starts with a 5,000 acre-ft extraction in 2006 (no extraction for years 2001-2005) and increases to 10,000 acre-ft in 2007. From 2008, the following extraction rules are applied:

- In years that the MWD Water Surplus and Drought Management Plan (WSDM Plan) calls for interruption of replenishment, the extractions for Riverside Corona Feeder Project are maximized at 40,000 acre-ft.

- In years that the MWD WSDM Plan calls for reduction in storage at Diamond Valley Lake or the SWP storage programs, the extractions for Riverside-Corona Feeder Project are 30,000 acre-ft.

- In years that the MWD water budget forecast shows a “remaining surplus” of greater than 200,000 acre-feet, the extractions for Riverside-Corona Feeder Project are 10,000 acre-ft.

- In all other years, Riverside-Corona Feeder Project extractions for the first Phase I study are 20,000 acre-ft when local hydrology is normal, 25,000 acre-ft when local hydrology is dry and 15,000 acre-ft when local hydrology is wet.

Table 1 shows the extraction schedules for the period 2001 through 2039 developed using the previously described rules. The total extraction during the period from 2001 through 2039 is 685,000 acre-ft.

A wellfield consisting of 20 new wells was delineated in the vicinity of Riverside-Corona Feeder, Baseline Feeder Extension South, and Central Feeder Pipeline (see Figure 1). The maximum capacity for each well was estimated to be 2,400 acre-ft. These 20 wells were further subdivided into four priority groups based on the distance to the existing pumping wells and contaminated plumes (see Figure 1). Table 2 shows the number of wells and the amount of extraction used as a function of the total extraction. For example, for years with total extraction of 5,000 acre-ft, only 7 wells of the Priority Group 1 are used and each well pumps 714 acre-ft (5,000 acre-ft / 7 = 714 acre-ft). When the total extraction increases to 15,000 acre-ft, the extraction for each of the 7 wells increases to 2,143 acre-ft (15,000 acre-ft / 7 = 2,143 acre-ft). However, when the total extraction increases to 20,000 acre-ft, both Priority Group 1 (7 wells) and Priority Group 2 (4 wells) wells are required to be used with an extraction of 1,818 acre-ft for each well (20,000 acre-ft / 11 = 1,818 acre-ft).

Replenishment Schedules

A forecast from 2001 through 2039 for the availability of MWD replenishment water was provided by Western. In years that the MWD WSDM Plan calls for interruption of replenishment, the replenishment for the Riverside-Corona Feeder Project is zero (i.e. years 2016, 2029, 2030, and 2031; see Table 1). The replenishment for other years was determined through iterative modeling to meet the following criteria:

- There is no rejected replenishment.
- Water is not extracted without having been previously spread in the basin for replenishment.

Table 1 shows the annual replenishment at each spreading ground from 2001 through 2039 for the Project scenario (Scenario 1).

Groundwater Flow Model Results

Groundwater elevation contours for No Project Condition in the years 2000 (model initial conditions), 2005, 2010, 2015, 2016 (lowest levels), 2020, 2022 (highest levels), 2025, 2030, 2035, and 2039 (end of model simulation) are shown on Figure 2 for Model Layer 1 and Figure 3 for Model Layer 2. In general, model-generated groundwater flow is similar to historical directions with groundwater flowing west from the SAR and Mill Creek Spreading Grounds, and southeast from the Lytle Creek and Cajon Creek (i.e. flowing to the Pressure Zone area). Water level fluctuations reflect hydrological wet and dry cycles. For example, a change in water level of 50 ft to 100 ft occurs in the Pressure Zone between model years 2016 (equivalent to 1977 – end of a dry year cycle) and 2022 (end of a wet cycle, historical year 1983; also see Figure 2). Groundwater flow directions and general patterns of fluctuations for the Scenario 1 (Project) are similar to No Project Condition (see Figures 4 and 5).

Differences in groundwater levels between No Project Condition and Scenario 1 in selected years are shown in Figure 6 (Model Layer 1) and Figure 7 (Model Layer 2). In general, groundwater levels for Scenario 1 are higher in the northwestern and eastern portions of the SBBA, reflecting an increase in artificial recharge at City Creek, Mill Creek, SAR, Waterman, East Twin Creek, Devil Canyon/Sweetwater and Lytle Creek Spreading Grounds. Meanwhile, groundwater levels are lower in the central (Pressure Zone) portion of the SBBA, as groundwater is extracted from the wellfield for the Project.

Hydrographs at selected wells and spreading grounds for No Project Condition and Project Scenario 1 are shown on Figures 8(a) through 8(al). These hydrographs show the temporal variations in the water levels reflecting the hydrologic conditions, artificial recharge and groundwater pumping assumed for the No Project Condition and Scenario 1. Figure 9 shows the location of these wells and spreading grounds.

Areas where the depth to groundwater is less than or equal to 50 ft below the land surface were delineated using the groundwater model. These areas are shown in Figure 2 for selected years for No Project Condition and Figure 4 for Scenario 1. The estimated acreages for each year are also shown in these figures for the entire SBBA as well as the Pressure Zone (not including the river channels). Differences in areas of potential liquefaction between Scenario 1 and No Project Condition are shown on Figure 10 for future year 2016 (hydrologic year 1977 – lowest water level) and future year 2022 (hydrologic year 1983 – highest water level).

Scenario 1 produces a general reduction in the total area of potential liquefaction within the Pressure Zone area (not including river channels) when compared to No Project Condition. The cumulative total area of potential liquefaction in the Pressure Zone under No Project Condition during the period 2001 through 2039 is approximately 32,184 acres. The area is reduced to 25,084 acres for Scenario 1. This amounted to a reduction of 7,100 acres for Scenario 1 (or a reduction of acres subjected to potential liquefaction of 22% (7100/32184)). Scenario 1 produces a general increase in water levels in the area outside the Pressure Zone compared to No Project Condition. The average increase in water levels is approximately 9 feet during the 39-year model simulation period. This would reduce the depth to water and the cost of pumping. Scenario 1 also produces a general decrease in water levels in the Pressure Zone area. As shown in Figures 8(k) and 8(ai) through 8(al), the average decrease in water levels in these five City of Riverside wells located in the Pressure Zone is approximately 9 feet during the 39-year model simulation period..

The overall water budgets for each of the model run were compiled to evaluate the SBBA groundwater model. The inflow terms for the model include recharge to groundwater from gaged streamflow, artificial recharge, local runoff generated by precipitation, infiltration from direct precipitation, return flow from groundwater pumping, ungaged mountain front runoff and underflow. The outflow terms consist of evapotranspiration, ground water pumping, and underflow. The difference between the total inflow and total outflow is the change in ground water storage. Annual groundwater budgets for No Project Condition and Scenario 1 are shown in Tables 3 and 4, respectively. Groundwater storage in the SBBA declines 3,324 acre-ft/yr during the period 2001 through 2039 under No Project Condition. Groundwater storage decline for Scenario 1 was estimated to be 3,281 acre-ft/yr. Therefore slightly more water was recharged than necessary to maintain total recharge equal to the No Project Condition (1,677 acre-ft). Figure 11 shows the inflow and outflow terms as a percentage of the total groundwater budget and average annual change in groundwater storage for the Project Scenario 1 as compared to No Project Condition.

MODPATH Model Results

Paths traveled by particles in Scenario 1 were compared to paths traveled for particles under No Project Condition (see Figures 12 through 14). In general, groundwater flow directions are similar under Scenario 1 and No Project Condition, but the rate of groundwater flow differs

slightly. The differences are due primarily to increased hydraulic gradients as the result of replenishment. For Scenario 1, groundwater flows slightly faster in the northwestern portion of the SBBA than it does for No Project Condition (i.e., the particles travel greater distances in the same amount of time; see Figure 12(f)). This reflects increased replenishment at City Creek, Waterman, East Twin Creek, and Badger Spreading Grounds, and increased pumping in the Pressure Zone which steepens local hydraulic gradients and therefore increases rates of flow.

The particle analyses for both the No Project Condition and for Scenario 1 are based on the assumption that the total extractions from the five Newmark Operable Unit wells and the five Muscoy Operable Unit wells are 11,537 acre-ft/yr and 13,767 acre-ft/yr respectively. These extractions in the aggregate amount of 25,304 acre-ft/yr are slightly less than the Design Extraction Rates with Maintenance Allowance of 25,814 acre-ft/yr provided for in the City of San Bernardino/EPA Consent Decree Statement of Work.

Figures 13(a) through 13(i) summarize the results of the plume front particle tracking analyses and show that particles are captured in the EPA barrier wells under both No Project Condition and Scenario 1. These results indicate that the EPA barrier wells will prevent contaminants from migrating passed the barrier wells under Scenario 1.

Transport Model Results

Results for the PCE transport model are shown in Figures 15 through 16. These figures show the modeled MCL plume (i.e. 5 µg/L) boundary of the Newmark and Muscoy PCE plumes for Scenario 1 compared to that of No Project Condition. In Scenario 1, the PCE plume boundary dissipates more quickly as a result of increased replenishment at spreading basins upgradient of the plumes. These spreading grounds include Devil Canyon/Sweetwater, Badger, East Twin Creek, and Waterman Spreading Grounds in the northwestern portion of the SBBA. As shown in Table 5, the acreage (averaged over the 39-year period) of the PCE plume footprint was estimated to be 1,941 acres and 1,925 acres under No Project Condition and Scenario 1, respectively. Table 5 also shows that there are five wells in which contaminants exceed the MCL for a brief period of time due to Scenario 1 implementation compared to No Project Condition. Figures 17(a) through 17(e) show the model-predicted PCE concentrations through time for these five wells (see Figure 18 for well locations). For example, Figure 17(a) shows that the PCE concentration at Well 1N/4W-16E01 would increase from 4.9 µg/L to 5.5 µg/L (slightly above the 5 µg/L MCL) in 2006 (hydrologic year 1967) and from 4.7 µg/L to 5.1 µg/L in 2008

(hydrologic year 1969) due to Project implementation. Seven wells that would be contaminated under No Project Condition would avoid contamination due to Project implementation. The same well may be contaminated in multiple years.

Results for the TCE transport model are shown in Figures 19 through 20. These figures show the modeled MCL plume (i.e. 5 µg/L) boundary of the Norton and Redlands-Crafton TCE plumes for Scenario 1 compared to that of No Project Condition. In Scenario 1, the TCE plume boundary dissipates more quickly as a result of increased groundwater pumping in the Pressure Zone by the Riverside-Corona Feeder Project. The acreage (averaged over the 39-year period) of the TCE plume footprint was estimated to be 1,749 acres and 1,308 acres under No Project Condition and Scenario 1, respectively (see Table 5). As shown in Table 5, there is one well contaminated due to Scenario 1 implementation compared to No Project Condition. Figure 21 shows that TCE concentration in Well 1S/4W-24R01 would briefly increase from 4.9 µg/L under No Project Condition to 5.2 µg/L for Scenario 1 in 2007 (hydrologic year 1969). Thirty-seven wells that would be contaminated under No Project Condition would avoid contamination due to Project implementation.

Total dissolved solids (TDS) concentrations from the solute transport model were examined for No Project Condition and Scenario 1. The average TDS concentration for the Groundwater Sub-Basin and SBBA compared to No Project Condition was calculated at the end of model simulation (see Table 6). The average TDS concentration for the SBBA would increase 2 mg/L for Scenario 1 compared to No Project Condition. The slight differences in TDS concentration between No Project Condition and Scenario 1 result from the amounts of SWP spreading and groundwater pumping. The average TDS concentration for SWP water was assumed to be 282 mg/L, based on the historic records. The average concentration for the groundwater extracted from the 20 new wells of the Riverside-Corona Feeder Project would be 267 mg/L. Model-generated TDS concentrations at the 25 index wells and nine spreading grounds for Scenario 1 were compared to the No Project Condition and are shown in Figures 22(a) through 22(ah).

Nitrate (as NO_3) concentrations from the solute transport model were examined for No Project Condition and Scenario 1. The average nitrate (as NO_3) concentration for the Groundwater Sub-Basin and SBBA was calculated at the end of model simulation (see Table 6). The slight differences in nitrate (as NO_3) concentration between No Project Condition and Scenario 1 result from the amounts of SWP spreading and groundwater pumping. Model-generated nitrate (as

NO_3) concentrations at the 25 index wells and nine spreading grounds for Scenario 1 were compared to the No Project Condition and are shown in Figures 23(a) through 23(ah).

Results for the perchlorate transport model are shown in Figures 24 and 25. These figures compare the modeled 6 µg/L plume boundary for Scenario 1 to No Project Condition. In Scenario 1, the perchlorate plume boundary dissipates more quickly as a result of increased groundwater pumping in the Pressure Zone by the Riverside-Corona Feeder Project. The acreage (averaged over the 39-year period) of the perchlorate plume footprint was estimated to be 1,192 acres and 1,128 acres under No Project Condition and Scenario 1, respectively (see Table 5). As shown in Table 5, there are two wells contaminated due to Scenario 1 implementation compared to No Project Condition. Locations of these wells are shown in Figure 18 and perchlorate concentrations through time for these wells are shown in Figures 26(a) and 26(b). Perchlorate concentration would increase for a brief period of time from slightly below 6 µg/L under No Project Condition to slightly above 6 µg/L for Scenario 1 in 2007 for Well 1S/4W-24K01 (see Figure 26(a)) and in 2015 for Well 1S/4W-23K01 (see Figure 26(b)). Twenty-four wells that would be contaminated under No Project Condition would avoid contamination due to Project implementation.

Please do not hesitate to call with any questions.

Sincerely,

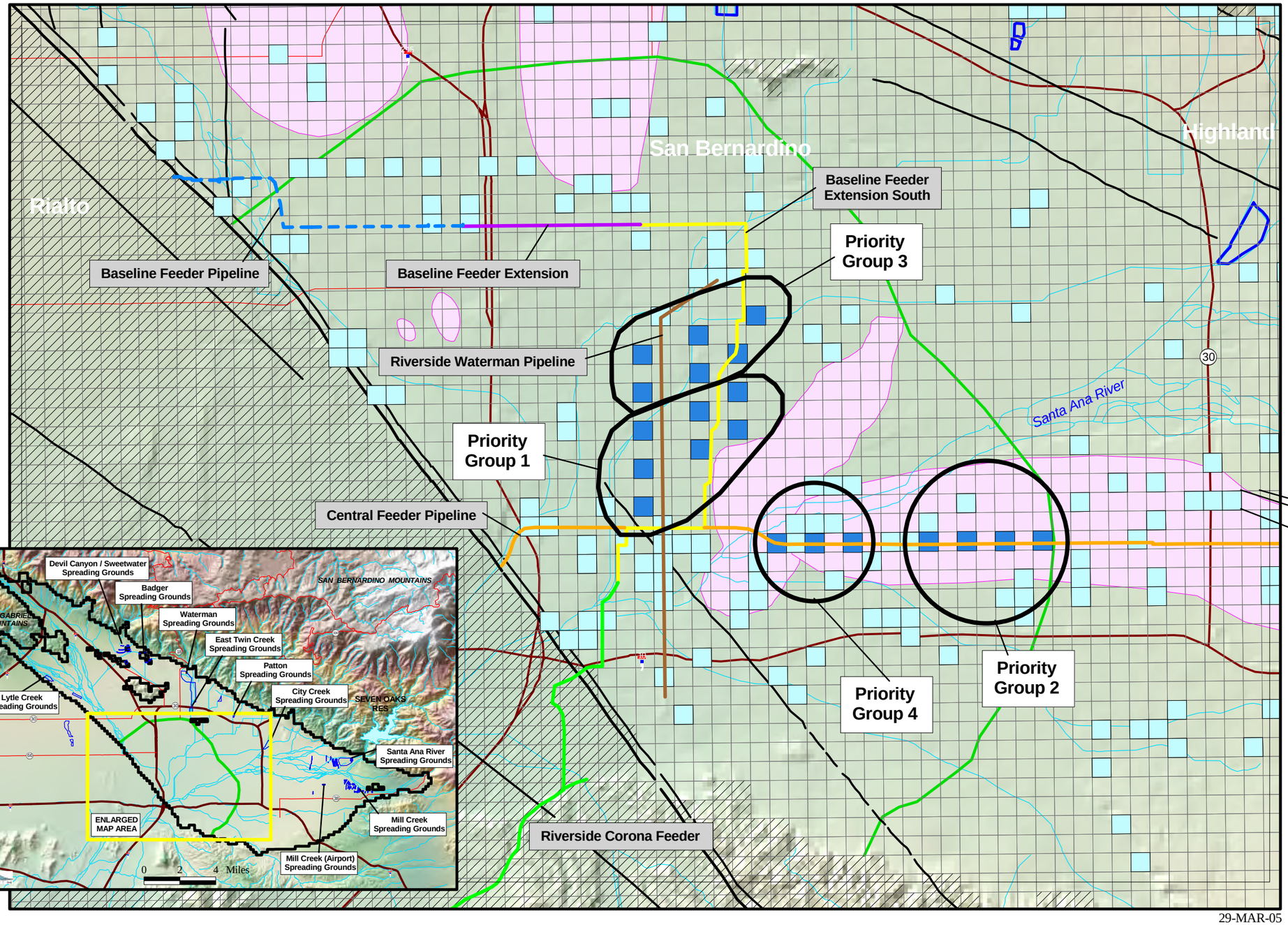
Dennis E. Williams, Ph.D.
President

DEW

cc: Mr. Bill Dendy/Bill Dendy & Associates
Mr. Don Harriger/Western Municipal Water District
Encl.

WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT



WELLS AND PIPELINE LOCATIONS IN THE PRESSURE ZONE

EXPLANATION

- Prioritized Pumping Groups
- Proposed New Well Location
- Existing Well

Pipeline Classifications

- Baseline Feeder
- Baseline Feeder Extension
- Baseline Feeder Extension South
- Central Feeder
- Riverside-Corona Feeder
- Riverside Waterman Pipeline
- Plume Boundary
- Model Grid of the San Bernardino Basin Area Groundwater Model (820 ft × 820 ft)

118 X 184 Cells / Layer X 2 Layers
43,424 Cells in Total

- Active Model Cell
- Inactive Model Cell
- Pressure Zone
- Fault
- Stream or River
- Spreading Grounds or Basins
- Freeway
- State Highway

29-MAR-05

Prepared by: DWB

Map Projection:
UTM Zone 11, NAD27

NORTH

0 1 2 Miles

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Figure 1

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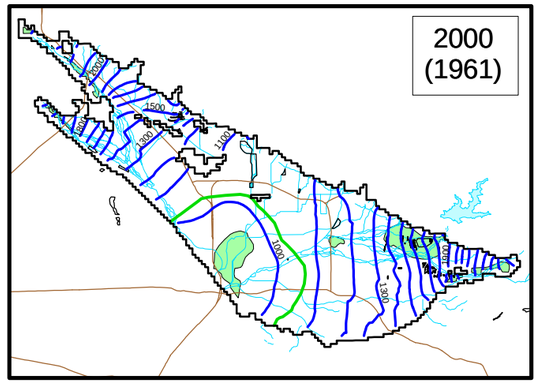
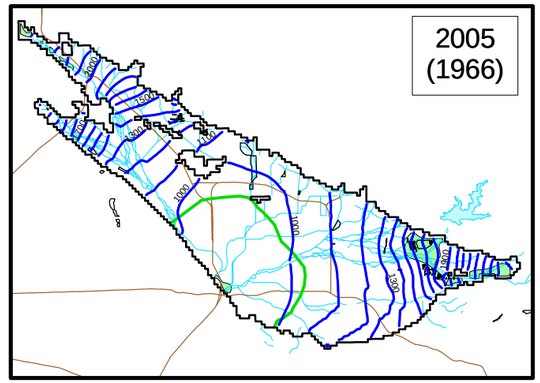
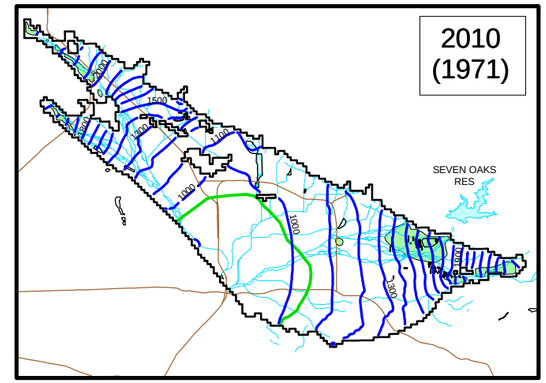
WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE
RIVERSIDE-CORONA FEEDER PROJECT

GROUNDWATER ELEVATIONS AND AREAS OF DEPTH TO WATER LESS THAN 50 FT FROM LAND SURFACE LAYER 1 NO PROJECT CONDITION

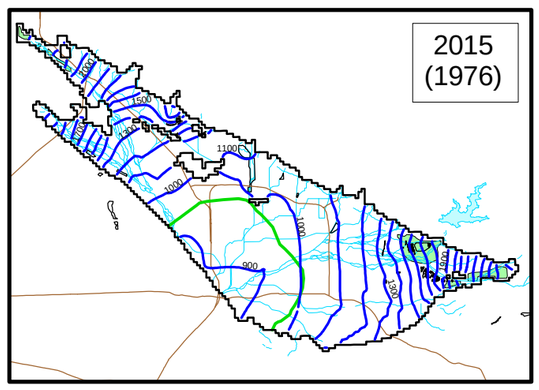


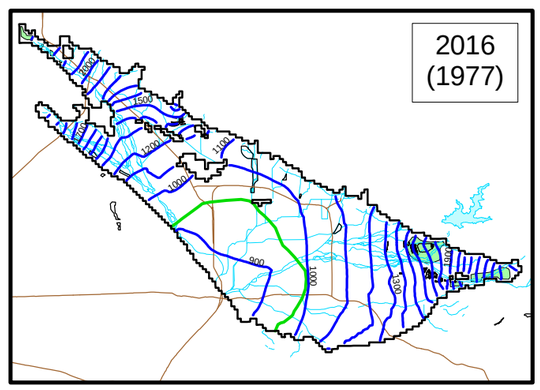


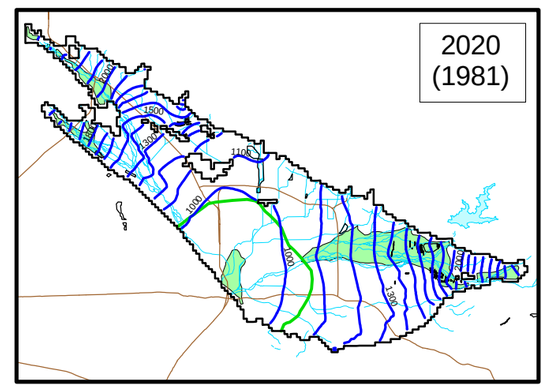


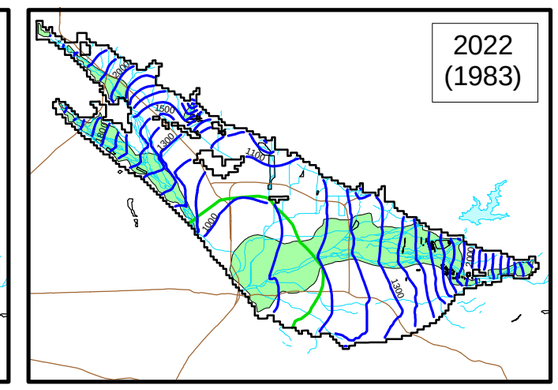
EXPLANATION

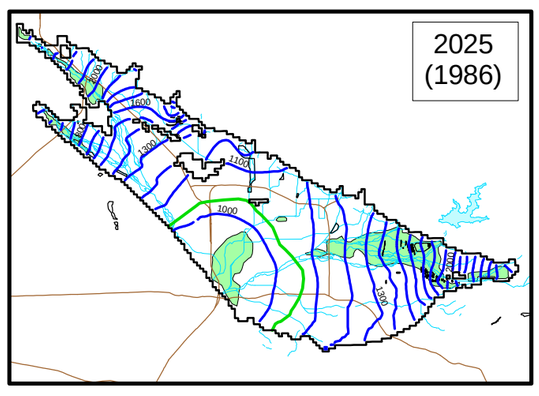
- Depth to Water Less Than 50 ft From Land Surface
- 1000 — Groundwater Contour (100 ft interval) (ft above mean sea level)
- 2000 (1961) — Model Year (Hydrological Year)
- Pressure Zone
- Model Grid of the San Bernardino Basin Area Groundwater Model
- Streams or Rivers Within Groundwater Basin Boundary
- Spreading Grounds or Basins
- Freeway

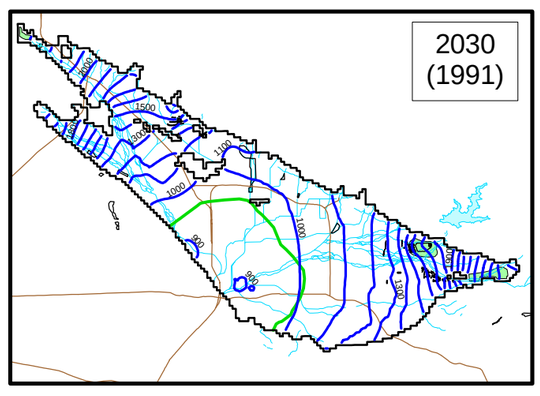


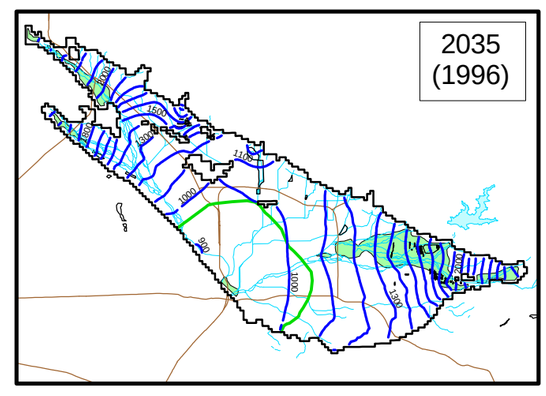


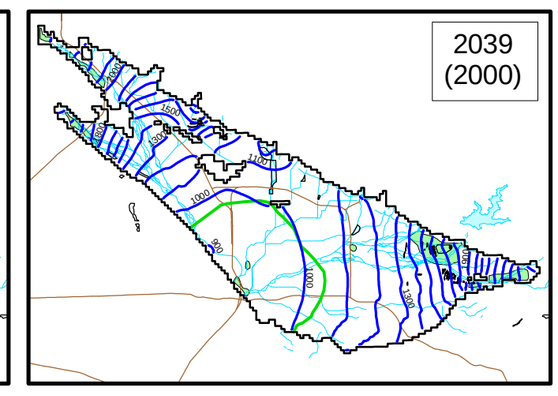












Area with Depth to Water less than 50 ft from land surface (acres)

Year	SBBA	PZ*
2001	7,301	1,204
2002	4,214	664
2003	2,640	154
2004	2,547	0
2005	3,597	139
2006	7,487	0
2007	5,372	0
2008	14,726	1,544
2009	8,706	201
2010	5,387	15
2011	3,983	0
2012	5,619	0
2013	5,063	0
2014	3,797	0
2015	3,118	0
2016	2,547	0
2017	9,925	93
2018	11,747	262
2019	20,299	3,226
2020	12,009	726
2021	11,747	1,019
2022	25,516	5,835
2023	20,391	4,739
2024	12,920	2,516
2025	12,071	1,976
2026	7,533	1,343
2027	5,094	849
2028	3,365	309
2029	1,652	0
2030	1,899	0
2031	2,146	0
2032	11,052	309
2033	5,989	0
2034	14,387	1,451
2035	8,860	170
2036	6,869	15
2037	16,903	2,686
2038	8,104	602
2039	4,384	139
Total	320,964	32,184

29-MAR-05

SBBA = San Bernardino Basin Area
PZ = Pressure Zone, not including river channels

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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Figure 2

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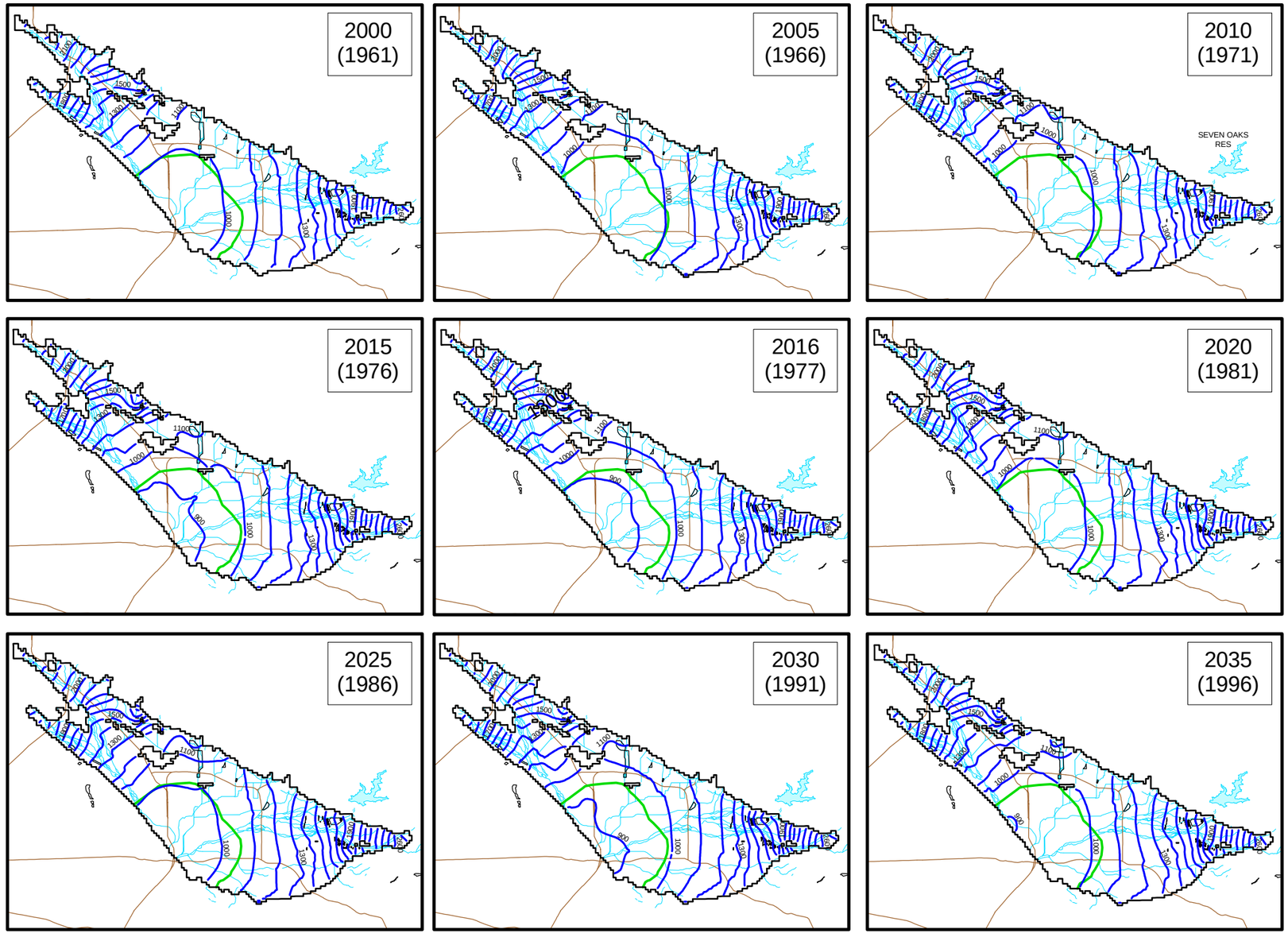
WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE
RIVERSIDE-CORONA FEEDER PROJECT

GROUNDWATER ELEVATIONS
LAYER 2
NO PROJECT CONDITION



EXPLANATION

1000	Groundwater Contour (100 ft interval) (ft above mean sea level)
2000 (1961)	Model Year (Hydrological Year)
	Pressure Zone
	Model Grid of the San Bernardino Basin Area Groundwater Model
	Streams or Rivers Within Groundwater Basin Boundary
	Spreading Grounds or Basins
	Freeway

29-MAR-05

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Figure 3

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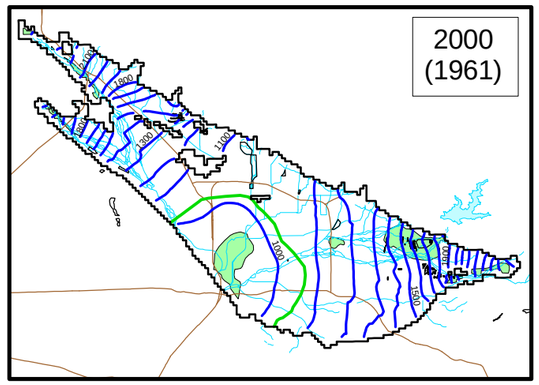
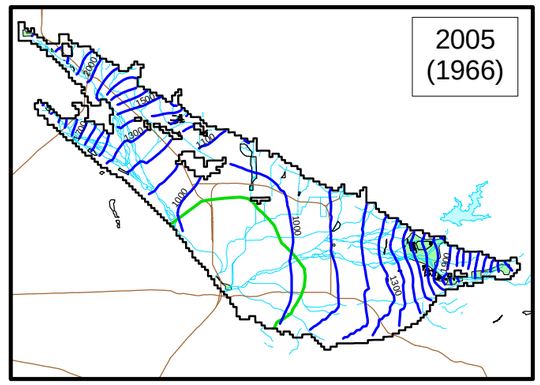
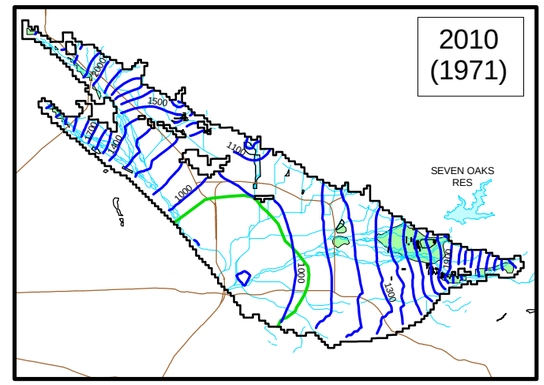
WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE
RIVERSIDE-CORONA FEEDER PROJECT

GROUNDWATER ELEVATIONS AND AREAS OF DEPTH TO WATER LESS THAN 50 FT FROM LAND SURFACE LAYER 1 SCENARIO 1







EXPLANATION

- Depth to Water Less Than 50 ft From Land Surface
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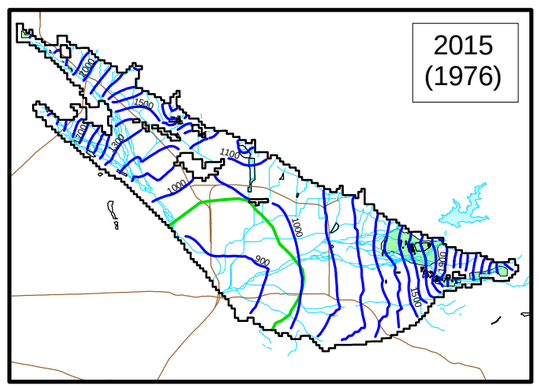

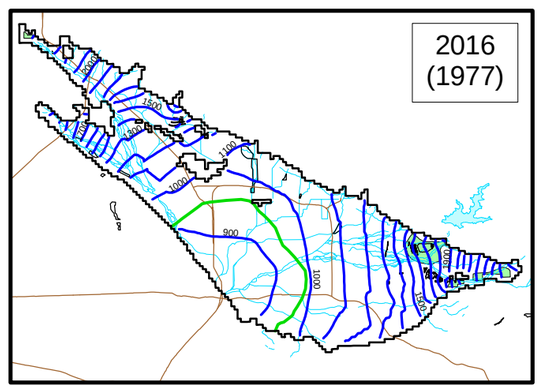

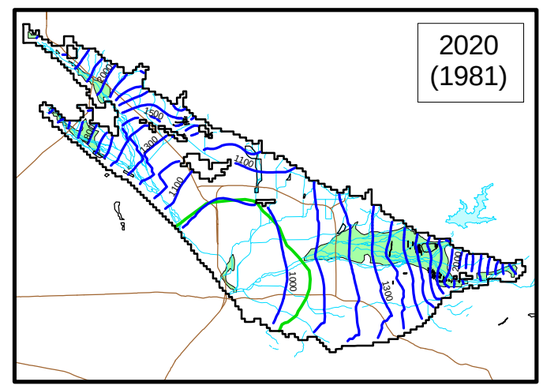

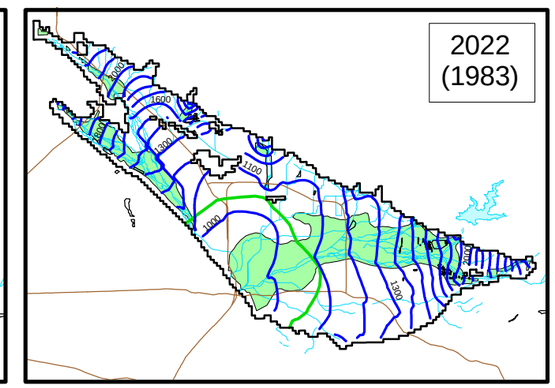

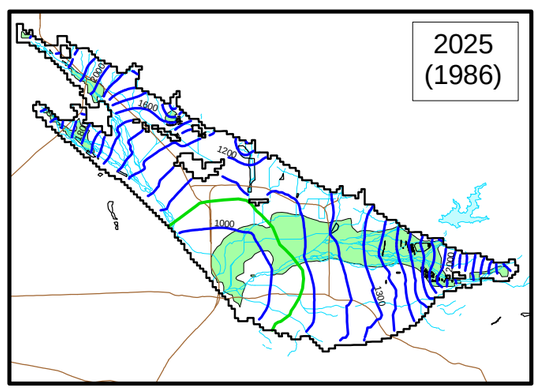

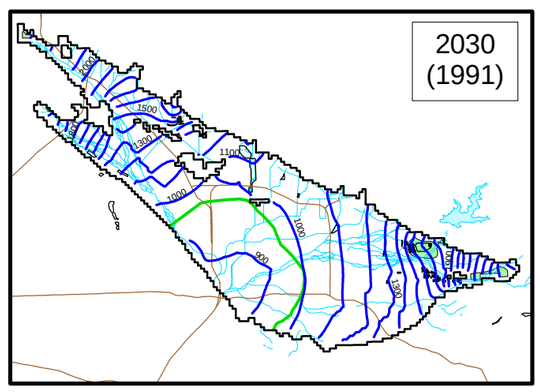

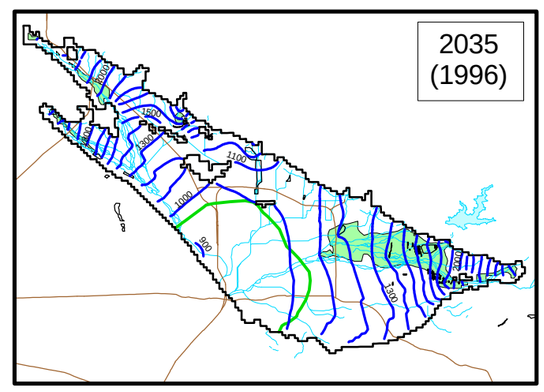

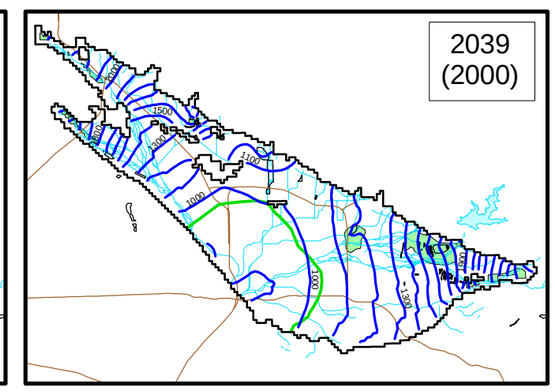

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2005	3,597	199
2006	8,829	0
2007	5,619	0
2008	14,109	1,003
2009	9,416	0
2010	5,742	0
2011	4,307	0
2012	6,036	0
2013	5,958	0
2014	5,295	0
2015	4,168	0
2016	2,779	0
2017	10,327	15
2018	12,087	216
2019	20,144	2,238
2020	11,299	293
2021	11,608	648
2022	26,751	5,742
2023	19,388	3,056
2024	17,258	2,161
2025	19,480	3,766
2026	14,495	1,868
2027	6,499	664
2028	3,164	31
2029	1,930	0
2030	2,007	0
2031	2,269	0
2032	10,651	15
2033	6,391	0
2034	13,661	396
2035	10,172	0
2036	8,567	0
2037	15,019	818
2038	8,567	0
2039	5,032	0
Total	349,321	25,084

SBBA = San Bernardino Basin Area
PZ = Pressure Zone, not including river channels

29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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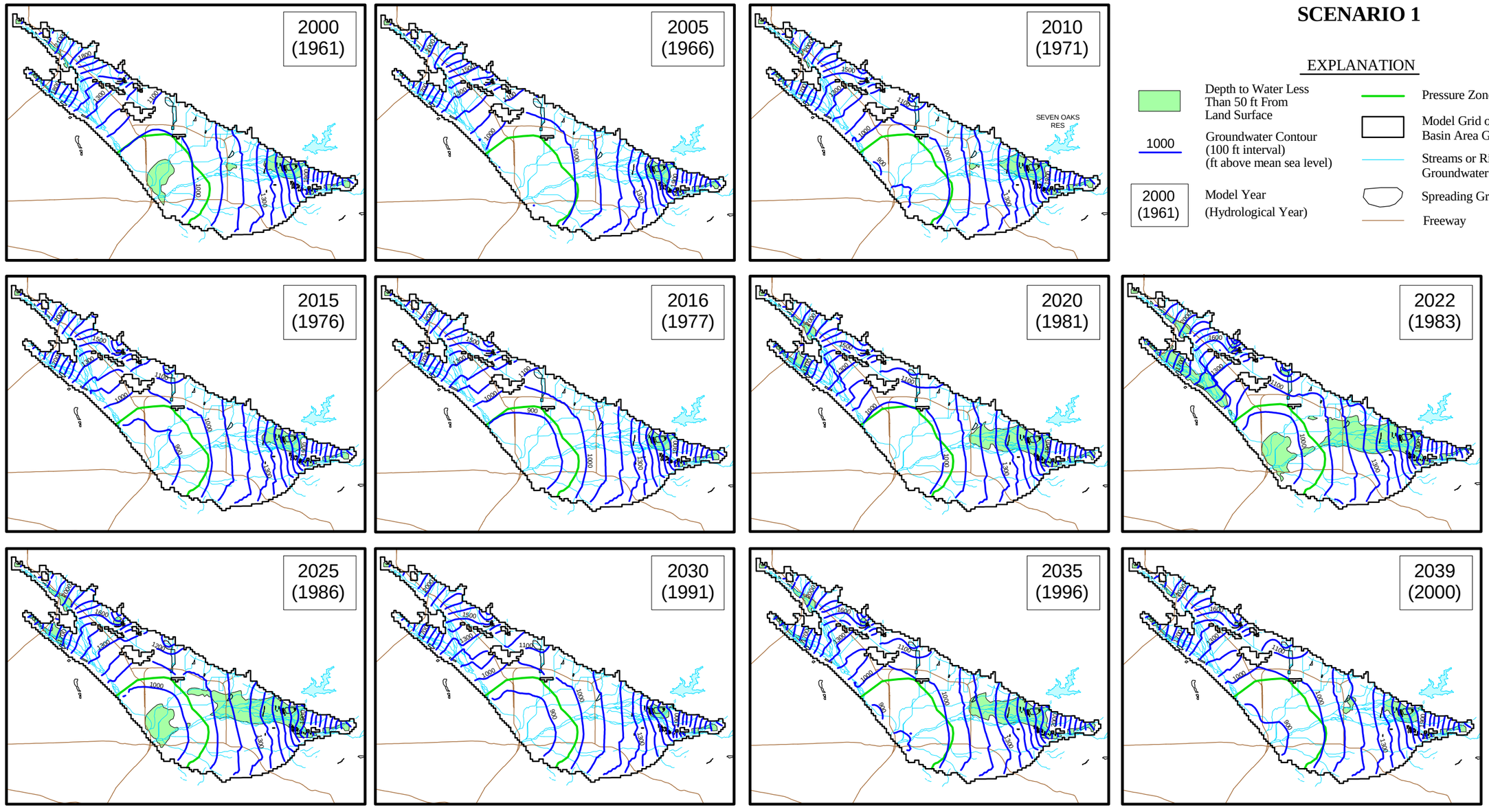
Figure 4

GIS_proj\western_mwd_riv-cor_feeder\model_figures\figs_group_1.apr

WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE
RIVERSIDE-CORONA FEEDER PROJECT

GROUNDWATER ELEVATIONS AND AREAS OF DEPTH TO WATER LESS THAN 50 FT FROM LAND SURFACE LAYER 2 SCENARIO 1



EXPLANATION

- Depth to Water Less Than 50 ft From Land Surface
- 1000 — Groundwater Contour (100 ft interval) (ft above mean sea level)
- 2000 (1961) — Model Year (Hydrological Year)
- Pressure Zone
- Model Grid of the San Bernardino Basin Area Groundwater Model
- Streams or Rivers Within Groundwater Basin Boundary
- Spreading Grounds or Basins
- Freeway

29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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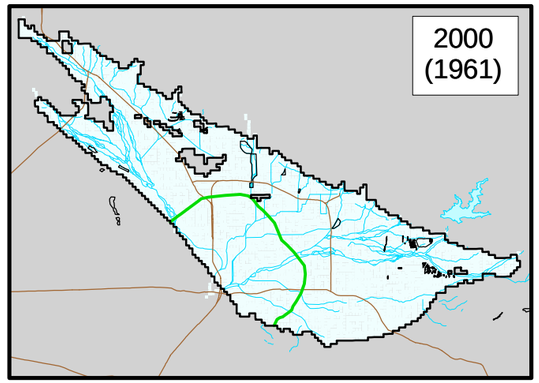
Figure 5

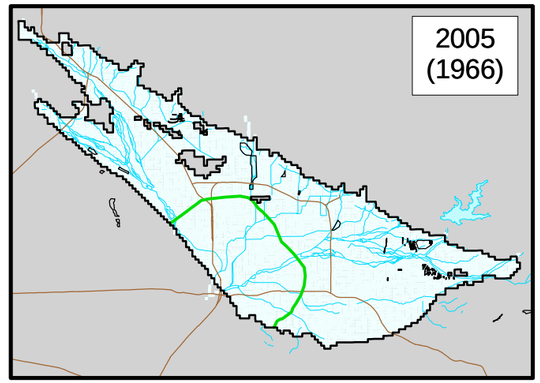
GIS_proj\western_mwd_riv-cor_feeder\model_figures\figs_group_1.apr

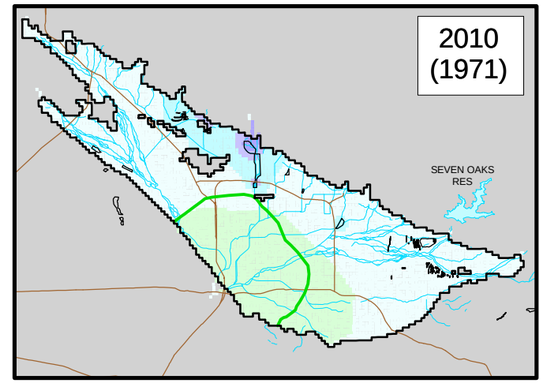
WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

DIFFERENCES IN GROUNDWATER LEVEL BETWEEN NO PROJECT CONDITION AND SCENARIO 1 LAYER 1







EXPLANATION

Change in Water Level (ft)
(No Project Condition minus Scenario 1)

- <-150
- -150 to -125
- -125 to -100
- -100 to -75
- -75 to -50
- -50 to -25
- -25 - 0
- 0 - 25
- 25 - 50
- >50

2000 (1961) — Model Year (Assumed Hydrological Year)

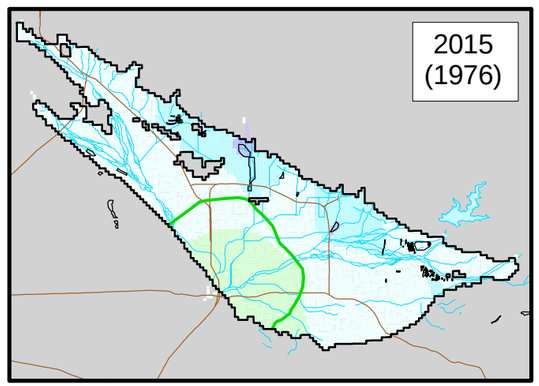
Pressure Zone

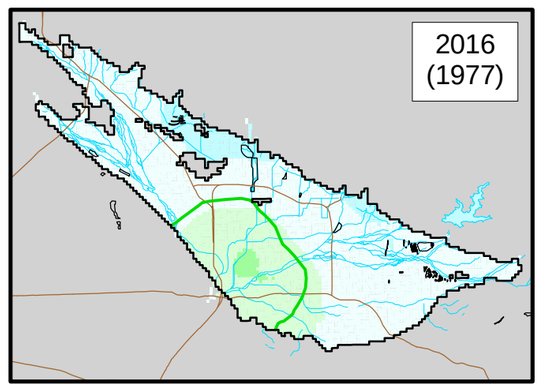
Model Grid of the San Bernardino Basin Area Groundwater Model

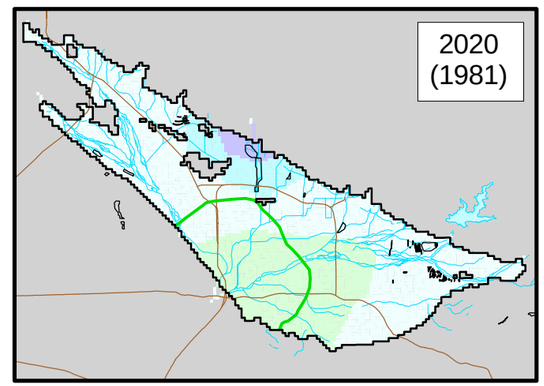
Streams or Rivers Within Groundwater Basin Boundary

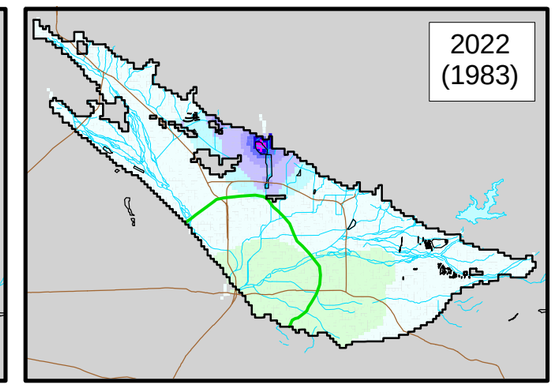
Spreading Grounds or Basins

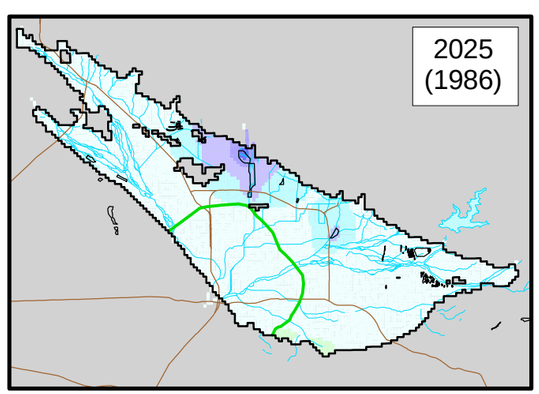
Freeway

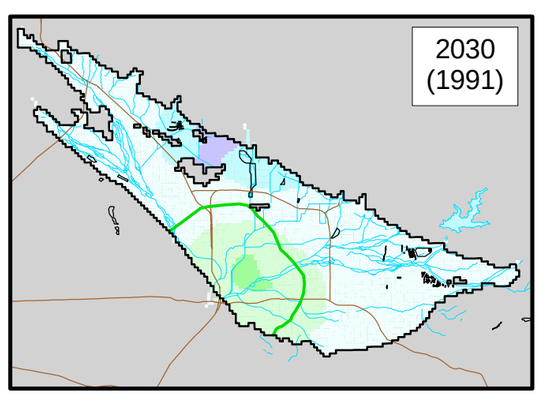


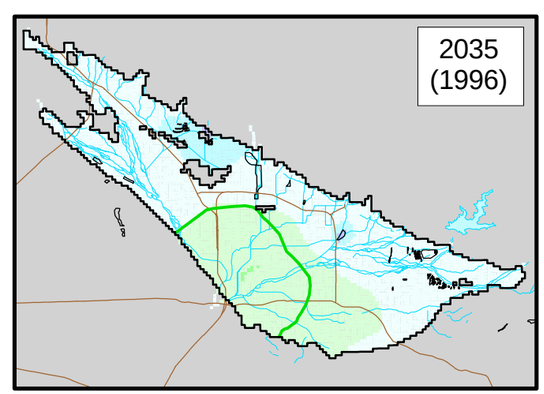


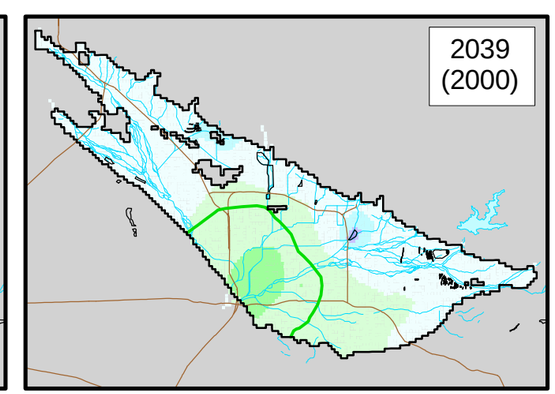












29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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Figure 6

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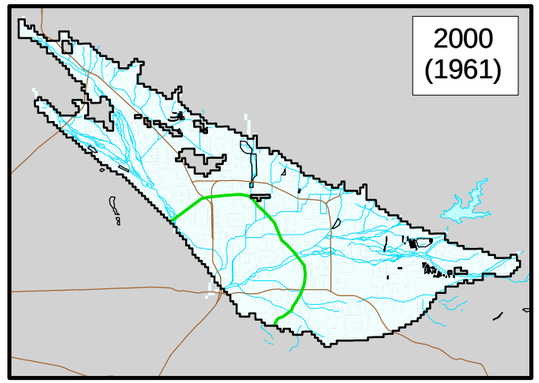
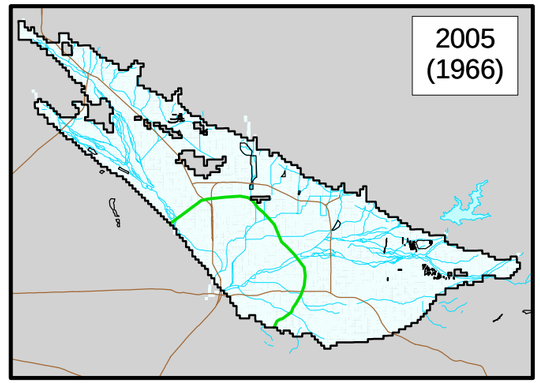
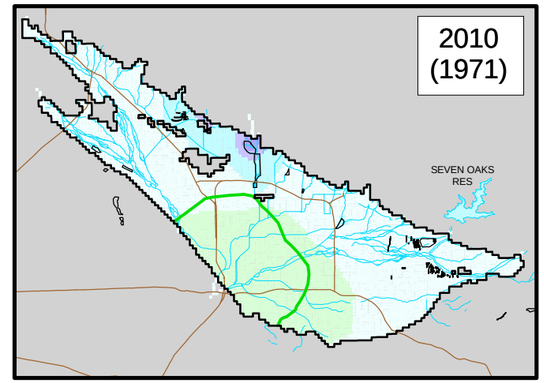
WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

DIFFERENCES IN GROUNDWATER LEVEL BETWEEN NO PROJECT CONDITION AND SCENARIO 1 LAYER 2







EXPLANATION

Change in Water Level (ft)
(No Project Condition minus Scenario 1)

- <-150
- -150 to -125
- -125 to -100
- -100 to -75
- -75 to -50
- -50 to -25
- -25 - 0
- 0 - 25
- 25 - 50
- >50

2000 (1961) Model Year (Assumed Hydrological Year)

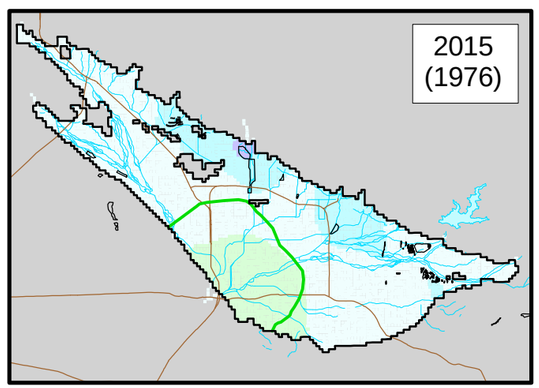
Pressure Zone

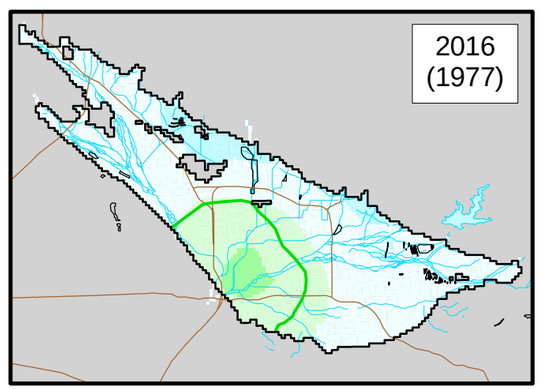
Model Grid of the San Bernardino Basin Area Groundwater Model

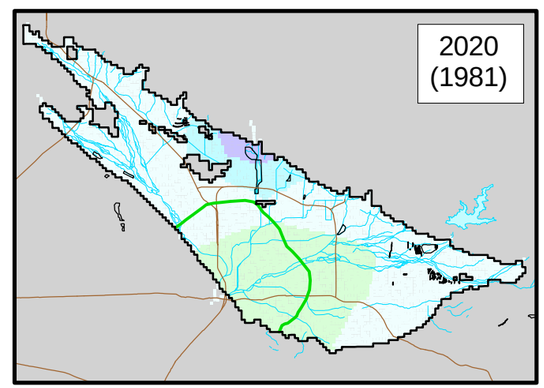
Streams or Rivers Within Groundwater Basin Boundary

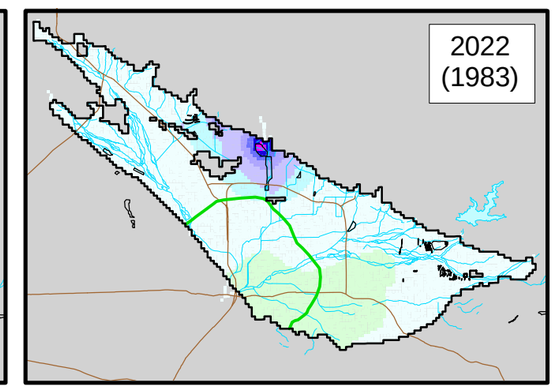
Spreading Grounds or Basins

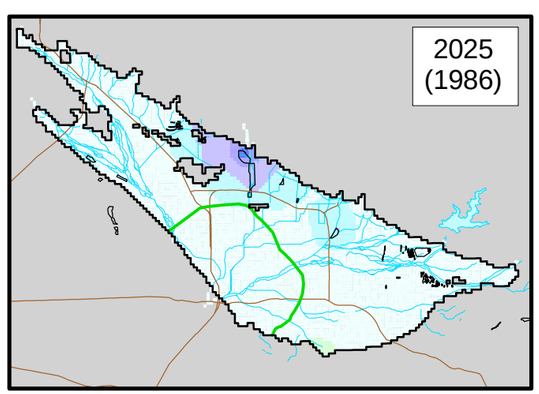
Freeway

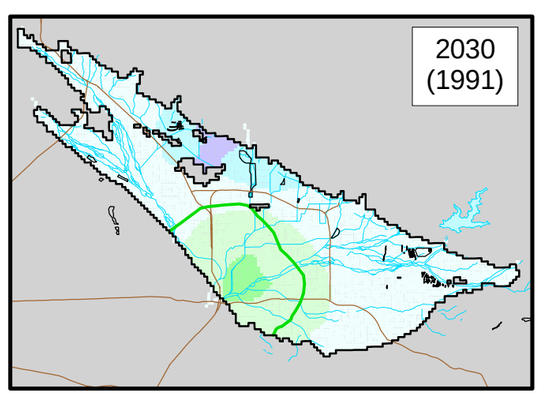


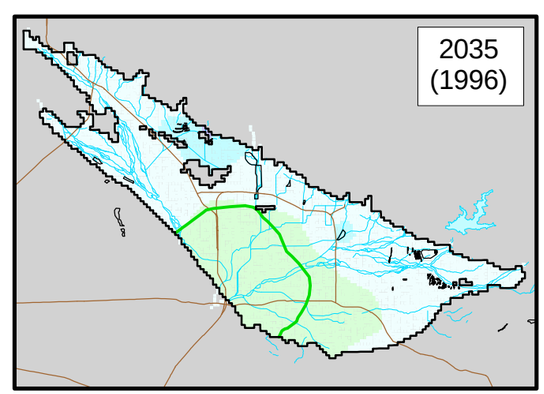


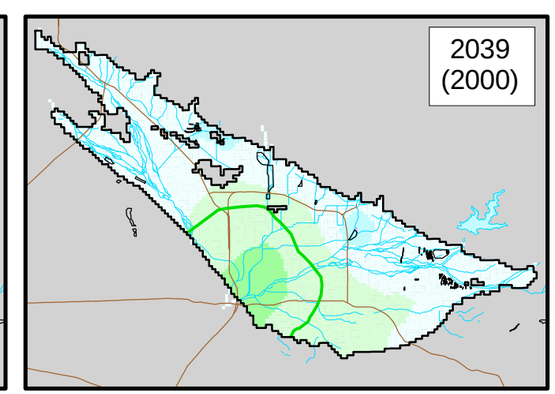












29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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Figure 7

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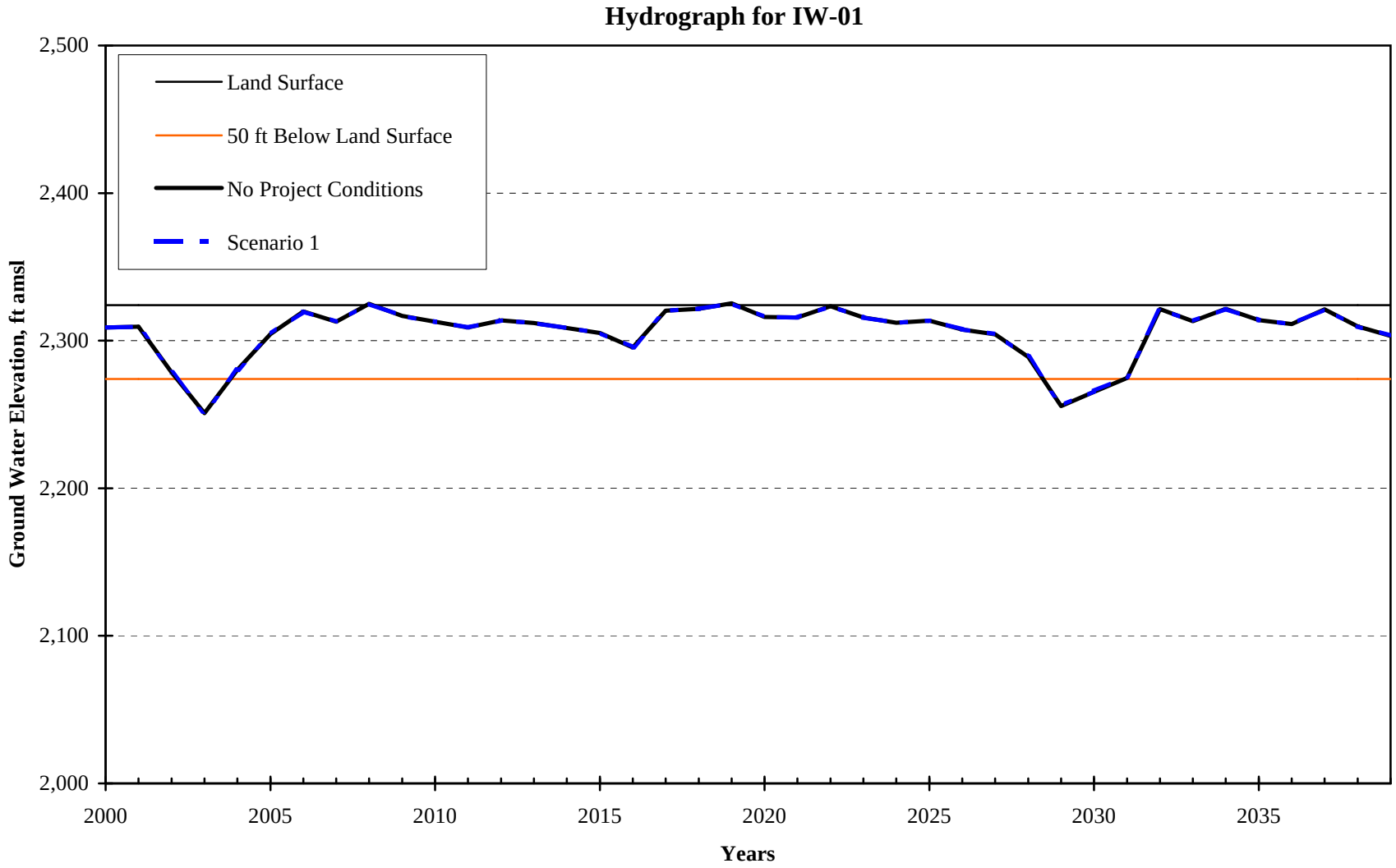

Hydrograph for IW-01
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
2,500
2,400
2,300
2,200
2,100
2,000
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(a)

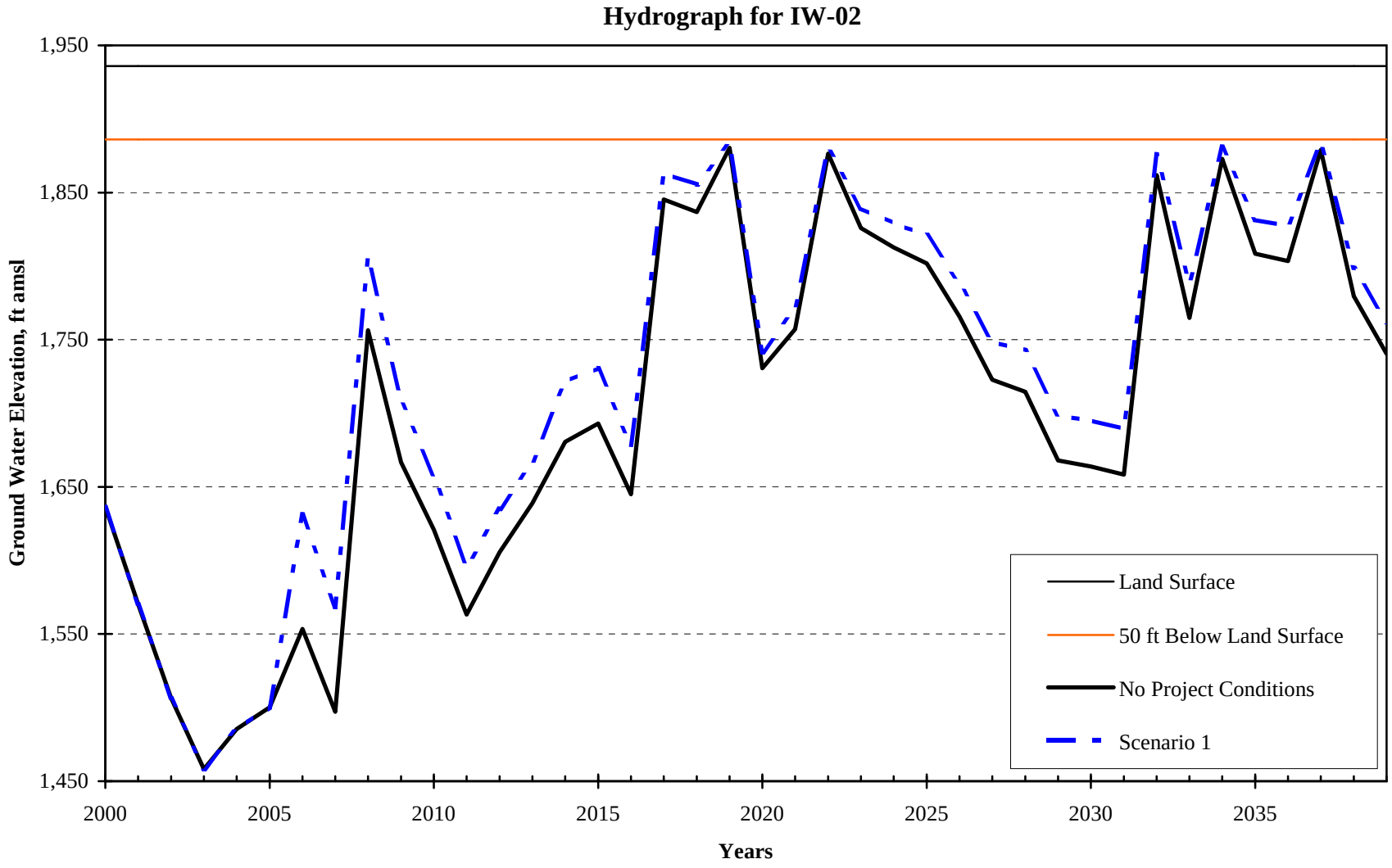

Hydrograph for IW-02
1,950
1,850
1,750
1,650
1,550
1,450
Ground Water Elevation, ft amsl
2000
2005
2010
2015
2020
2025
2030
2035
Years
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1

Figure 8(b)

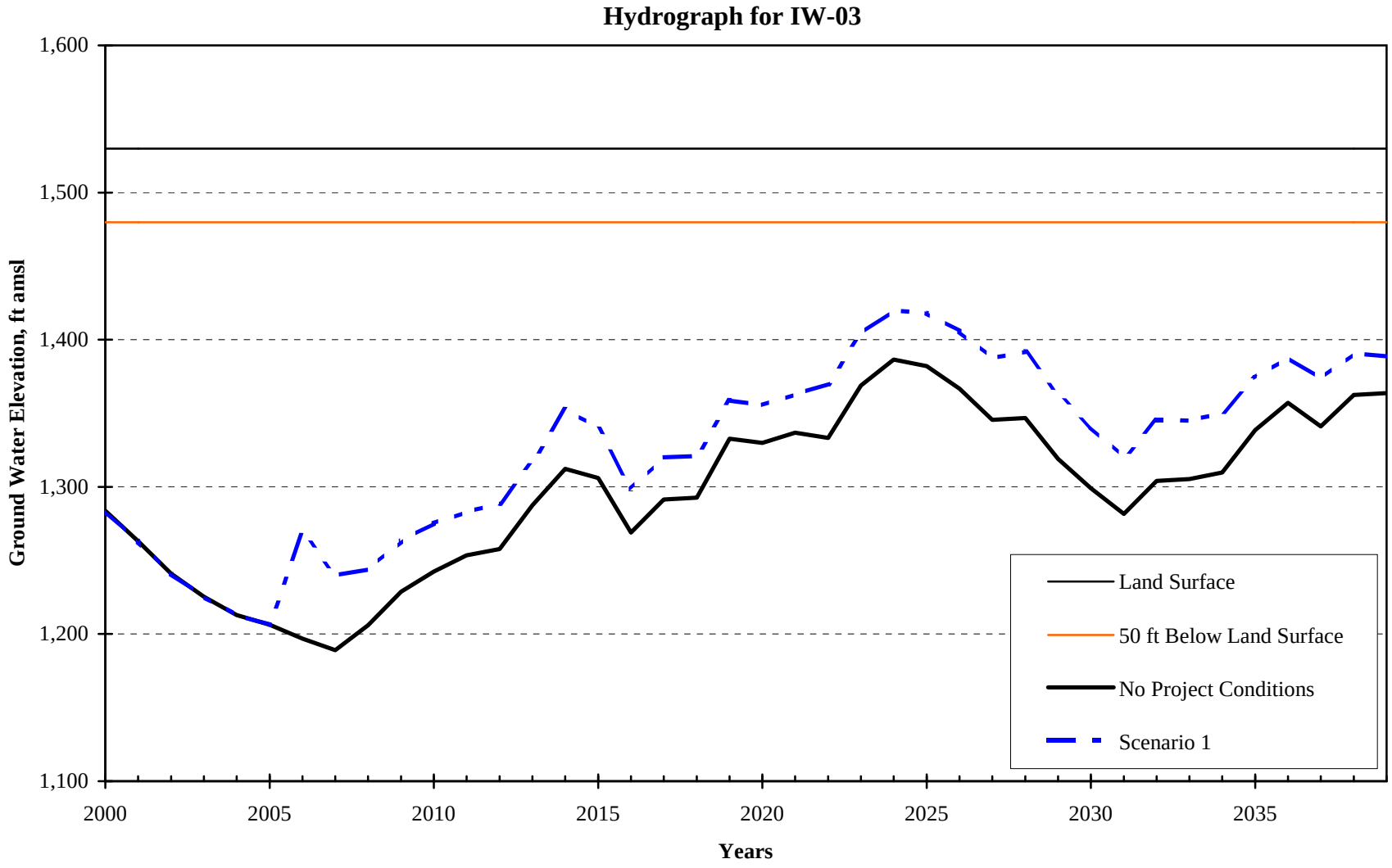

Hydrograph for IW-03
1,600
1,500
1,400
1,300
1,200
1,100
Ground Water Elevation, ft amsl
2000
2005
2010
2015
2020
2025
2030
2035
Years
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1

Figure 8(c)

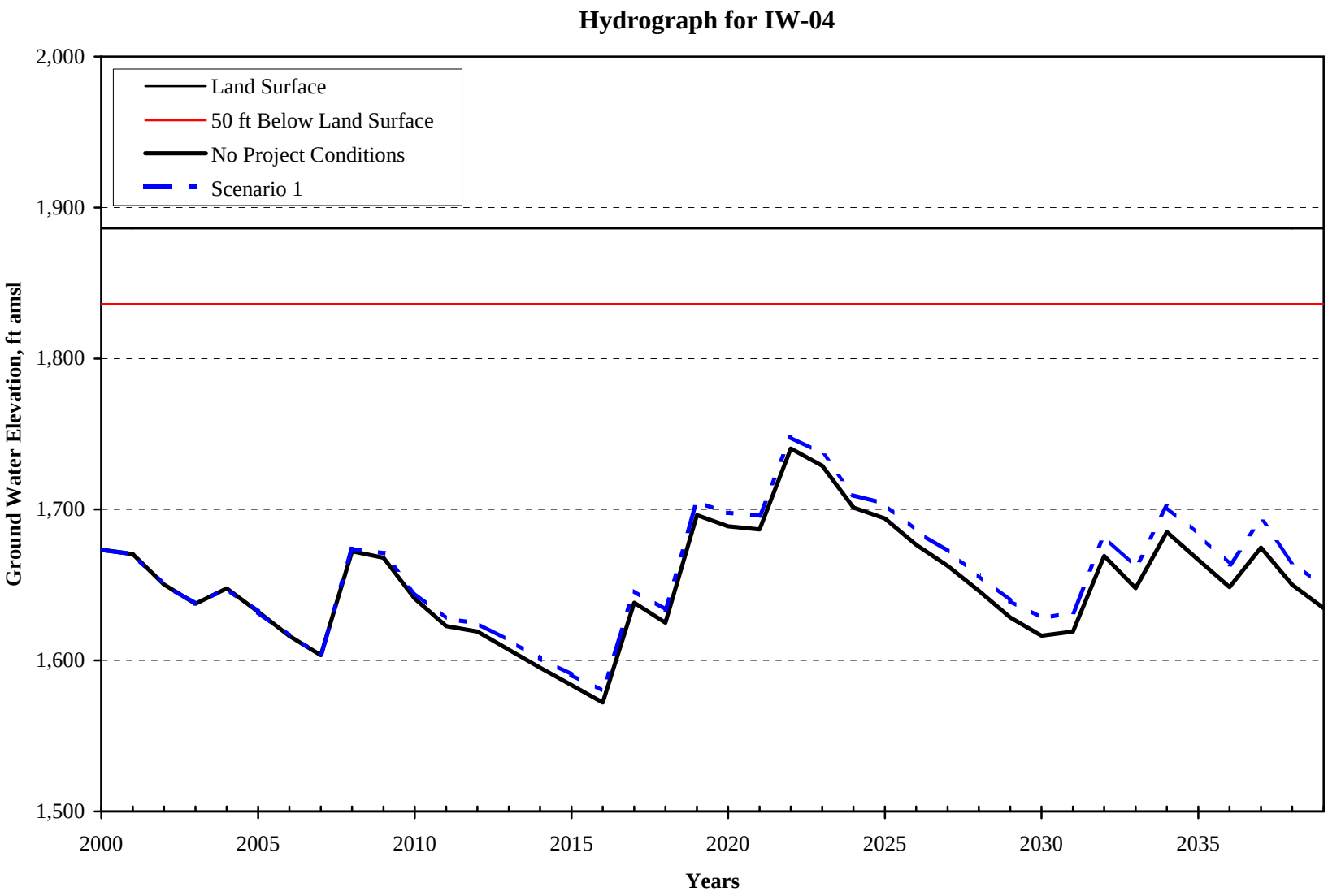

Hydrograph for IW-04
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
2,000
1,900
1,800
1,700
1,600
1,500
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(d)

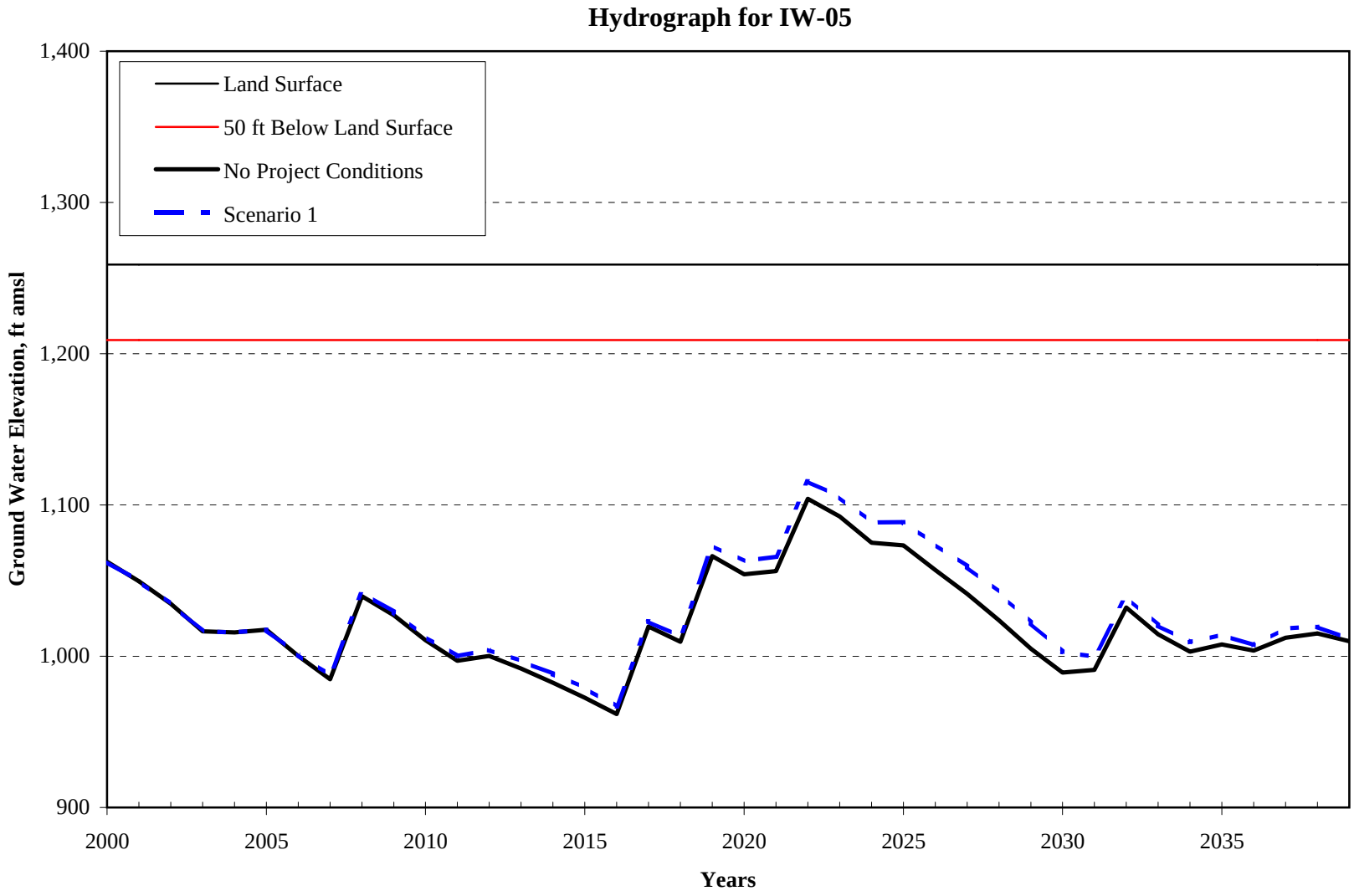

Hydrograph for IW-05
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,400
1,300
1,200
1,100
1,000
900
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(e)

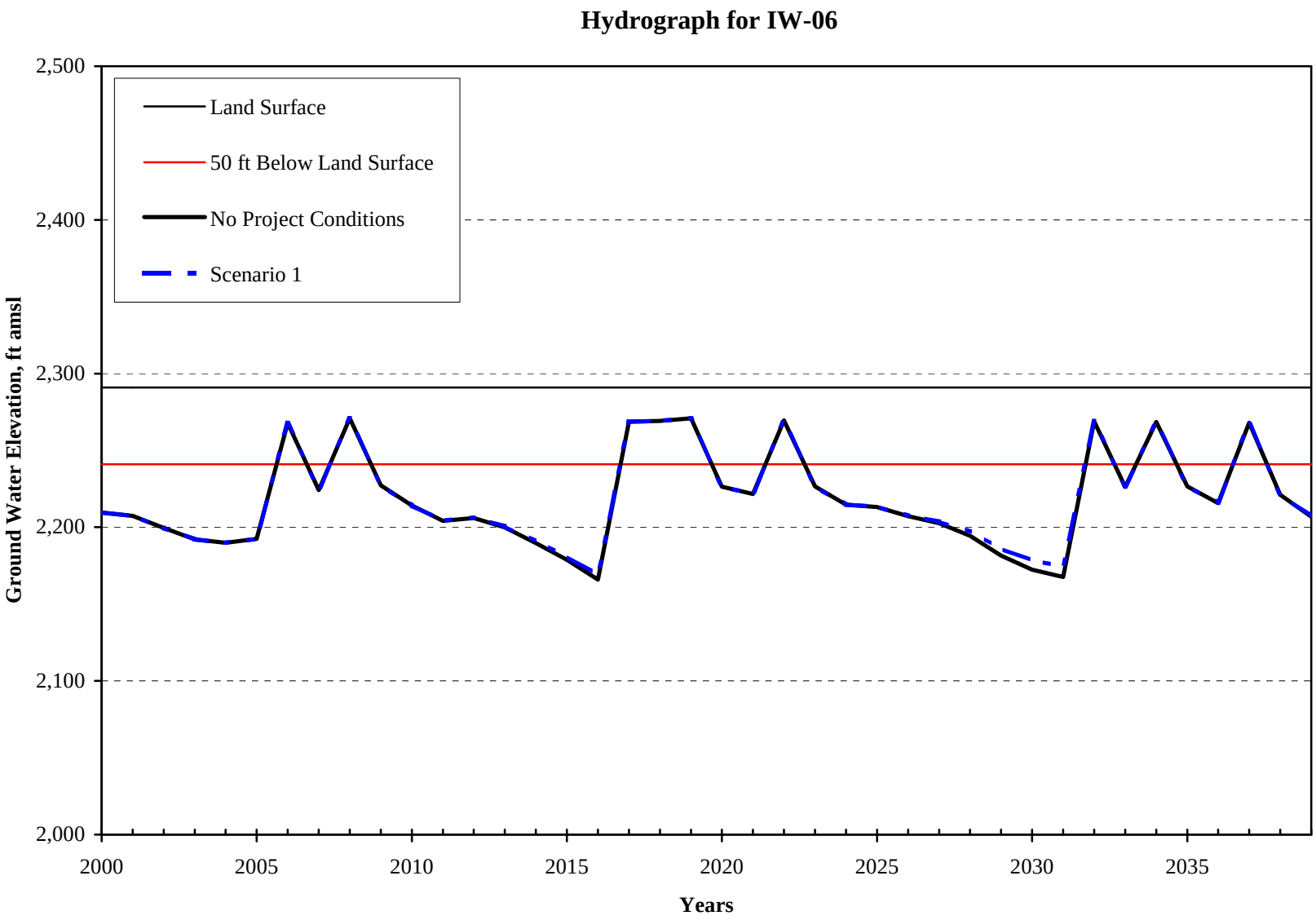

Hydrograph for IW-06
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
2,500
2,400
2,300
2,200
2,100
2,000
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(f)

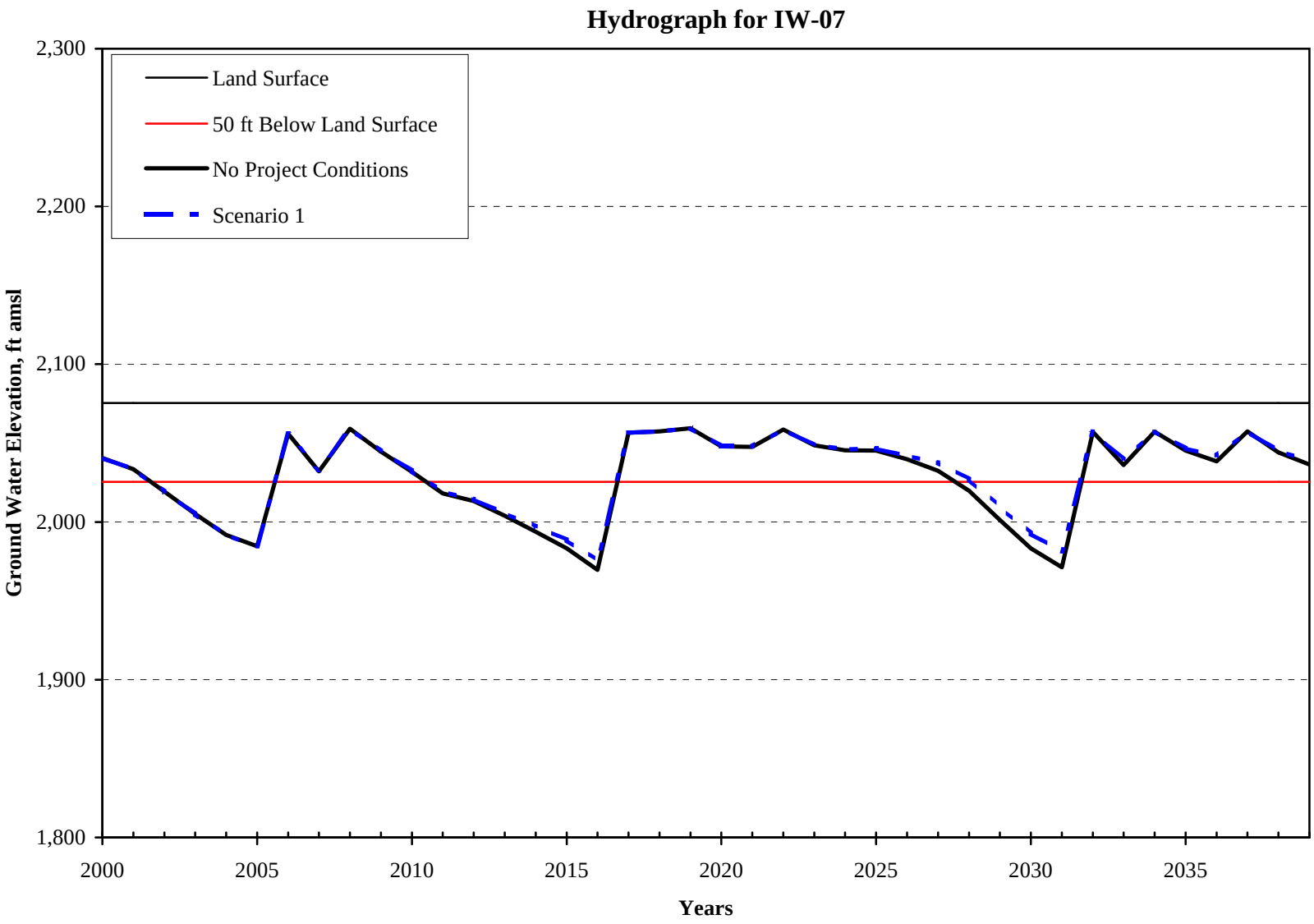

Hydrograph for IW-07
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
2,300
2,200
2,100
2,000
1,900
1,800
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(g)

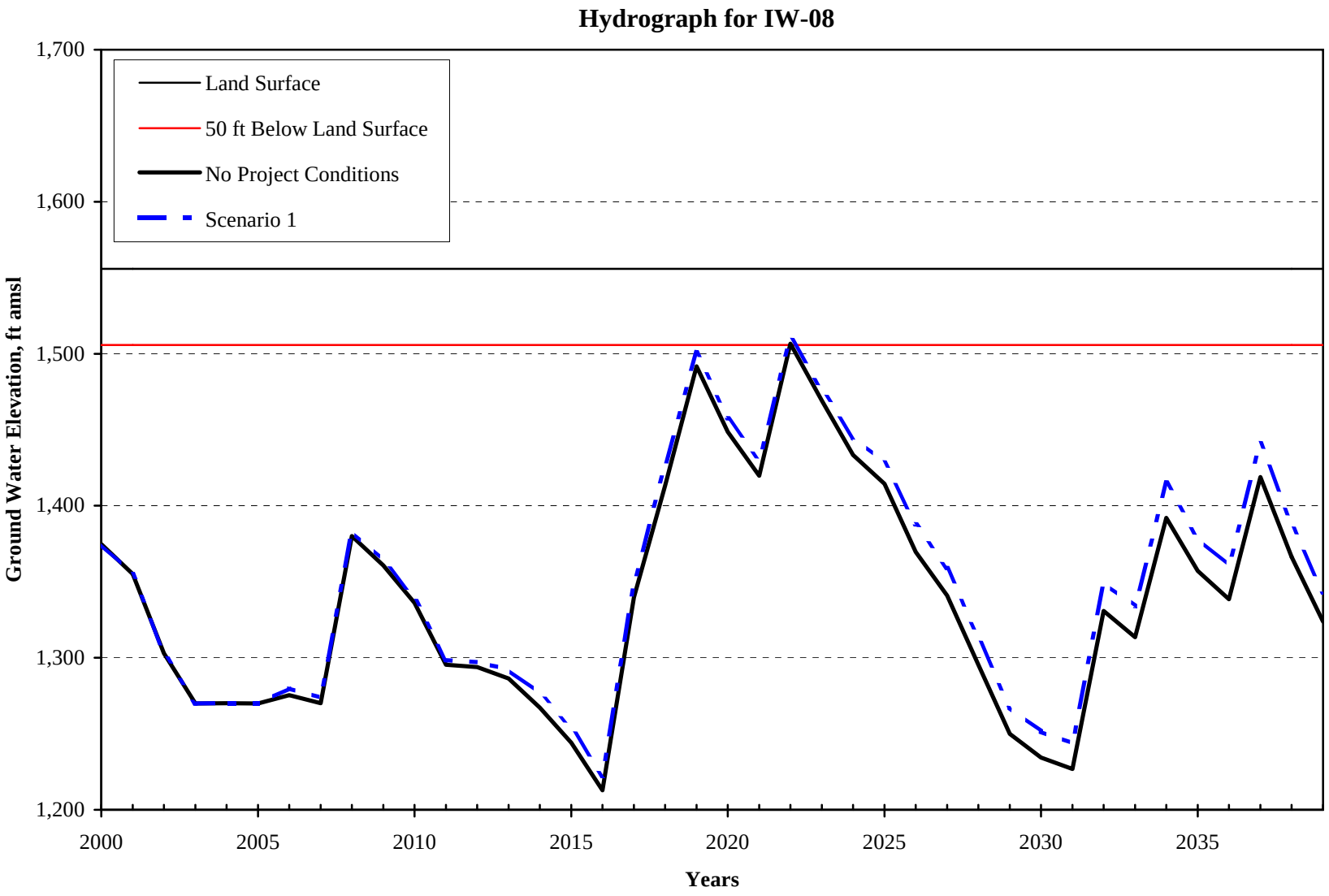

Hydrograph for IW-08
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,700
1,600
1,500
1,400
1,300
1,200
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(h)

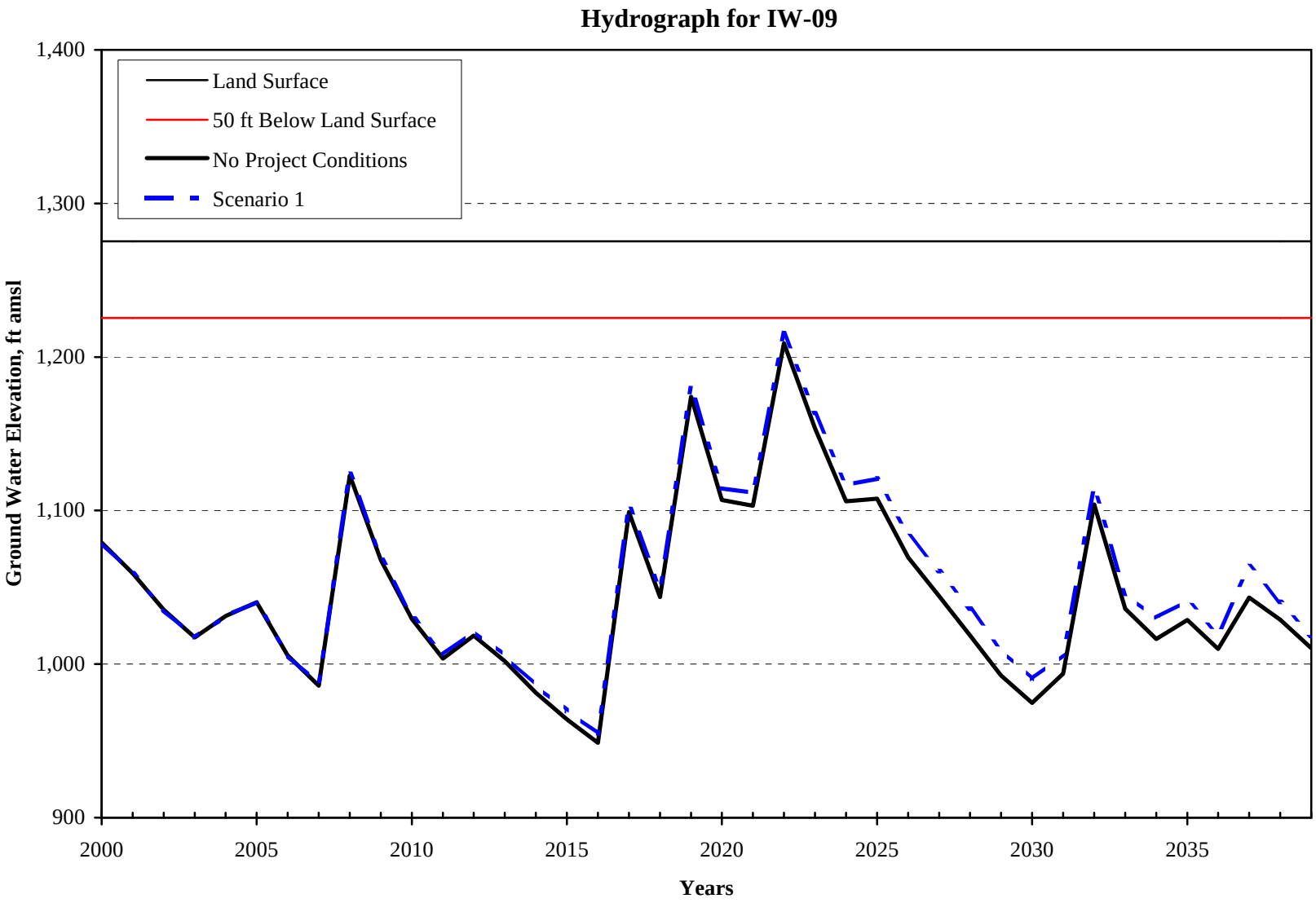

Hydrograph for IW-09
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,400
1,300
1,200
1,100
1,000
900
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(i)

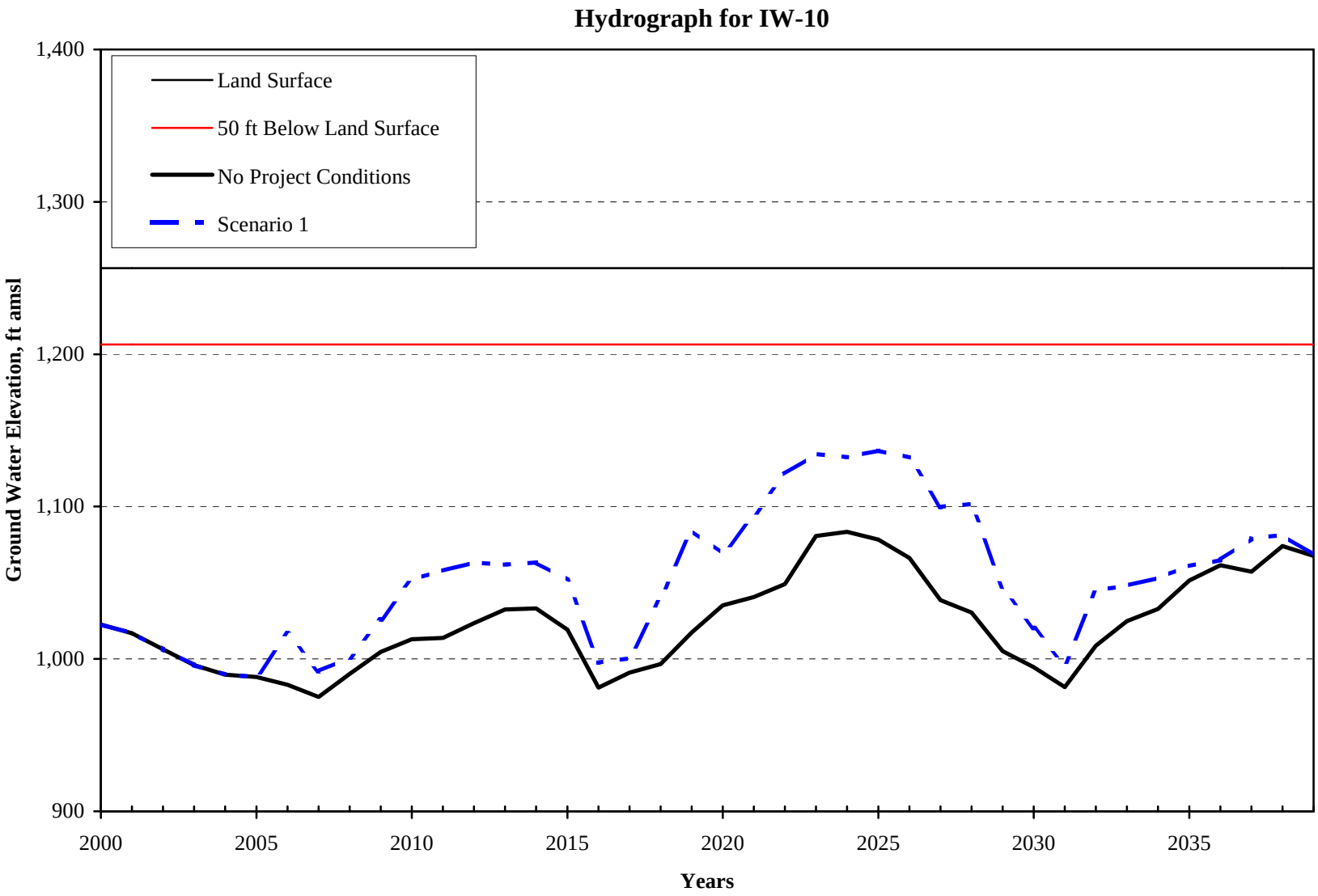

Hydrograph for IW-10
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,400
1,300
1,200
1,100
1,000
900
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(j)

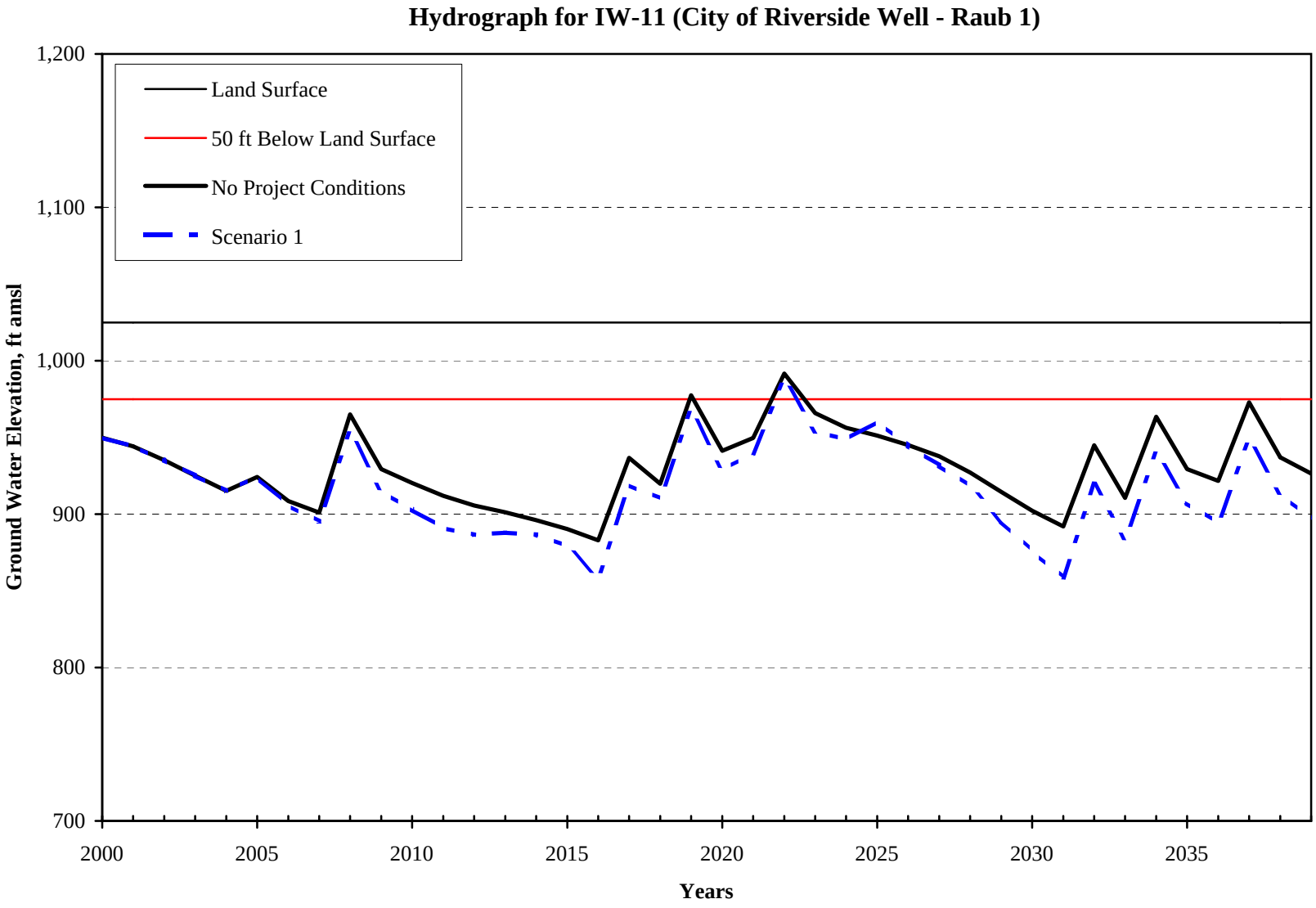

Hydrograph for IW-11 (City of Riverside Well - Raub 1)
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,200
1,100
1,000
900
800
700
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(k)

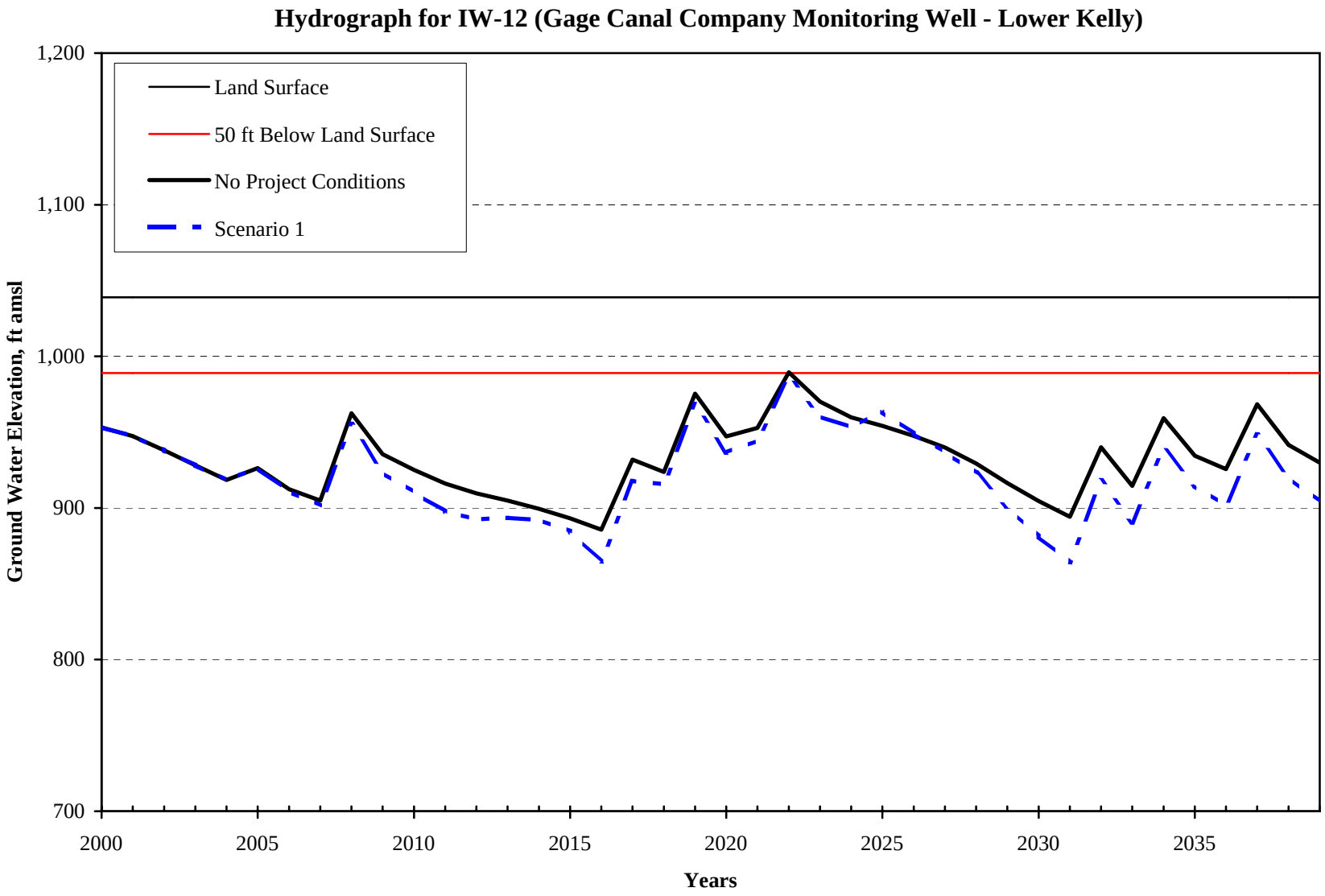

Hydrograph for IW-12 (Gage Canal Company Monitoring Well - Lower Kelly)
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,200
1,100
1,000
900
800
700
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(l)

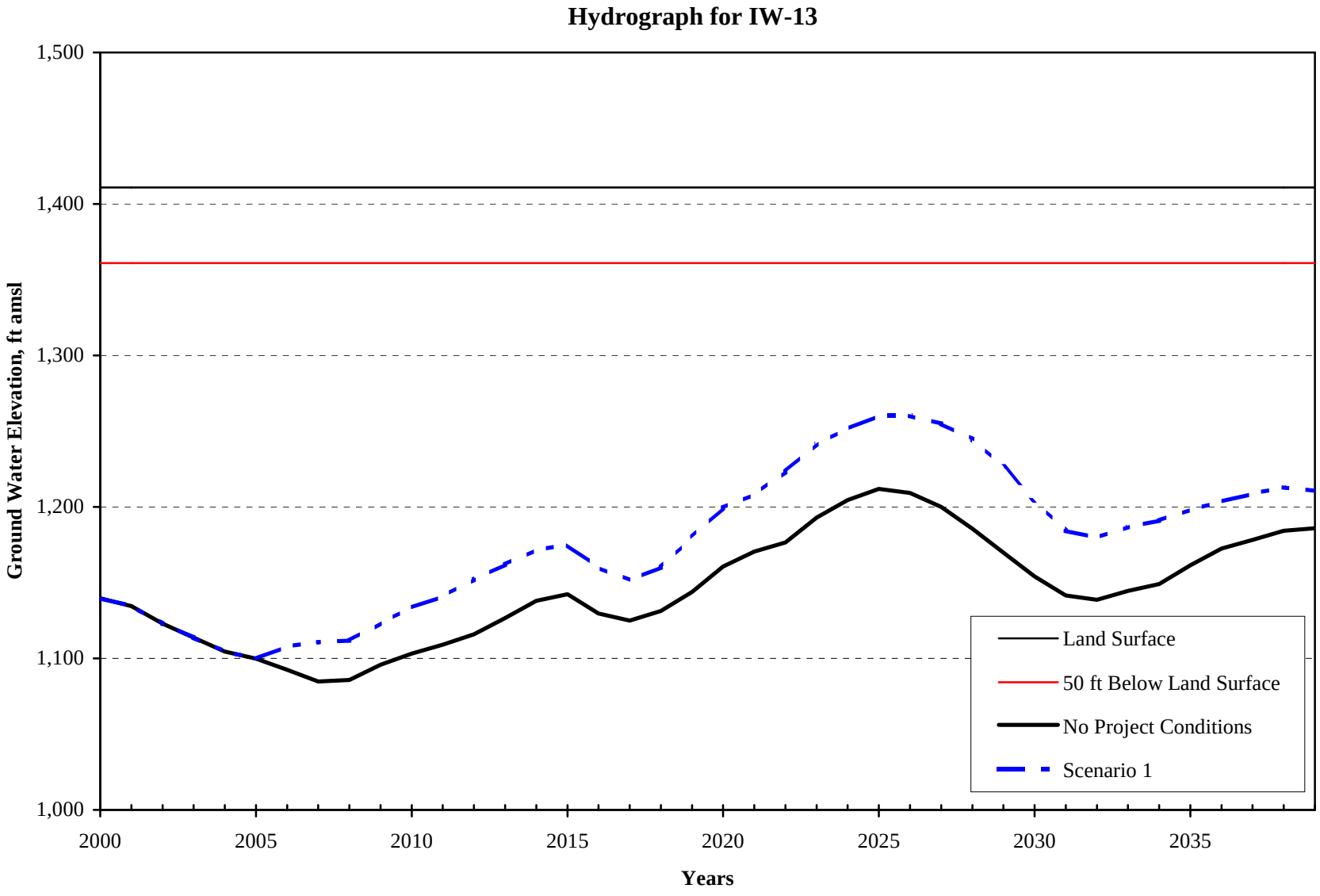

Hydrograph for IW-13
1,500
1,400
1,300
1,200
1,100
1,000
Ground Water Elevation, ft amsl
2000
2005
2010
2015
2020
2025
2030
2035
Years
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1

Figure 8(m)

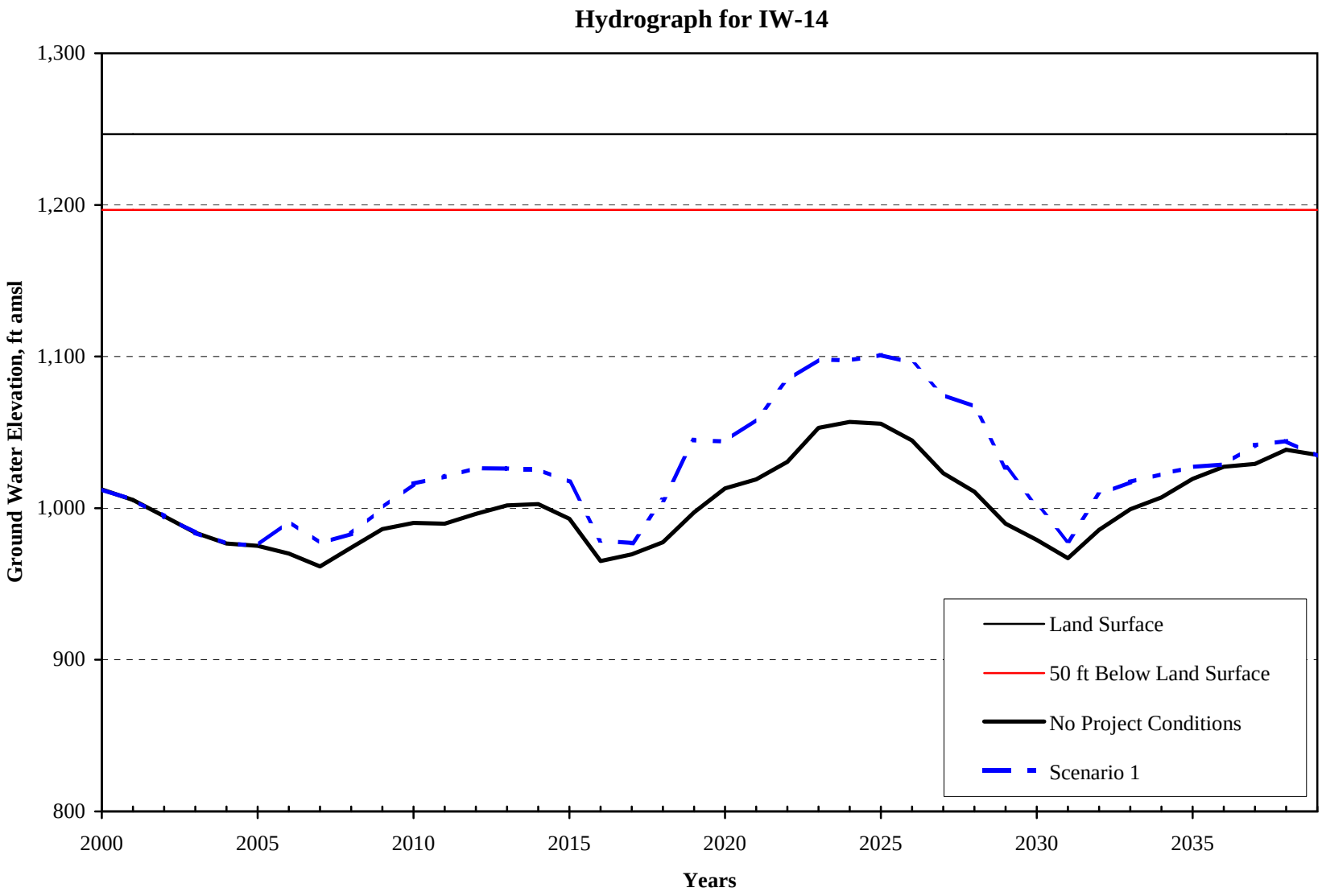

Hydrograph for IW-14
1,300
1,200
1,100
1,000
900
800
Ground Water Elevation, ft amsl
2000
2005
2010
2015
2020
2025
2030
2035
Years
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1

Figure 8(n)

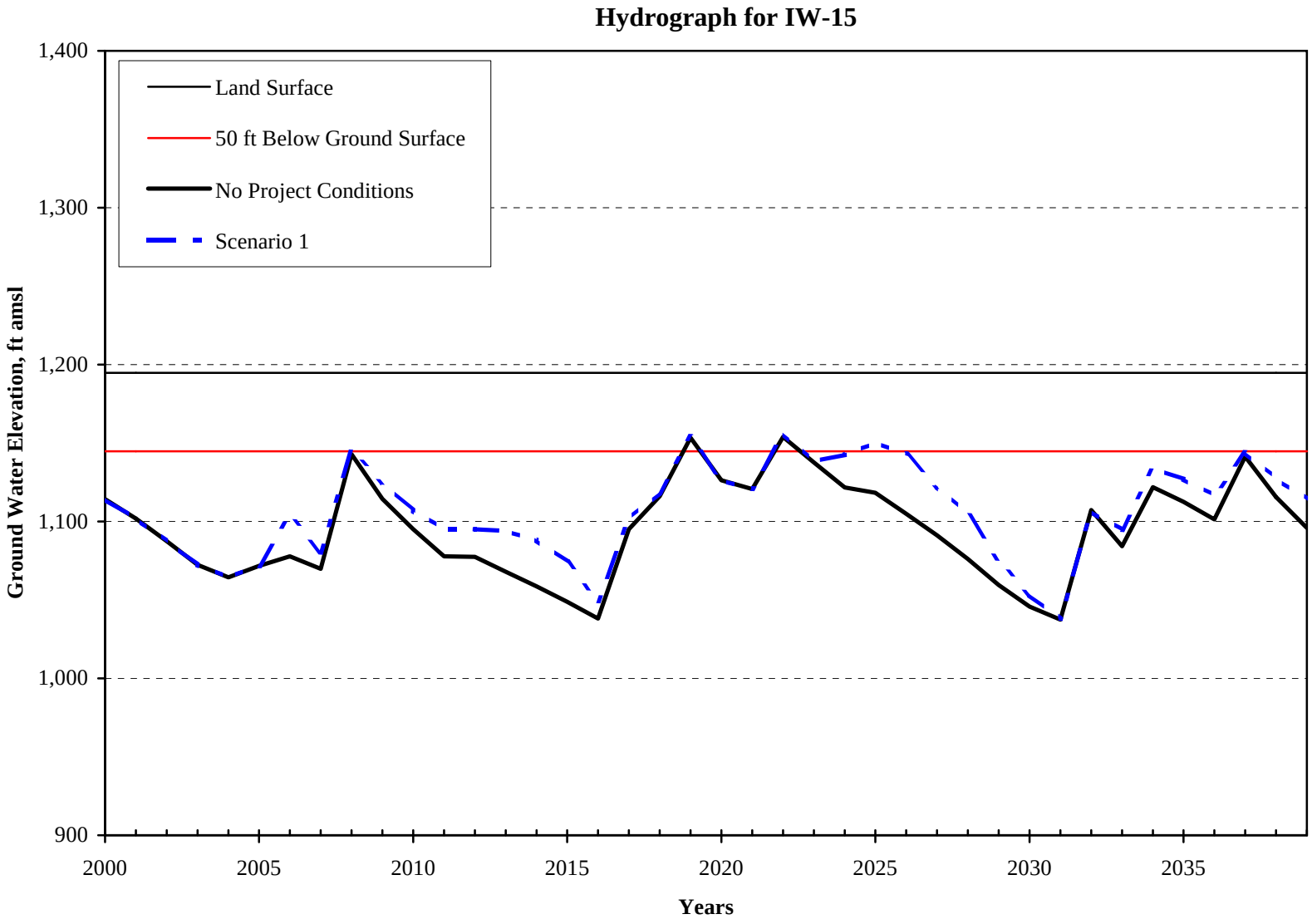

Hydrograph for IW-15
Land Surface
50 ft Below Ground Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,400
1,300
1,200
1,100
1,000
900
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(o)

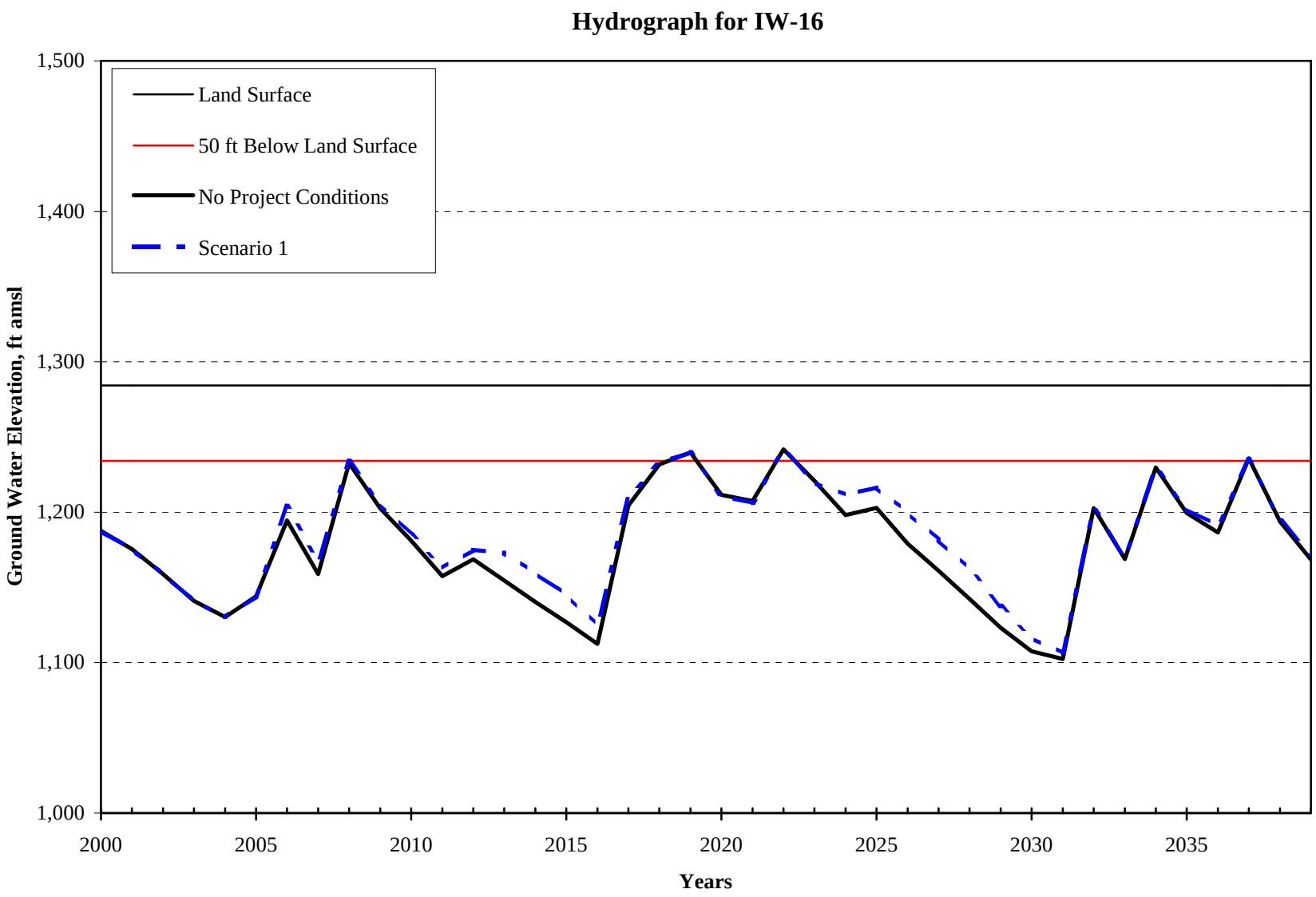

Hydrograph for IW-16
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,500
1,400
1,300
1,200
1,100
1,000
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(p)

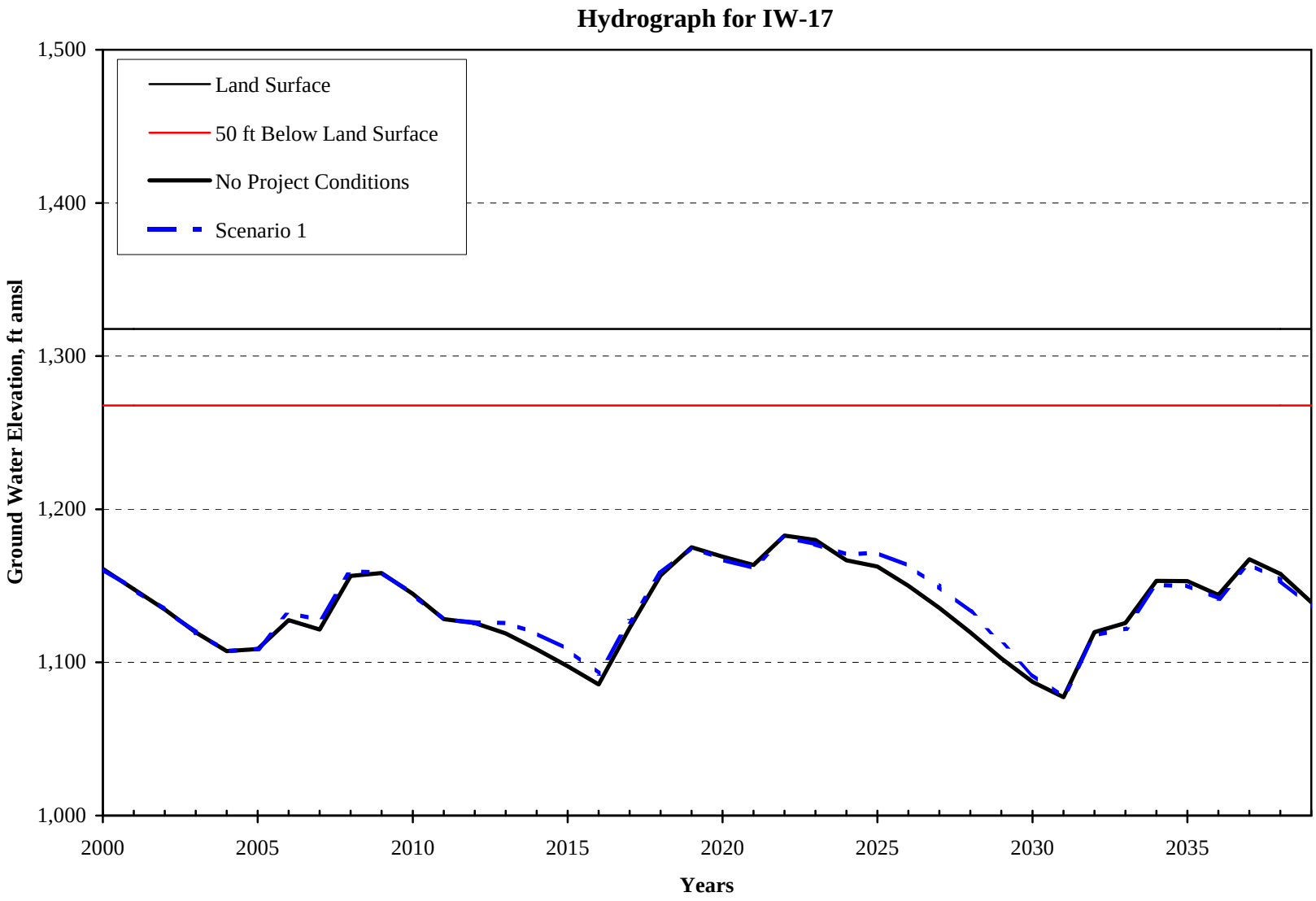

Hydrograph for IW-17
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,500
1,400
1,300
1,200
1,100
1,000
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(q)

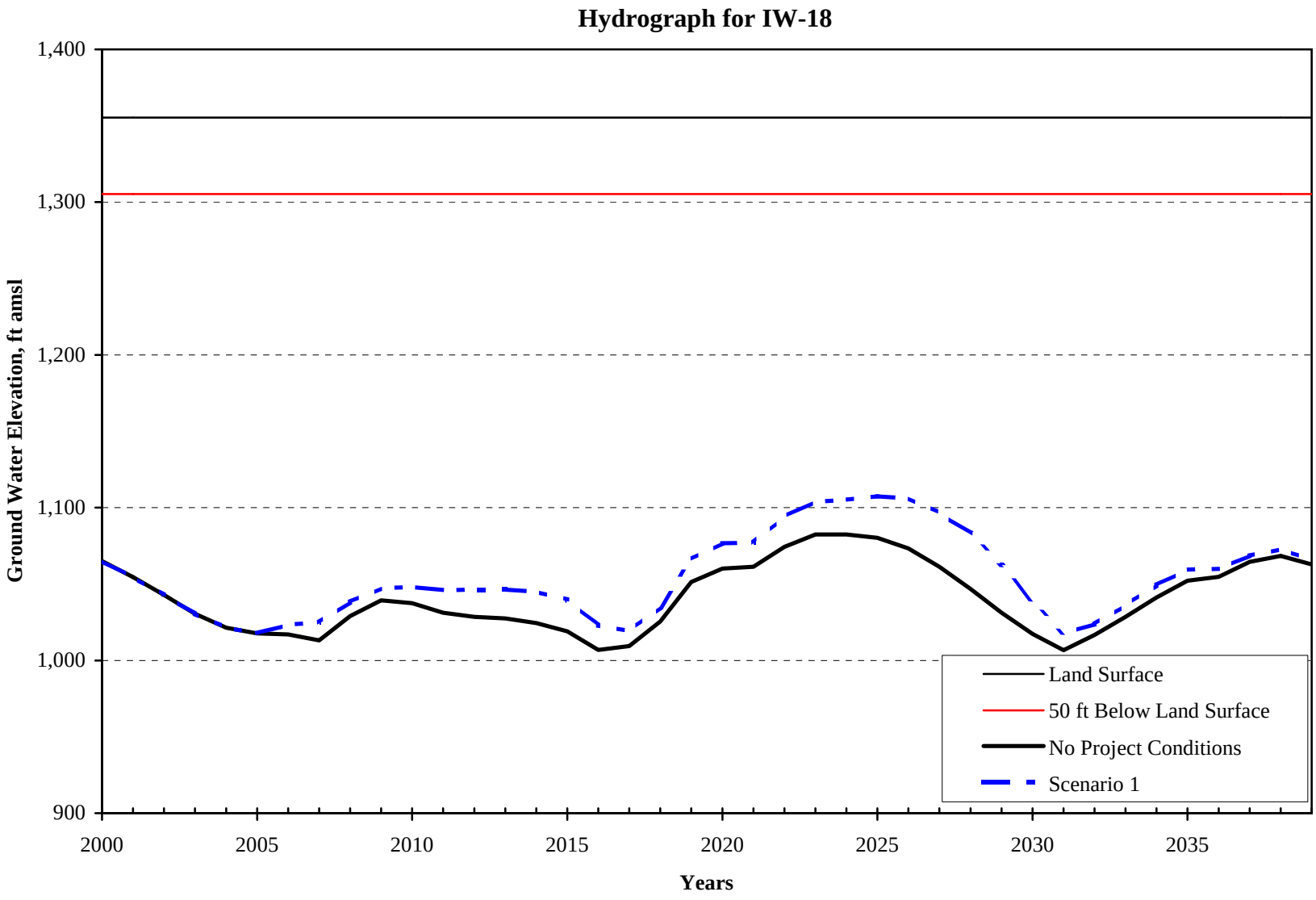

Hydrograph for IW-18
1,400
1,300
1,200
1,100
1,000
900
Ground Water Elevation, ft amsl
2000
2005
2010
2015
2020
2025
2030
2035
Years
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1

Figure 8(r)

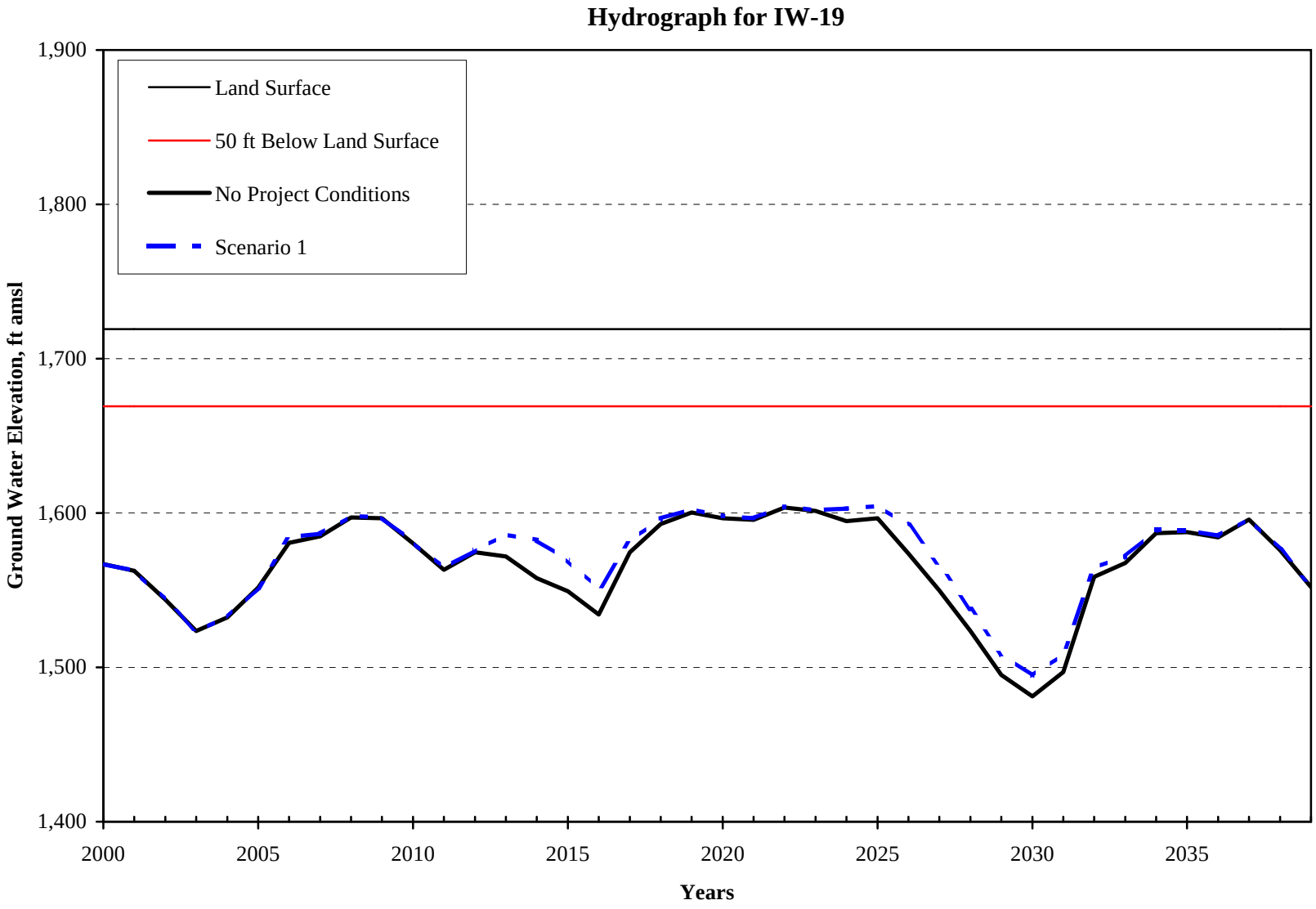

Hydrograph for IW-19
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,900
1,800
1,700
1,600
1,500
1,400
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(s)

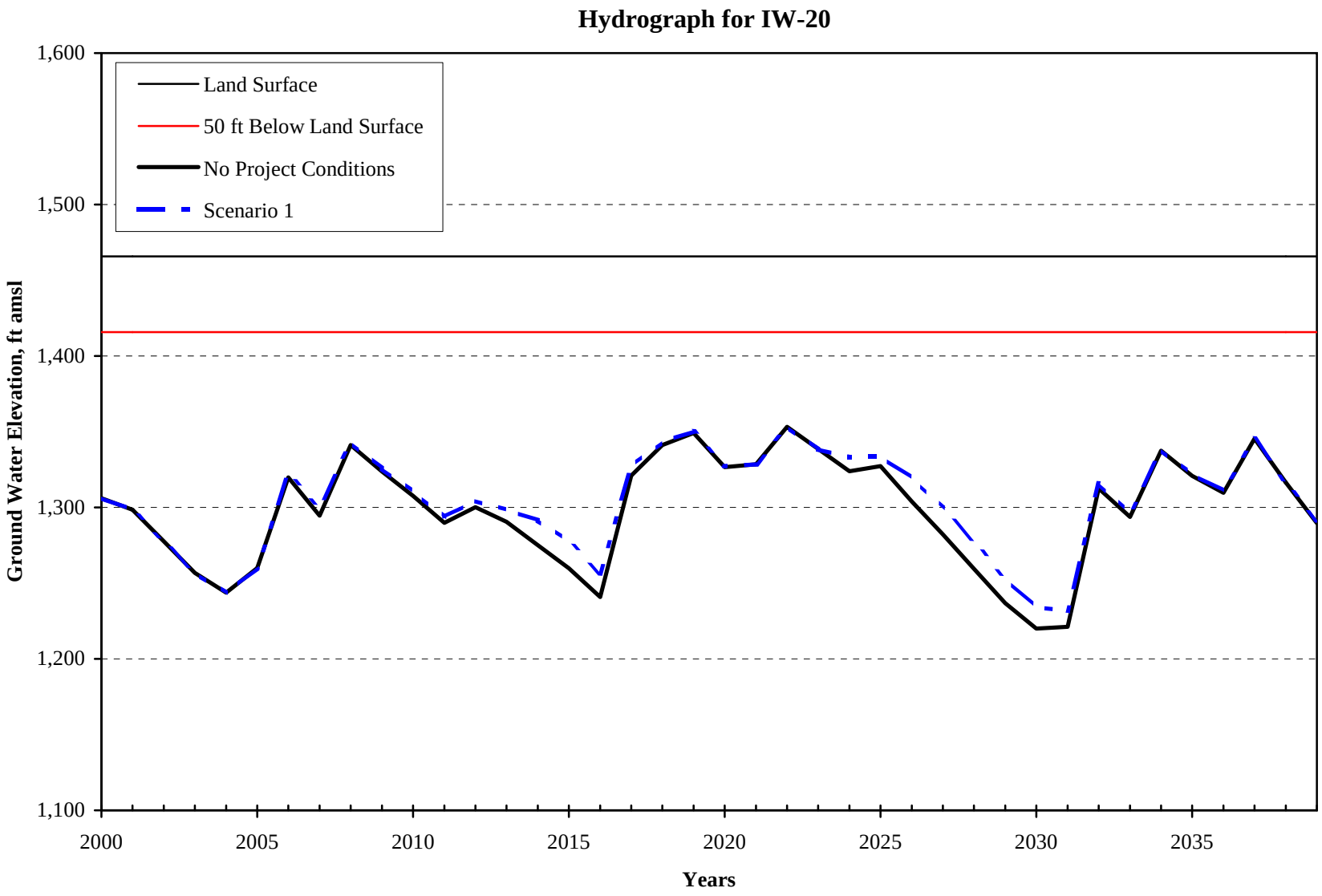

Hydrograph for IW-20
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,600
1,500
1,400
1,300
1,200
1,100
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(t)

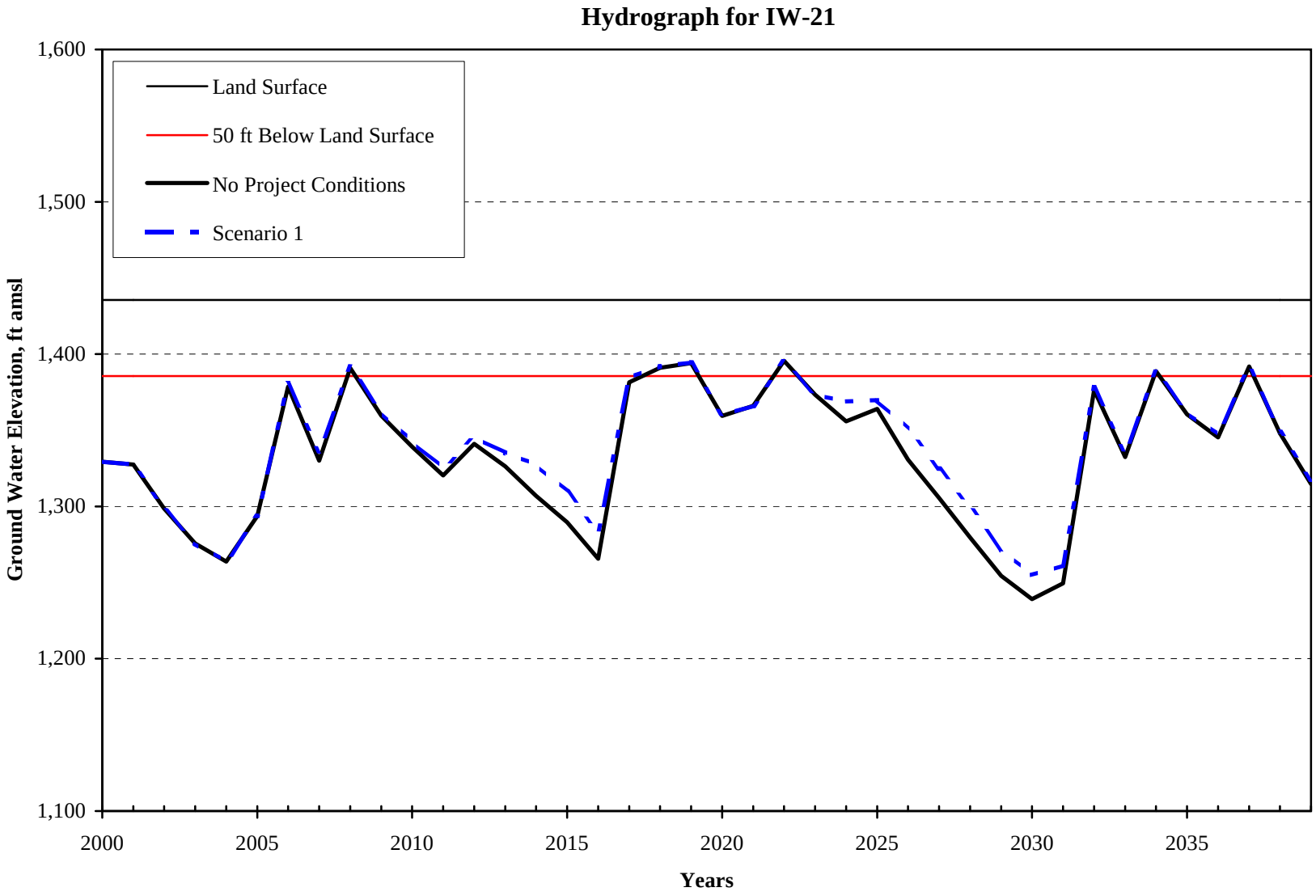

Hydrograph for IW-21
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,600
1,500
1,400
1,300
1,200
1,100
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(u)

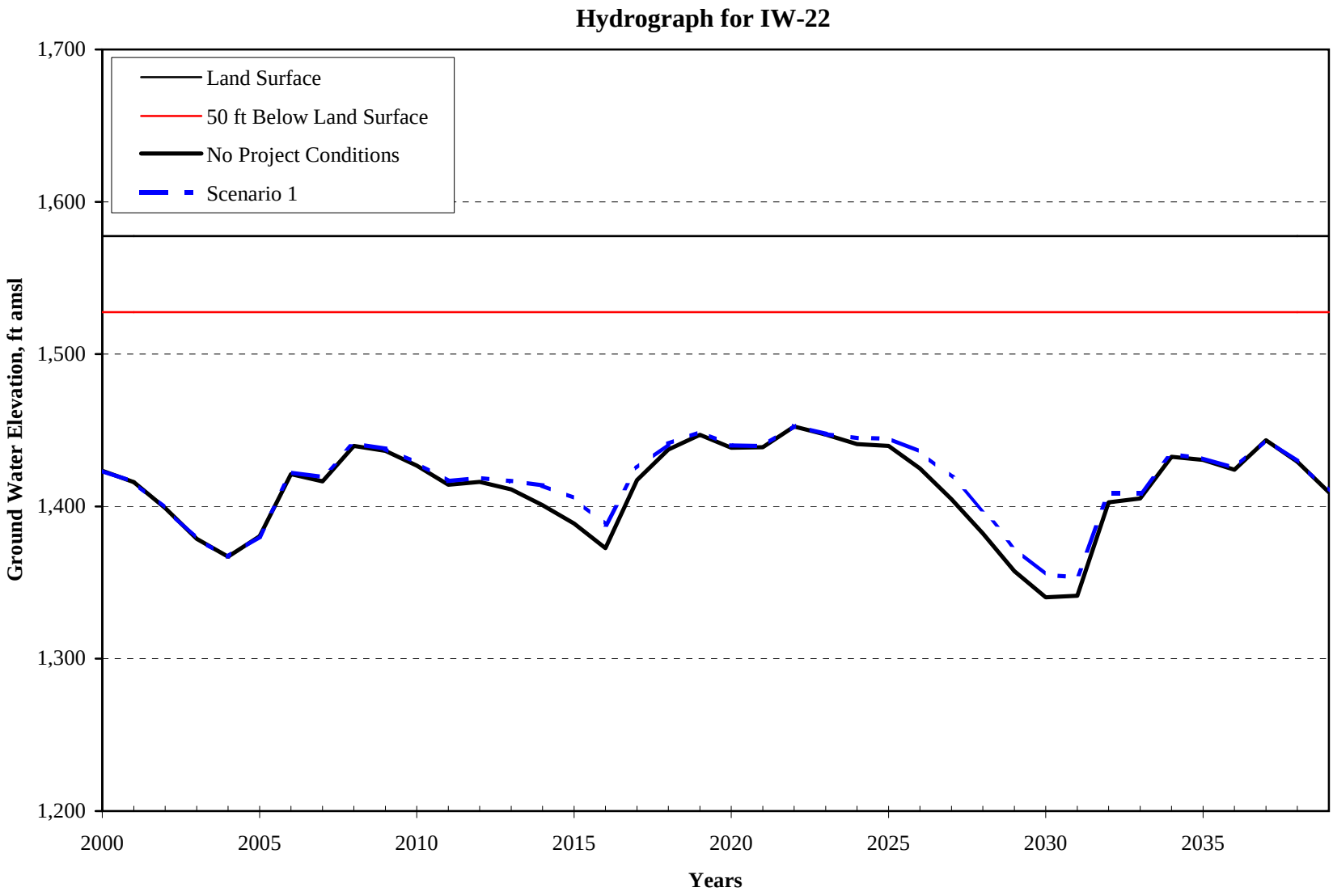

Hydrograph for IW-22
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,700
1,600
1,500
1,400
1,300
1,200
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(v)

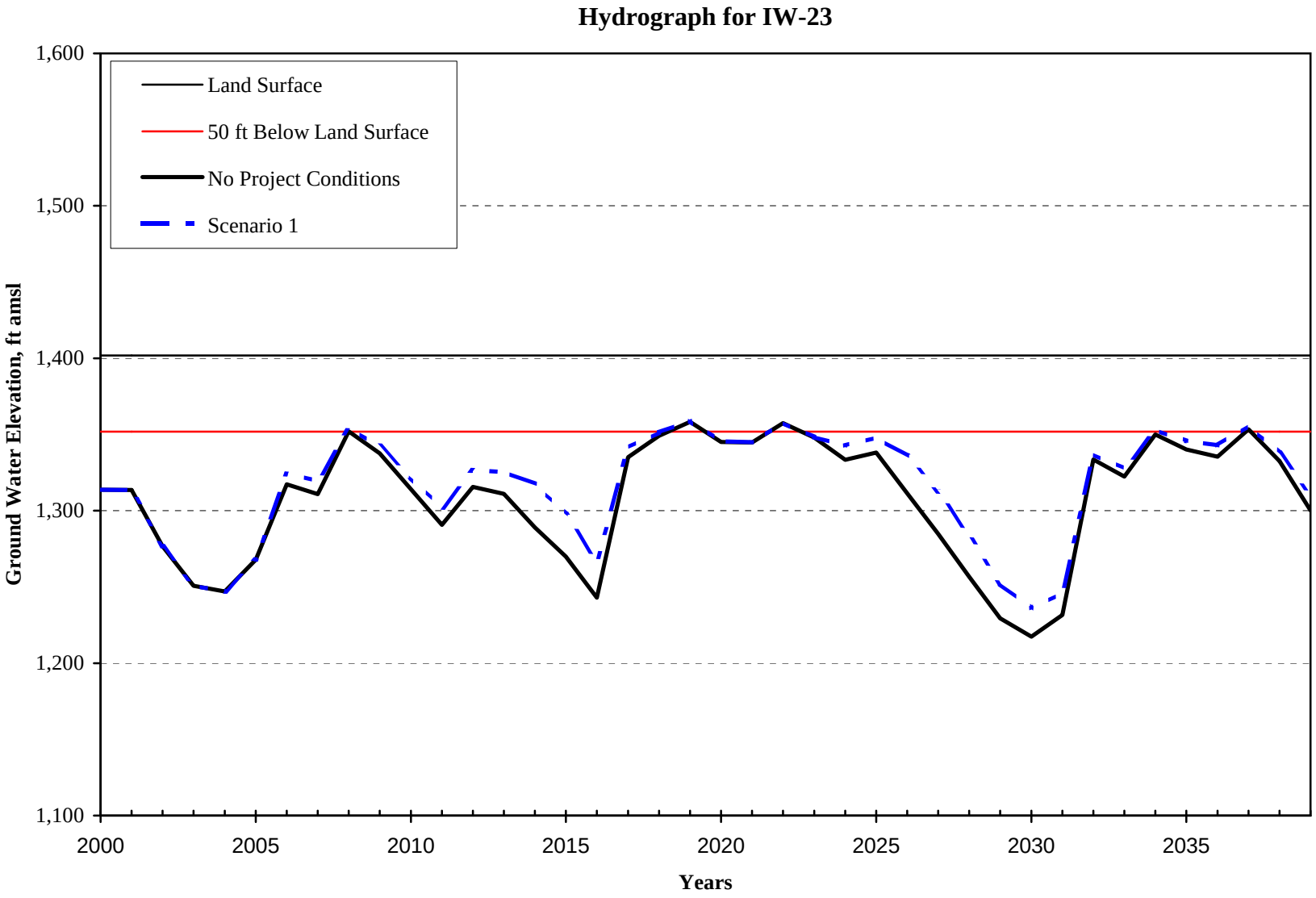

Hydrograph for IW-23
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,600
1,500
1,400
1,300
1,200
1,100
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(w)

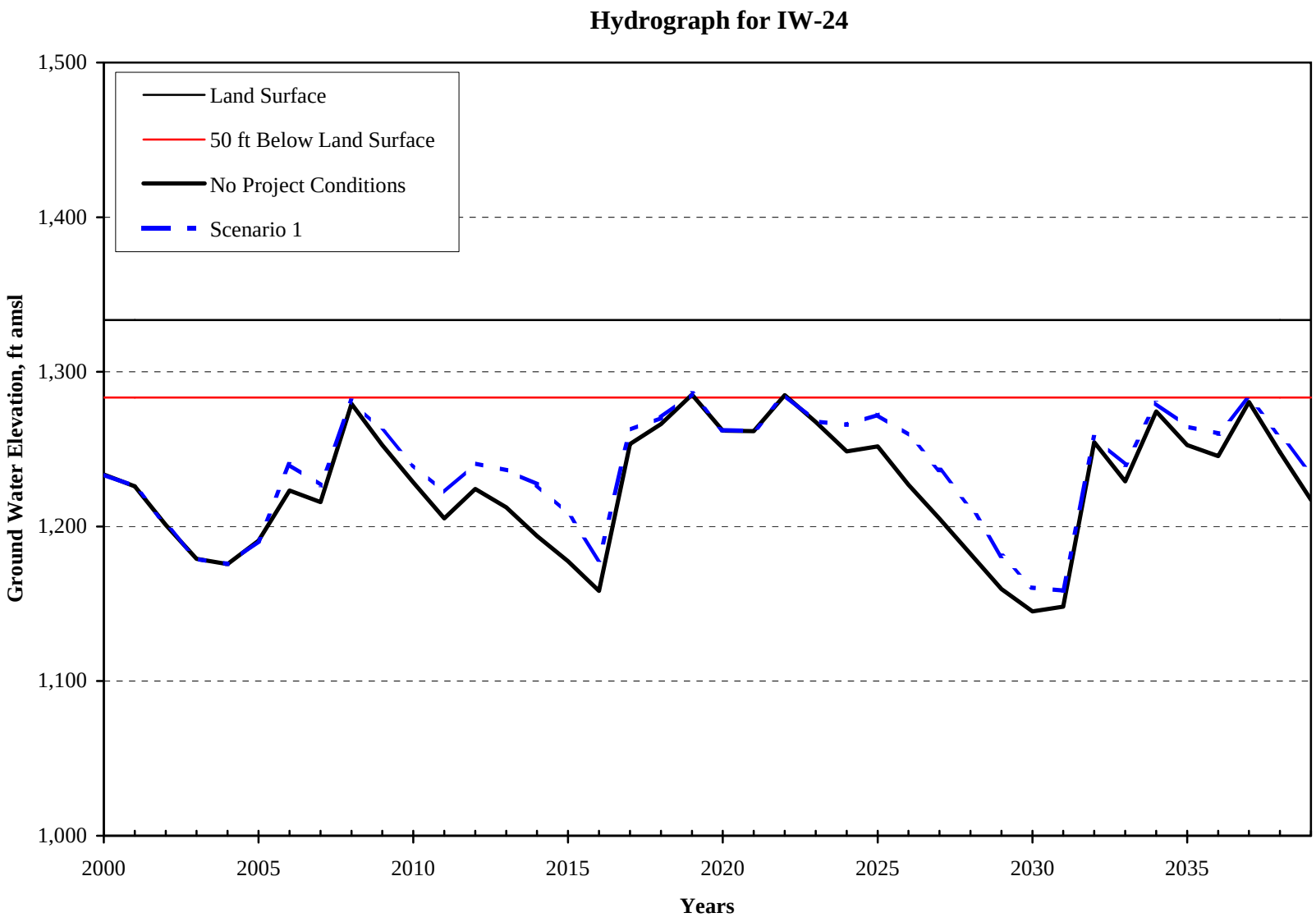

Hydrograph for IW-24
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,500
1,400
1,300
1,200
1,100
1,000
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(x)

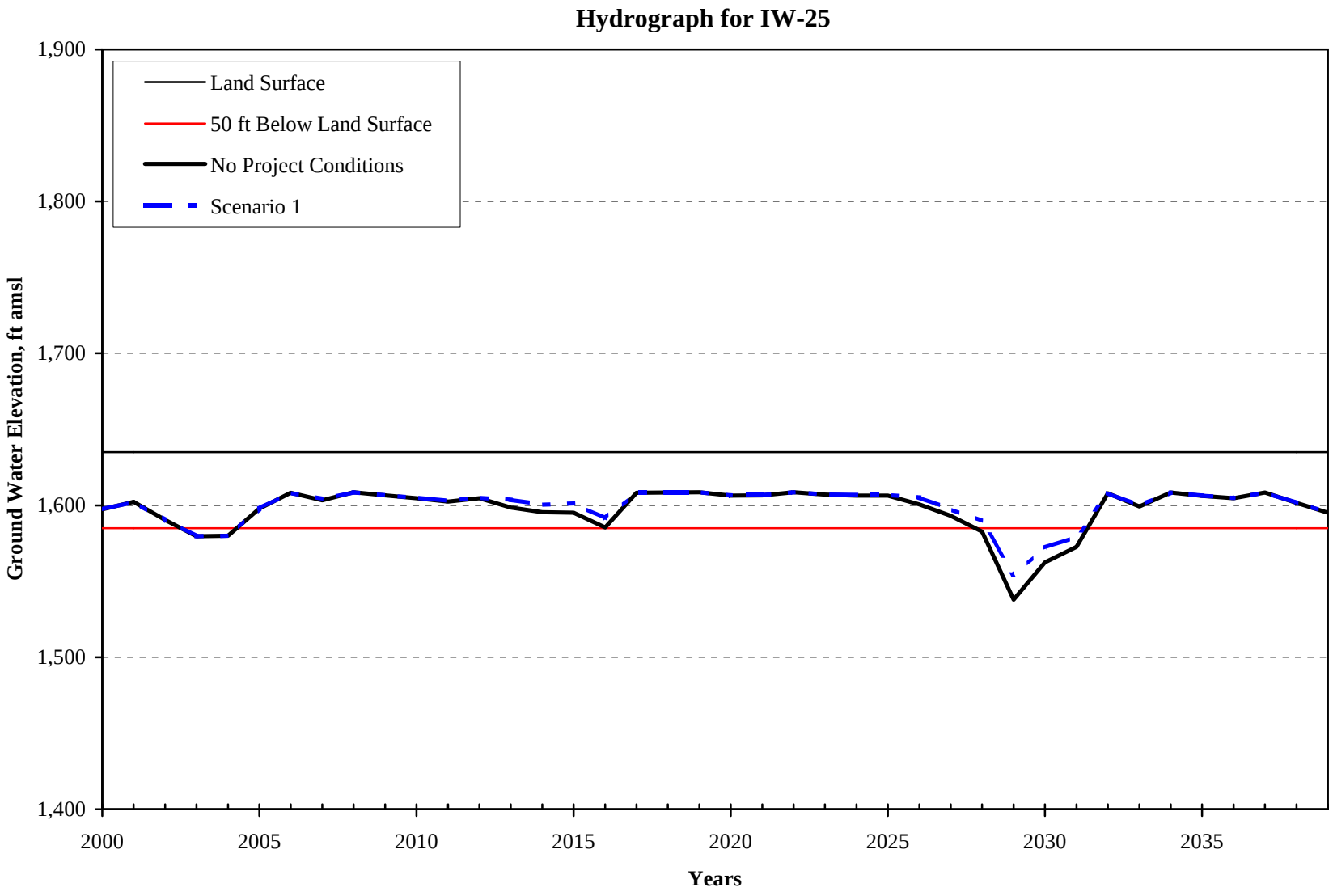

Hydrograph for IW-25
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,900
1,800
1,700
1,600
1,500
1,400
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(y)

Hydrograph for SG-1 Devil Canyon / Sweetwater Spreading Ground

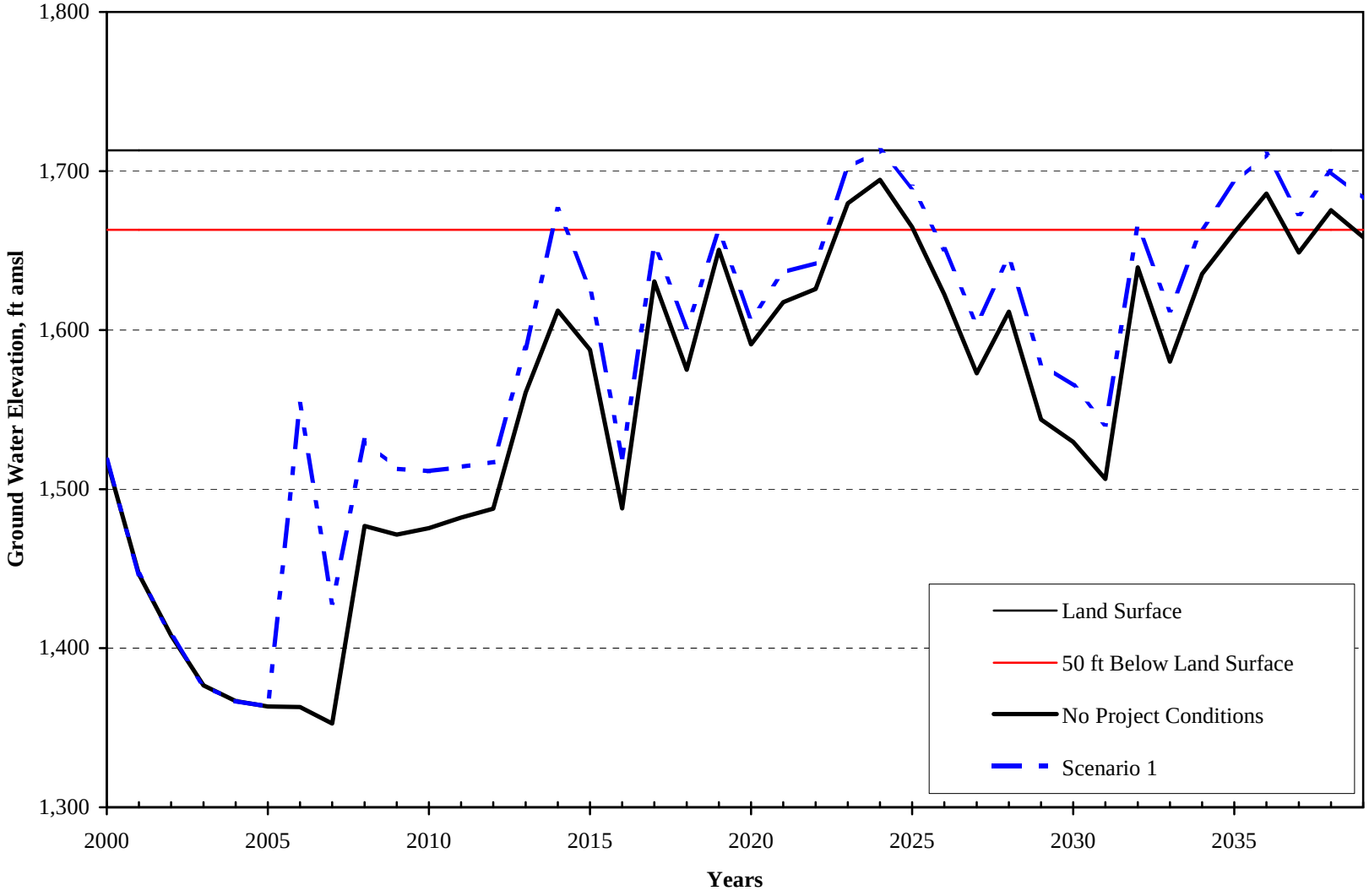


Figure 8(z)

Hydrograph for SG-2 Santa Ana River Spreading Ground

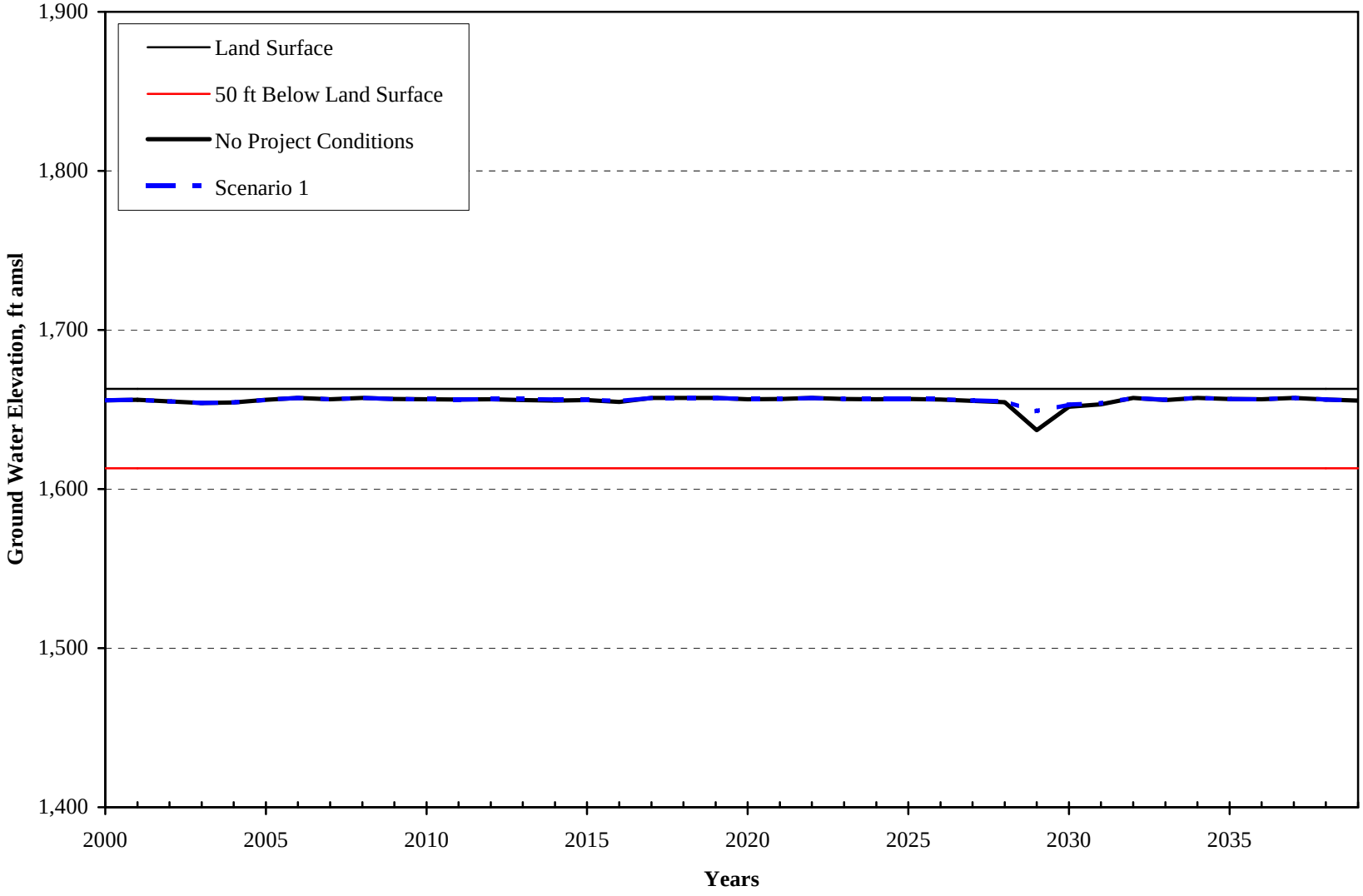


Figure 8(aa)

Hydrograph for SG-3 Waterman Spreading Ground

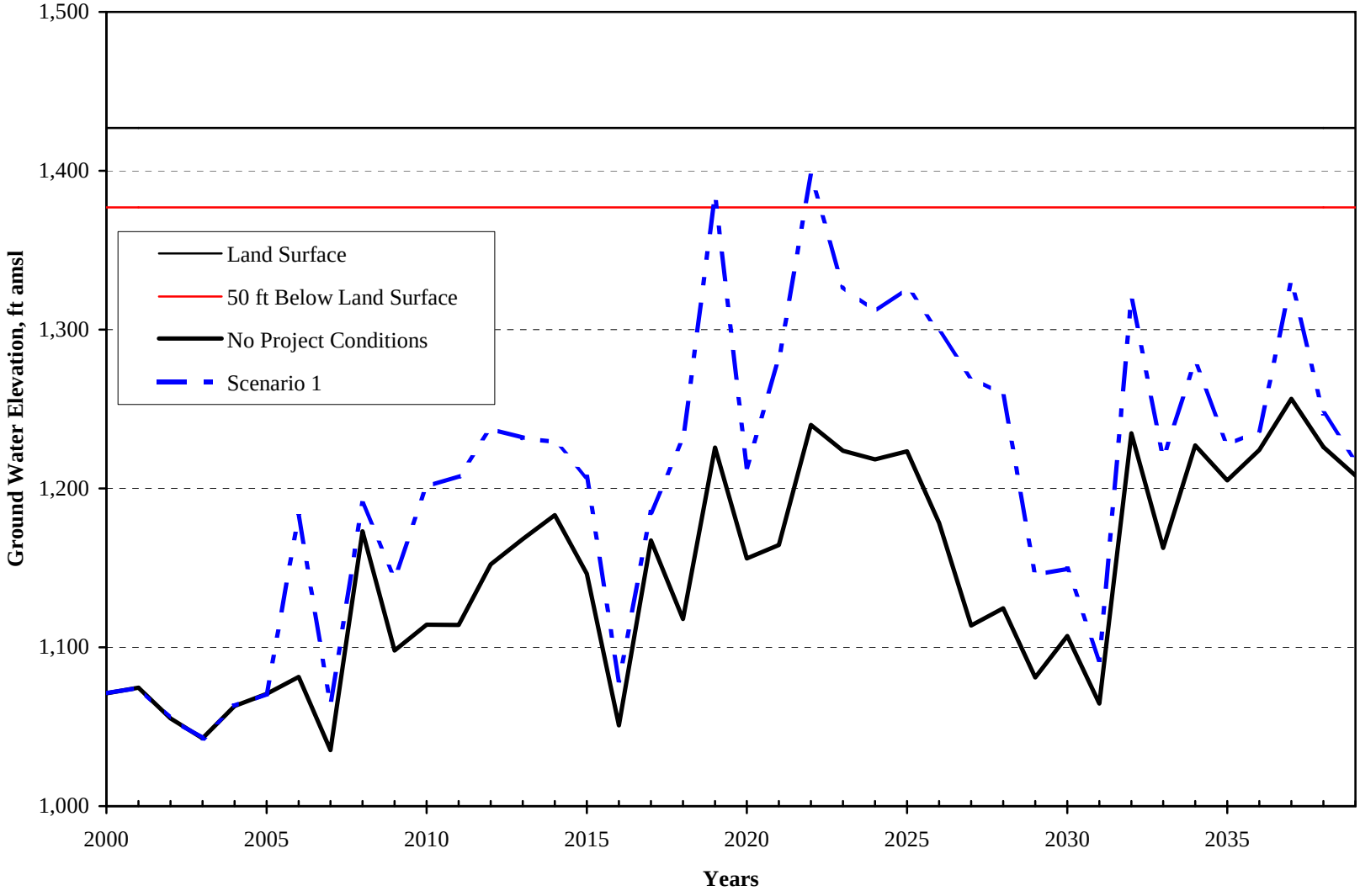


Figure 8(ab)

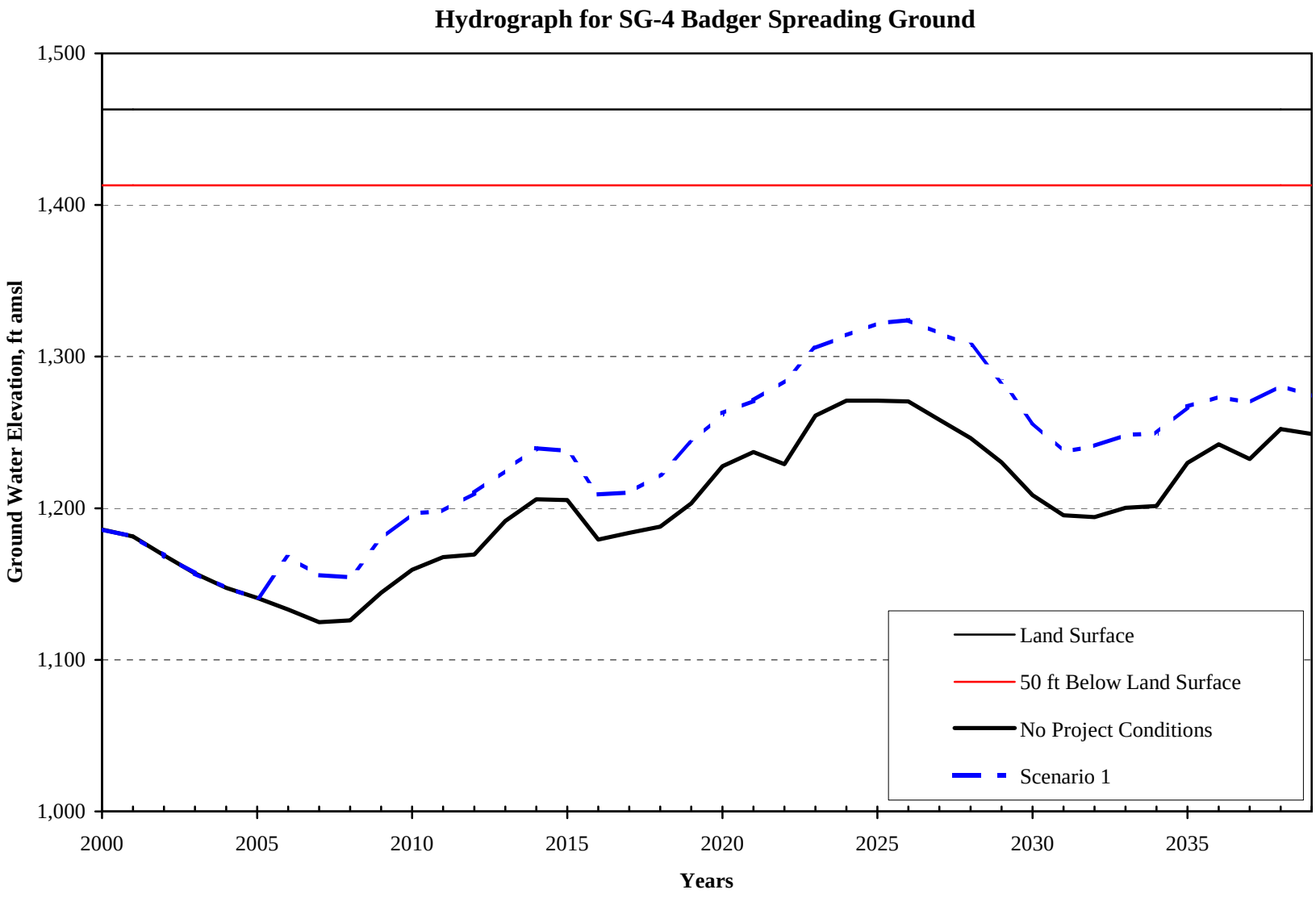

Hydrograph for SG-4 Badger Spreading Ground
1,500
1,400
1,300
1,200
1,100
1,000
Ground Water Elevation, ft amsl
2000
2005
2010
2015
2020
2025
2030
2035
Years
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1

Figure 8(ac)

Hydrograph for SG-5 Patton Spreading Ground

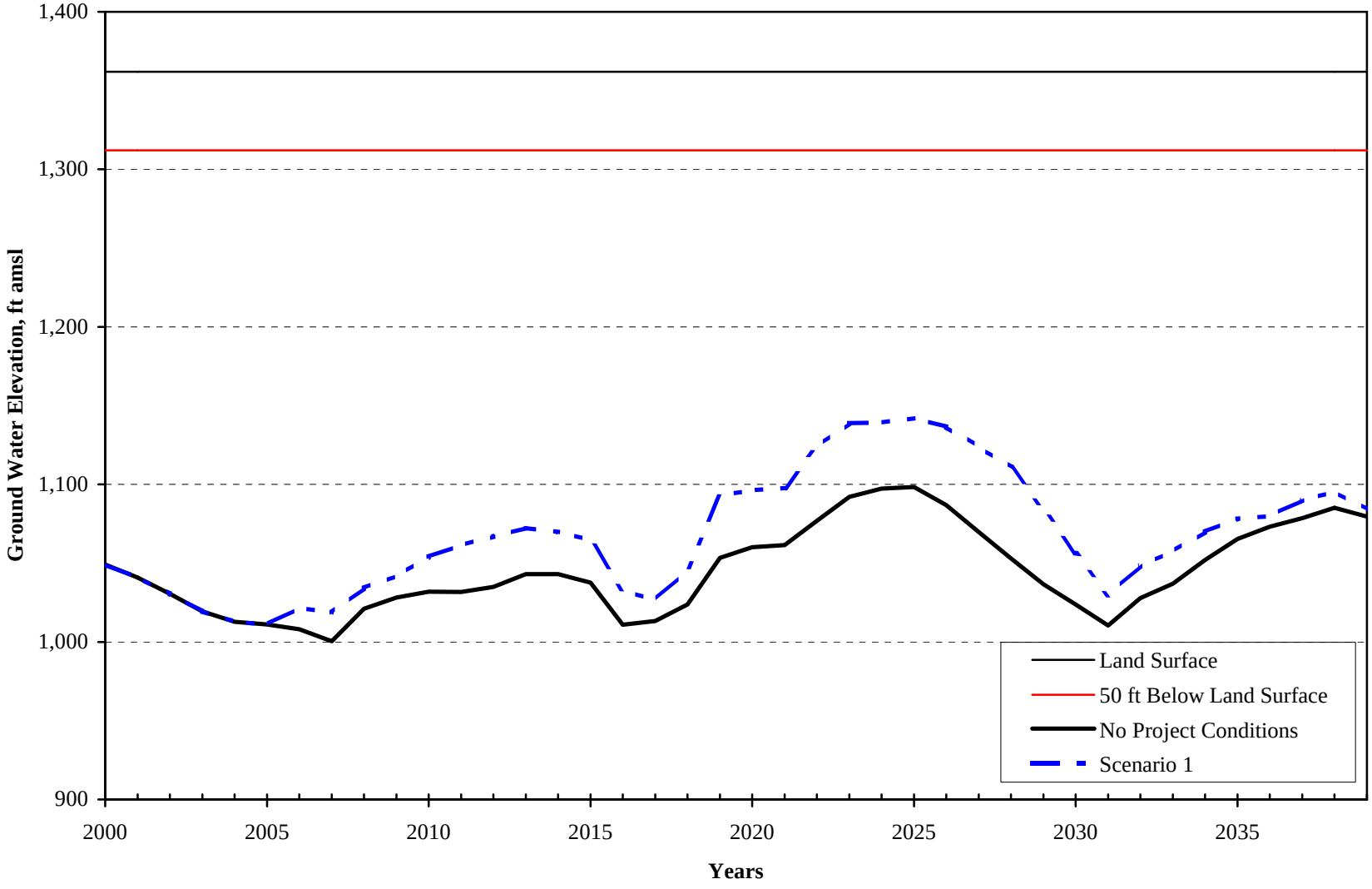


Figure 8(ad)

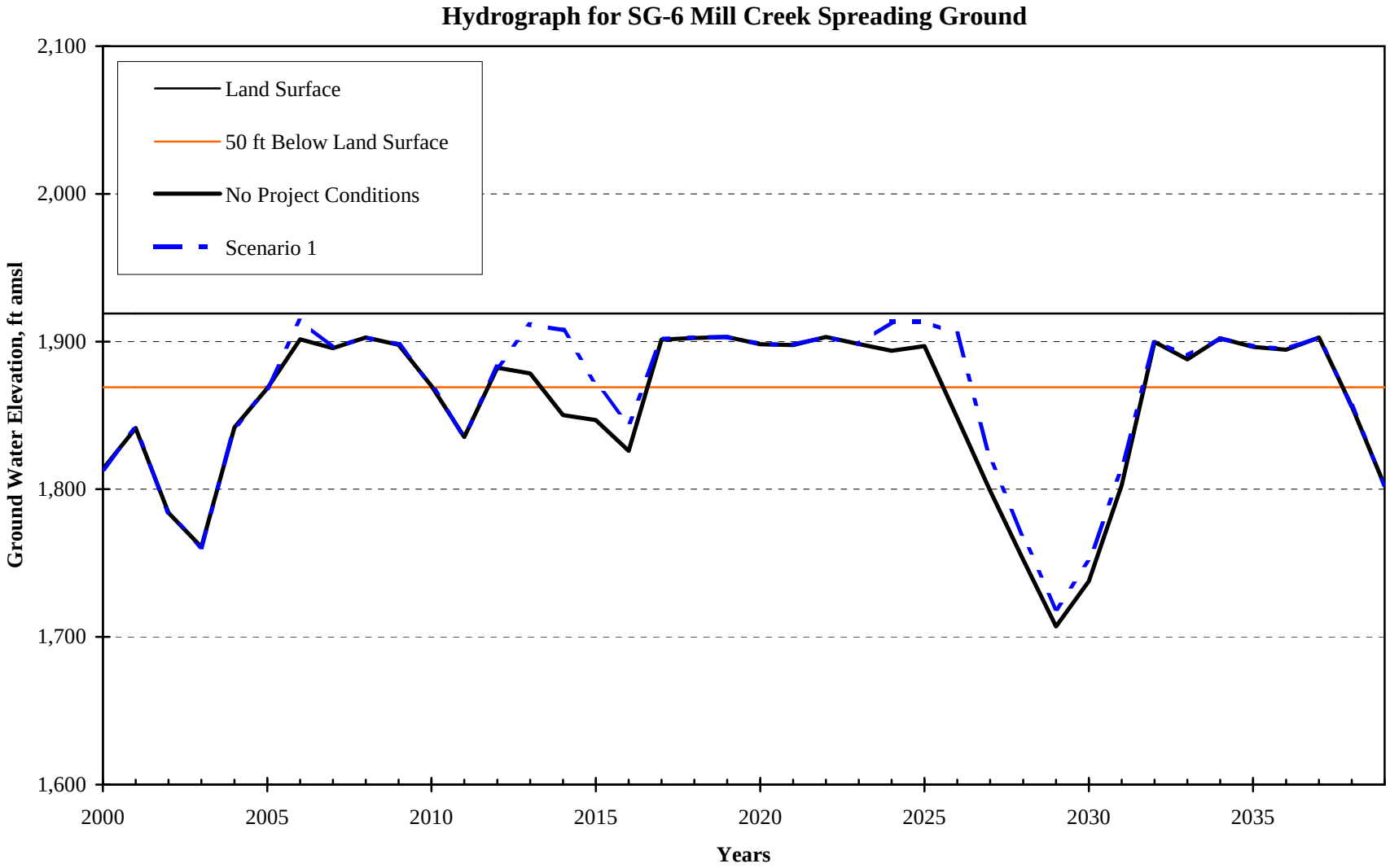

Hydrograph for SG-6 Mill Creek Spreading Ground
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
2,100
2,000
1,900
1,800
1,700
1,600
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(ae)

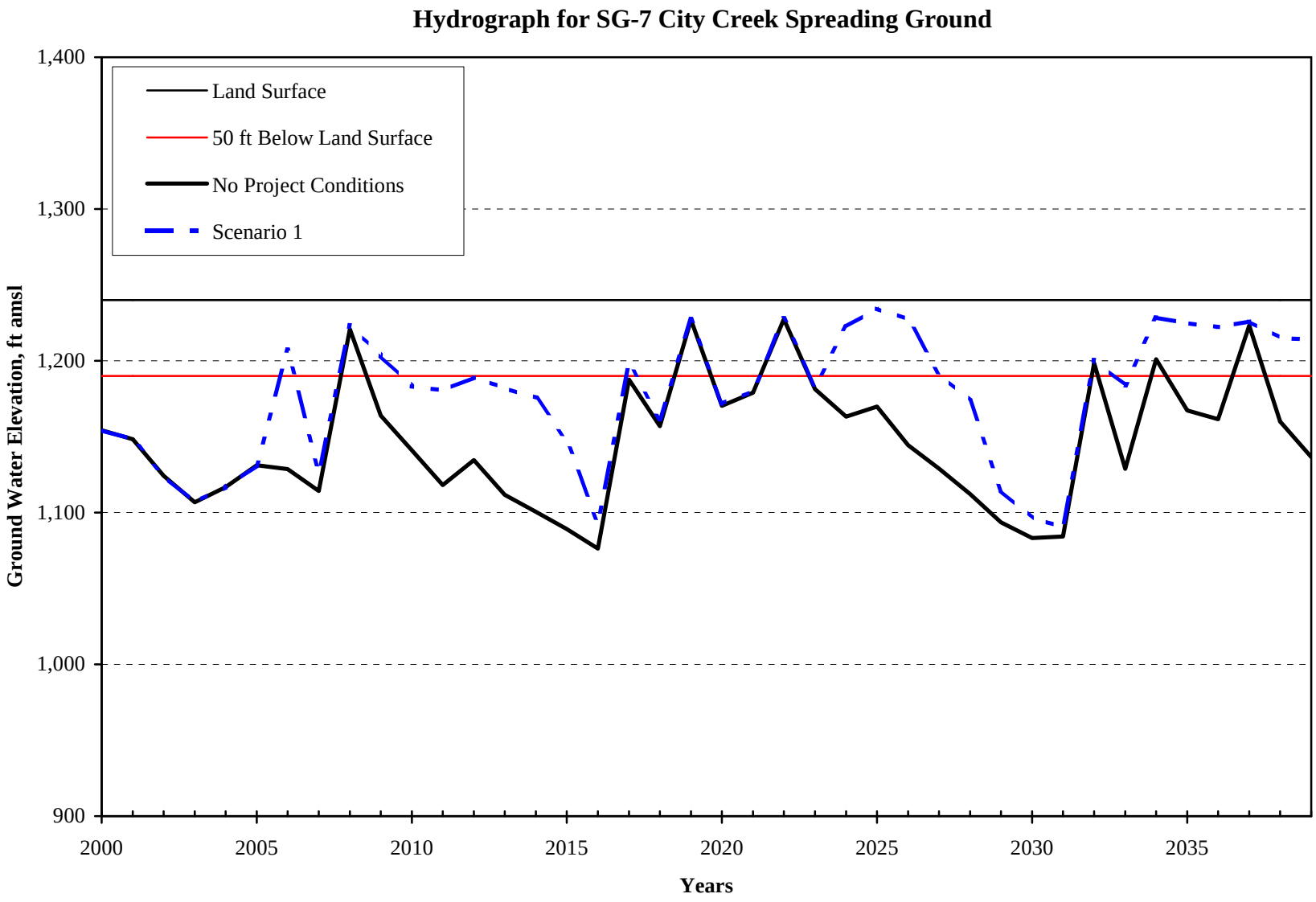

Hydrograph for SG-7 City Creek Spreading Ground
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,400
1,300
1,200
1,100
1,000
900
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(af)

Hydrograph for SG-8 East Twin Creek Spreading Ground

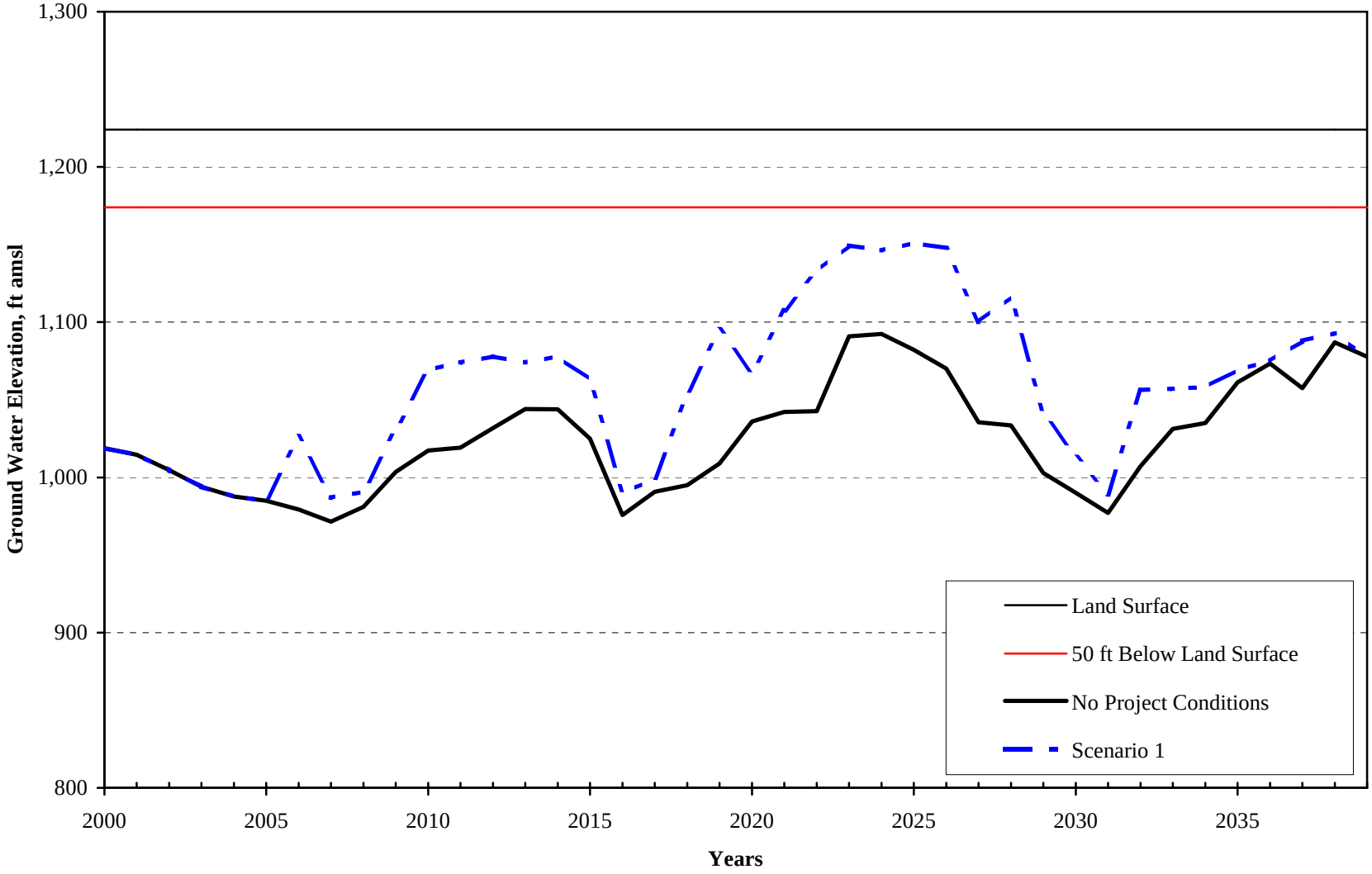


Figure 8(ag)

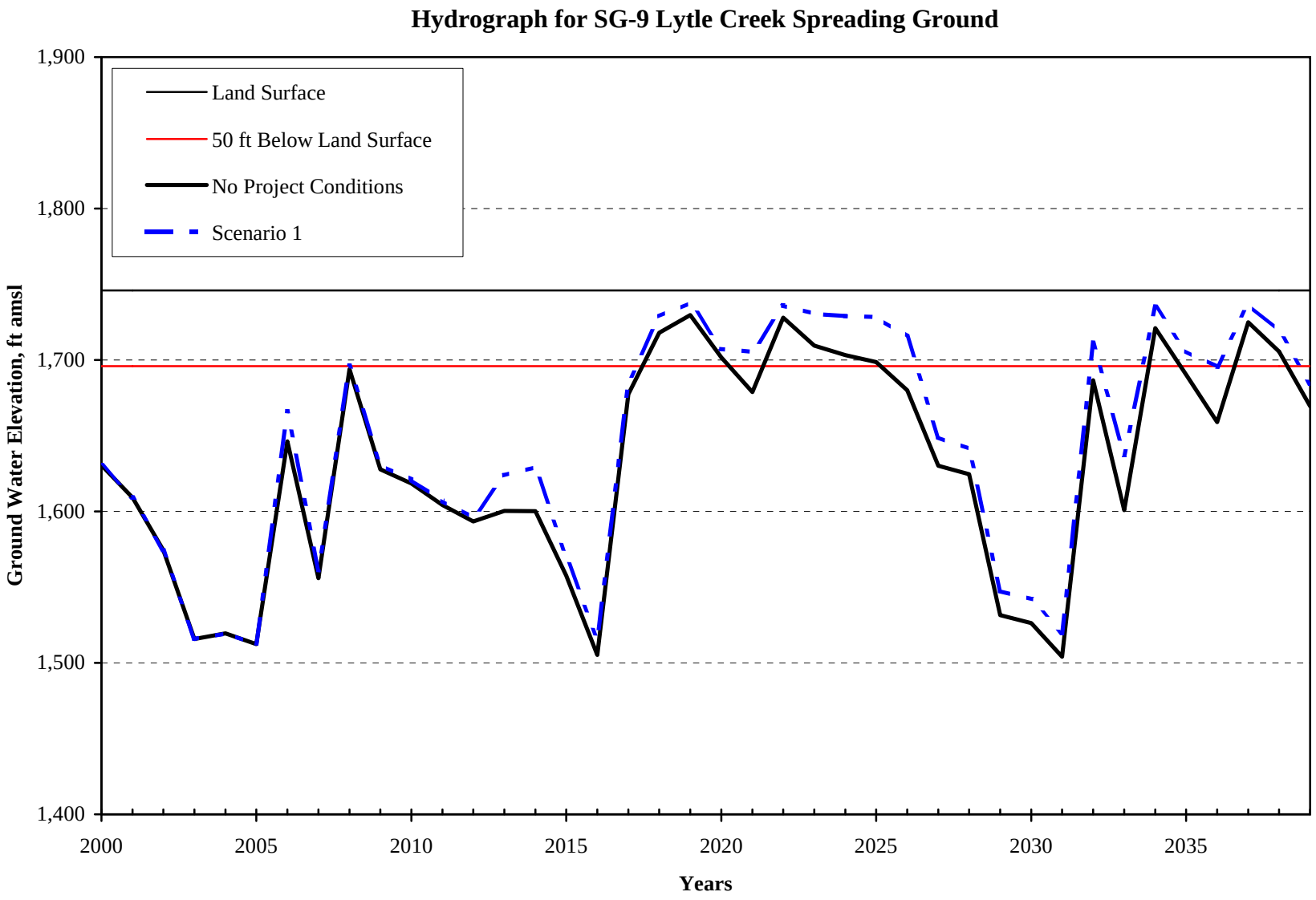

Hydrograph for SG-9 Lytle Creek Spreading Ground
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,900
1,800
1,700
1,600
1,500
1,400
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(ah)

Hydrograph for City of Riverside Well Cooley A

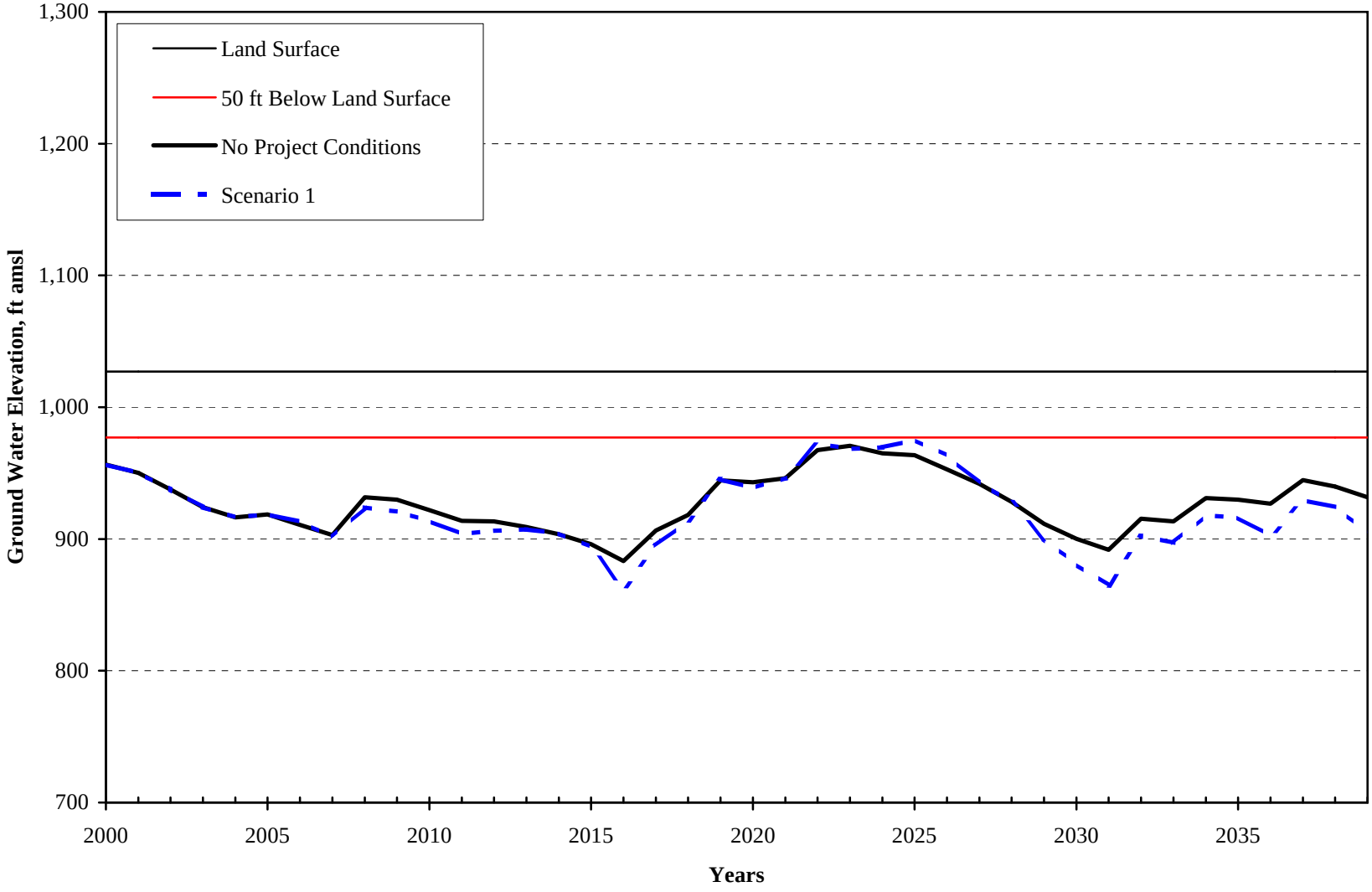


Figure 8(ai)

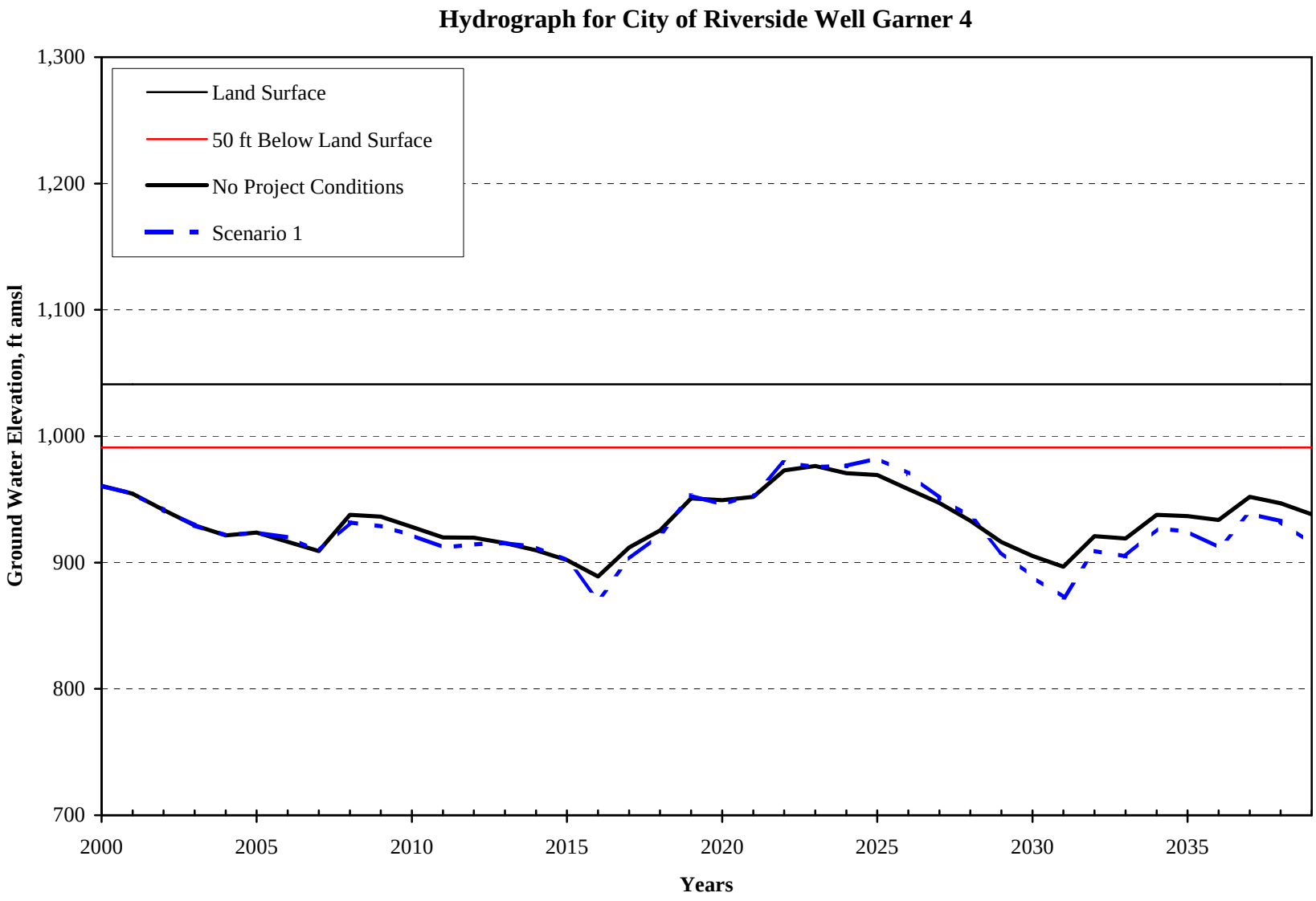

Hydrograph for City of Riverside Well Garner 4
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,300
1,200
1,100
1,000
900
800
700
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(aj)

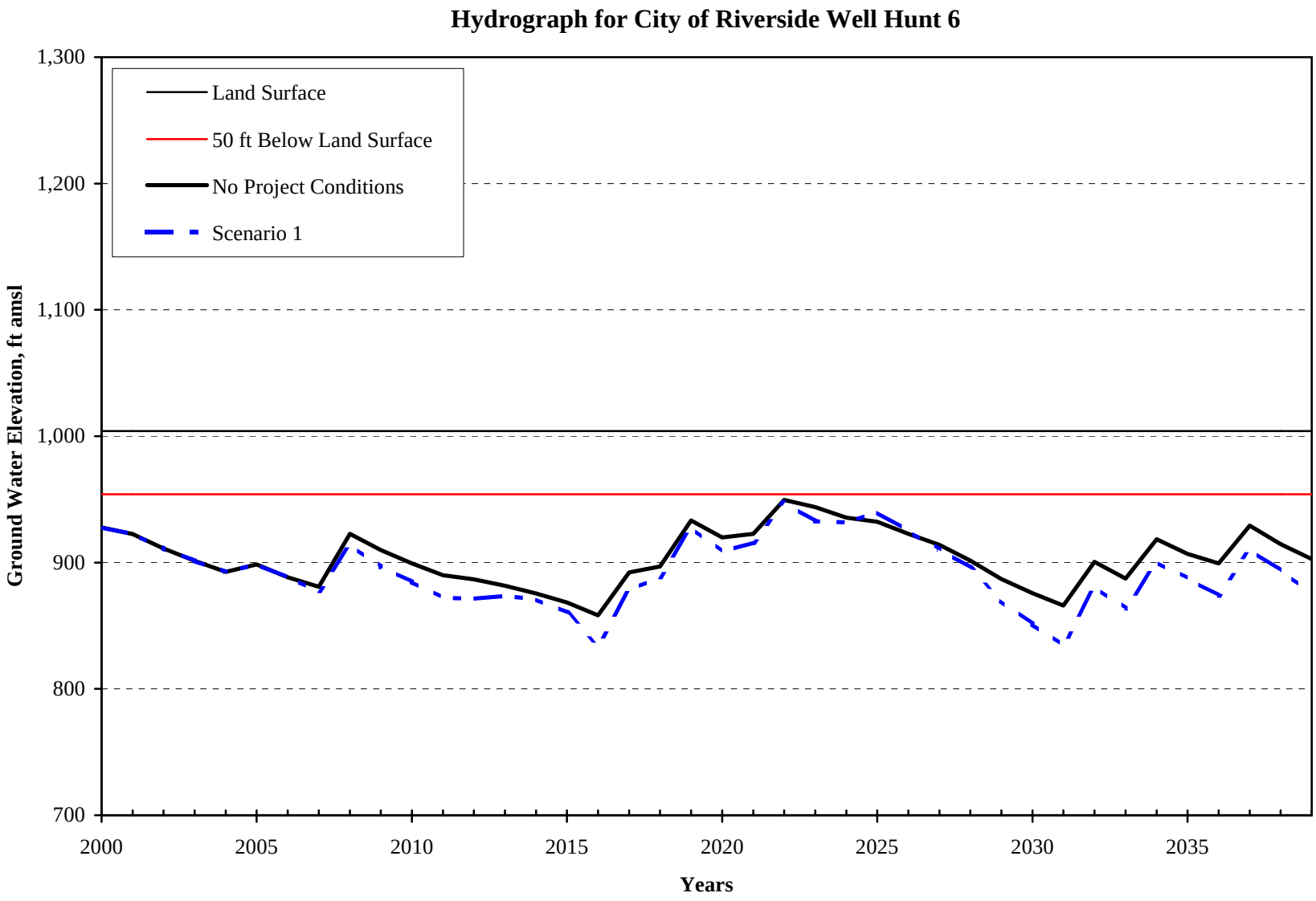

Hydrograph for City of Riverside Well Hunt 6
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,300
1,200
1,100
1,000
900
800
700
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(ak)

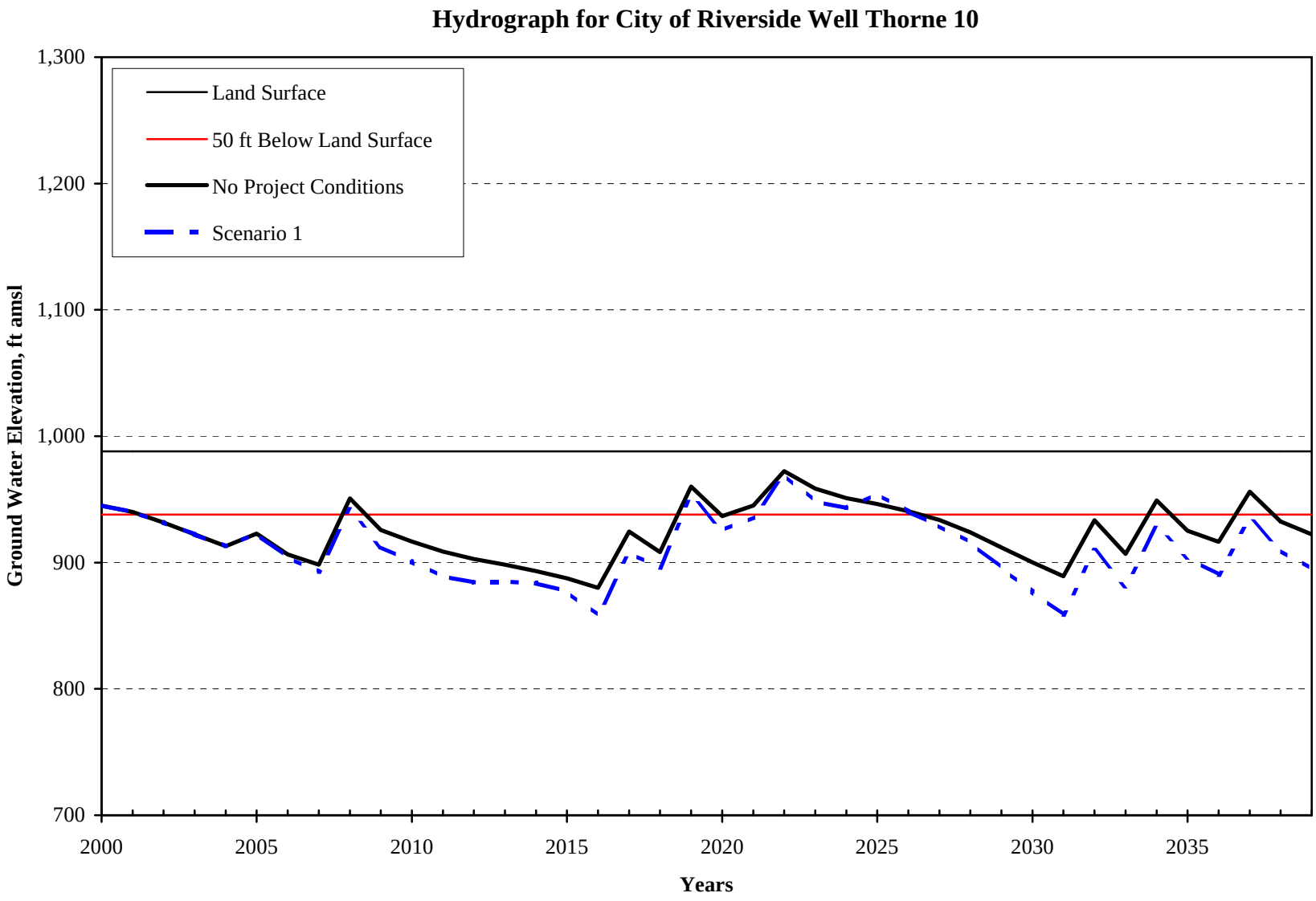
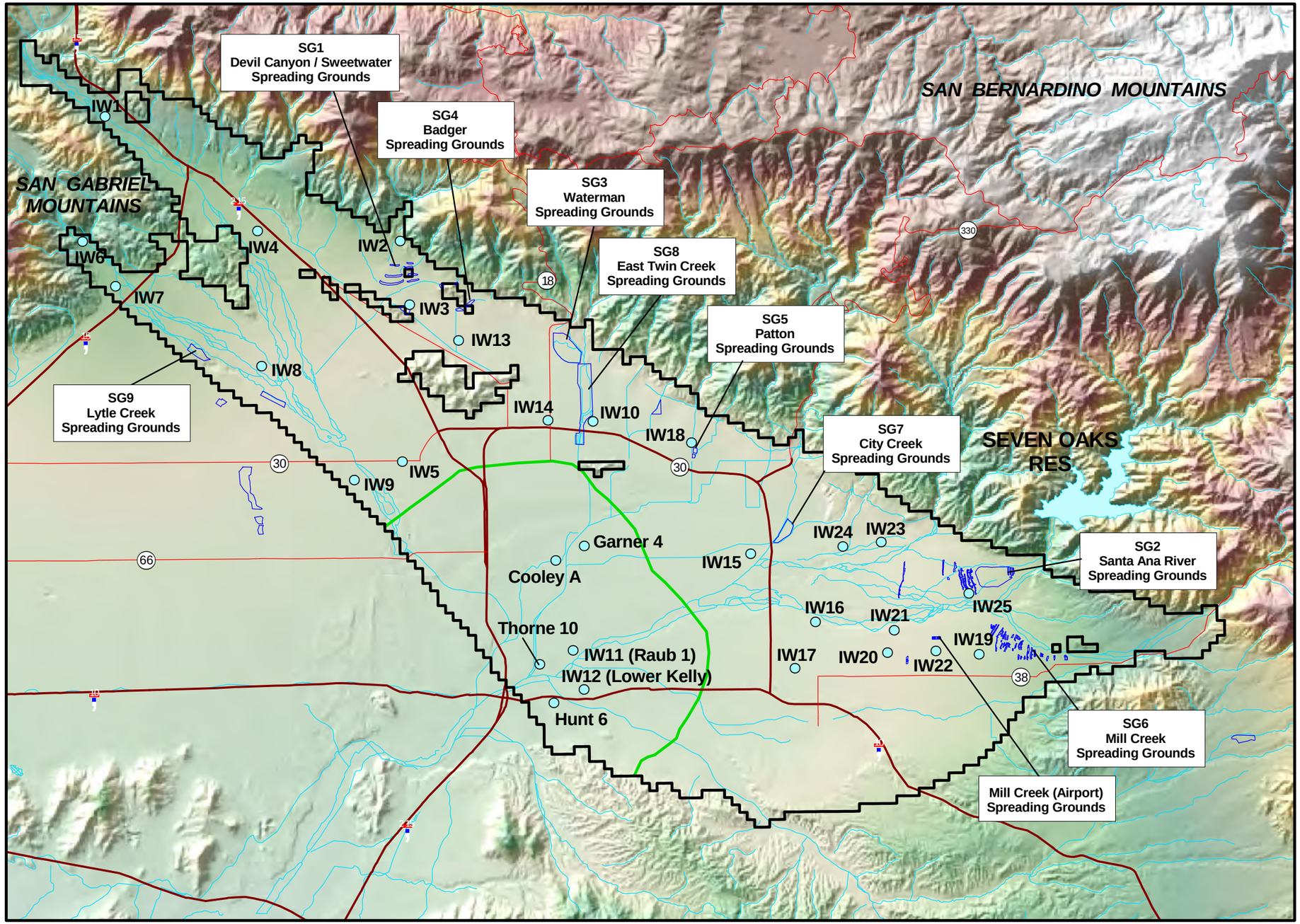

Hydrograph for City of Riverside Well Thorne 10
Land Surface
50 ft Below Land Surface
No Project Conditions
Scenario 1
Ground Water Elevation, ft amsl
1,300
1,200
1,100
1,000
900
800
700
2000
2005
2010
2015
2020
2025
2030
2035
Years

Figure 8(al)

LOCATIONS OF INDEX WELLS AND ARTIFICIAL RECHARGE OF IMPORTED WATER



EXPLANATION

- Location of Index Well
- Spreading Grounds or Basins
- Active/Inactive Cell Boundary
- Pressure Zone
- Stream or River
- Freeway
- State Highway

29-MAR-05

Prepared by: DWB

Map Projection:
UTM Zone 11, NAD27

Source:
Danskin, W.R., McPherson, K.R., and Woolfenden, L.R., "Hydrology, description of computer models, and evaluation of selected water-management alternatives in the San Bernardino area, California" US. Geological Survey, draft in preparation.

NORTH

0 2 4 Miles

GEOSCIENCE
GEOSCIENCE Support Services, Inc.
P.O. Box 220, Claremont, CA 91711
Tel: (909) 920-0707 Fax: (909) 920-0403
www.gssiwater.com

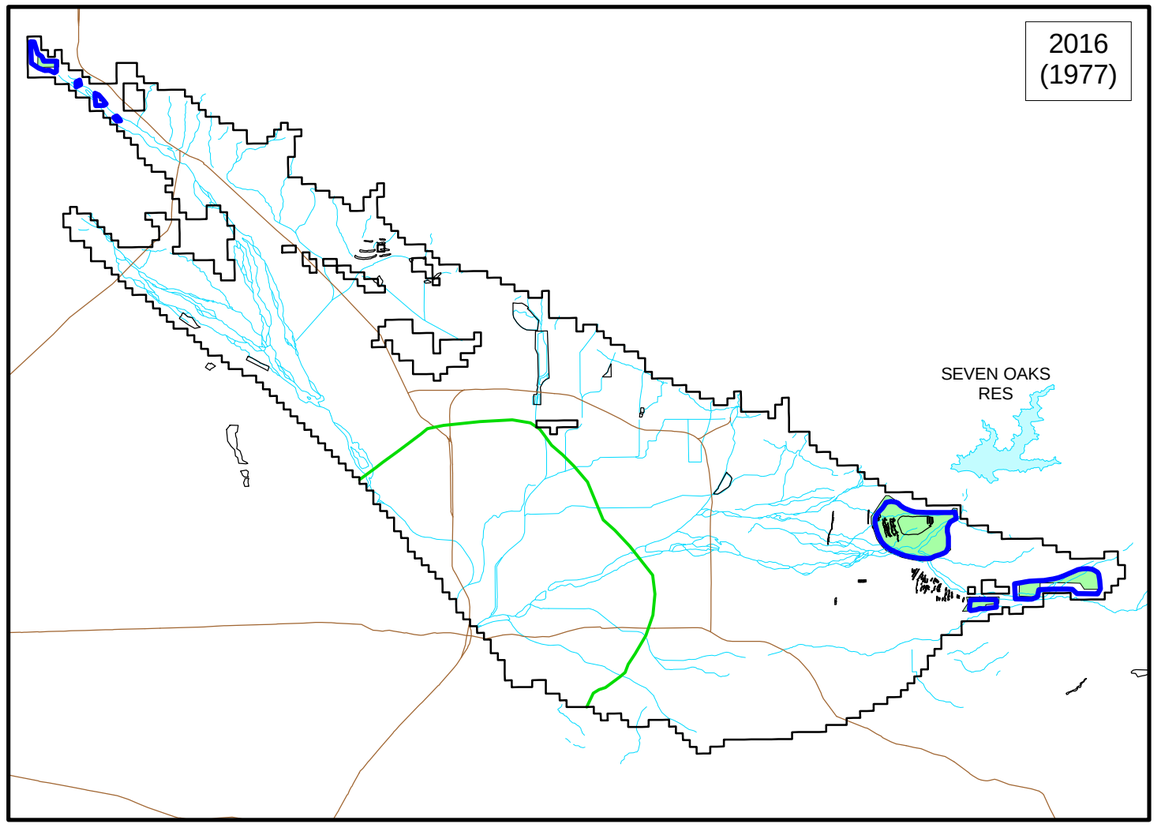
Figure 9

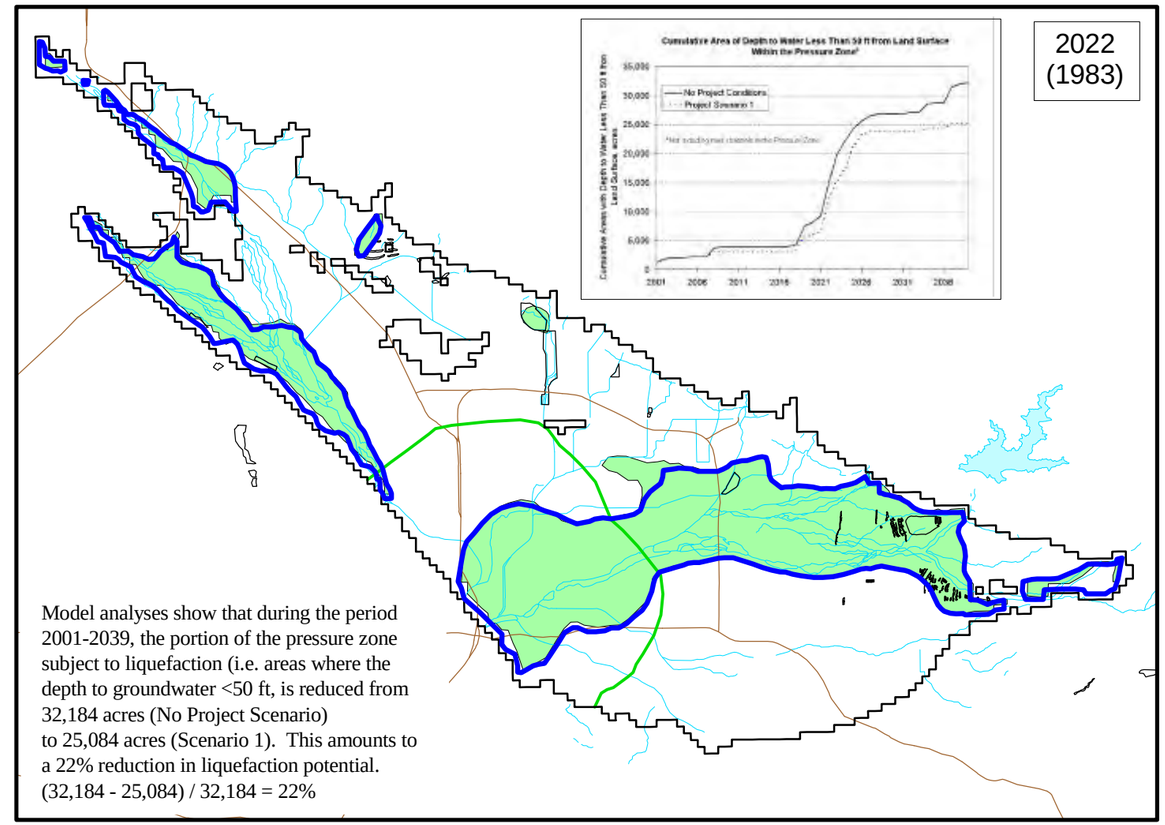
GIS_proj\western_mwd_riv-cor_feeder\wmwd_riv-cor_feeder.apr

WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE
RIVERSIDE-CORONA FEEDER PROJECT

DEPTH TO GROUNDWATER LESS THAN 50 FT FROM LAND SURFACE FOR NO PROJECT CONDITION AND SCENARIO 1 YEARS 2016 AND 2022





Model analyses show that during the period 2001-2039, the portion of the pressure zone subject to liquefaction (i.e. areas where the depth to groundwater <50 ft, is reduced from 32,184 acres (No Project Scenario) to 25,084 acres (Scenario 1). This amounts to a 22% reduction in liquefaction potential.
(32,184 - 25,084) / 32,184 = 22%

29-MAR-05

EXPLANATION

- No Project Condition Depth to Water Less Than 50 ft From Land Surface
- Scenario 1 Depth to Water Less Than 50 ft From Land Surface
- 2016 (1977) — Model Year (Hydrological Year)
- Pressure Zone
- Model Grid of the San Bernardino Basin Area Groundwater Model
- Streams or Rivers Within Groundwater Basin Boundary
- Spreading Grounds or Basins
- Freeway

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 3 6 Miles

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P.O. Box 220, Claremont, CA 91711
Tel: (909) 920-0707 Fax: (909) 920-0403
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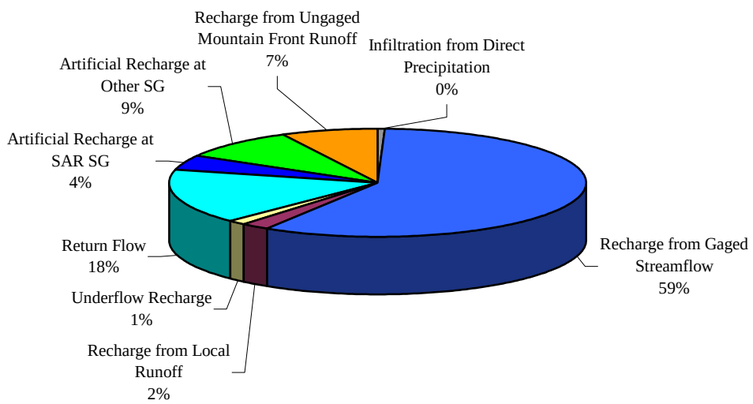
Figure 10

GIS_proj\western_mwd_riv-cor_feeder\model_figures\figs_group_1.apr

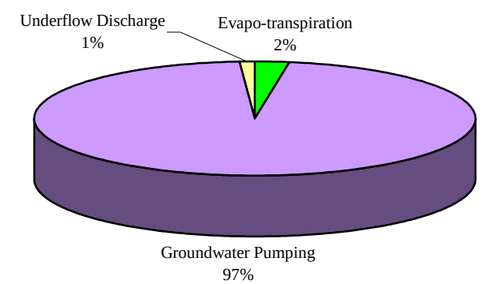
Comparisons of Groundwater Budgets for SBBA Between No Project Condition and Scenario 1 - 2001 to 2039

No Project Condition
Storage Decline 3,324 acre-ft/yr

INFLOW
(238,989 acre-ft/yr)

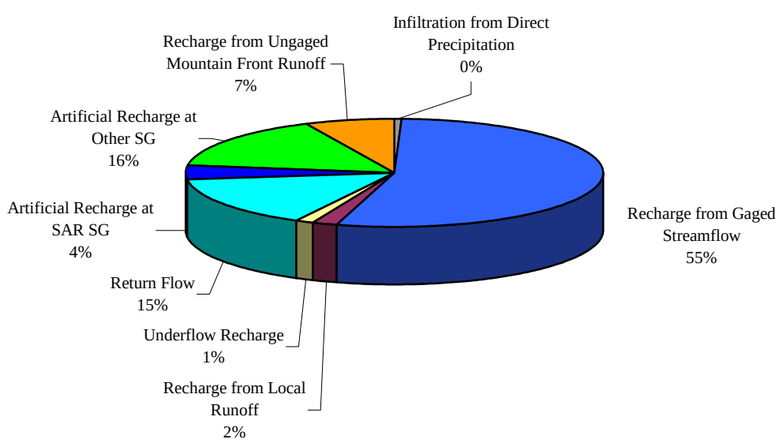


OUTFLOW
(242,313 acre-ft/yr)



Scenario 1
Storage Decline 3,281 acre-ft/yr

INFLOW
(257,809 acre-ft/yr)



OUTFLOW
(261,090 acre-ft/yr)

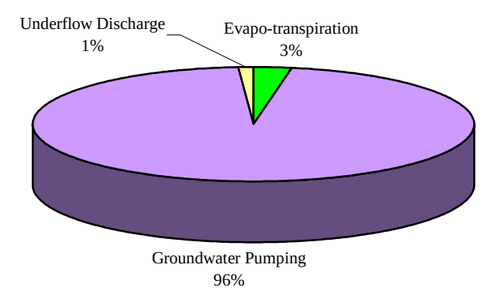
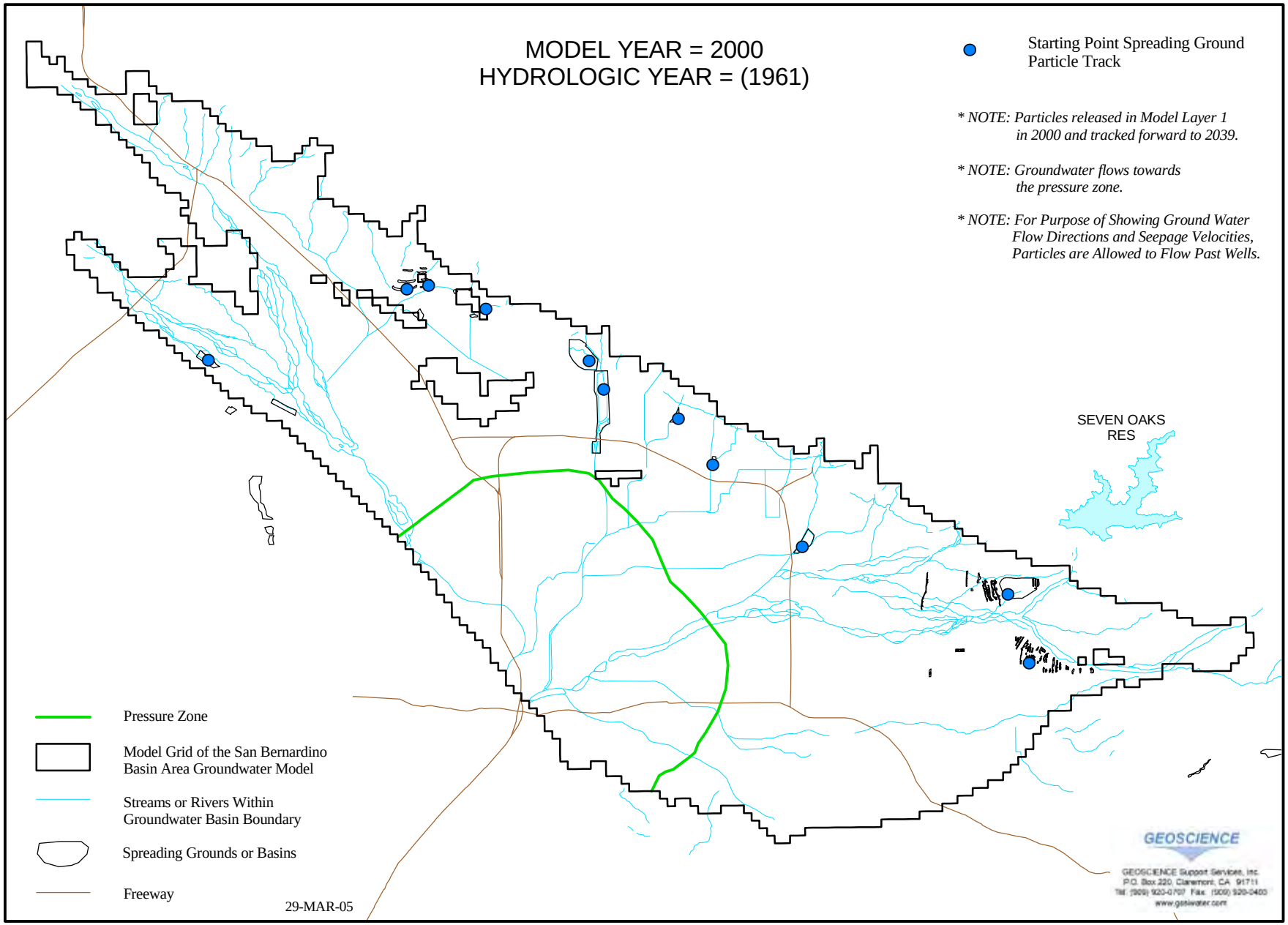


Figure 11



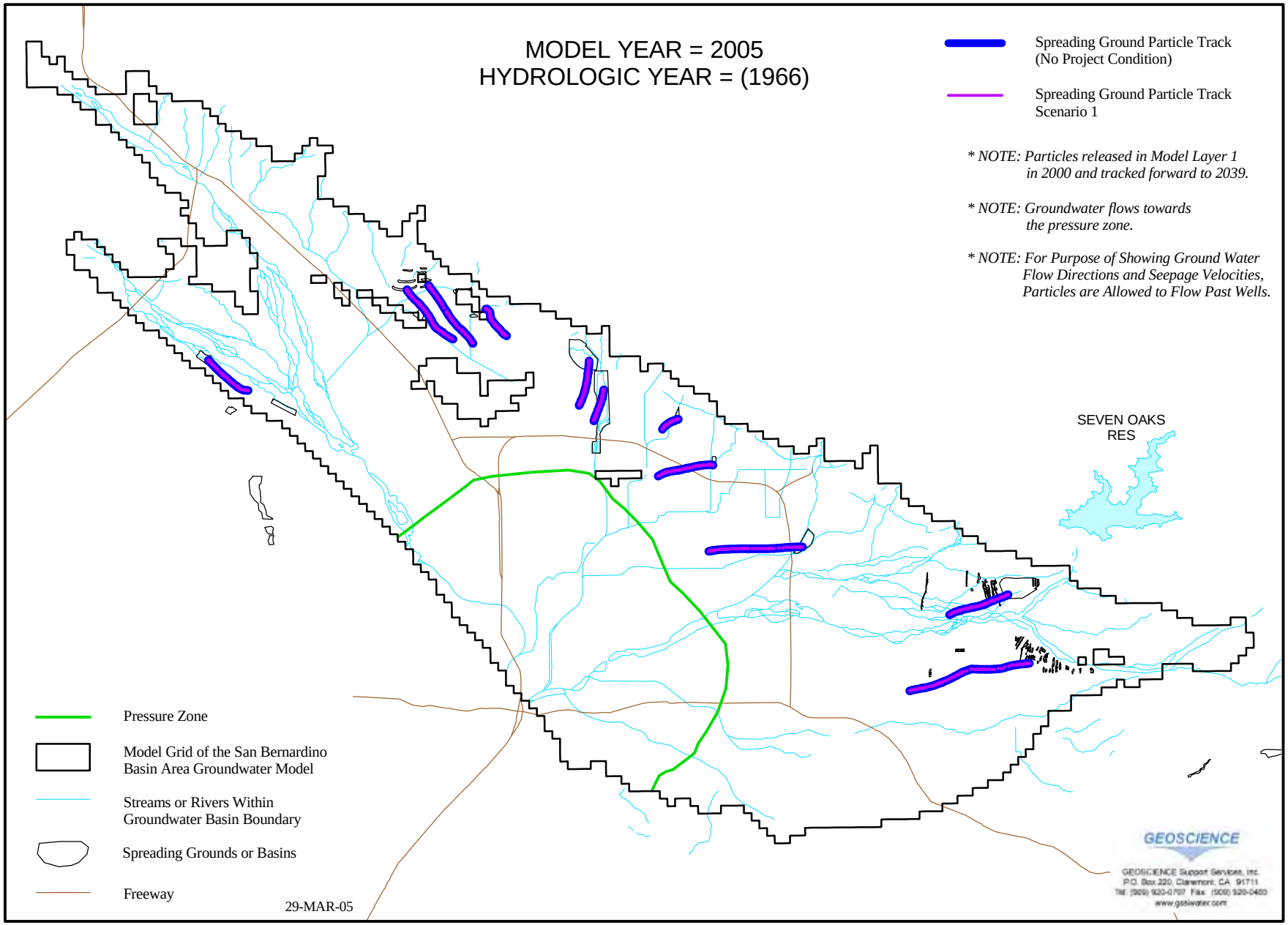
GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

NORTH

0 2 4 Miles

PARTICLE TRACKS FROM SPREADING GROUNDS,
NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2000

Figure 12(a)



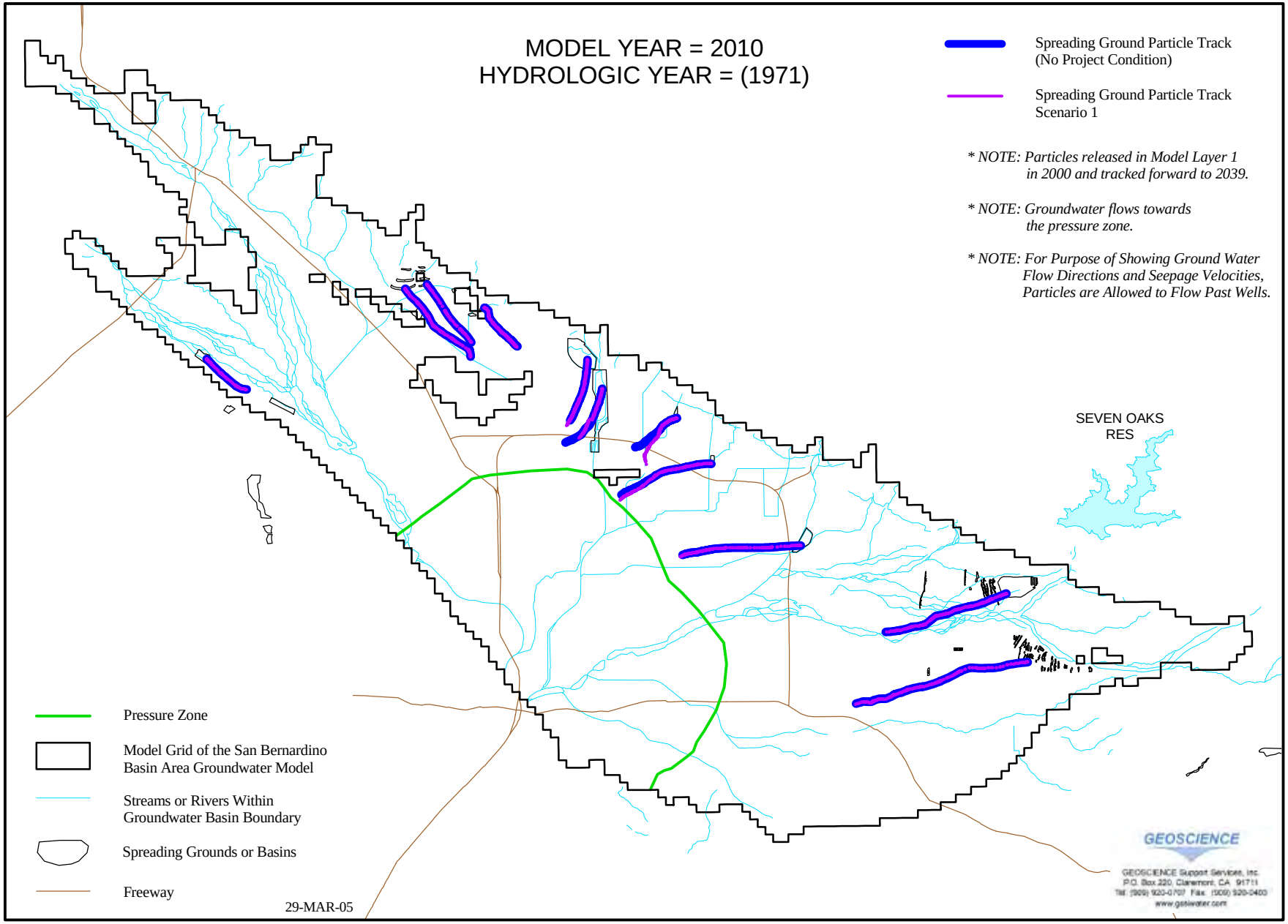
GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

NORTH

0 2 4 Miles

PARTICLE TRACKS FROM SPREADING GROUNDS, NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2005

Figure 12(b)



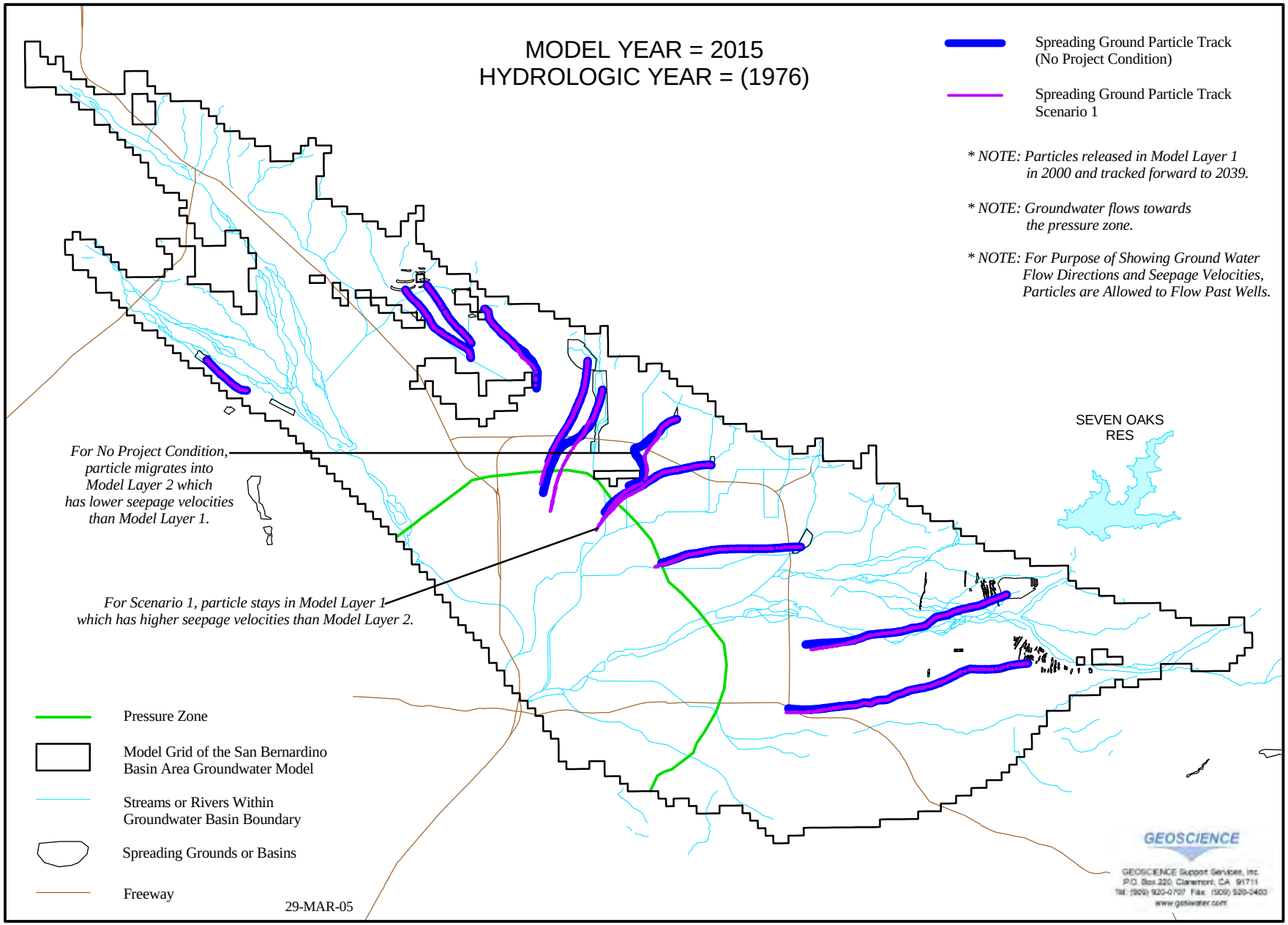
NORTH

0 2 4 Miles

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

PARTICLE TRACKS FROM SPREADING GROUNDS, NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2010

Figure 12(c)



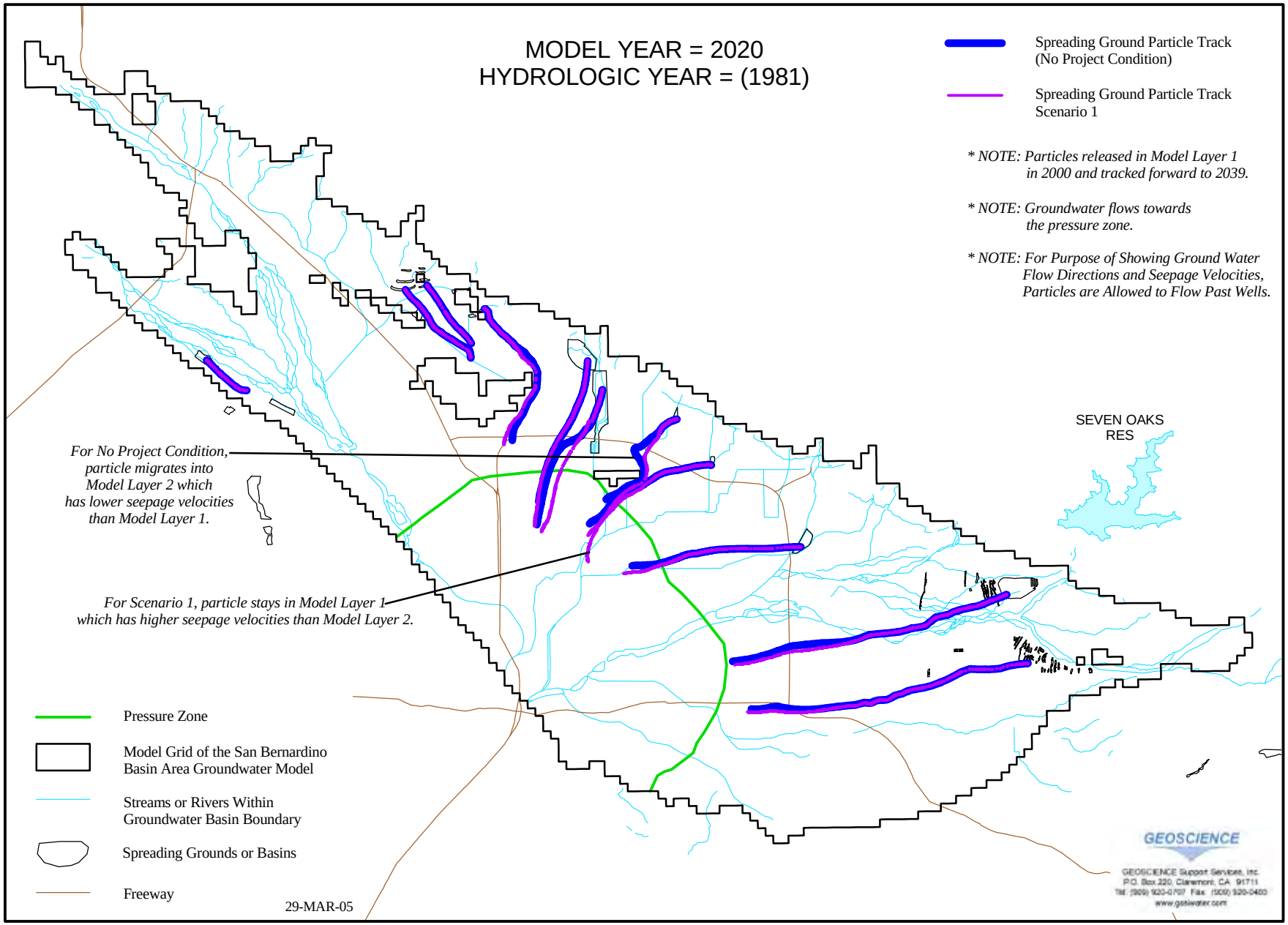
NORTH

0 2 4 Miles

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

PARTICLE TRACKS FROM SPREADING GROUNDS, NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2015

Figure 12(d)



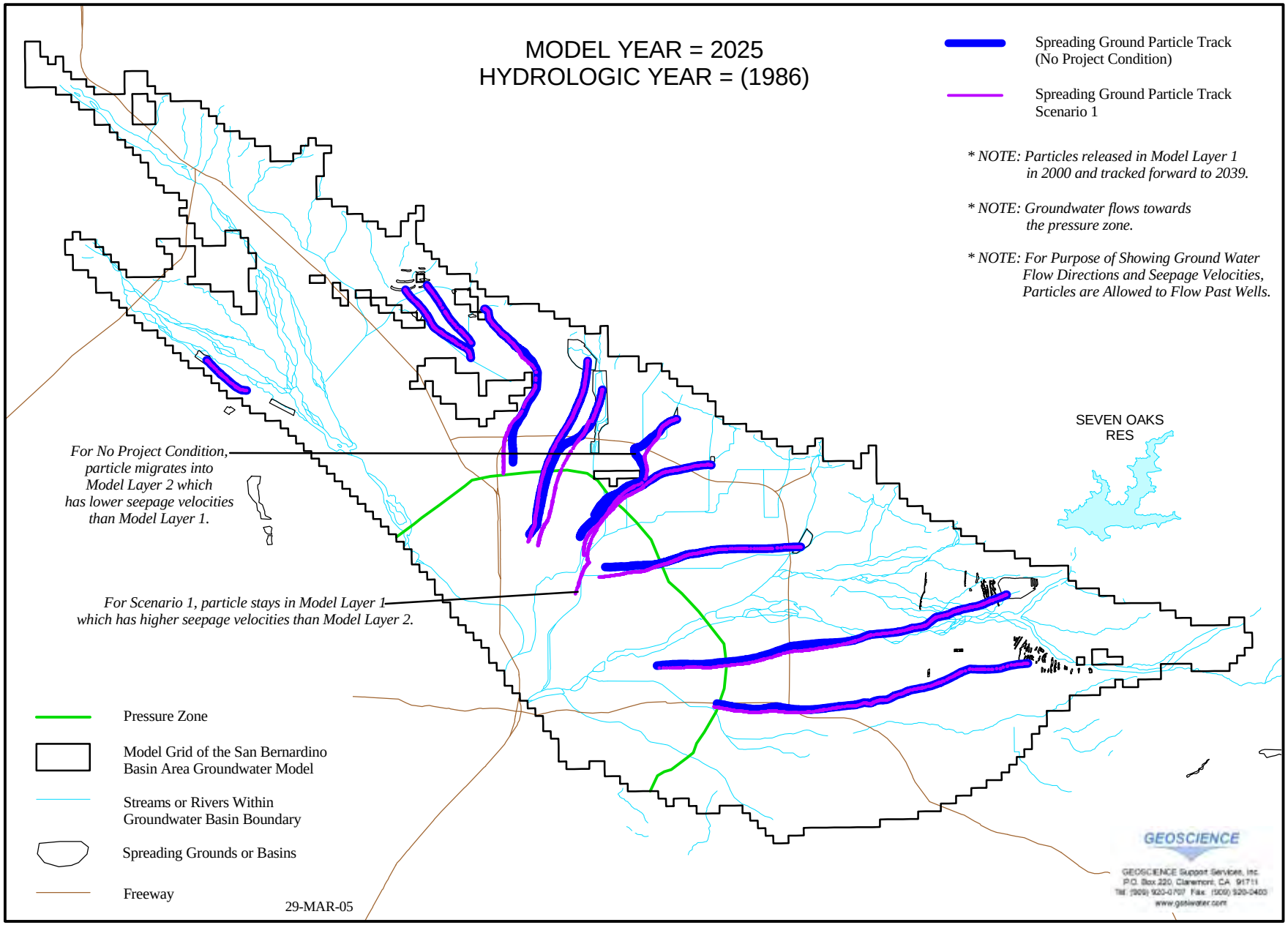
NORTH

0 2 4 Miles

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

PARTICLE TRACKS FROM SPREADING GROUNDS, NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2020

Figure 12(e)



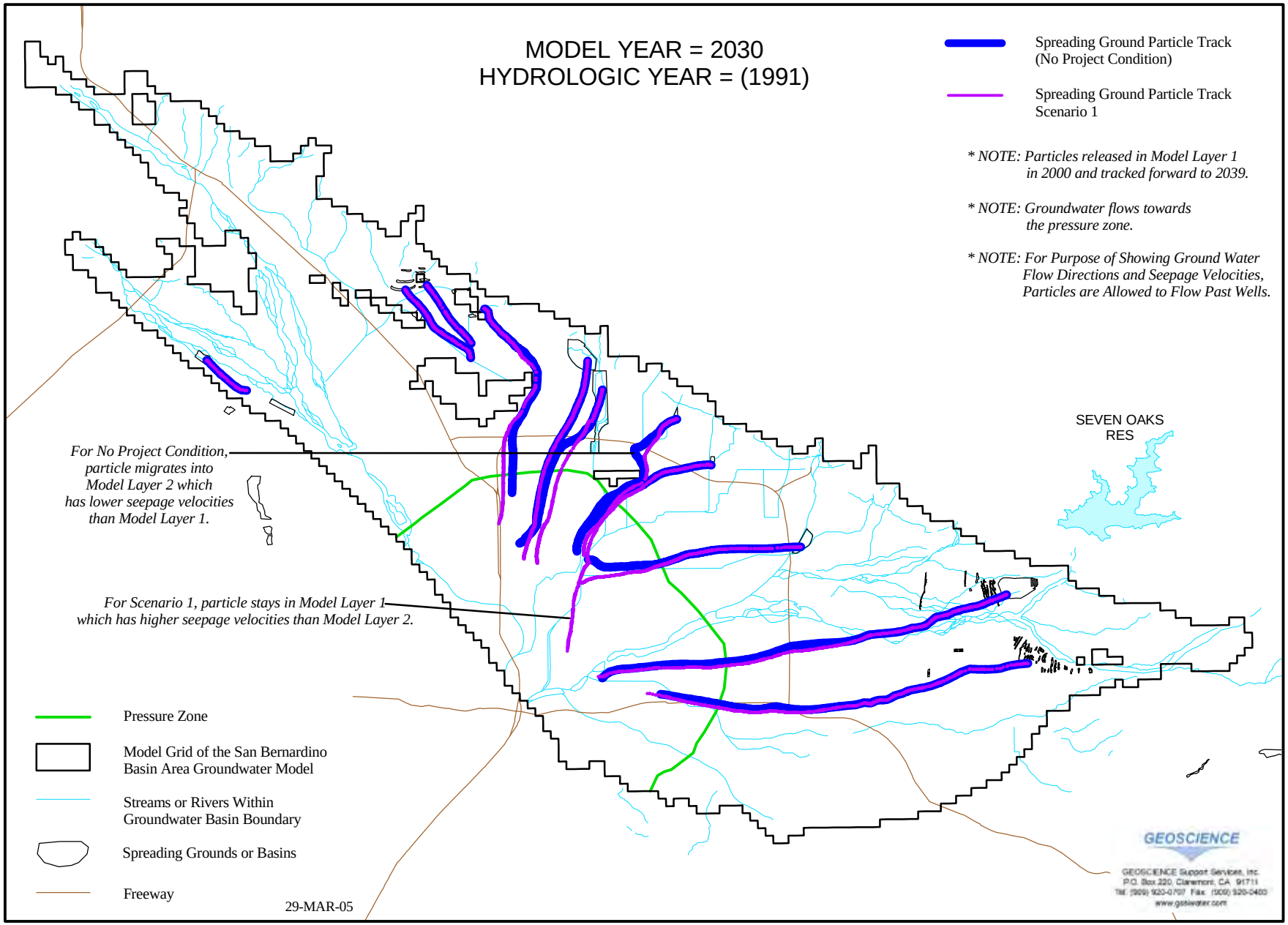
NORTH

0 2 4 Miles

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

PARTICLE TRACKS FROM SPREADING GROUNDS, NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2025

Figure 12(f)



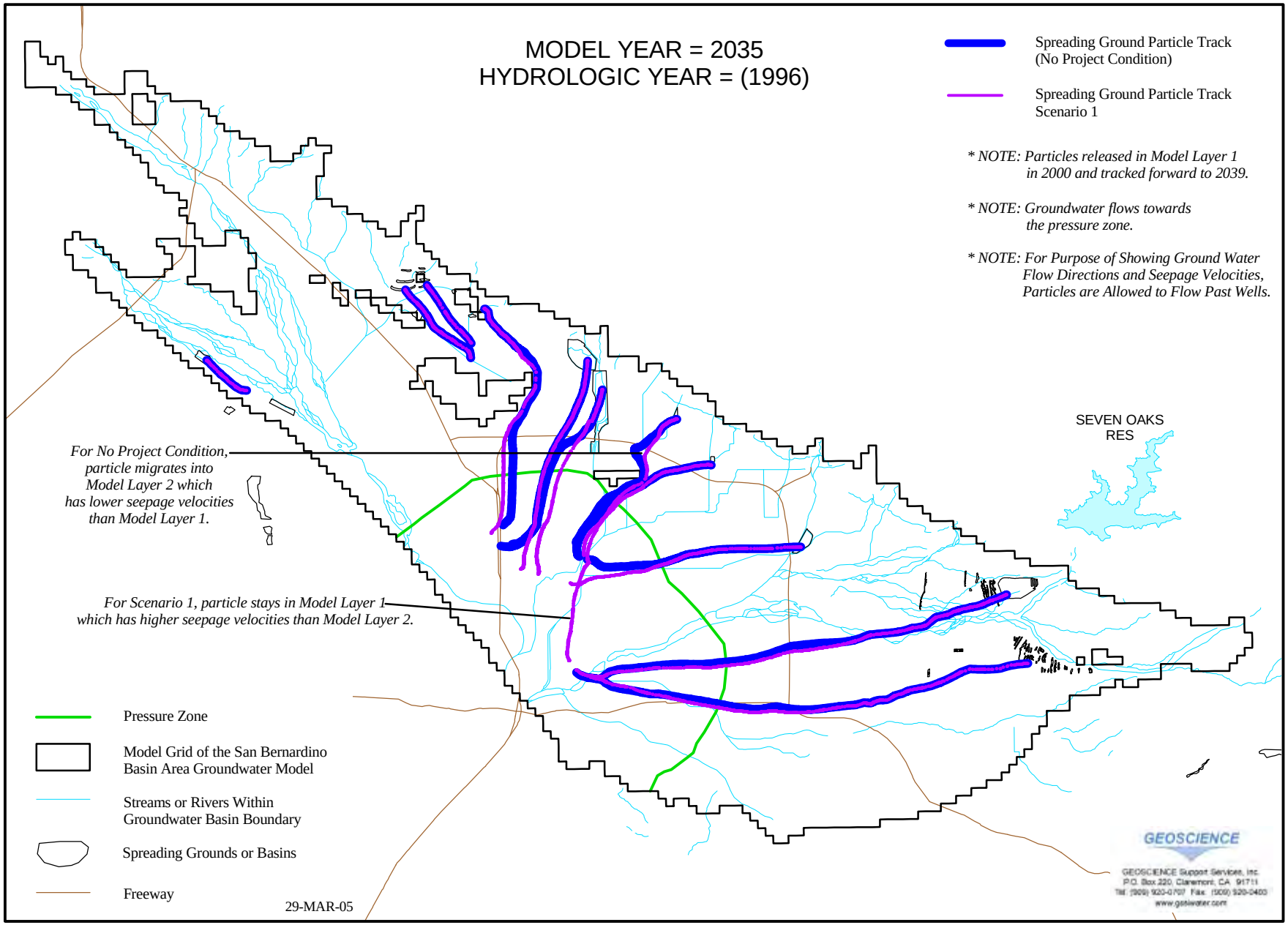
NORTH

0 2 4 Miles

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

PARTICLE TRACKS FROM SPREADING GROUNDS, NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2030

Figure 12(g)



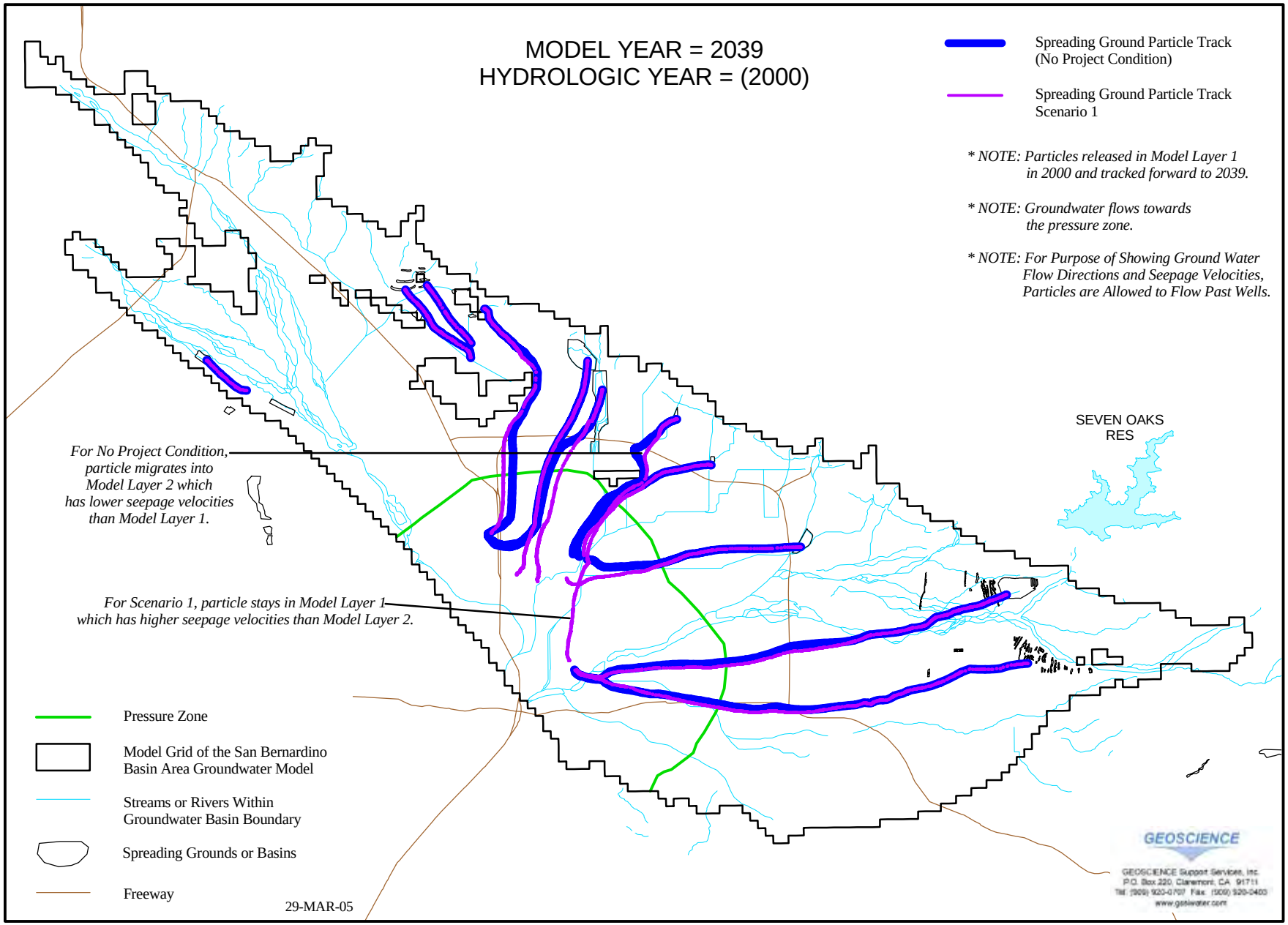
GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

NORTH

0 2 4 Miles

PARTICLE TRACKS FROM SPREADING GROUNDS, NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2035

Figure 12(h)



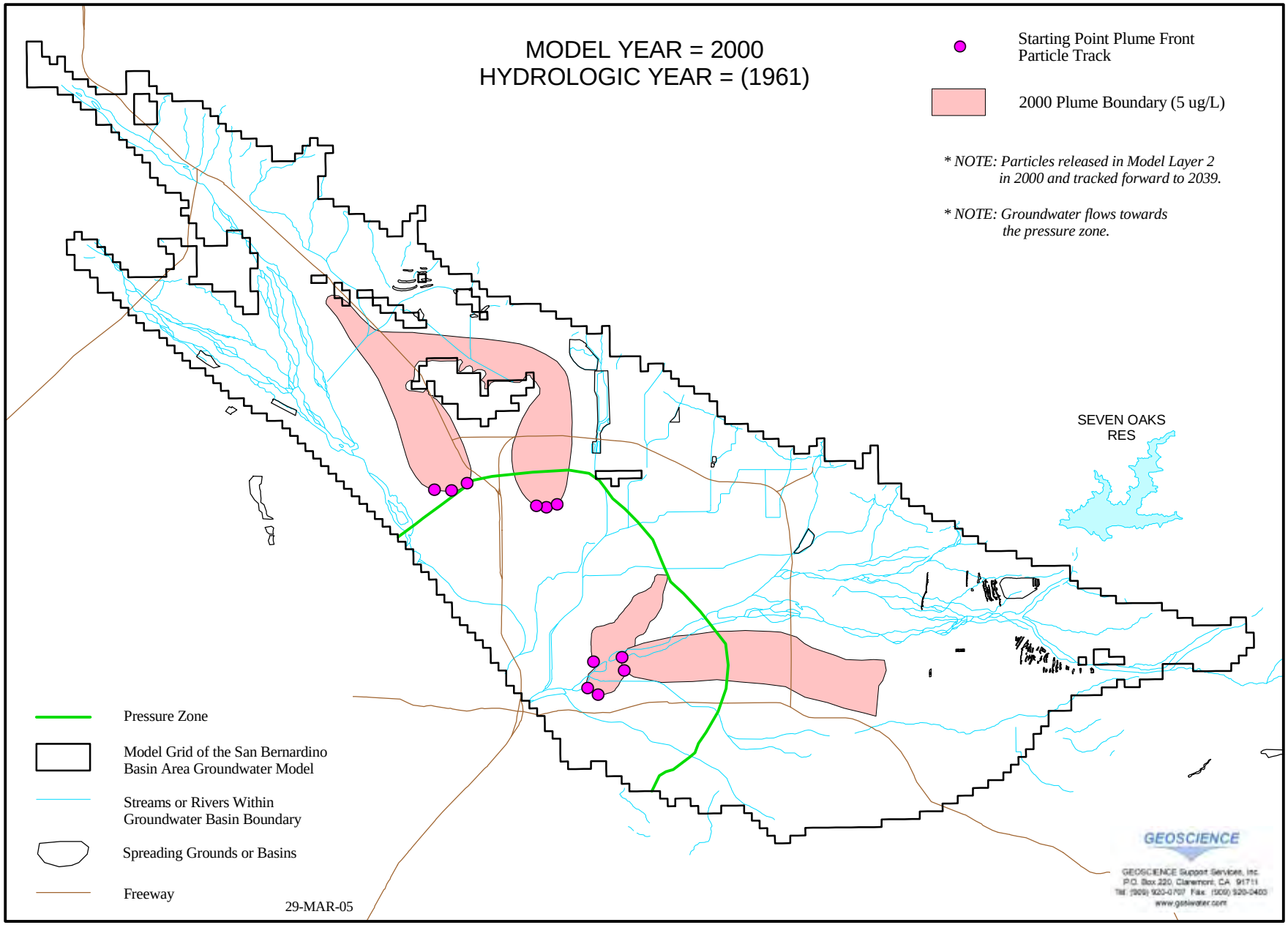
NORTH

0 2 4 Miles

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

PARTICLE TRACKS FROM SPREADING GROUNDS, NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2039

Figure 12(i)



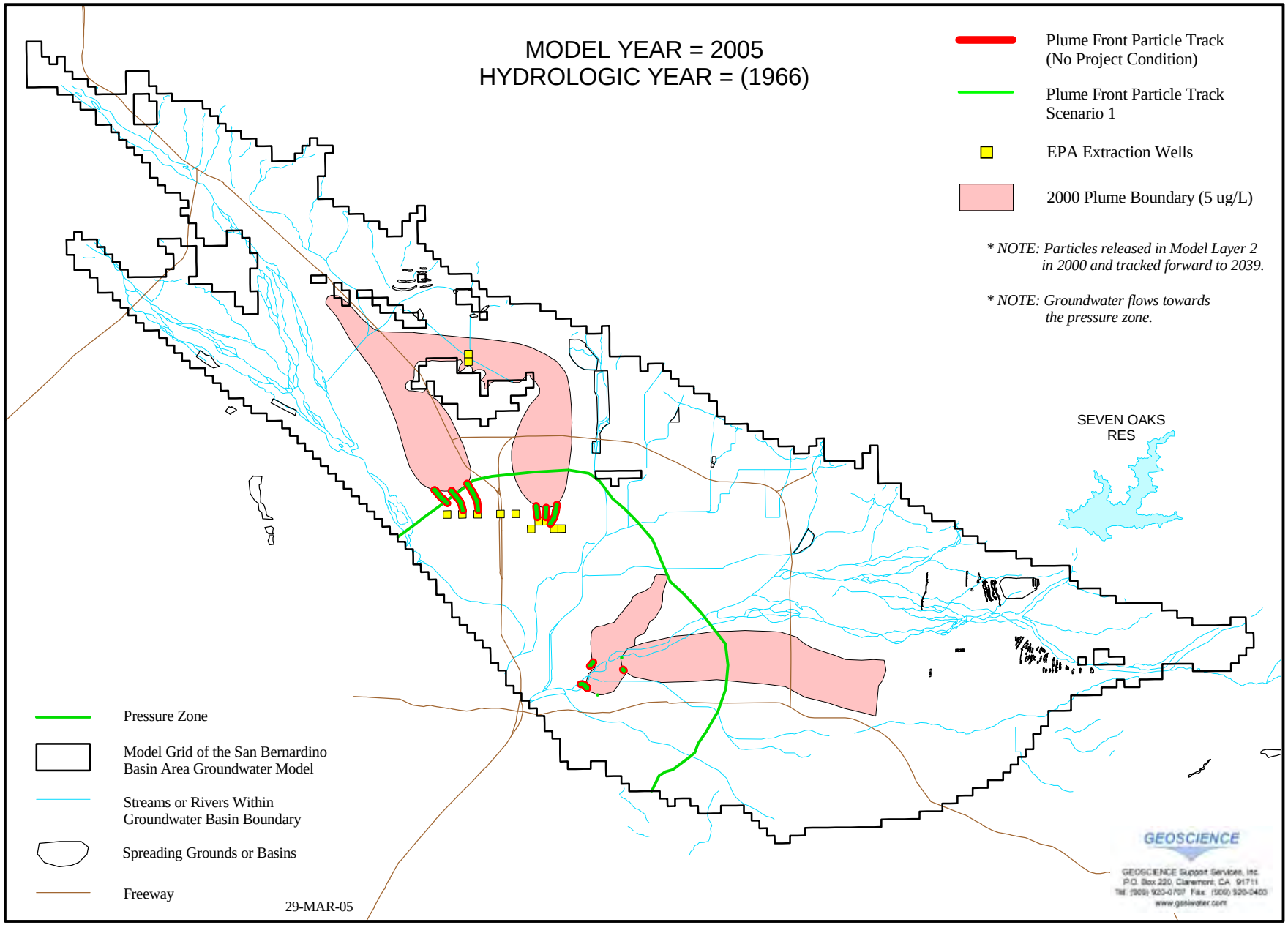
GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

NORTH

0 2 4 Miles

PARTICLE TRACKS FROM PLUME FRONTS,
NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2000

Figure 13(a)



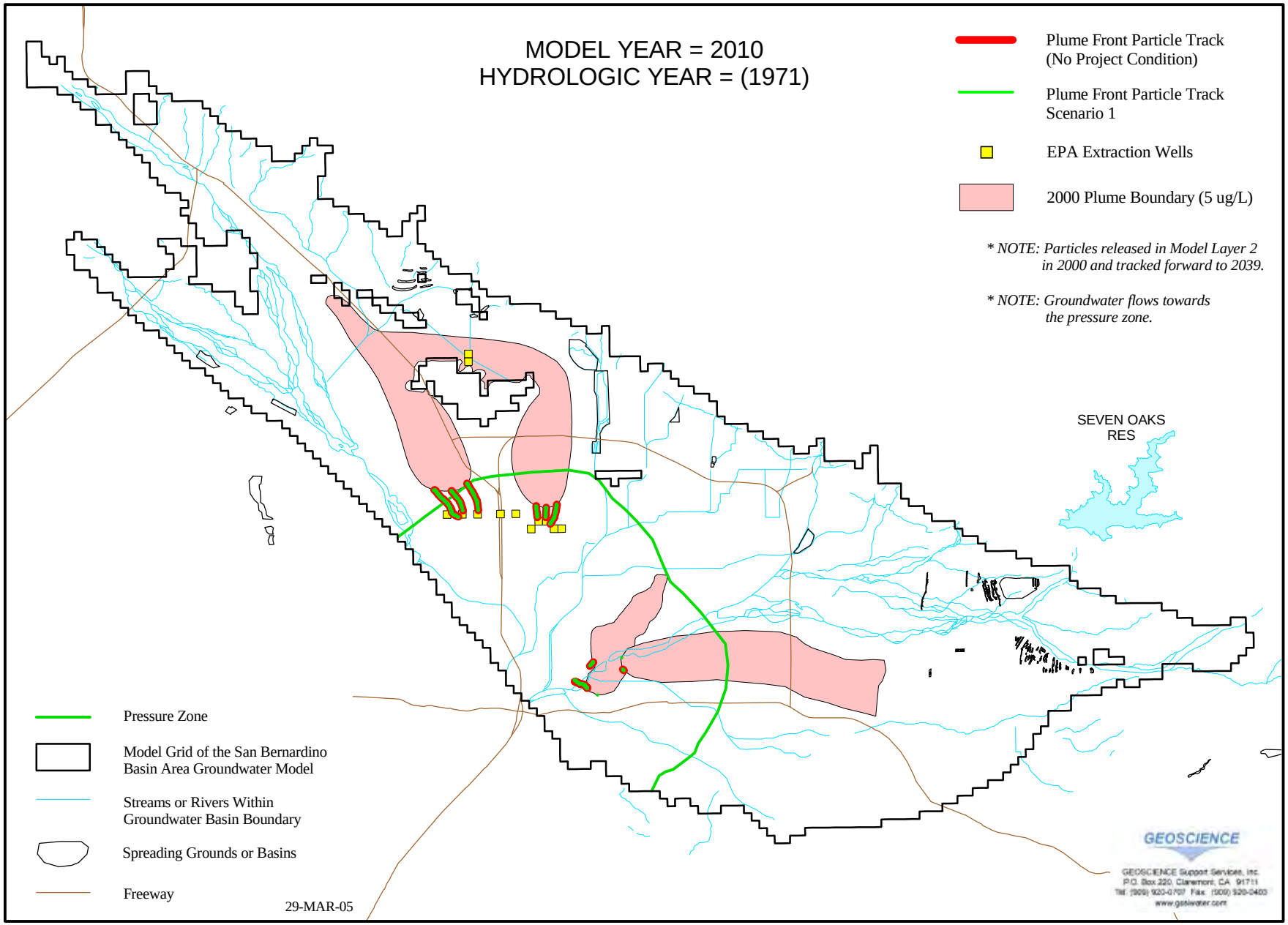
NORTH

0 2 4 Miles

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

PARTICLE TRACKS FROM PLUME FRONTS,
NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2005

Figure 13(b)



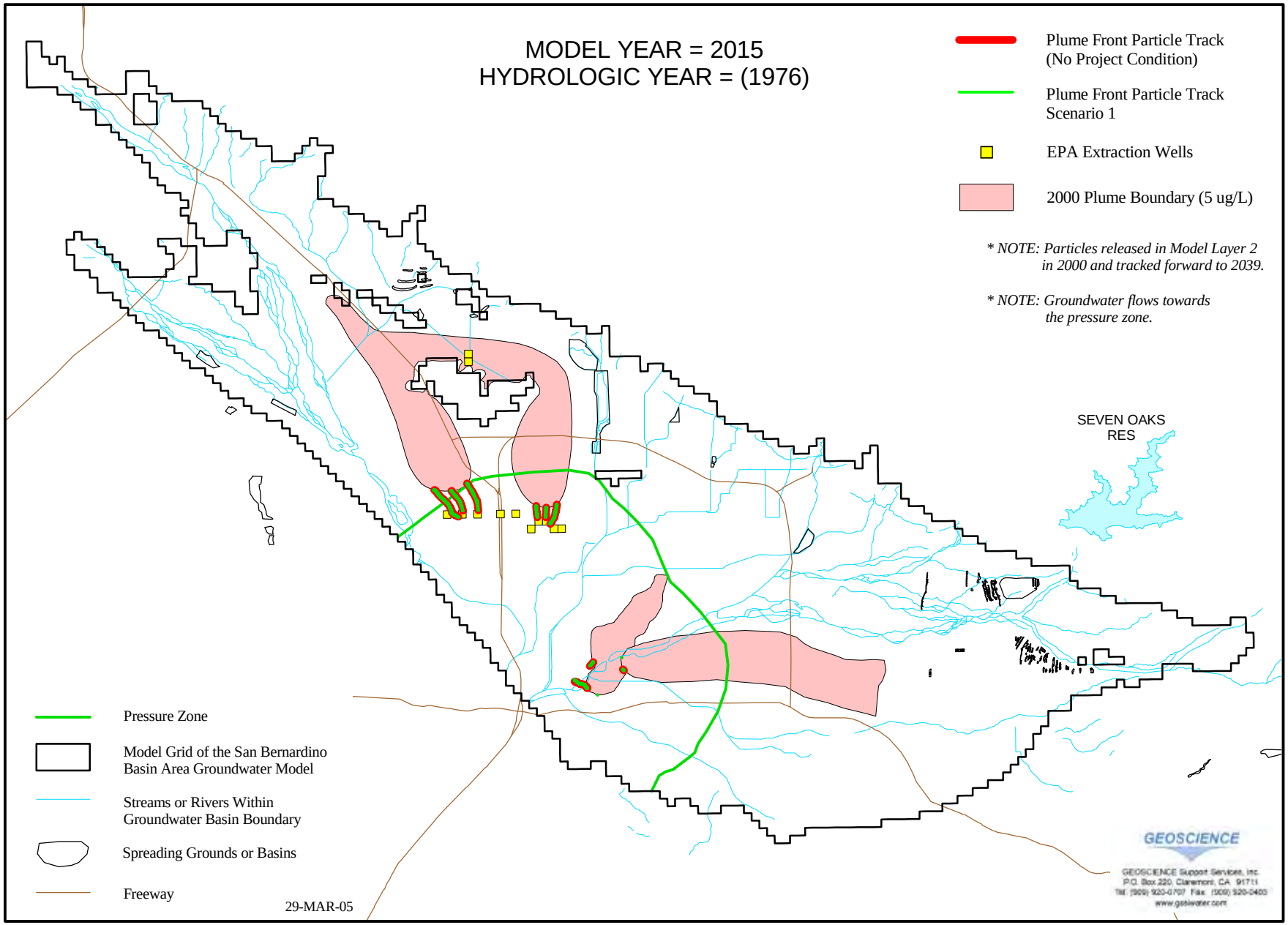
GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

NORTH

0 2 4 Miles

PARTICLE TRACKS FROM PLUME FRONTS,
NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2010

Figure 13(c)



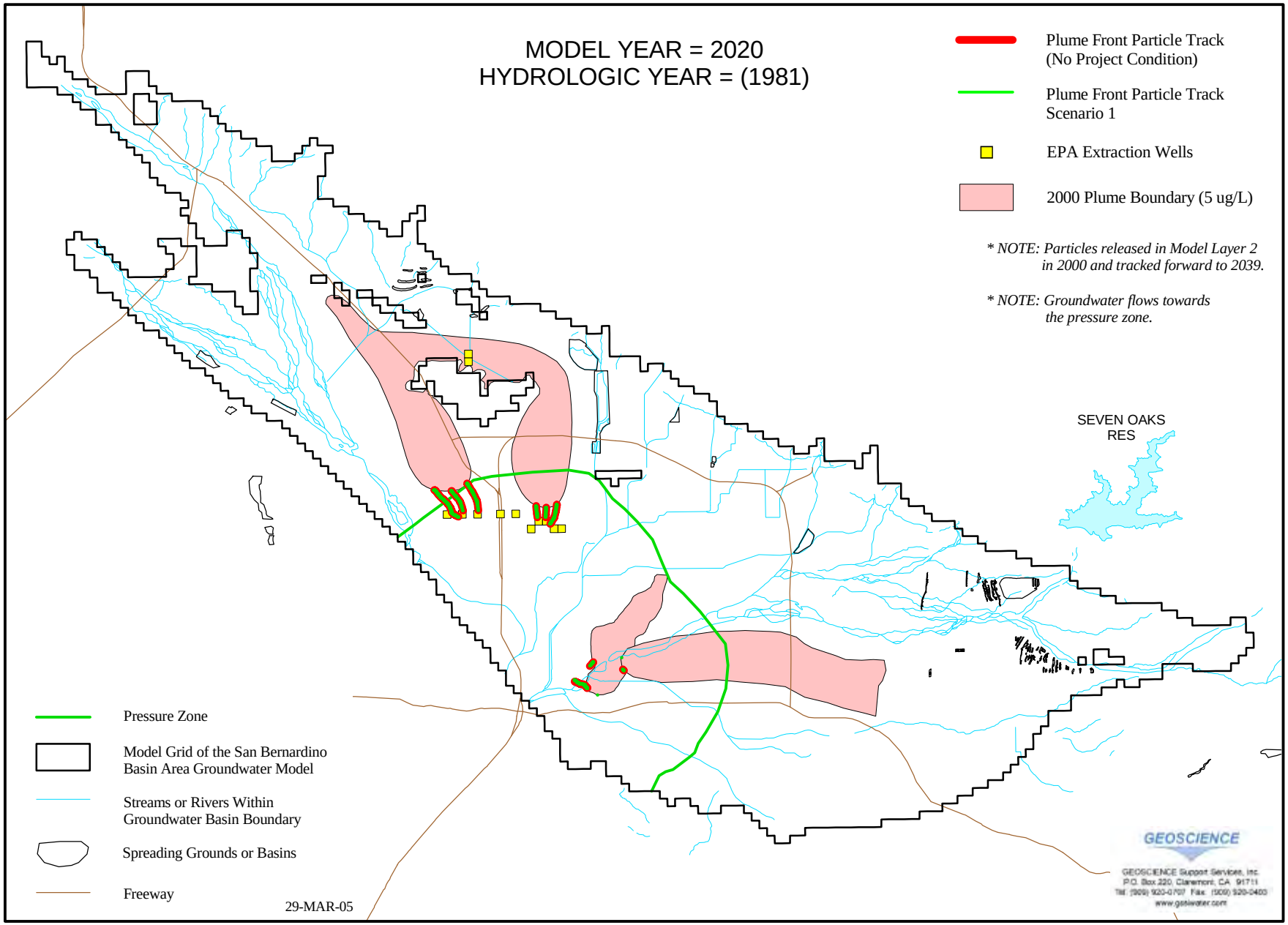
GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

NORTH

0 2 4 Miles

PARTICLE TRACKS FROM PLUME FRONTS,
NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2015

Figure 13(d)



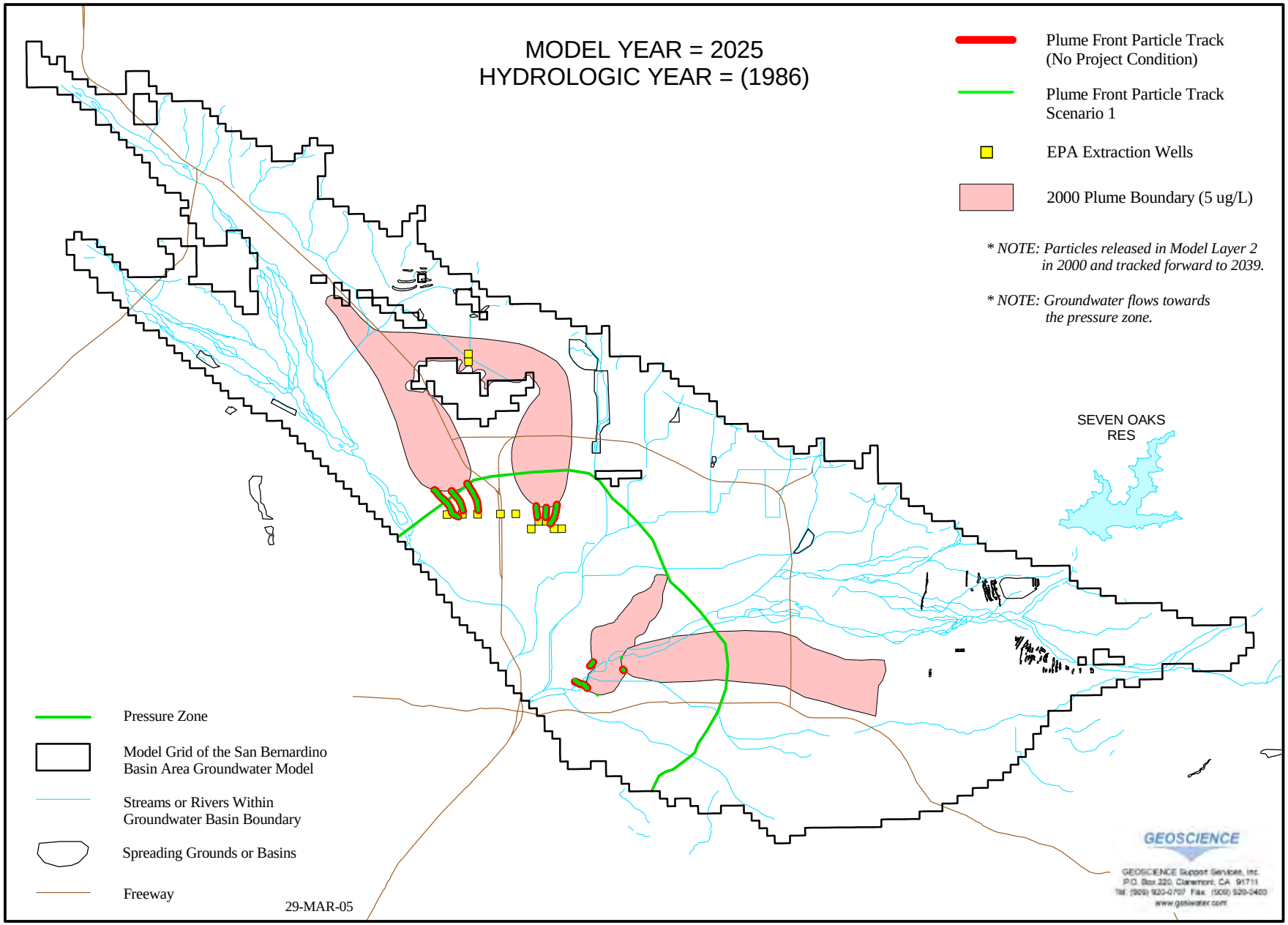
GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

NORTH

0 2 4 Miles

PARTICLE TRACKS FROM PLUME FRONTS,
NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2020

Figure 13(e)



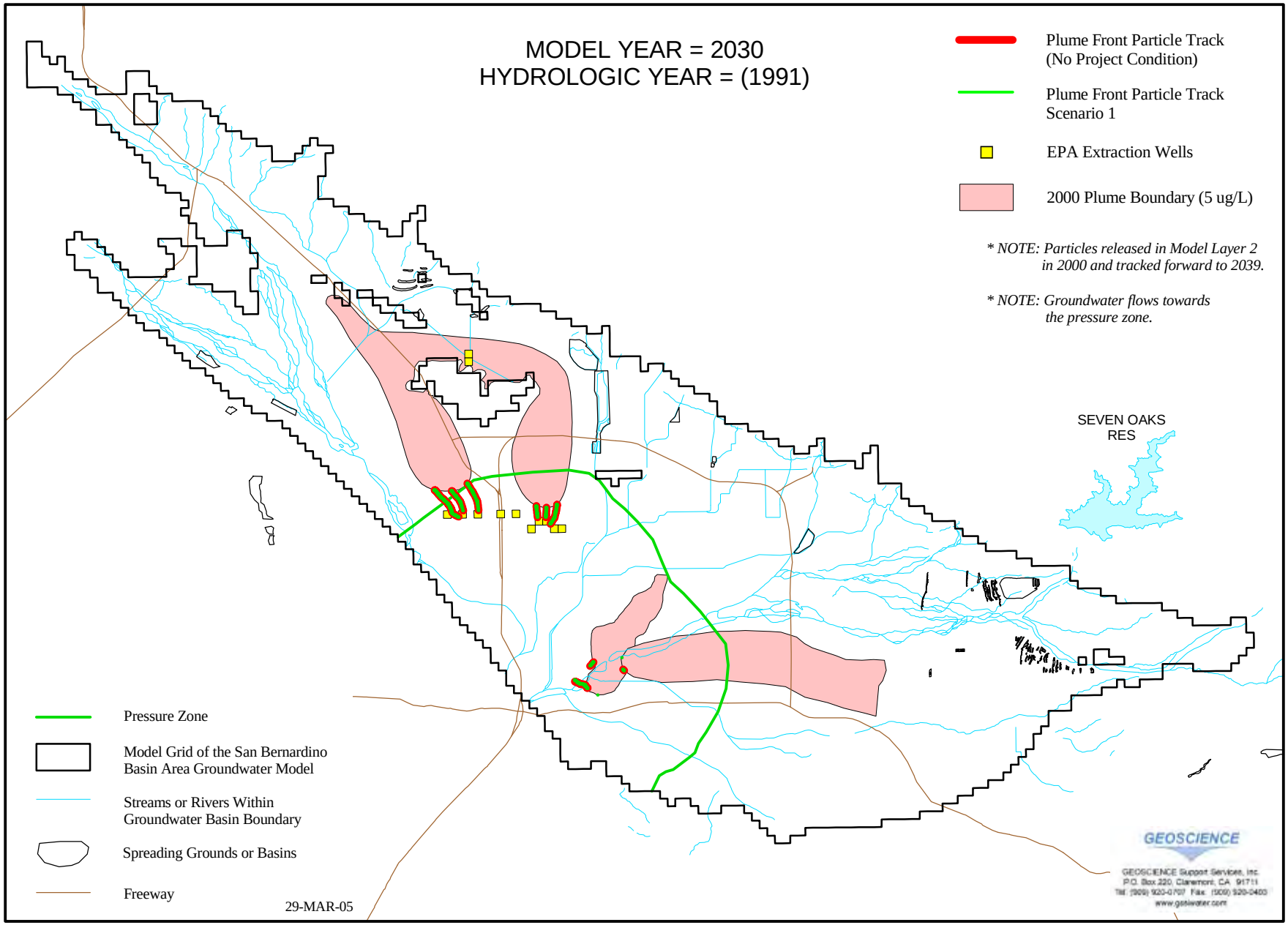
GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

NORTH

0 2 4 Miles

PARTICLE TRACKS FROM PLUME FRONTS,
NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2025

Figure 13(f)



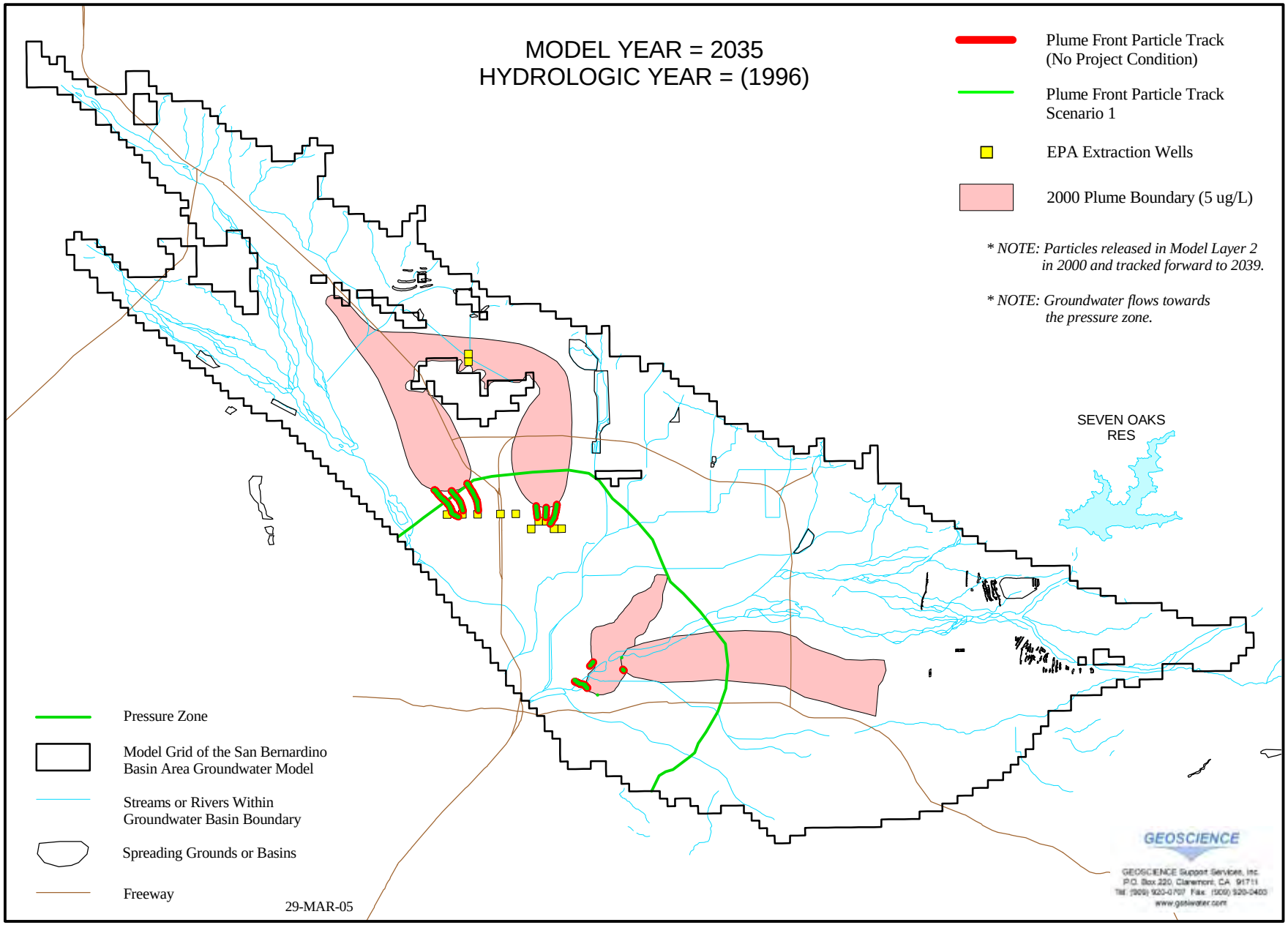
GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

NORTH

0 2 4 Miles

PARTICLE TRACKS FROM PLUME FRONTS,
NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2030

Figure 13(g)



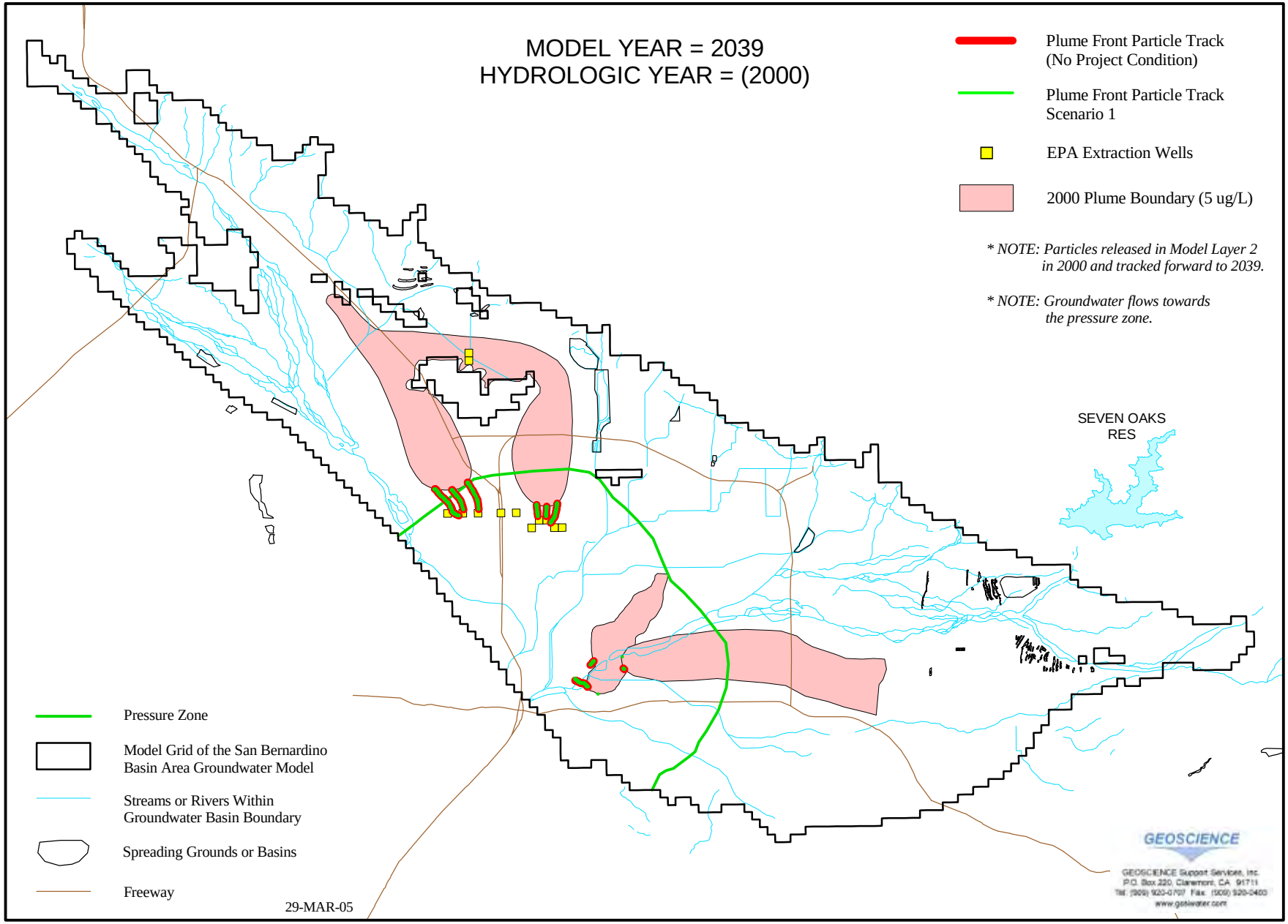
GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

NORTH

0 2 4 Miles

PARTICLE TRACKS FROM PLUME FRONTS,
NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2035

Figure 13(h)



NORTH

0 2 4 Miles

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

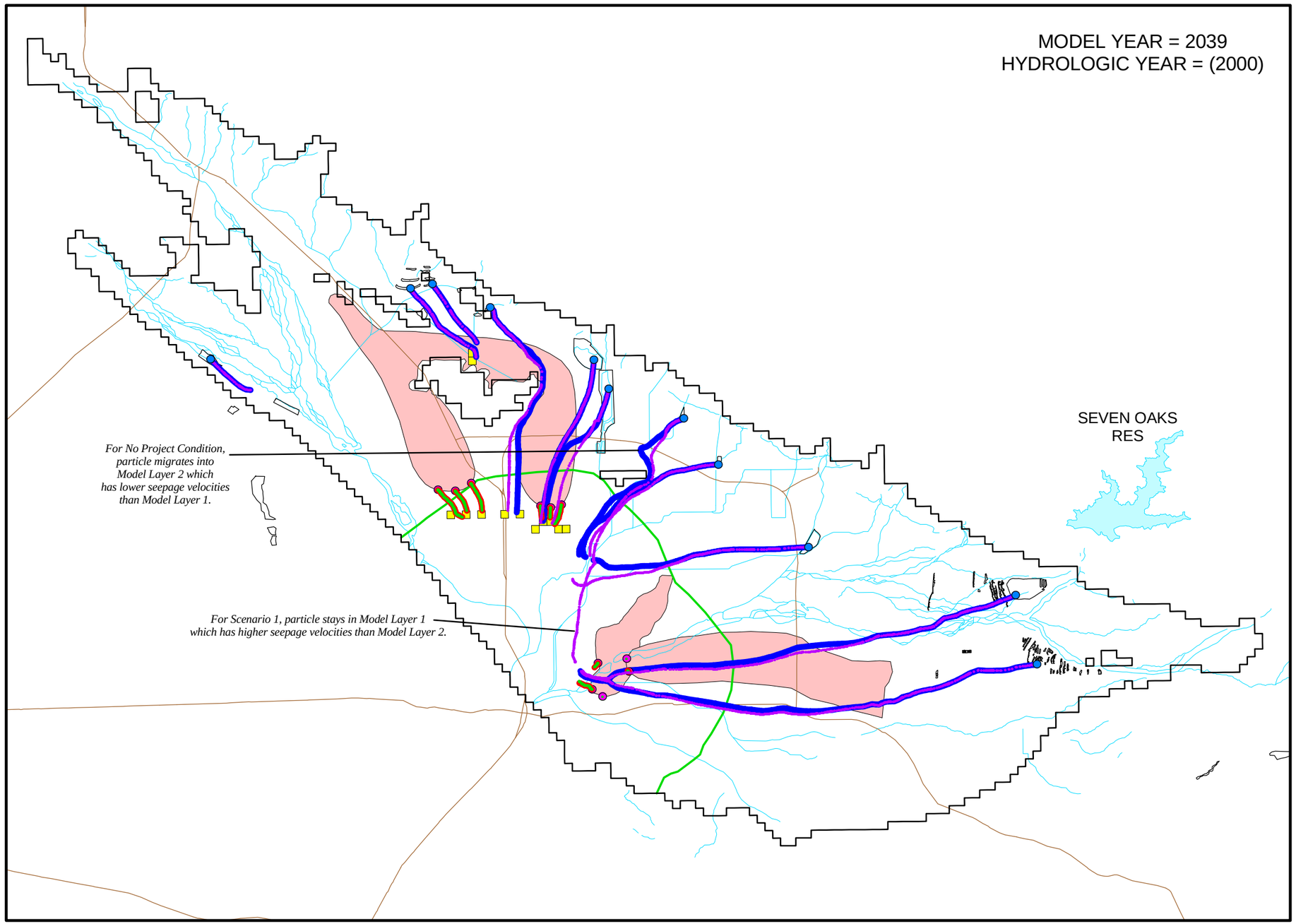
PARTICLE TRACKS FROM PLUME FRONTS,
NO PROJECT CONDITION VERSUS SCENARIO 1, MODEL YEAR 2039

Figure 13(i)

WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE
RIVERSIDE-CORONA FEEDER PROJECT

PARTICLE TRACKS FROM BOTH SPREADING GROUNDS AND PLUME FRONTS, YEAR 2039, NO PROJECT CONDITION VERSUS SCENARIO 1



EXPLANATION

- Starting Point Spreading Ground Particle Track (Particles released in Model Layer 1 in 2000 and tracked forward to 2039)
- Spreading Ground Particle Track (No Project Condition) (For Purpose of Showing Ground Water Flow Directions and Seepage Velocities, Particles are Allowed to Flow Past Wells Until They Reach the EPA Extraction Wells)
- Spreading Ground Particle Track Scenario 1 (For Purpose of Showing Ground Water Flow Directions and Seepage Velocities, Particles are Allowed to Flow Past Wells Until They Reach the EPA Extraction Wells)
- Starting Point Plume Front Particle Track (Particles released in Model Layer 2 in 2000 and tracked forward to 2039)
- Plume Front Particle Track (No Project Condition) (Particles were Captured by EPA Extraction Wells)
- Plume Front Particle Track Scenario 1 (Particles were Captured by EPA Extraction Wells)
- EPA Extraction Wells
- 2000 Plume Boundary (5 ug/L)
- Pressure Zone
- Model Grid of the San Bernardino Basin Area Groundwater Model
- Streams or Rivers Within Groundwater Basin Boundary
- Spreading Grounds or Basins
- Freeway

29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 2 4 Miles

** NOTE: Groundwater flows towards the pressure zone.*

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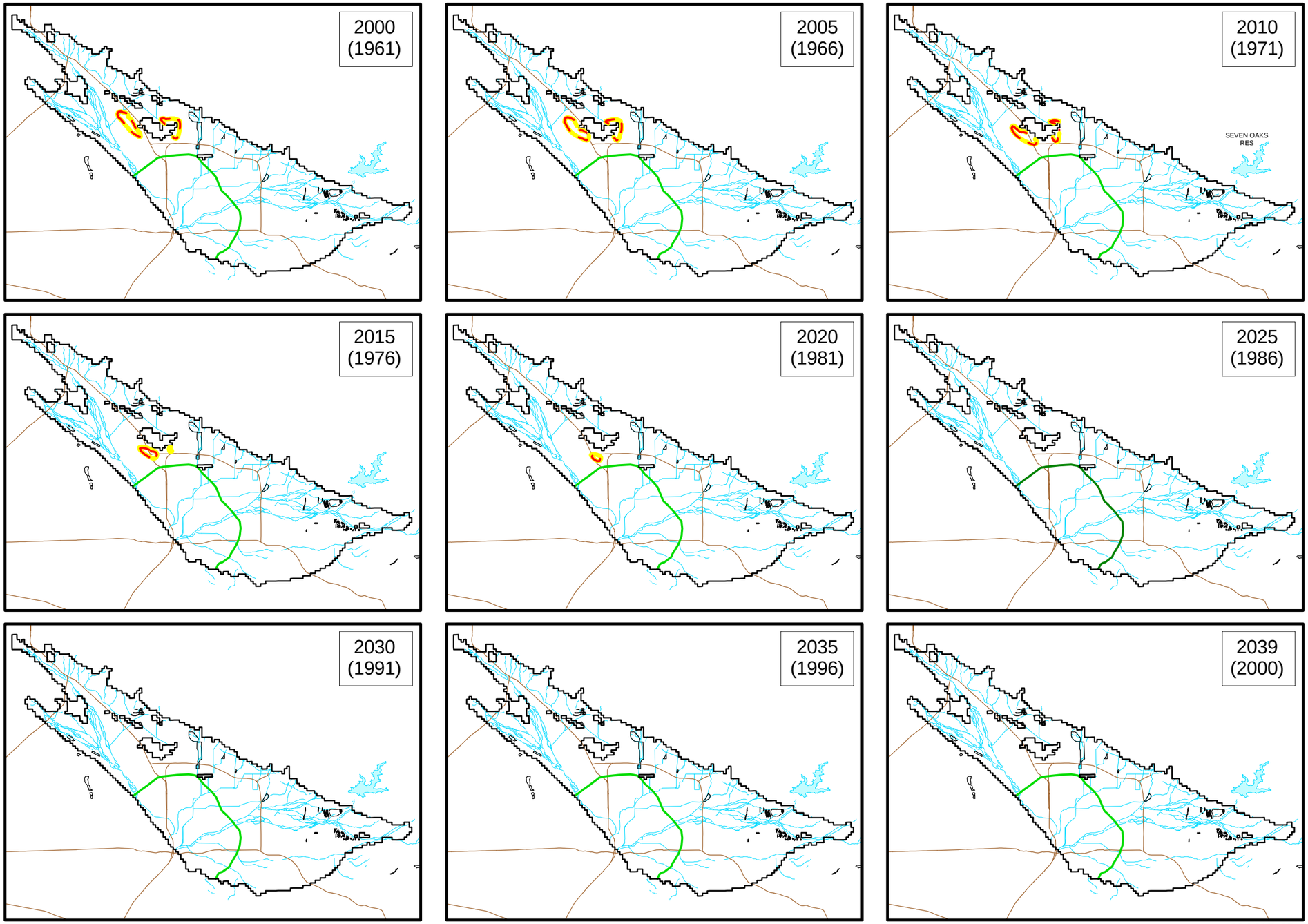
Figure 14

GIS_proj\western_mwd_riv-cor_feeder\model_figures\figs_group_1.apr

WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

PCE PLUME BOUNDARY LAYER 1 NO PROJECT CONDITION VERSUS SCENARIO 1



EXPLANATION

Yellow Line	PCE Plume Boundary (5 ug/L) Layer 1, No Project Condition
	PCE Plume Boundary (5 ug/L) Layer 1, Scenario 1
2000 (1961)	Model Year (Assumed Hydrological Year)
	Pressure Zone
	Model Grid of the San Bernardino Basin Area Groundwater Model
	Streams or Rivers Within Groundwater Basin Boundary
	Spreading Grounds or Basins
	Freeway

29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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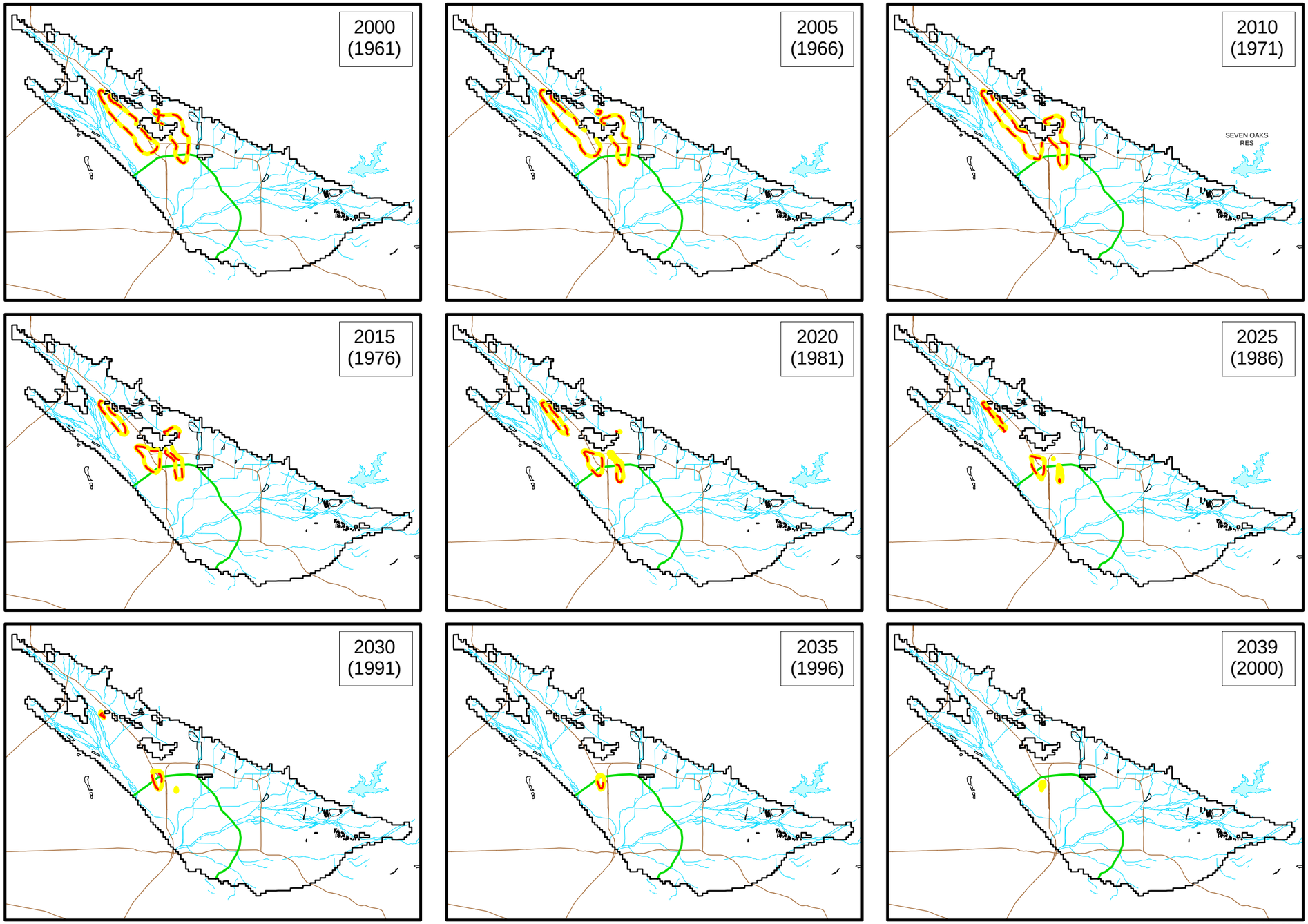
Figure 15

GIS_proj\western_mwd_riv-cor_feeder\model_figures\figs_group_2.apr

WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

PCE PLUME BOUNDARY LAYER 2 NO PROJECT CONDITION VERSUS SCENARIO 1



EXPLANATION

Yellow Line	PCE Plume Boundary (5 ug/L) Layer 2, No Project Condition
	PCE Plume Boundary (5 ug/L) Layer 2, Scenario 1
2000 (1961)	Model Year (Assumed Hydrological Year)
	Pressure Zone
	Model Grid of the San Bernardino Basin Area Groundwater Model
	Streams or Rivers Within Groundwater Basin Boundary
	Spreading Grounds or Basins
	Freeway

29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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Figure 16

GIS_proj\western_mwd_riv-cor_feeder\model_figures\figs_group_2.apr

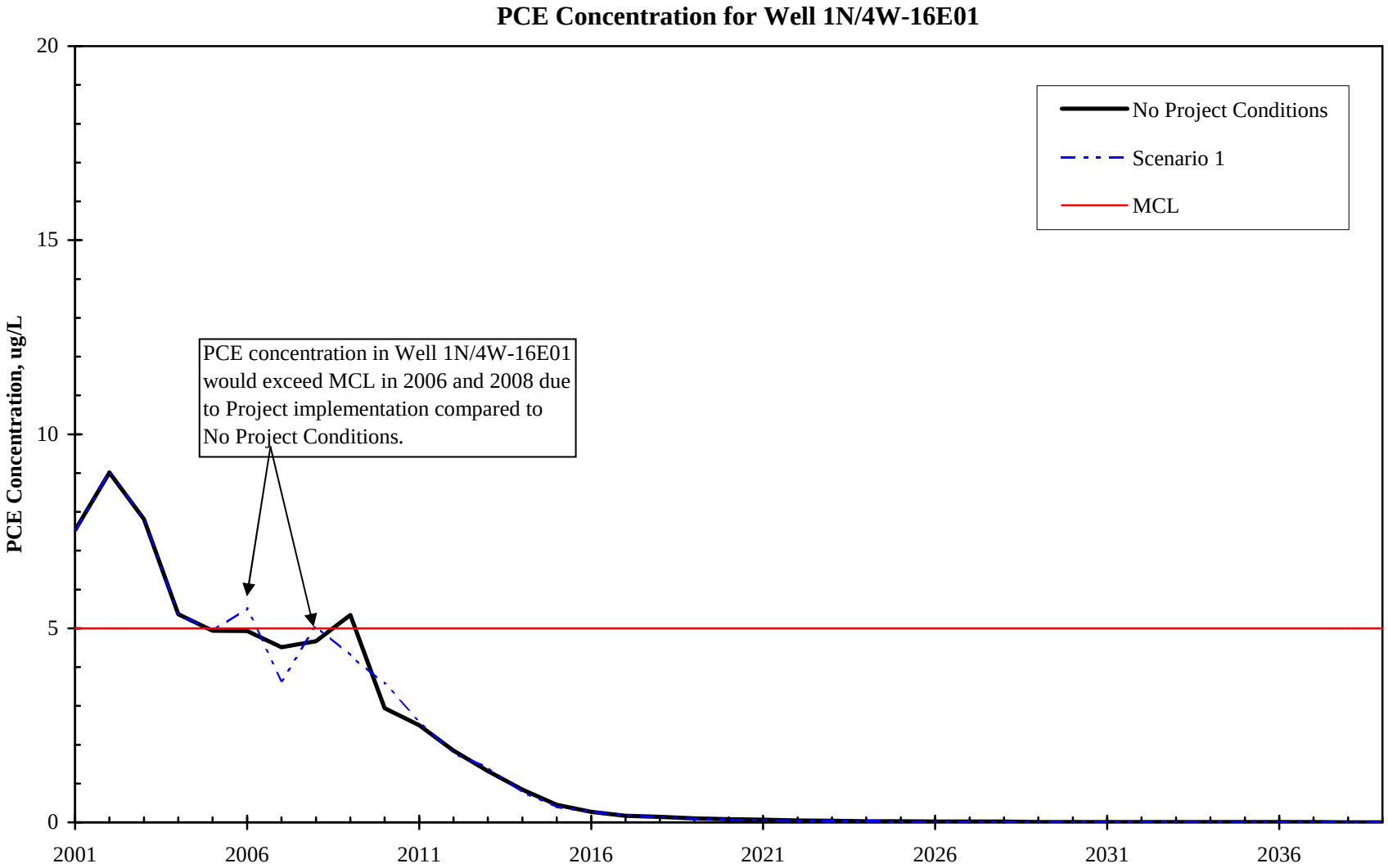

PCE Concentration for Well 1N/4W-16E01
PCE Concentration, ug/L
20
15
10
5
0
2001
2006
2011
2016
2021
2026
2031
2036
No Project Conditions
Scenario 1
MCL
PCE concentration in Well 1N/4W-16E01 would exceed MCL in 2006 and 2008 due to Project implementation compared to No Project Conditions.

Figure 17(a)

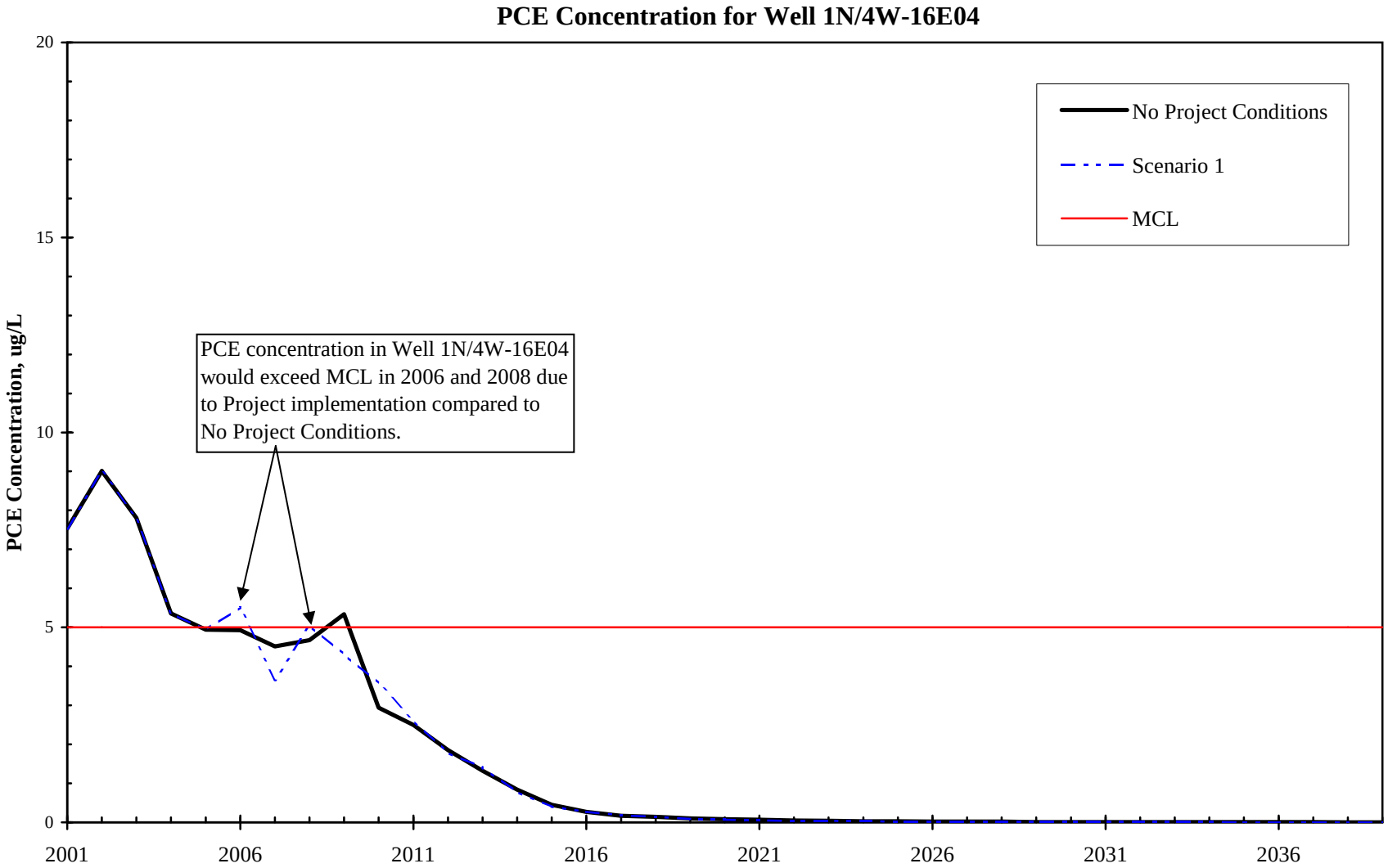

PCE Concentration for Well 1N/4W-16E04
PCE Concentration, ug/L
20
15
10
5
0
2001
2006
2011
2016
2021
2026
2031
2036
No Project Conditions
Scenario 1
MCL
PCE concentration in Well 1N/4W-16E04 would exceed MCL in 2006 and 2008 due to Project implementation compared to No Project Conditions.

Figure 17(b)

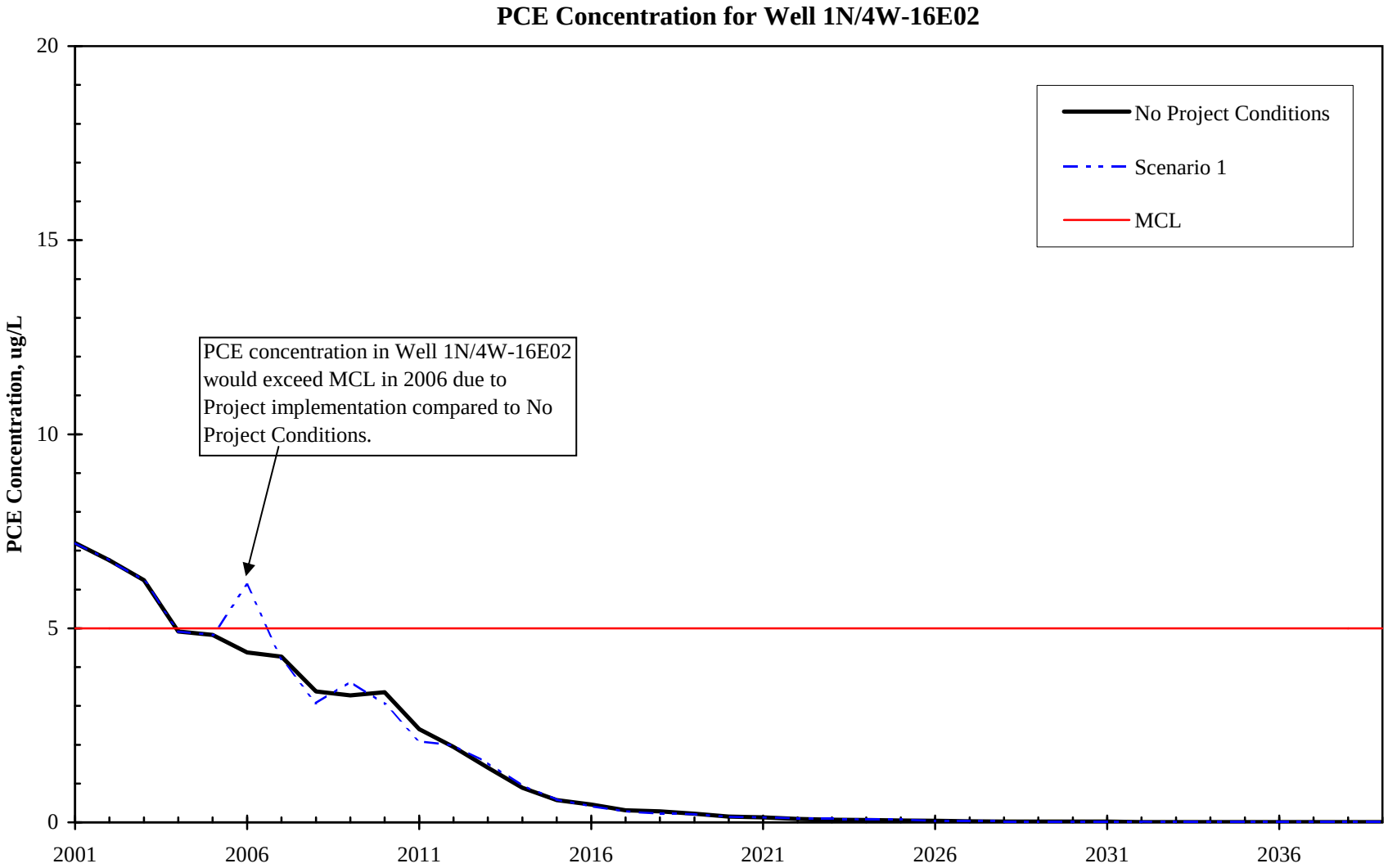

PCE Concentration for Well 1N/4W-16E02
PCE Concentration, ug/L
20
15
10
5
0
2001
2006
2011
2016
2021
2026
2031
2036
No Project Conditions
Scenario 1
MCL
PCE concentration in Well 1N/4W-16E02 would exceed MCL in 2006 due to Project implementation compared to No Project Conditions.

Figure 17(c)

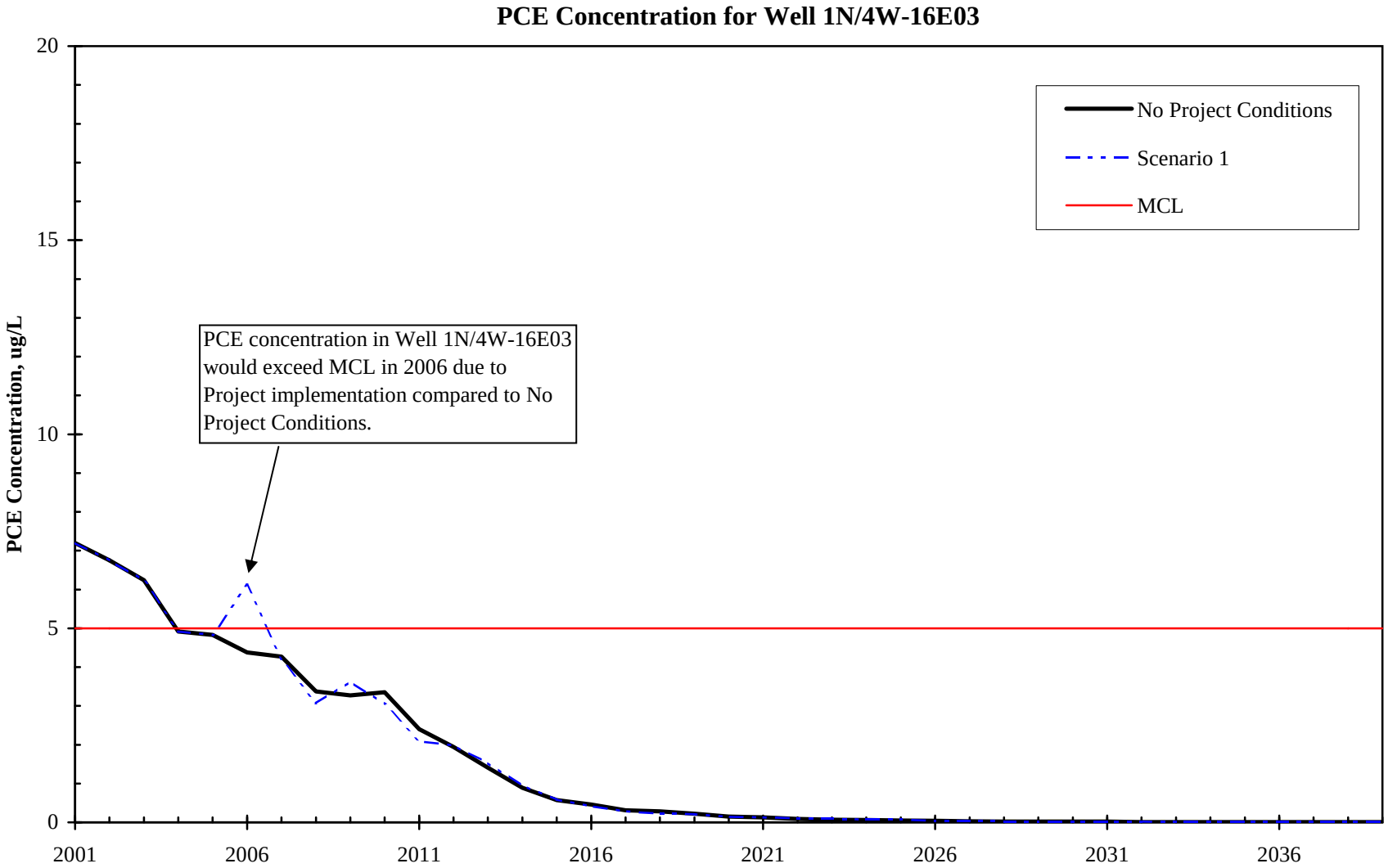

PCE Concentration for Well 1N/4W-16E03
PCE Concentration, ug/L
20
15
10
5
0
2001
2006
2011
2016
2021
2026
2031
2036
No Project Conditions
Scenario 1
MCL
PCE concentration in Well 1N/4W-16E03 would exceed MCL in 2006 due to Project implementation compared to No Project Conditions.

Figure 17(d)

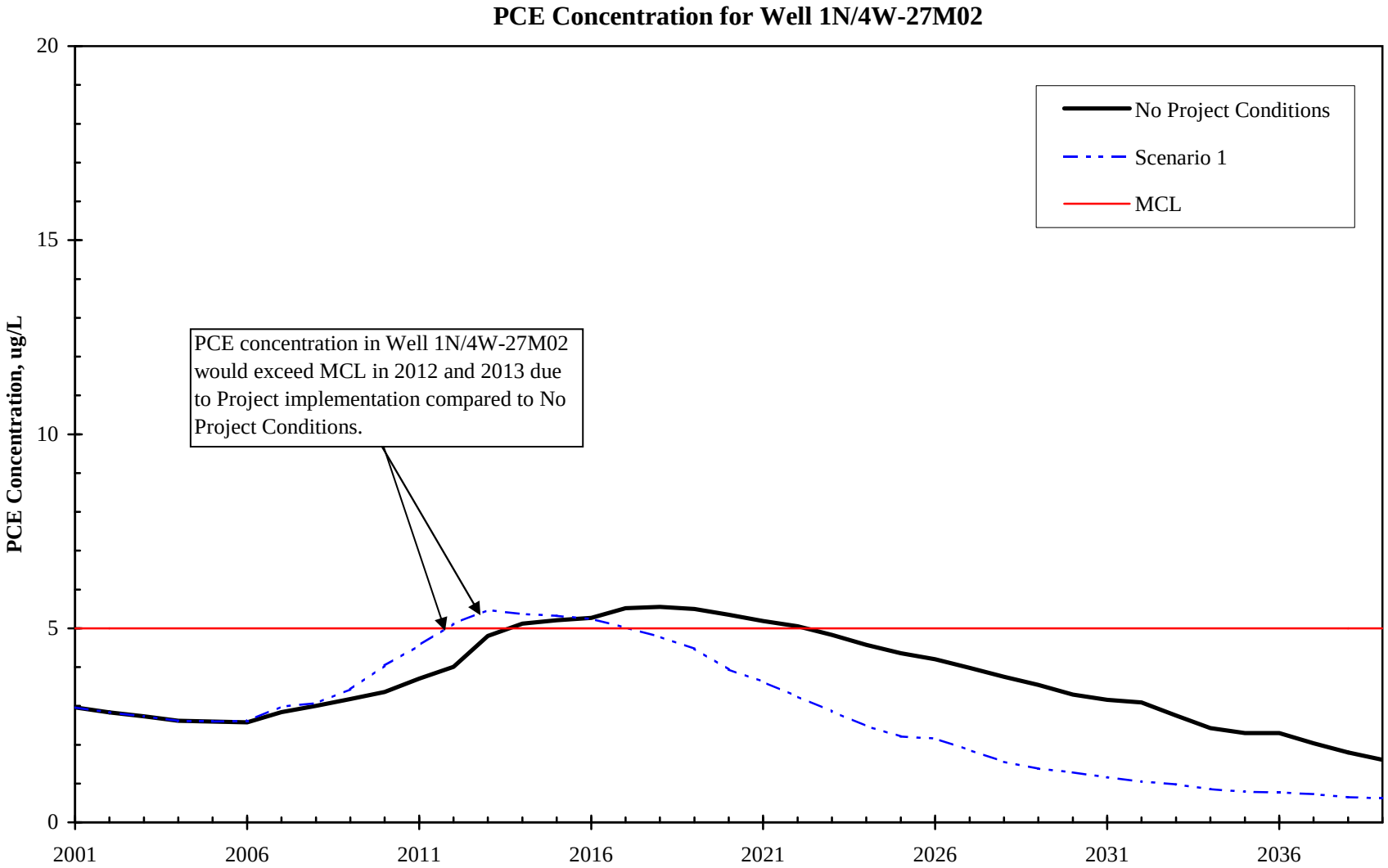
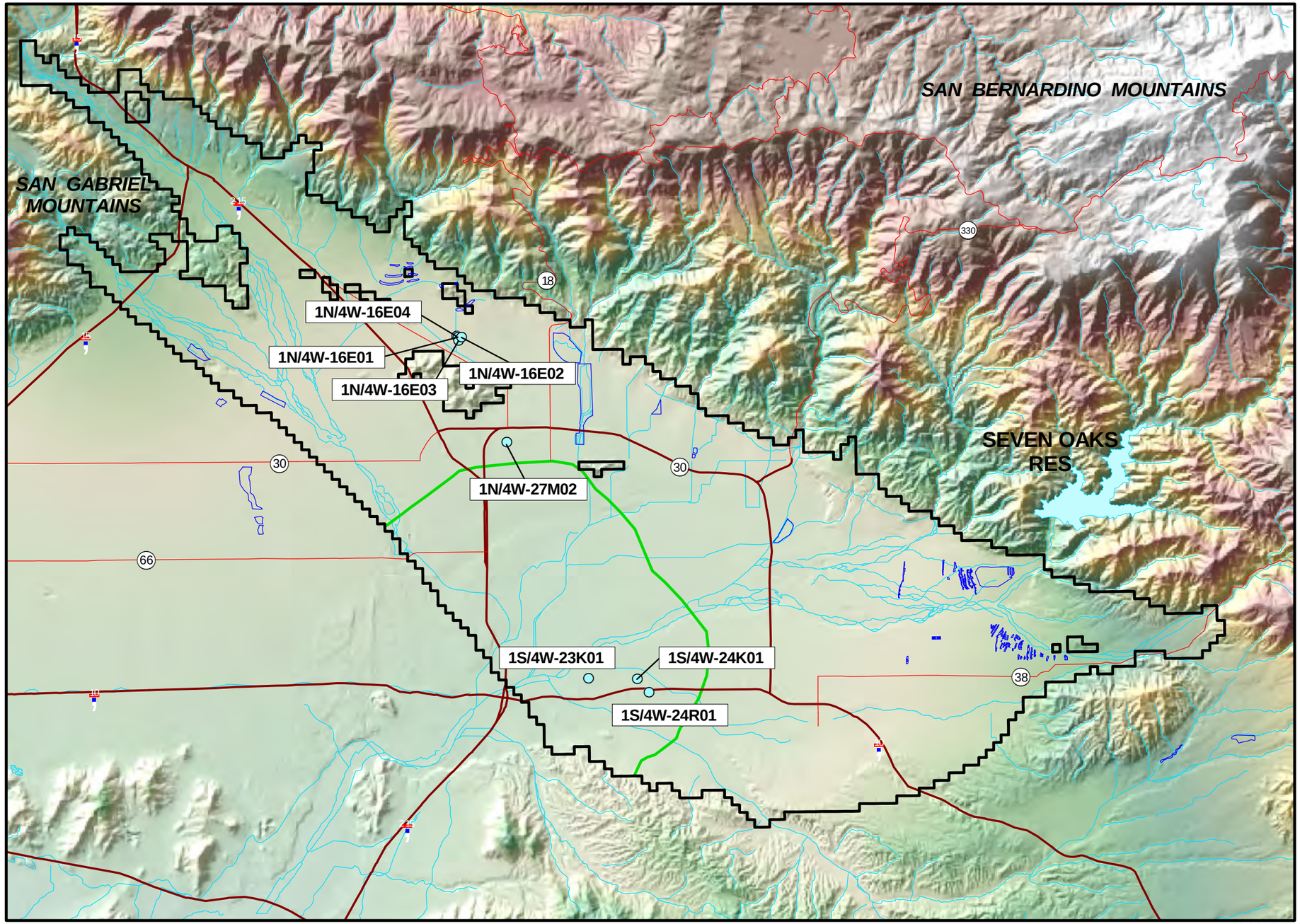

PCE Concentration for Well 1N/4W-27M02
PCE Concentration, ug/L
20
15
10
5
0
2001
2006
2011
2016
2021
2026
2031
2036
No Project Conditions
Scenario 1
MCL
PCE concentration in Well 1N/4W-27M02 would exceed MCL in 2012 and 2013 due to Project implementation compared to No Project Conditions.

Figure 17(e)

LOCATIONS OF WELLS WITH EXPECTED IMPACTS TO PCE, TCE, AND PERCHLORATE CONCENTRATIONS



EXPLANATION

- Location of Well with Expected Impacts to PCE, TCE, and Perchlorate Concentrations
- Spreading Grounds or Basins
- Active/Inactive Cell Boundary
- Pressure Zone
- Stream or River
- Freeway
- State Highway

29-MAR-05

Prepared by: DWB

Map Projection:
UTM Zone 11, NAD27

Source:
Danskin, W.R., McPherson, K.R., and Woolfenden, L.R., "Hydrology, description of computer models, and evaluation of selected water-management alternatives in the San Bernardino area, California" US. Geological Survey, draft in preparation.

NORTH

0 2 4 Miles

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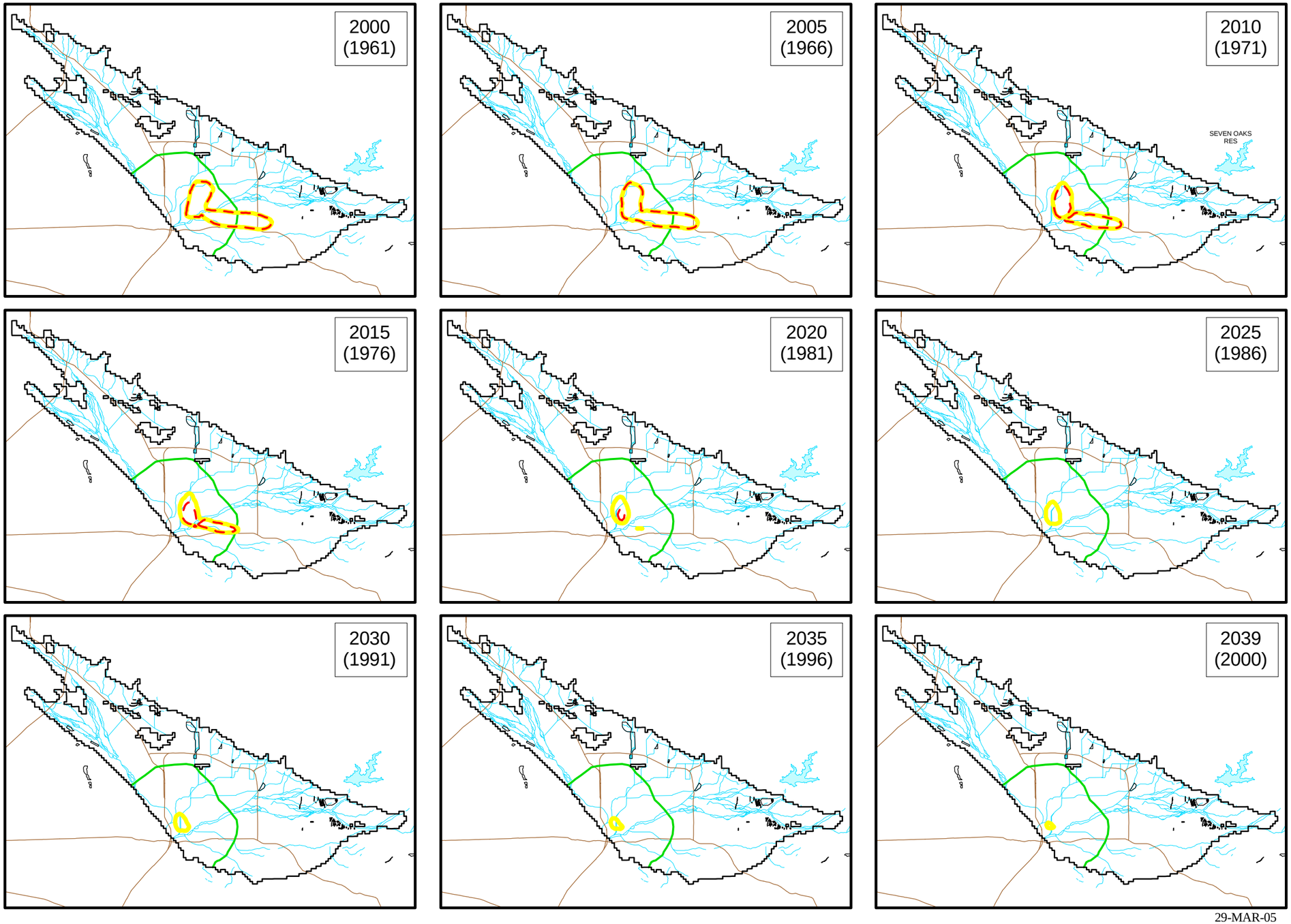
Figure 18

GIS_proj\western_mwd_riv-cor_feeder\wmwd_riv-cor_feeder.apr

WESTERN MUNICIPAL WATER DISTRICT

GROUNDWATER MODELING OF THE RIVERSIDE-CORONA FEEDER PROJECT

TCE PLUME BOUNDARY LAYER 1 NO PROJECT CONDITION VERSUS SCENARIO 1



EXPLANATION

Yellow Line	TCE Plume Boundary (5 ug/L) Layer 1, No Project Condition
	TCE Plume Boundary (5 ug/L) Layer 1, Scenario 1
2000 (1961)	Model Year (Assumed Hydrological Year)
	Pressure Zone
	Model Grid of the San Bernardino Basin Area Groundwater Model
	Streams or Rivers Within Groundwater Basin Boundary
	Spreading Grounds or Basins
	Freeway

29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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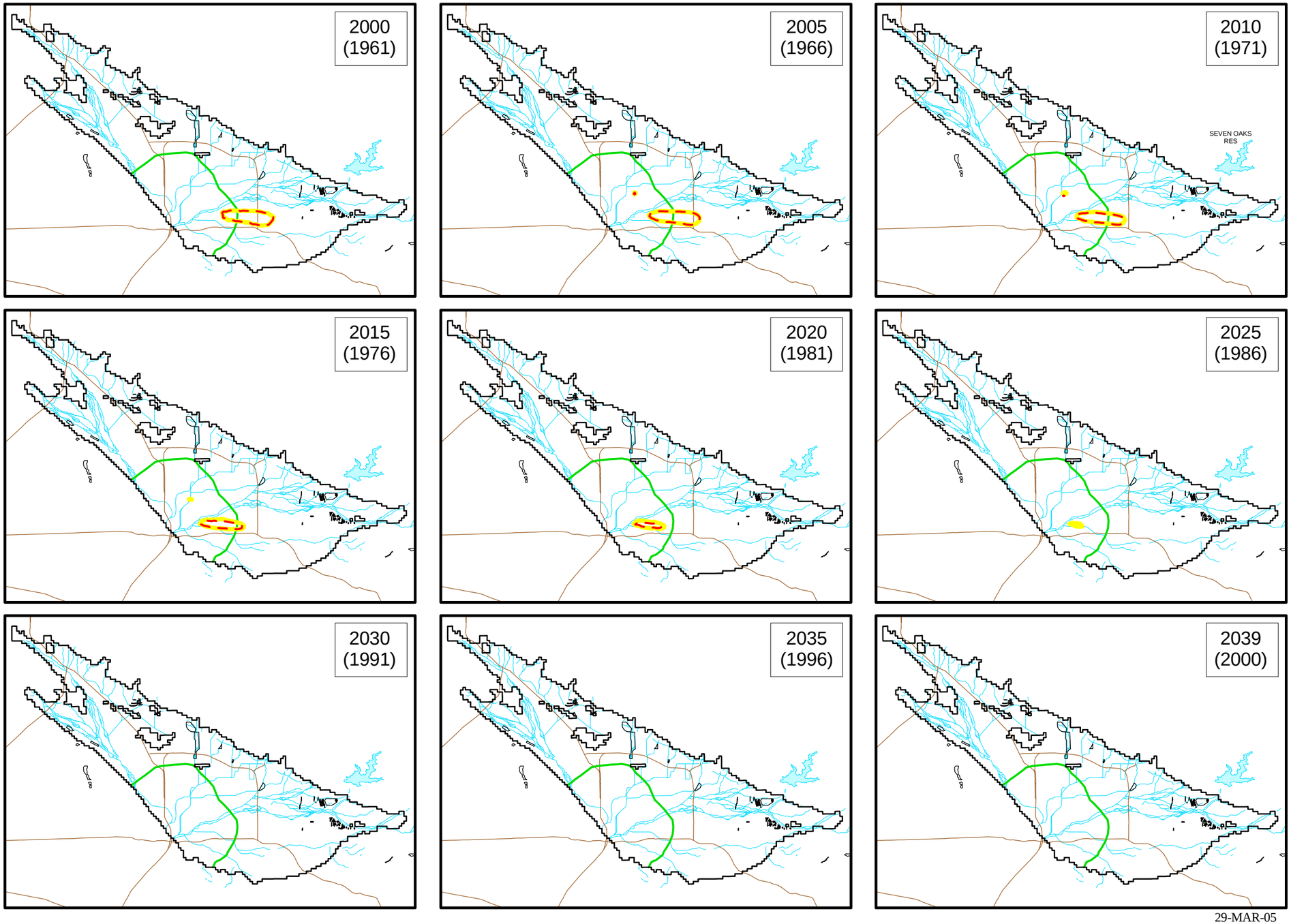
Figure 19

GIS_proj\western_mwd_riv-cor_feeder\model_figures\figs_group_2.apr

TCE PLUME BOUNDARY LAYER 2 NO PROJECT CONDITION VERSUS SCENARIO 1



EXPLANATION

Yellow Line	TCE Plume Boundary (5 ug/L) Layer 2, No Project Condition
	TCE Plume Boundary (5 ug/L) Layer 2, Scenario 1
2000 (1961)	Model Year (Assumed Hydrological Year)
	Pressure Zone
	Model Grid of the San Bernardino Basin Area Groundwater Model
	Streams or Rivers Within Groundwater Basin Boundary
	Spreading Grounds or Basins
	Freeway

29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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Figure 20

GIS_proj\western_mwd_riv-cor_feeder\model_figures\figs_group_2.apr

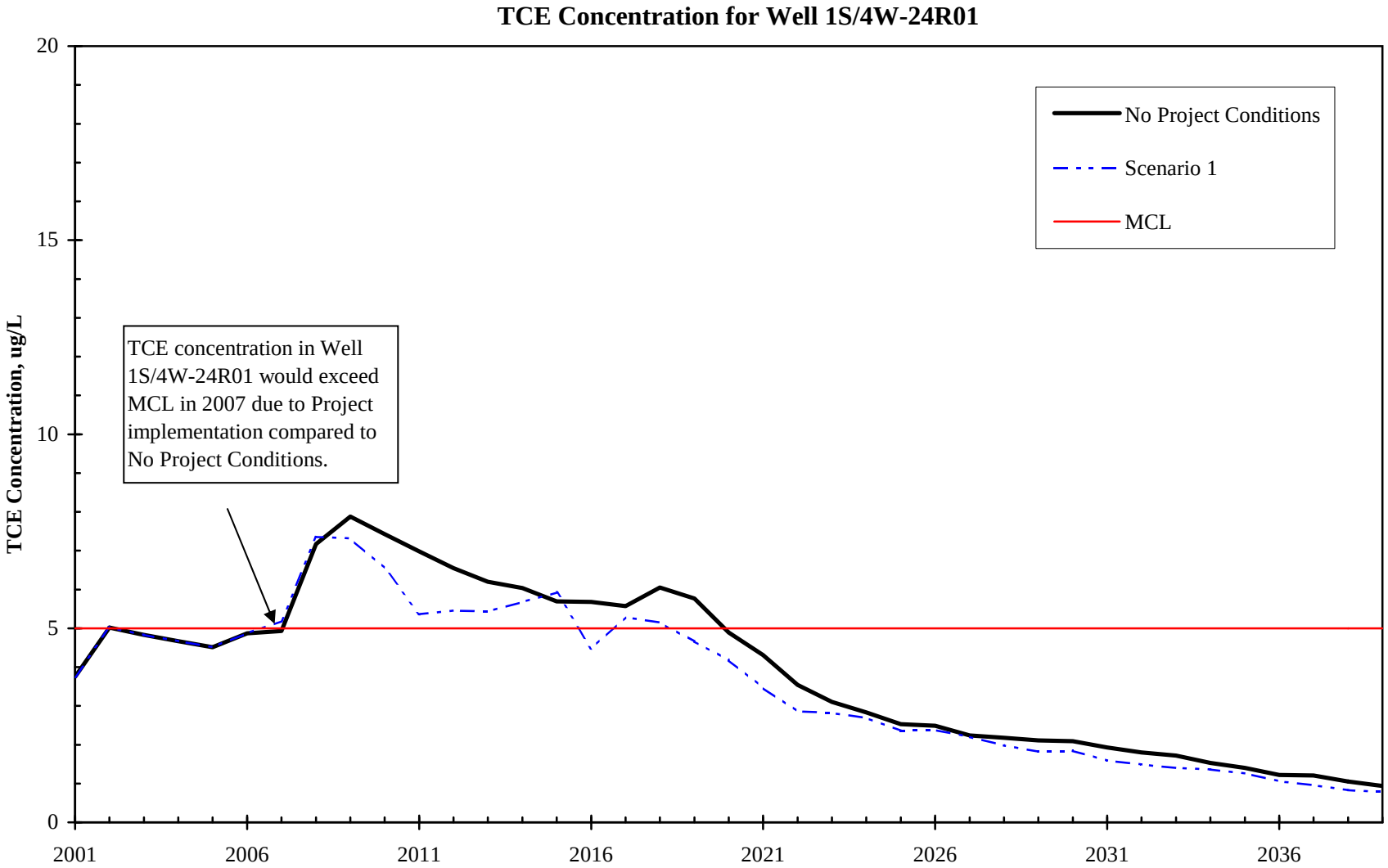

TCE Concentration for Well 1S/4W-24R01
TCE Concentration, ug/L
20
15
10
5
0
2001
2006
2011
2016
2021
2026
2031
2036
No Project Conditions
Scenario 1
MCL
TCE concentration in Well 1S/4W-24R01 would exceed MCL in 2007 due to Project implementation compared to No Project Conditions.

Figure 21

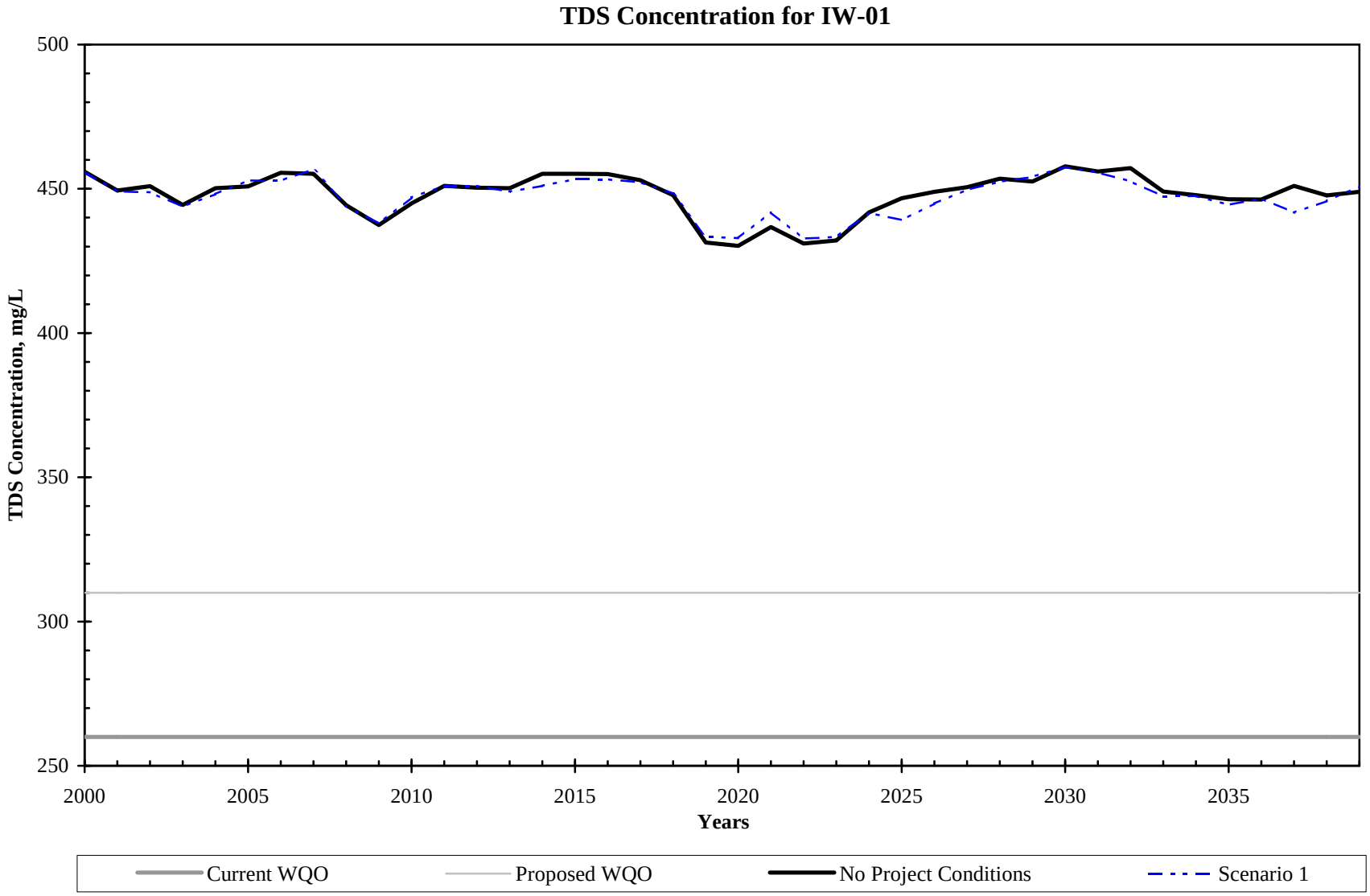

TDS Concentration for IW-01
500
450
400
350
300
250
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(a)

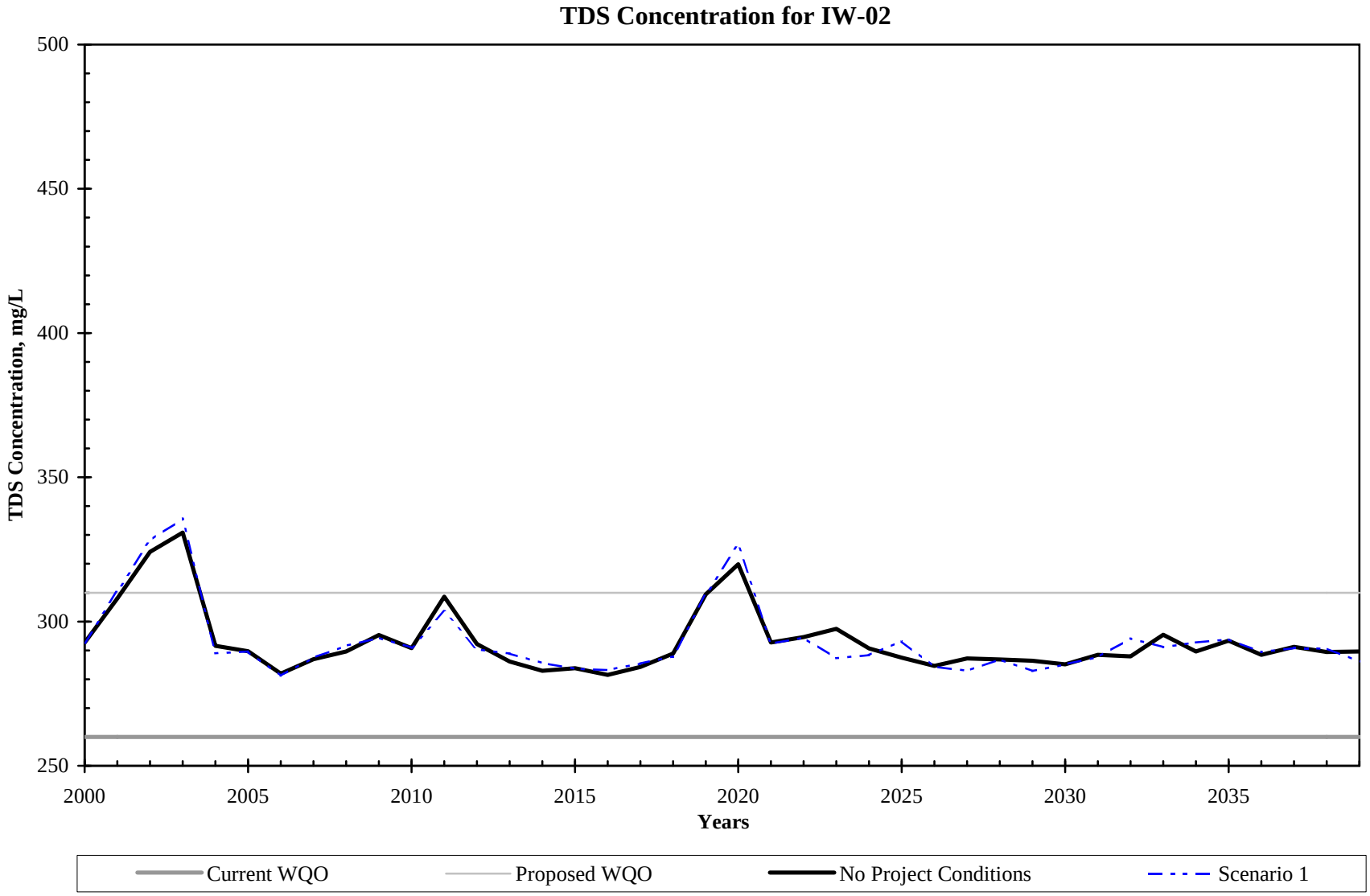

TDS Concentration for IW-02
TDS Concentration, mg/L
500
450
400
350
300
250
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(b)

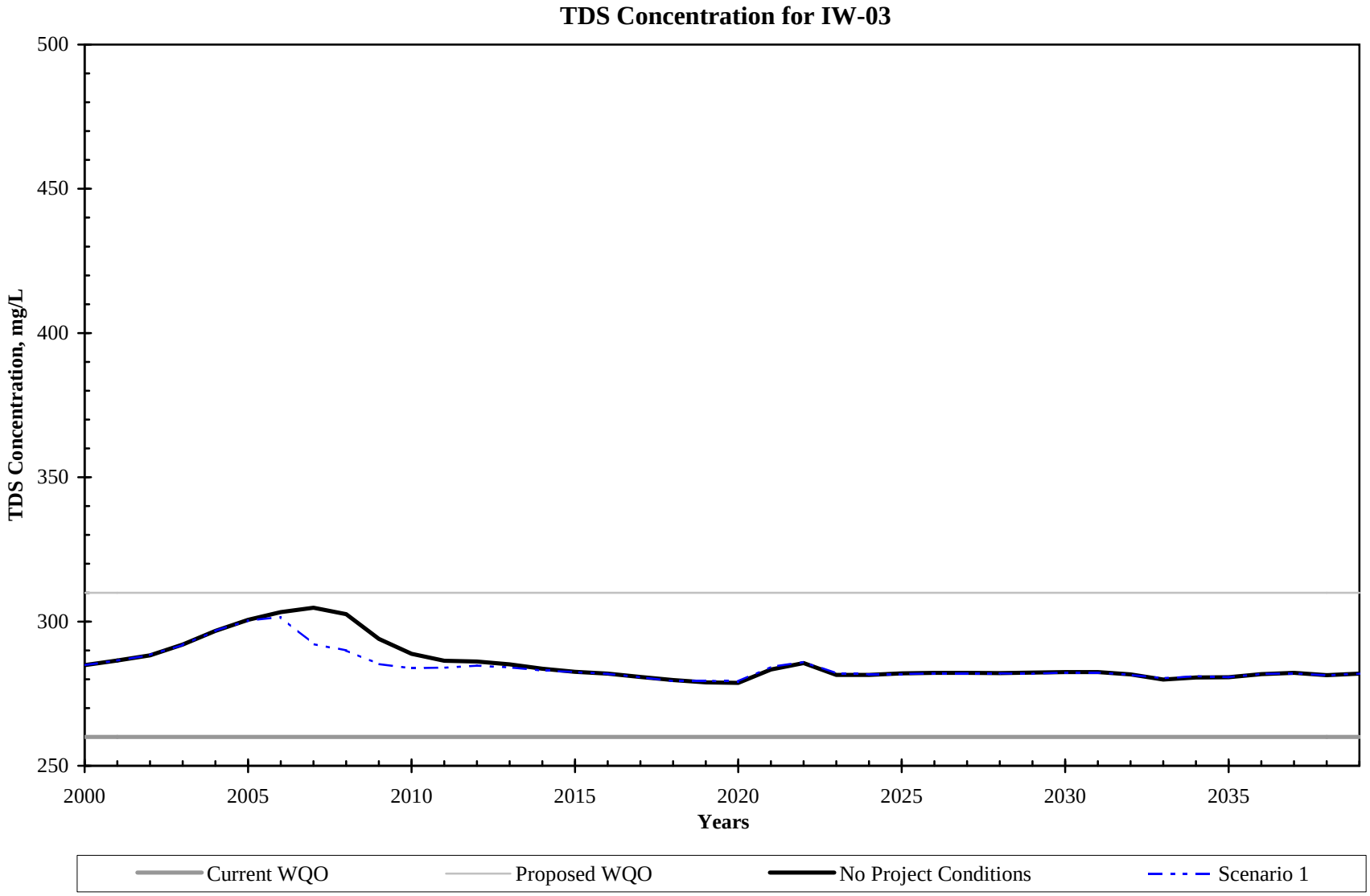

TDS Concentration for IW-03
TDS Concentration, mg/L
500
450
400
350
300
250
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(c)

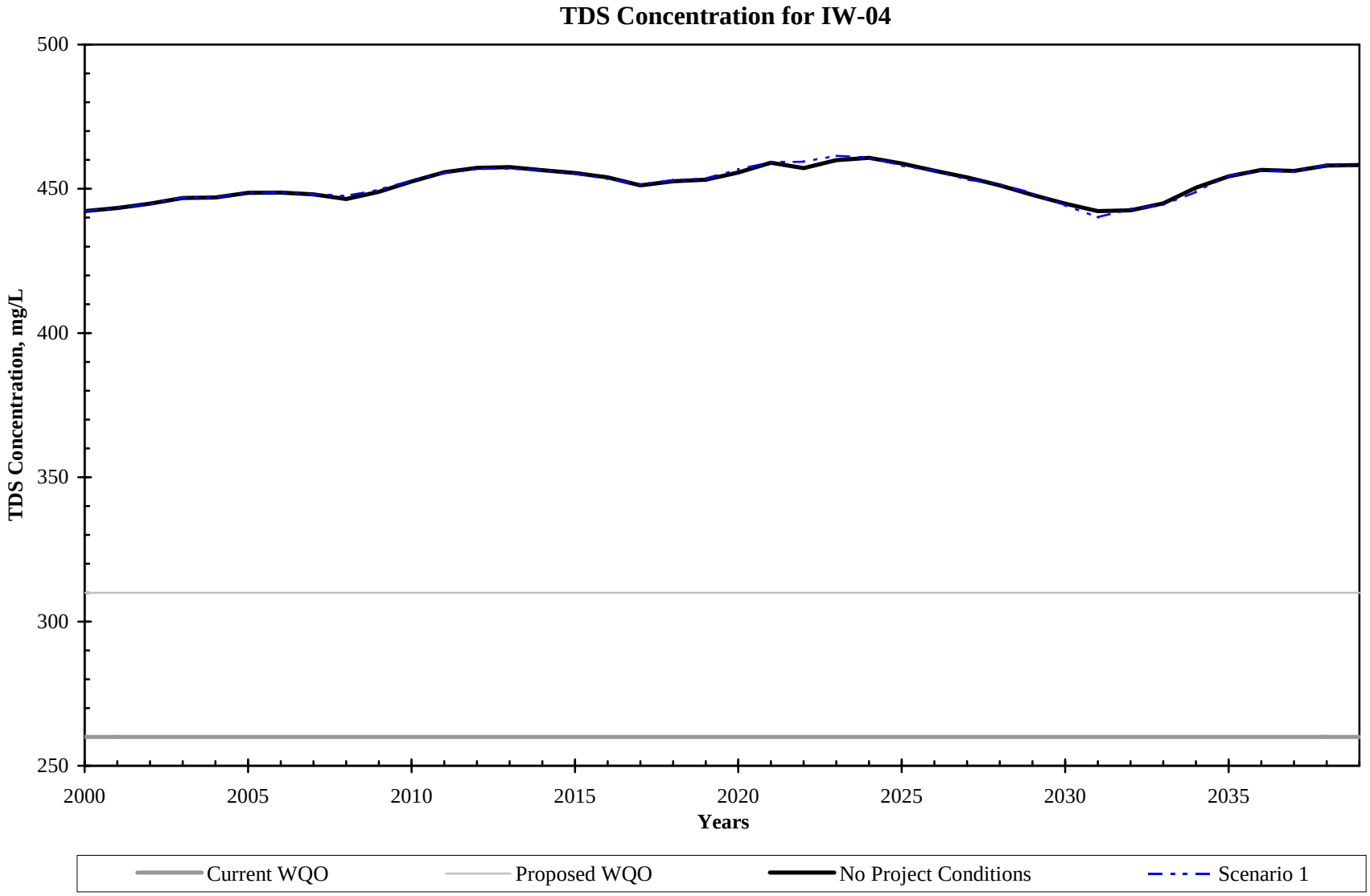

TDS Concentration for IW-04
500
450
400
350
300
250
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(d)

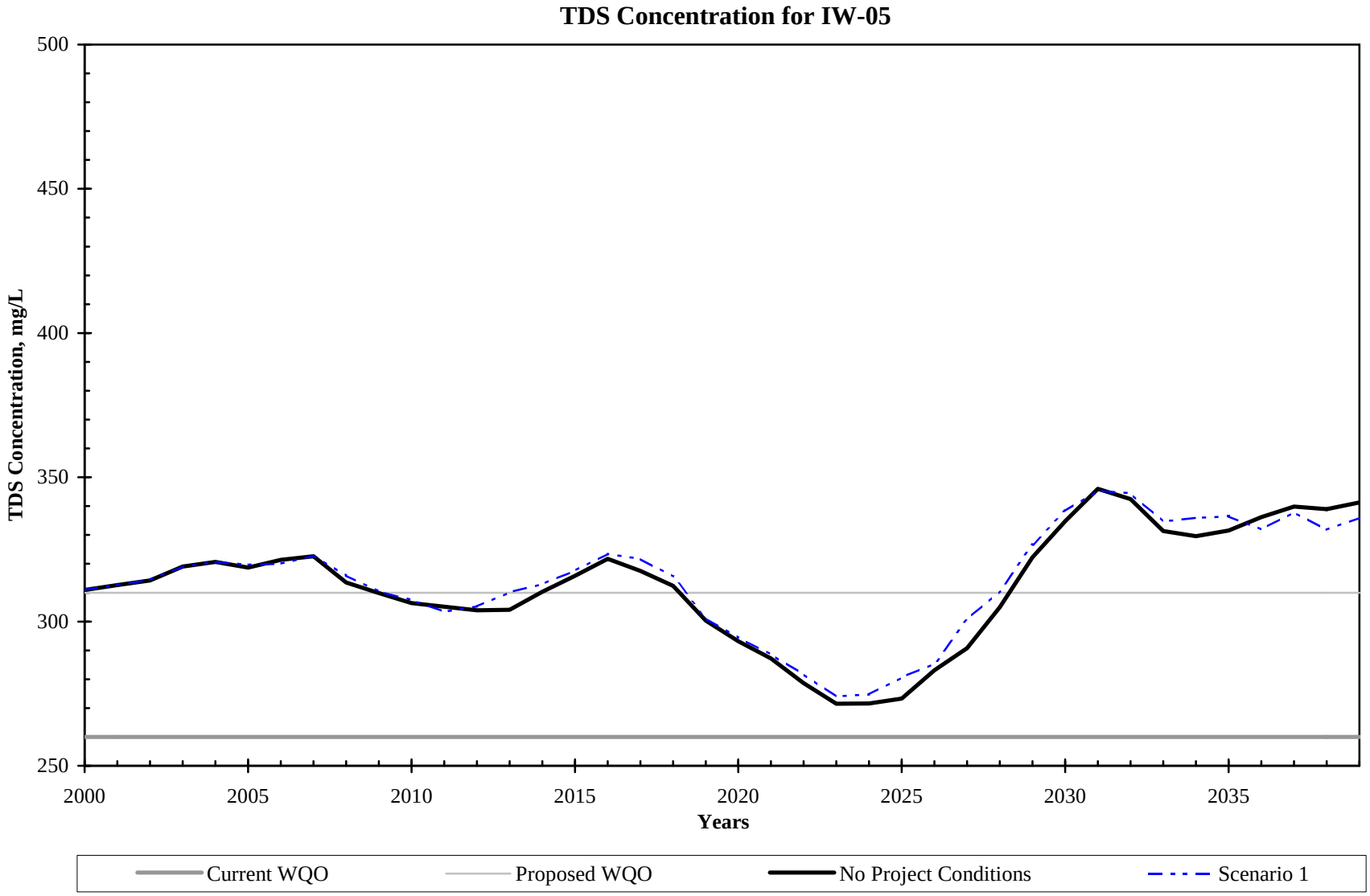

TDS Concentration for IW-05
TDS Concentration, mg/L
500
450
400
350
300
250
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(e)

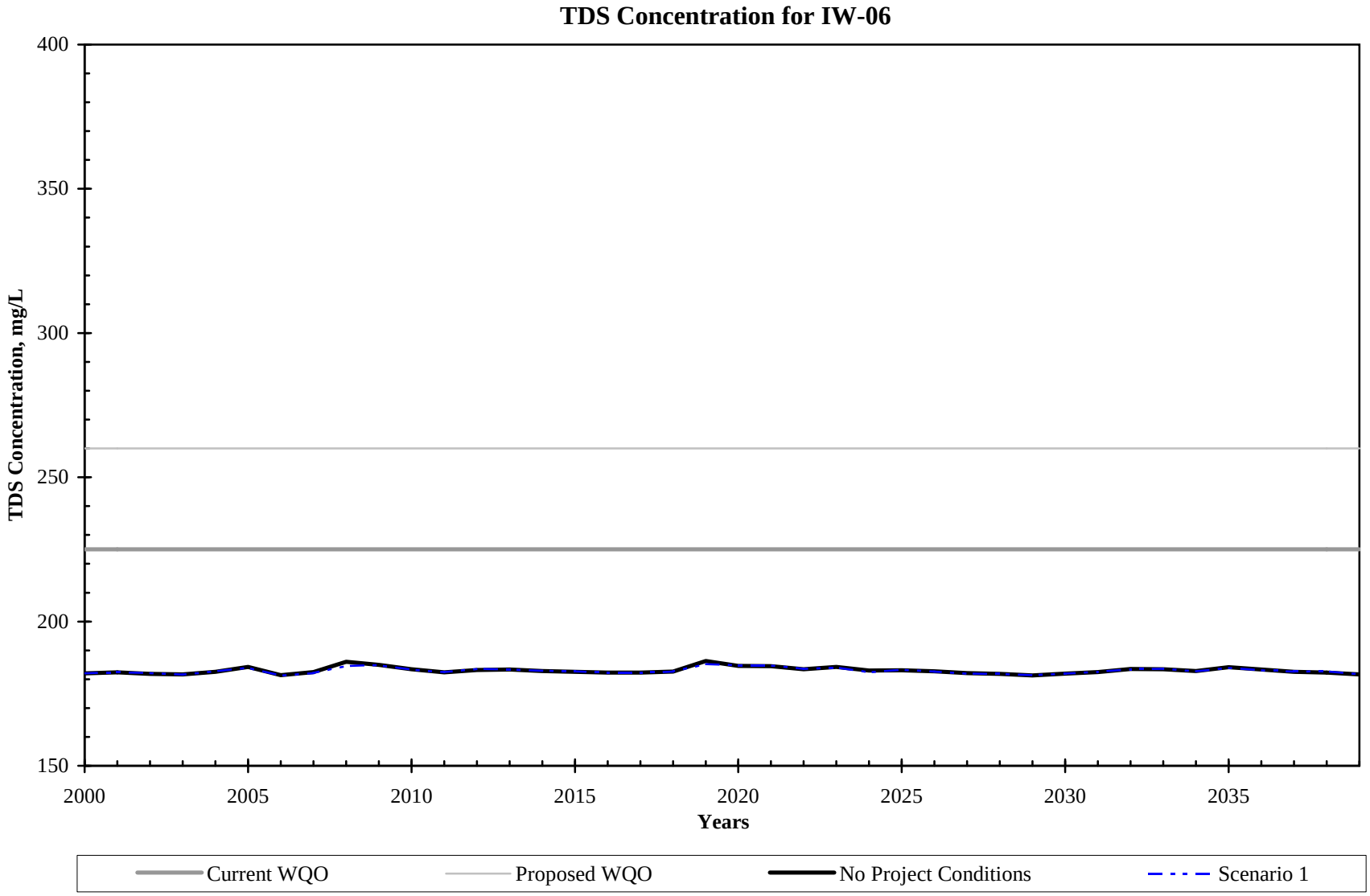

TDS Concentration for IW-06
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(f)

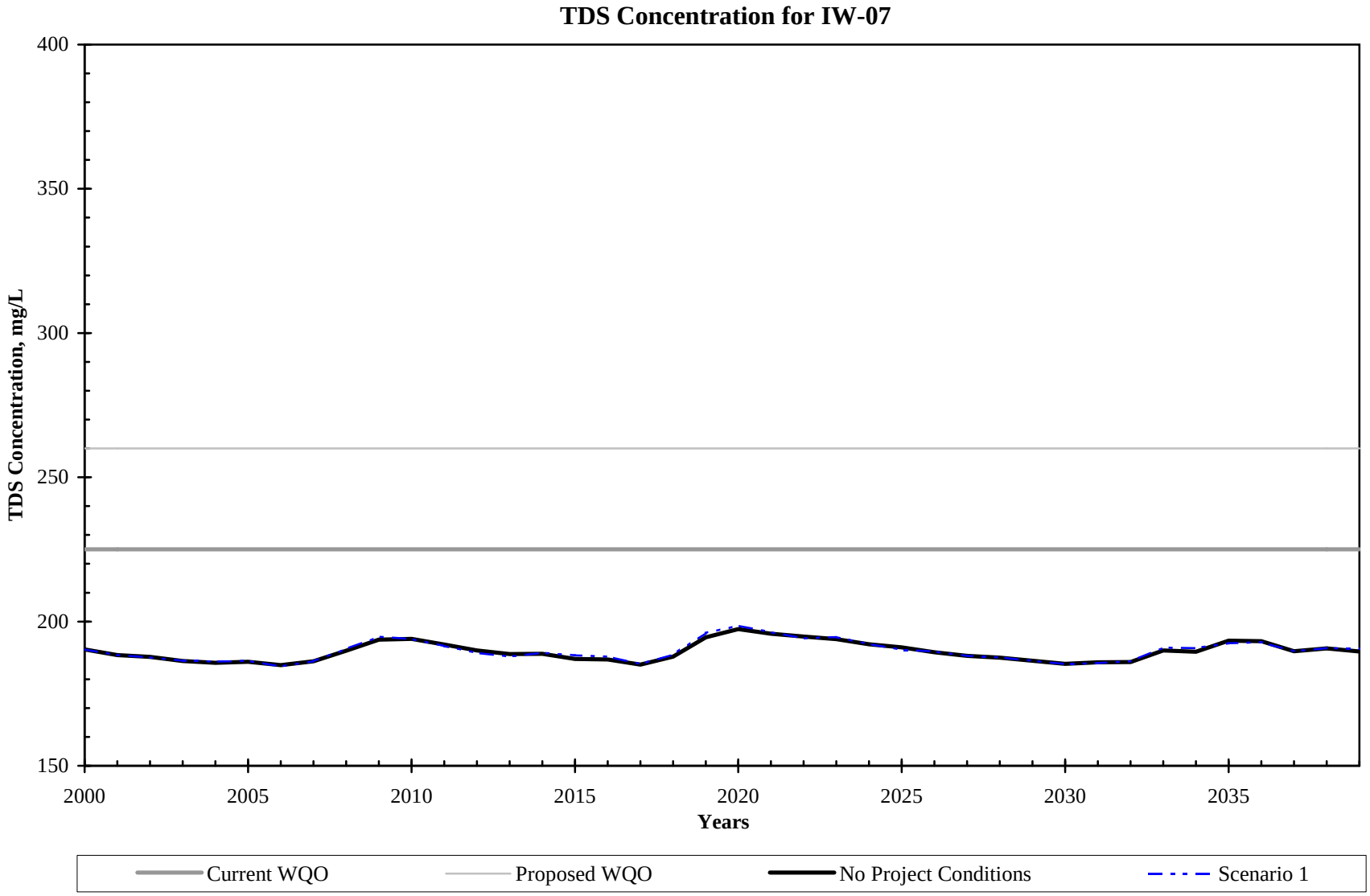

TDS Concentration for IW-07
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(g)

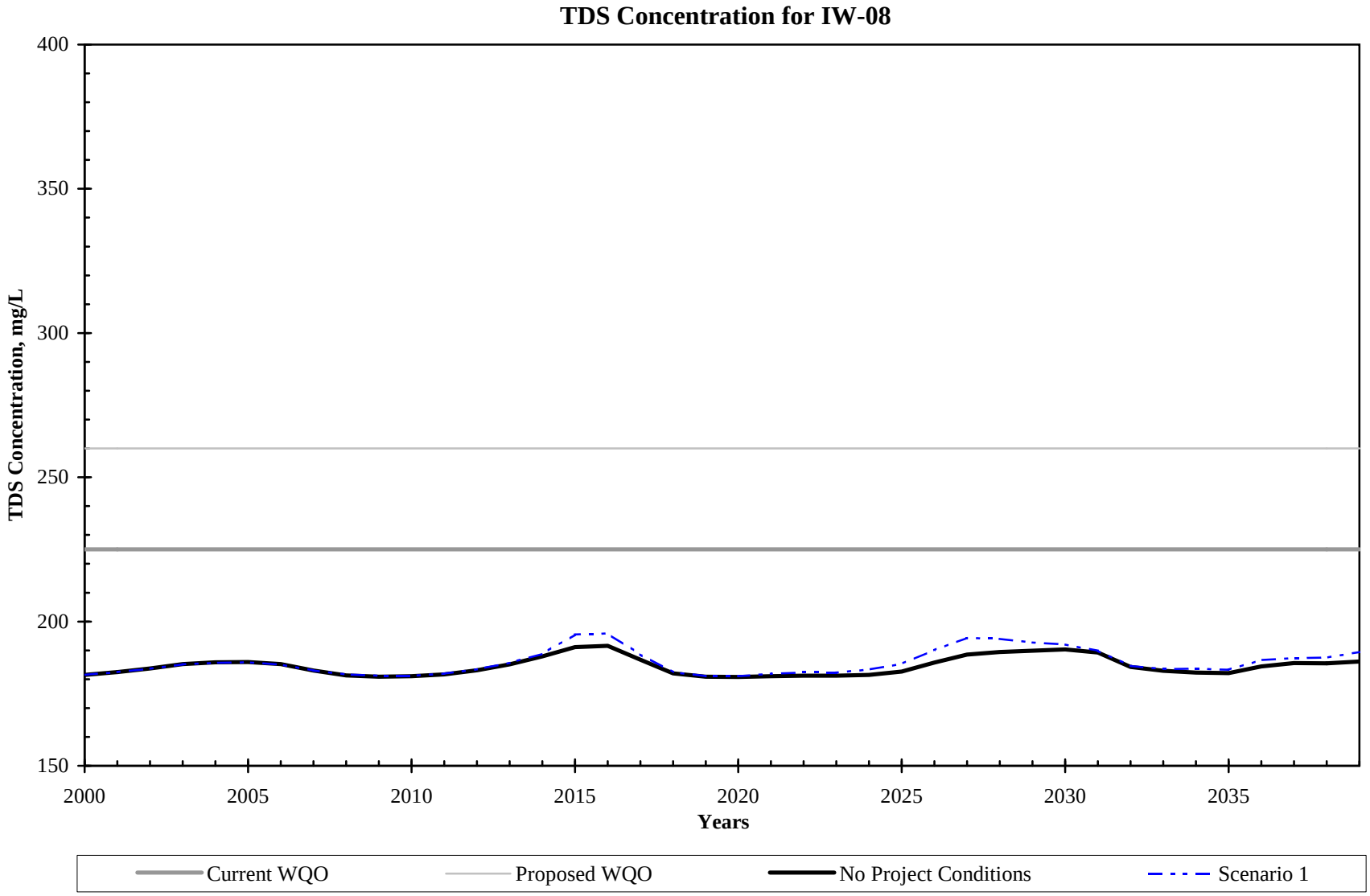

TDS Concentration for IW-08
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(h)

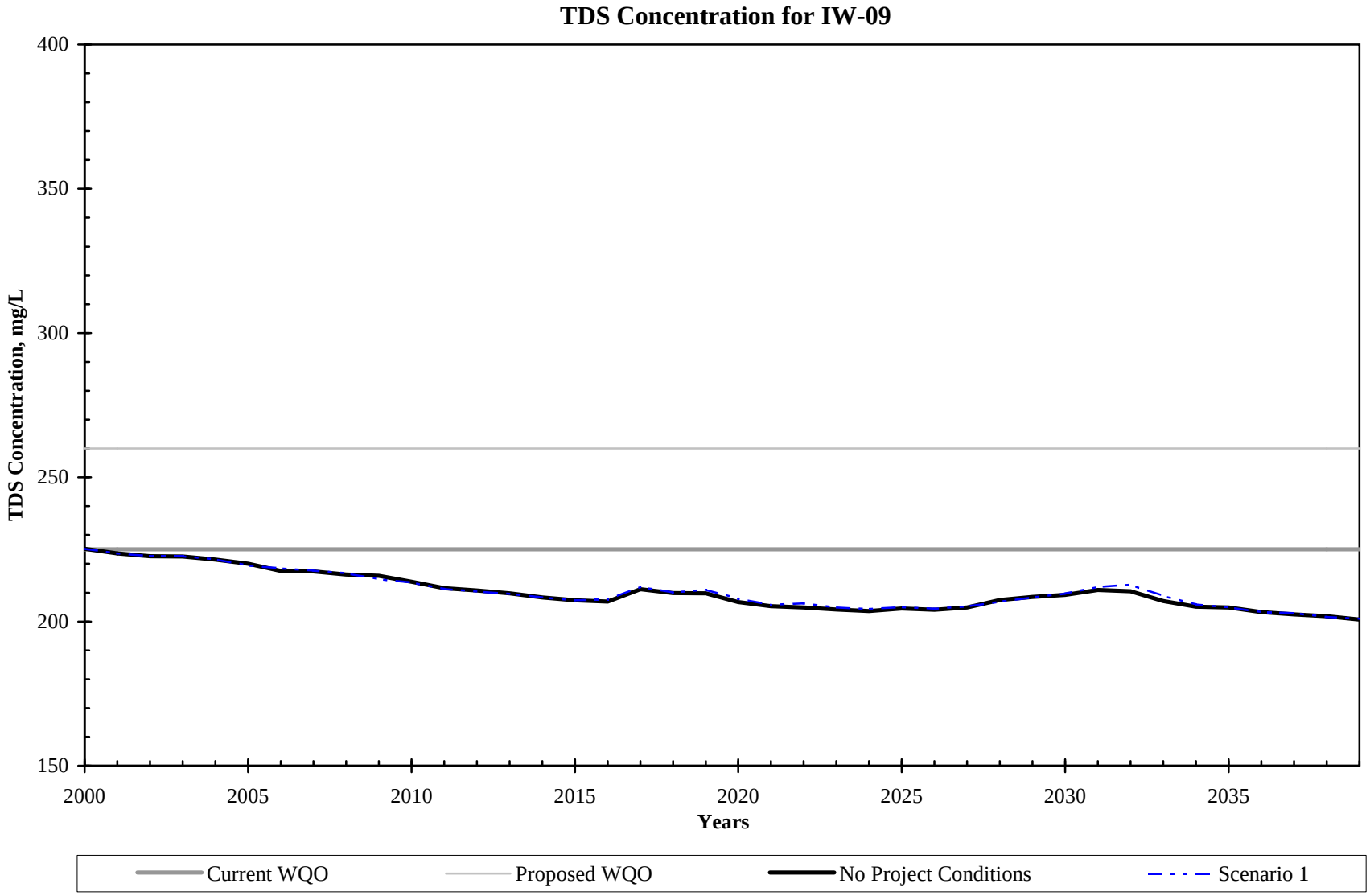

TDS Concentration for IW-09
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(i)

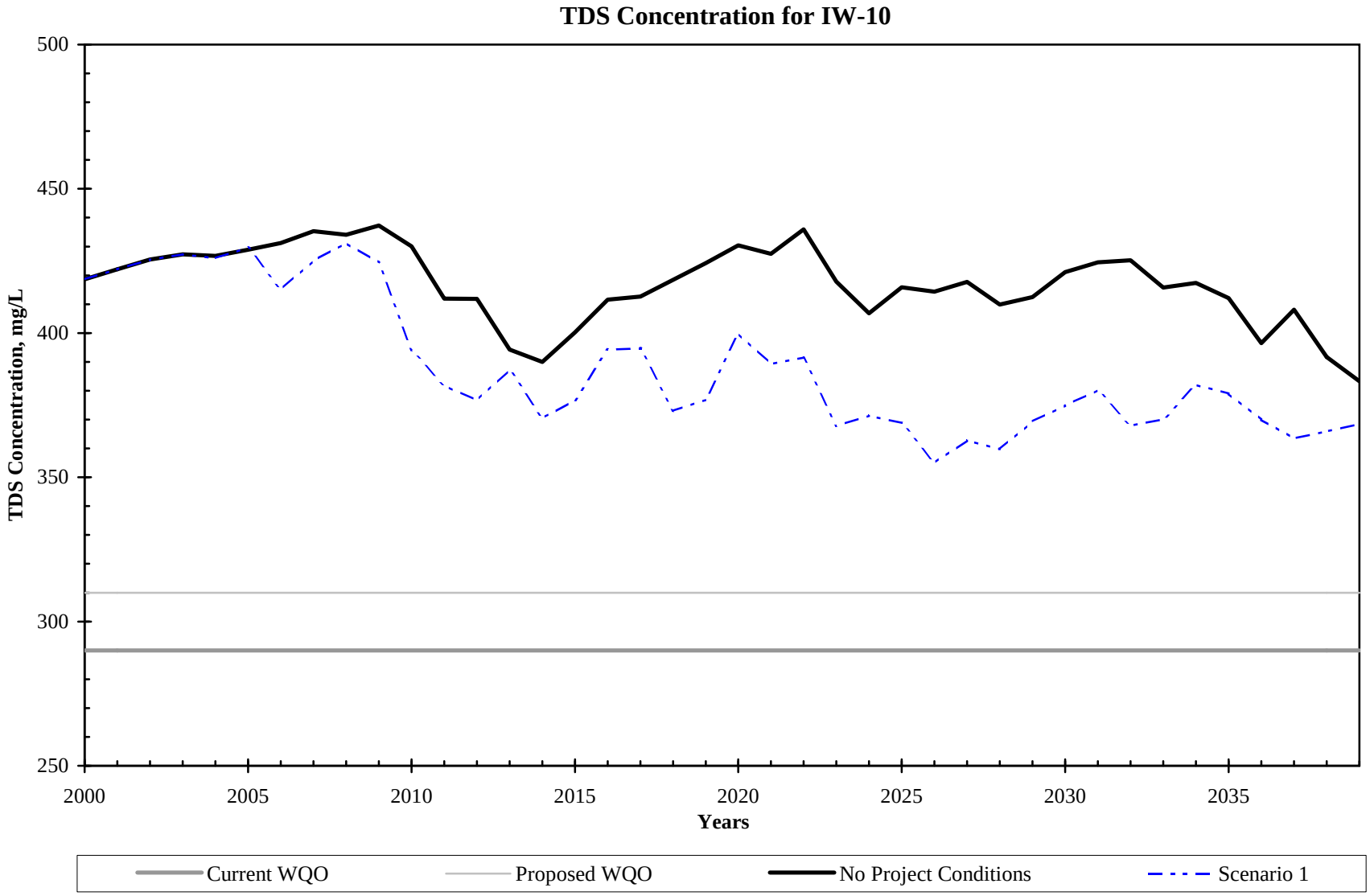

TDS Concentration for IW-10
500
450
400
350
300
250
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(j)

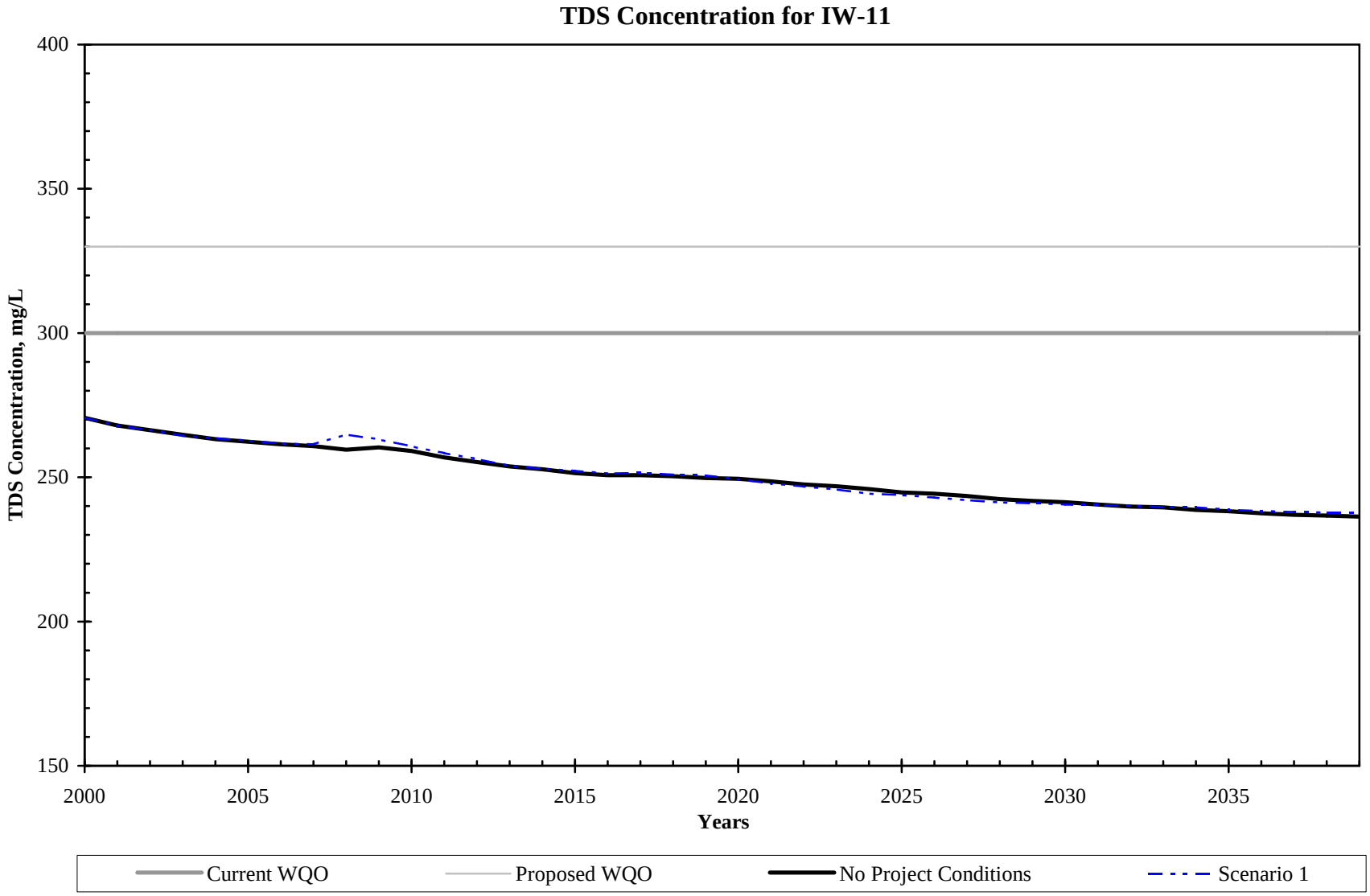

TDS Concentration for IW-11
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(k)

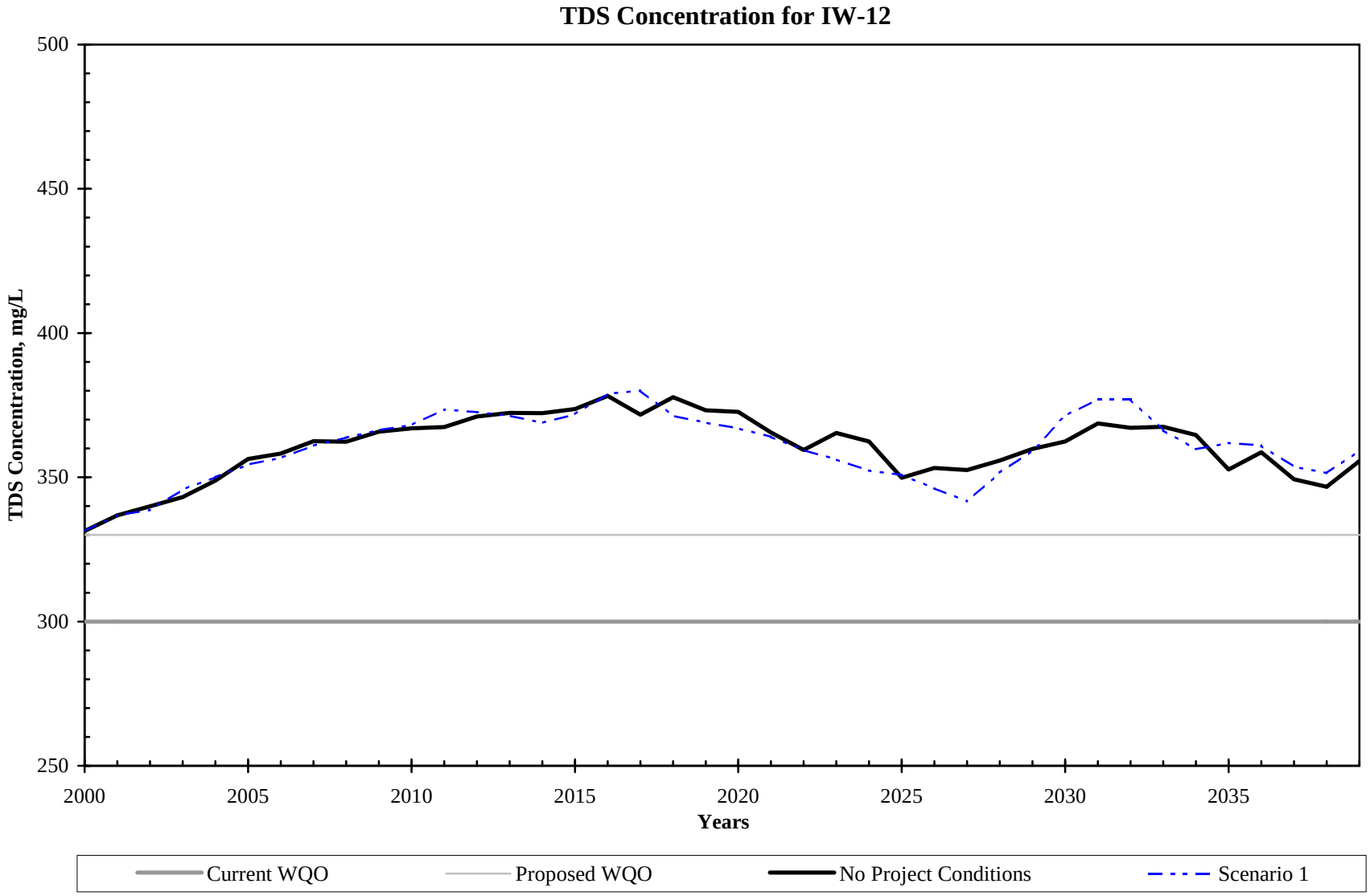

TDS Concentration for IW-12
TDS Concentration, mg/L
500
450
400
350
300
250
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(I)

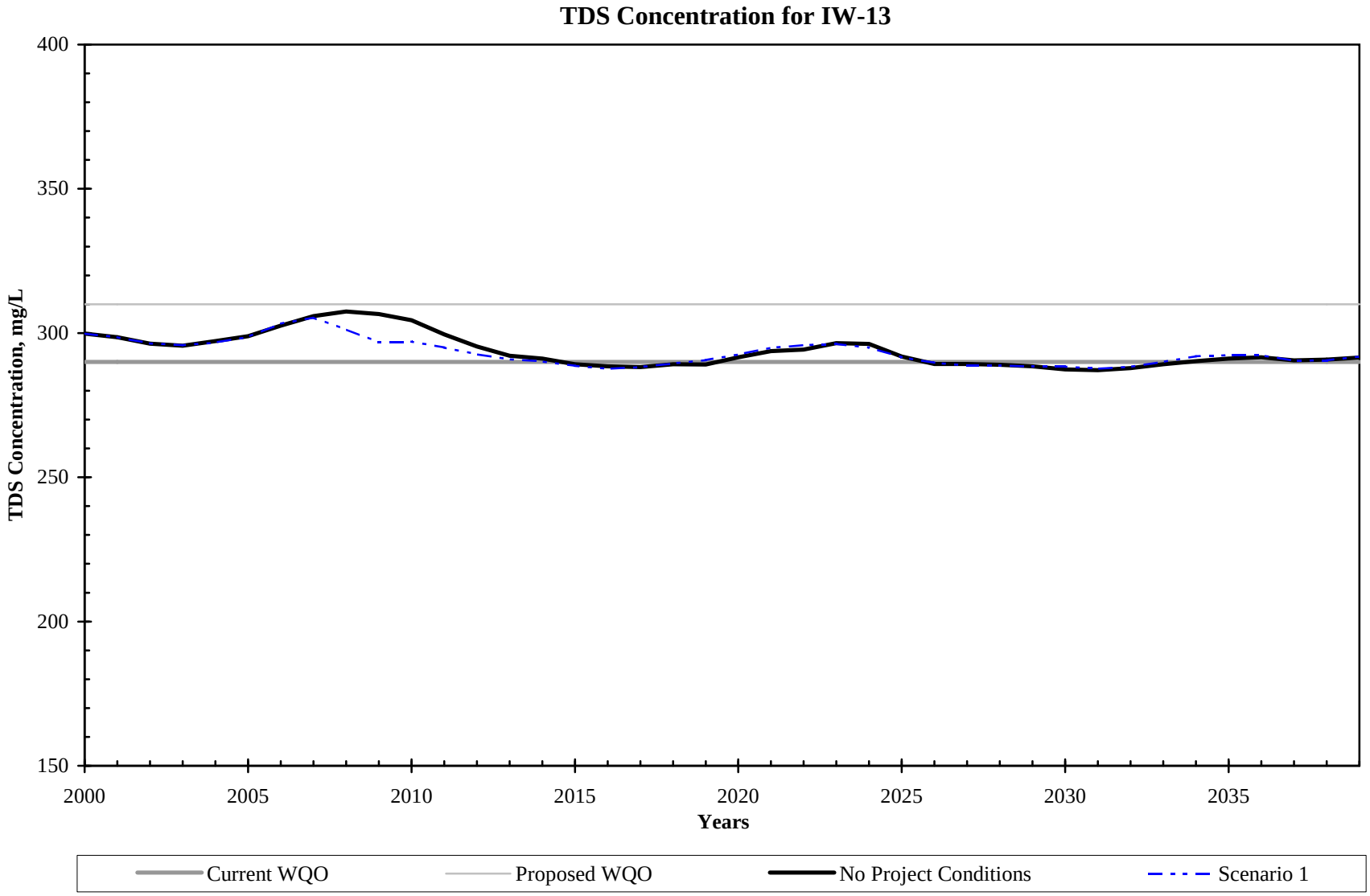

TDS Concentration for IW-13
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(m)

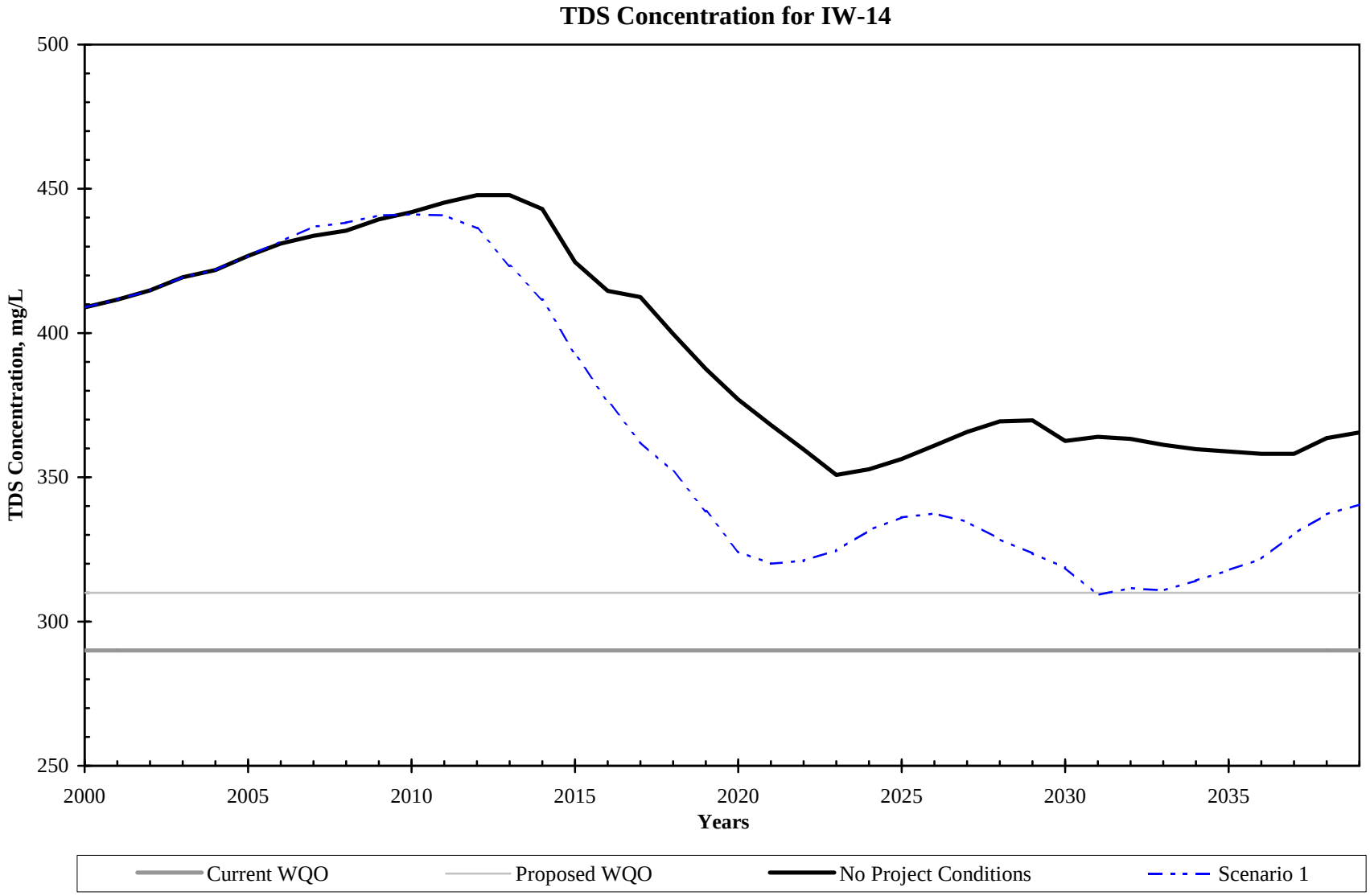

TDS Concentration for IW-14
500
450
400
350
300
250
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(n)

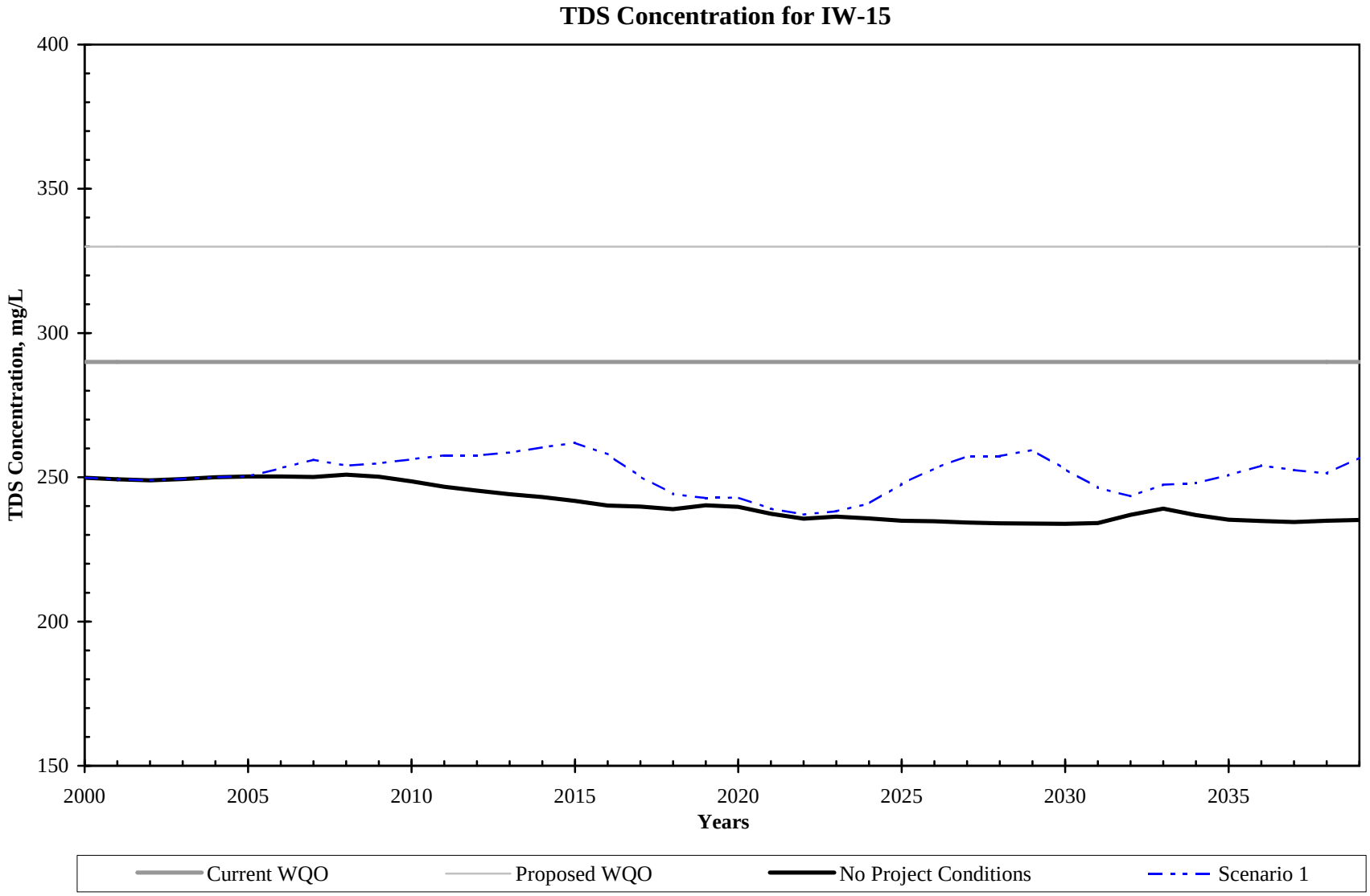

TDS Concentration for IW-15
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(o)

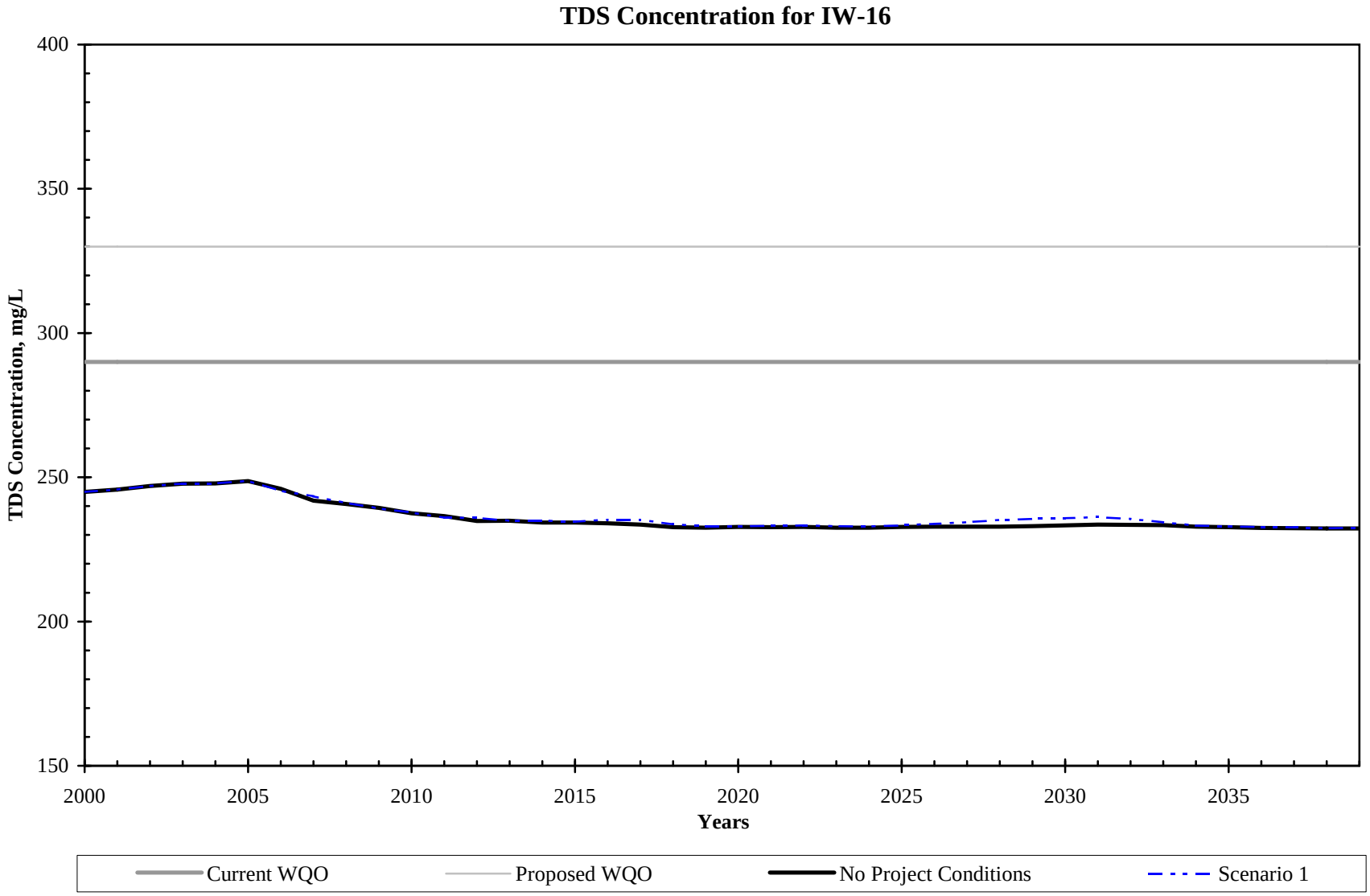

TDS Concentration for IW-16
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(p)

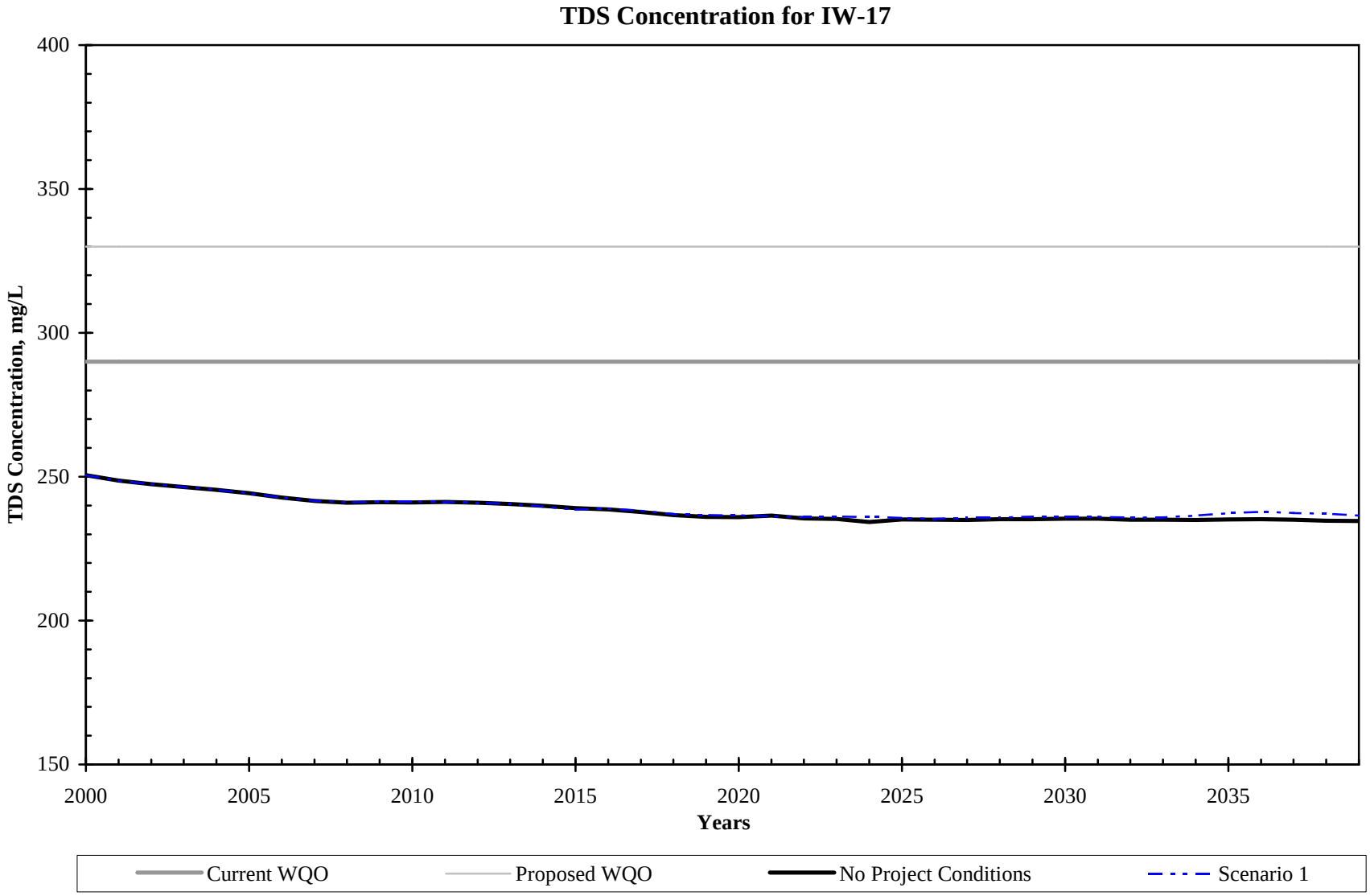

TDS Concentration for IW-17
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(q)

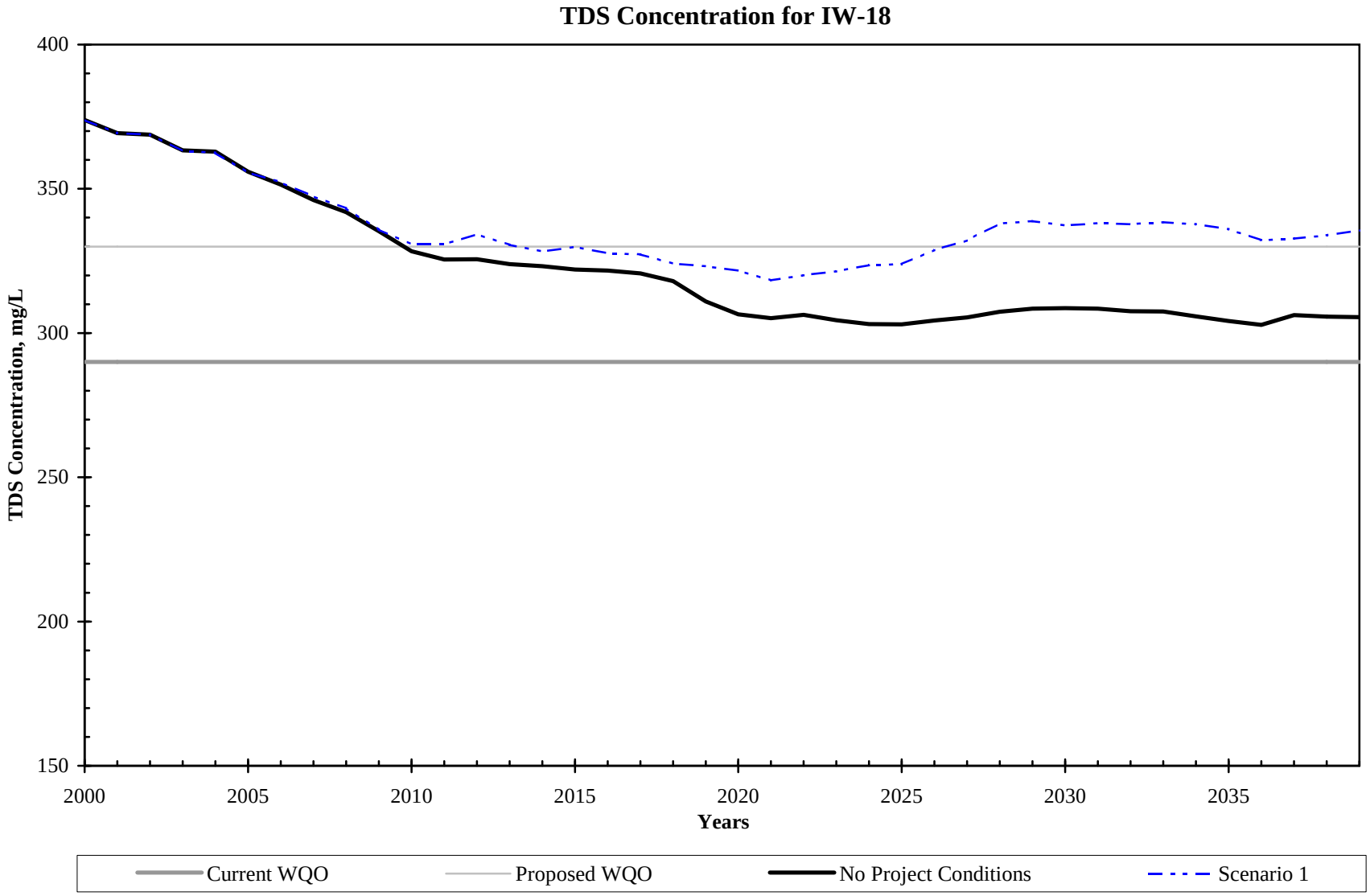

TDS Concentration for IW-18
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(r)

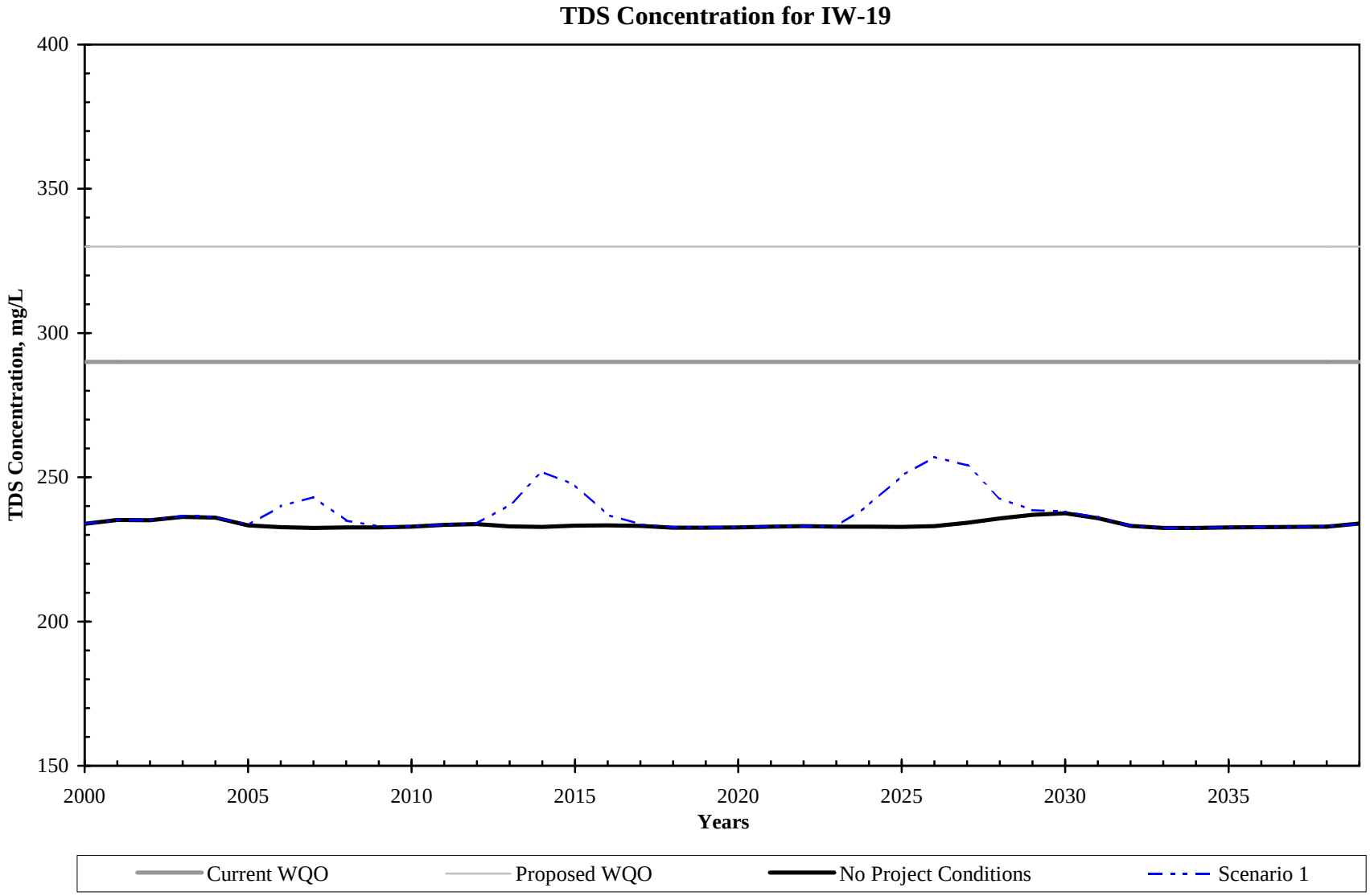

TDS Concentration for IW-19
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(s)

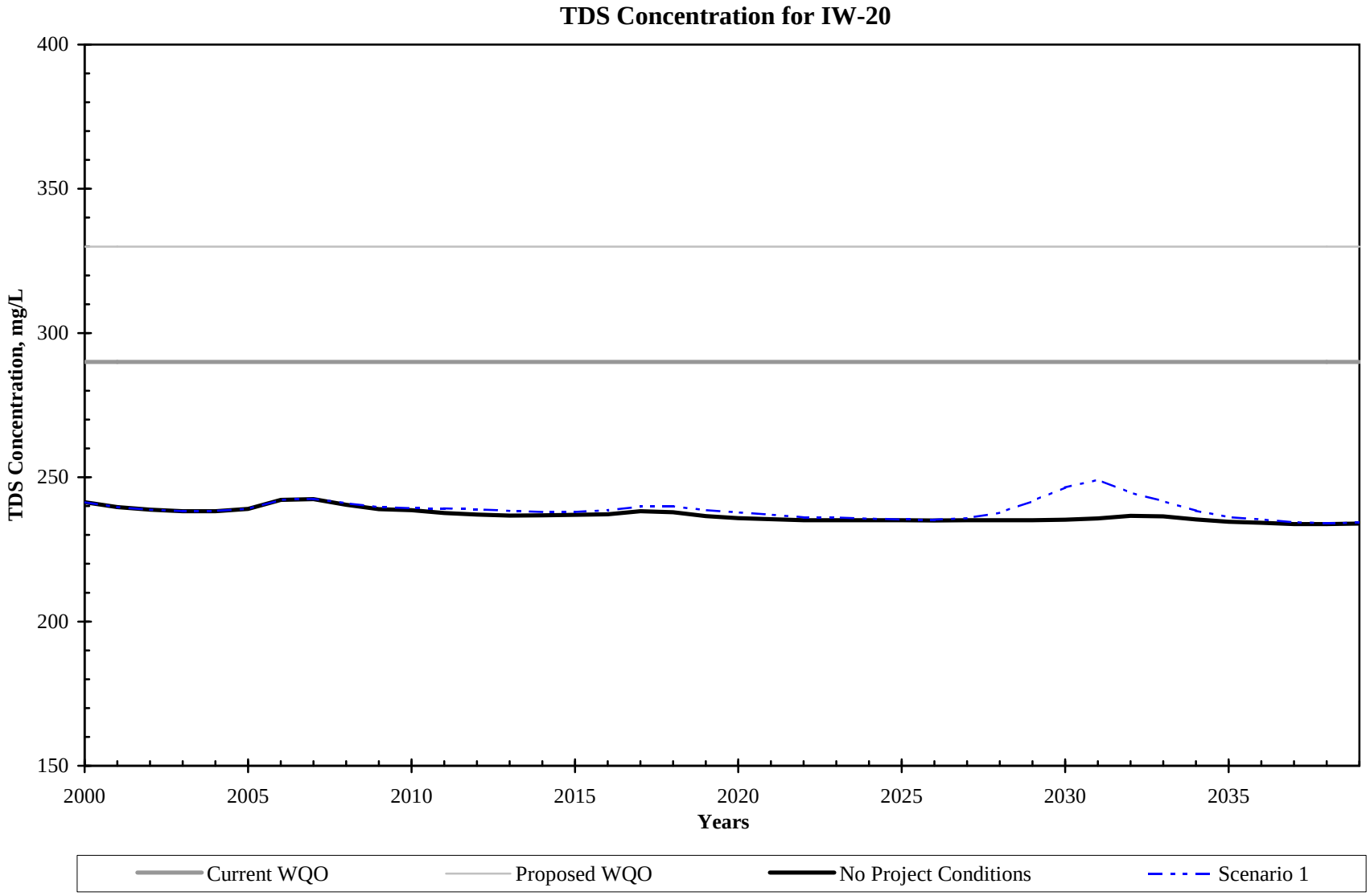

TDS Concentration for IW-20
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(t)

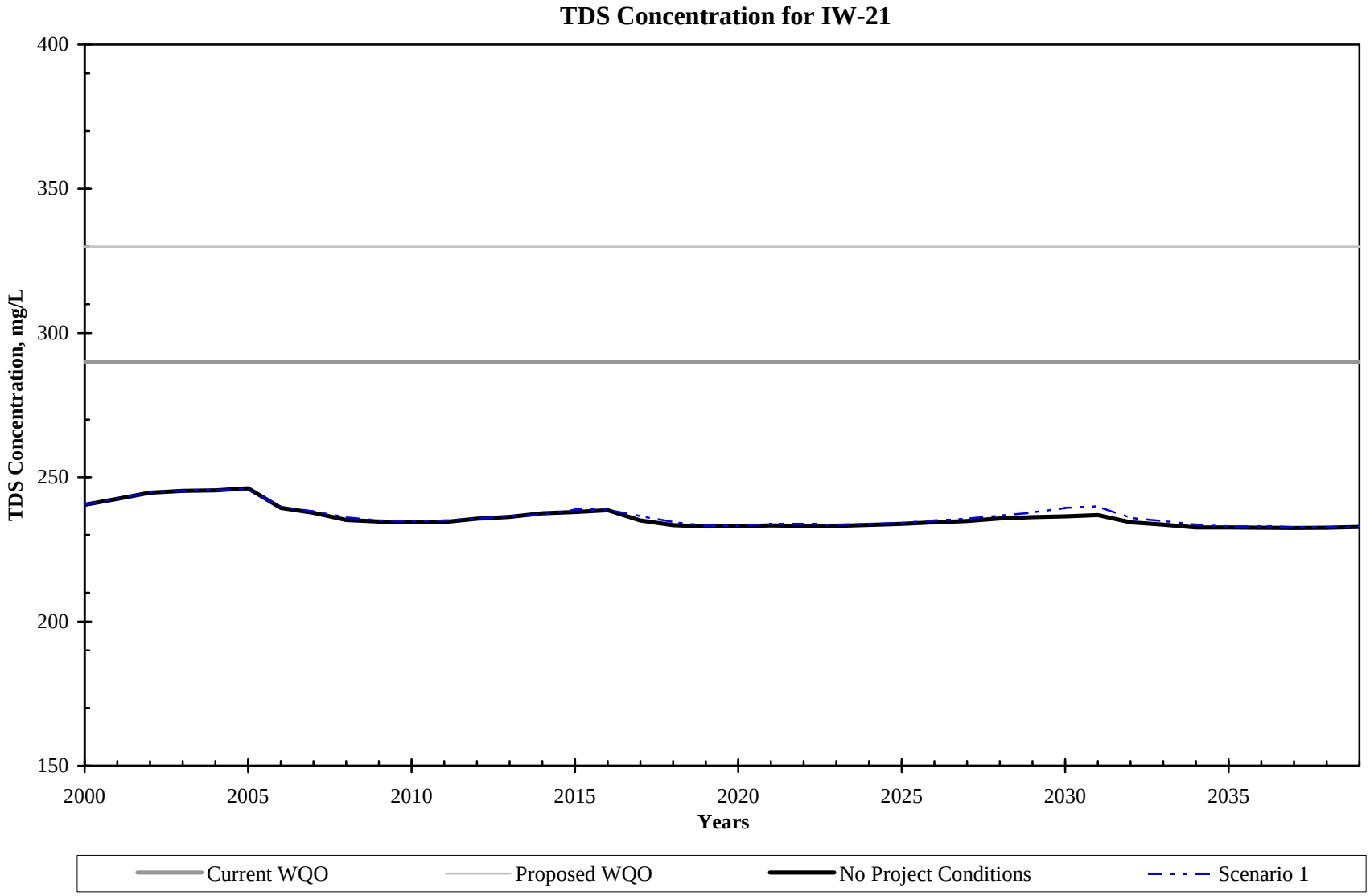

TDS Concentration for IW-21
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(u)

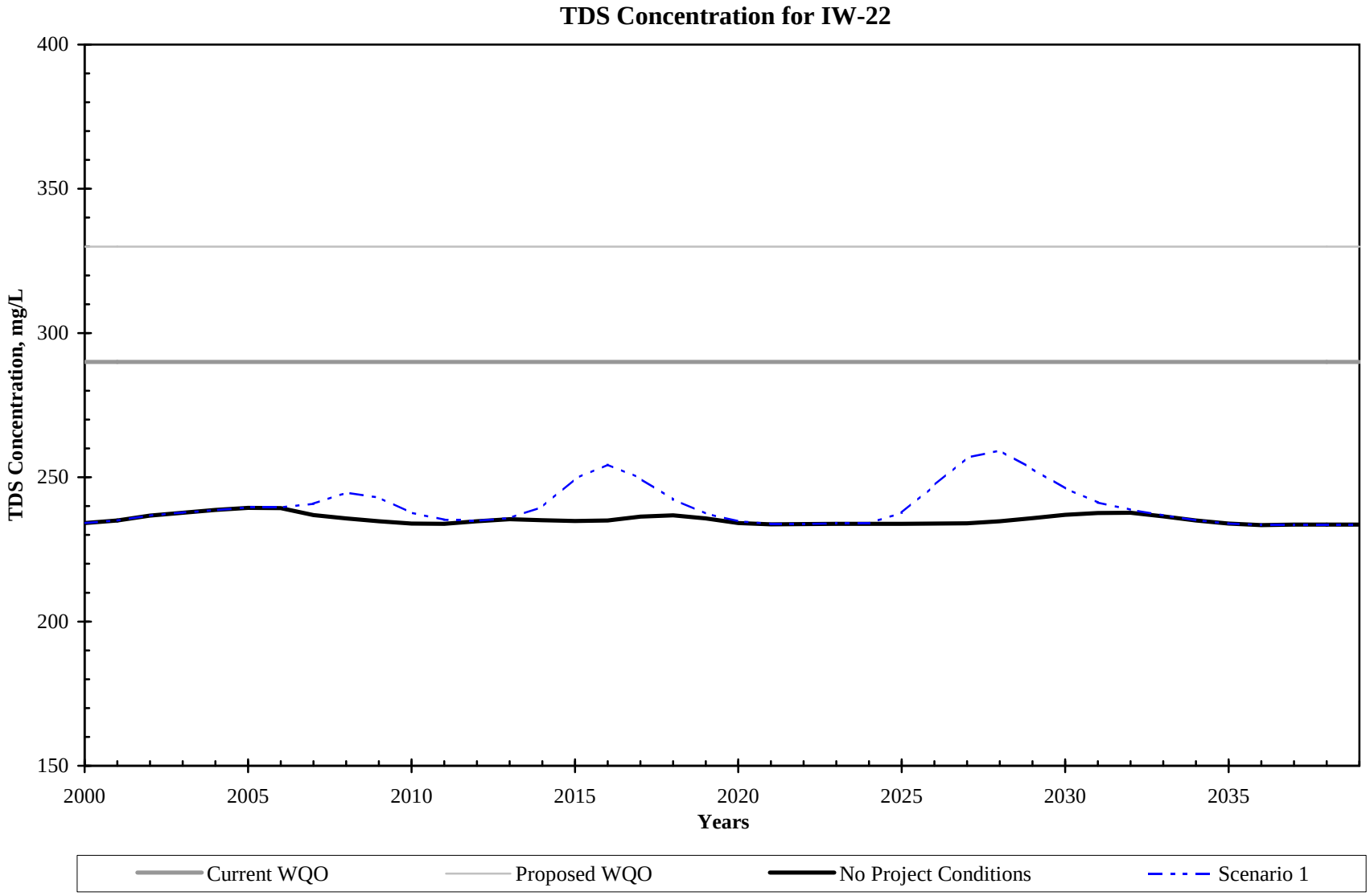

TDS Concentration for IW-22
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(v)

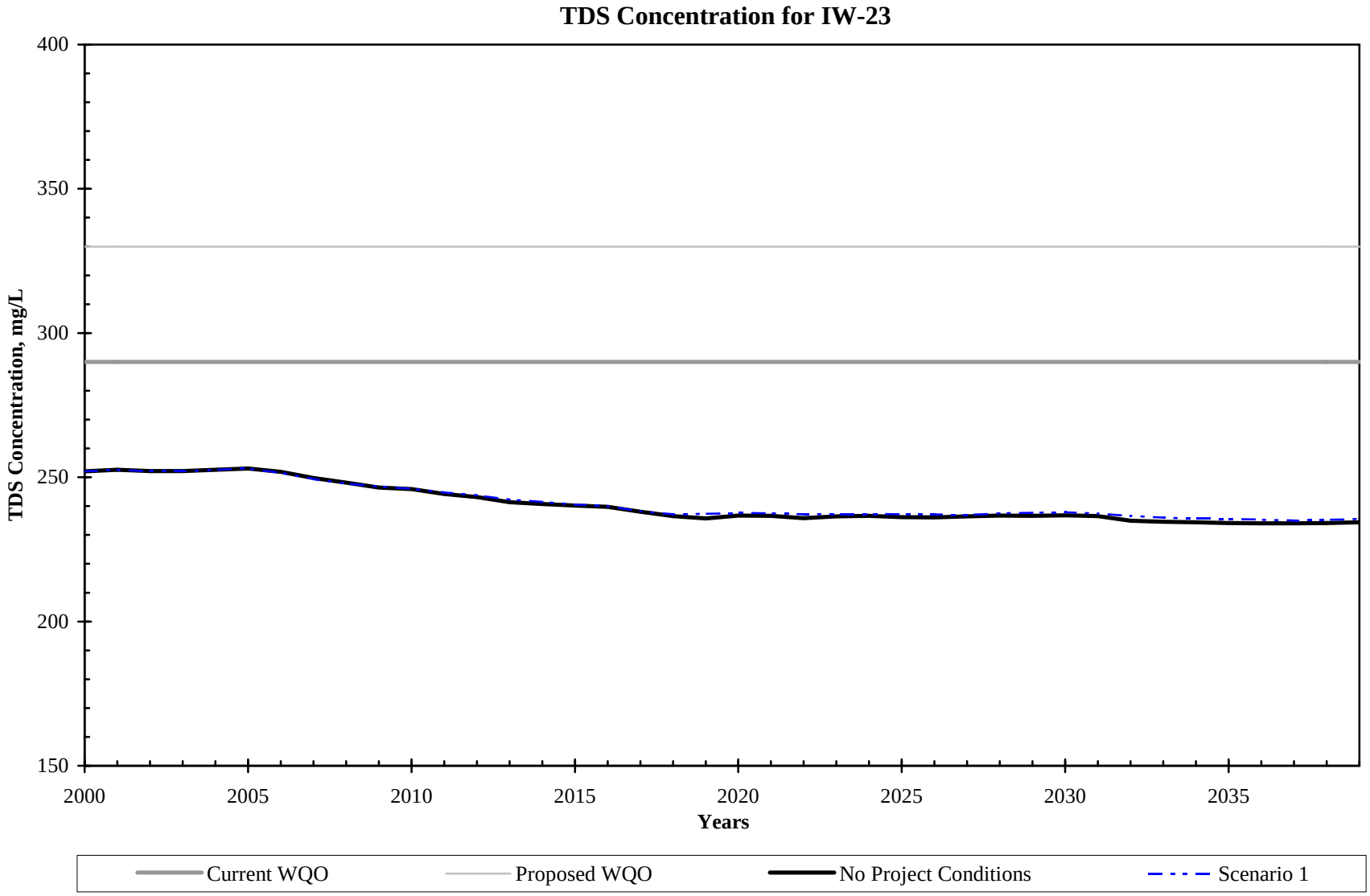

TDS Concentration for IW-23
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(w)

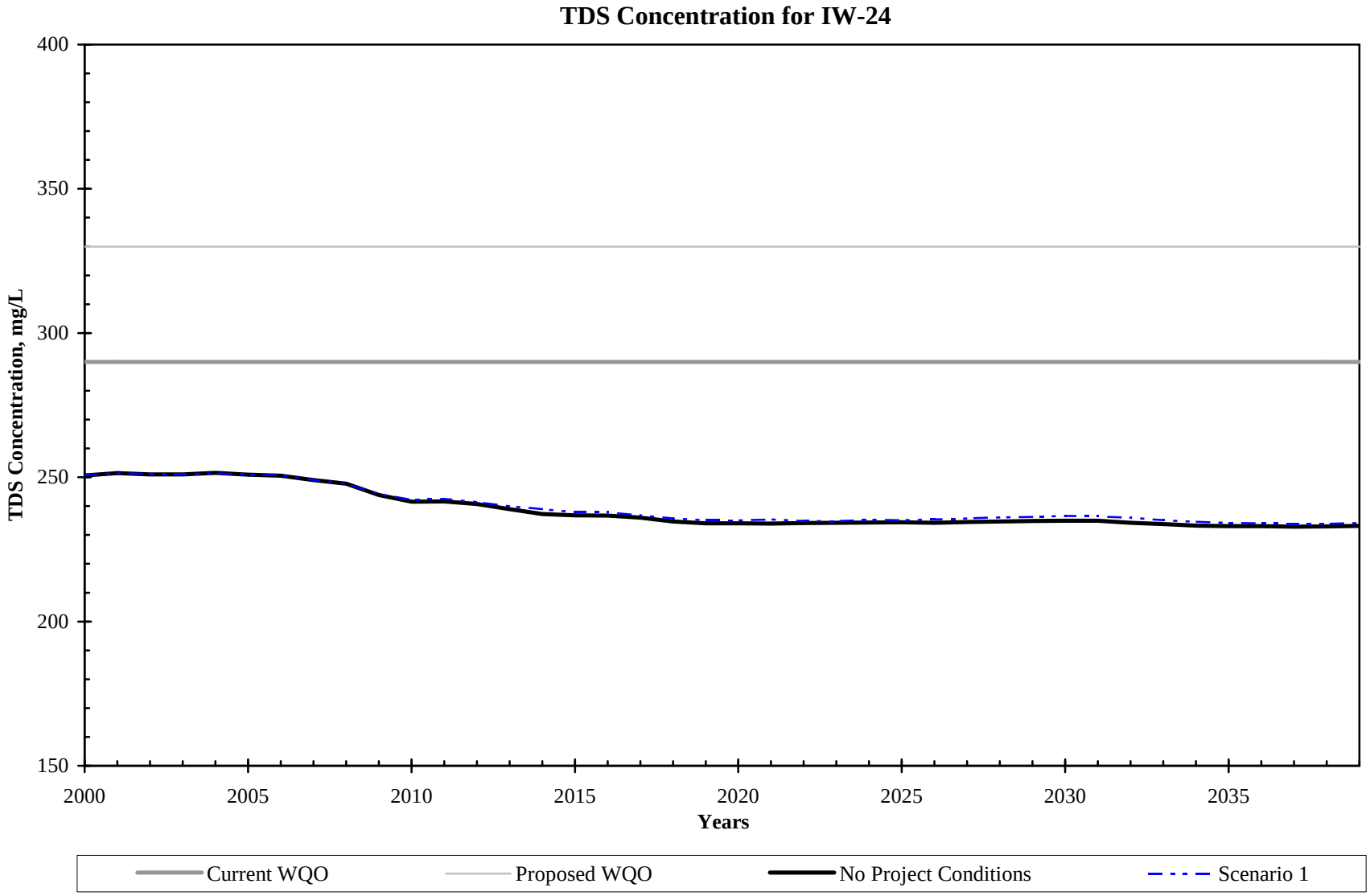

TDS Concentration for IW-24
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(x)

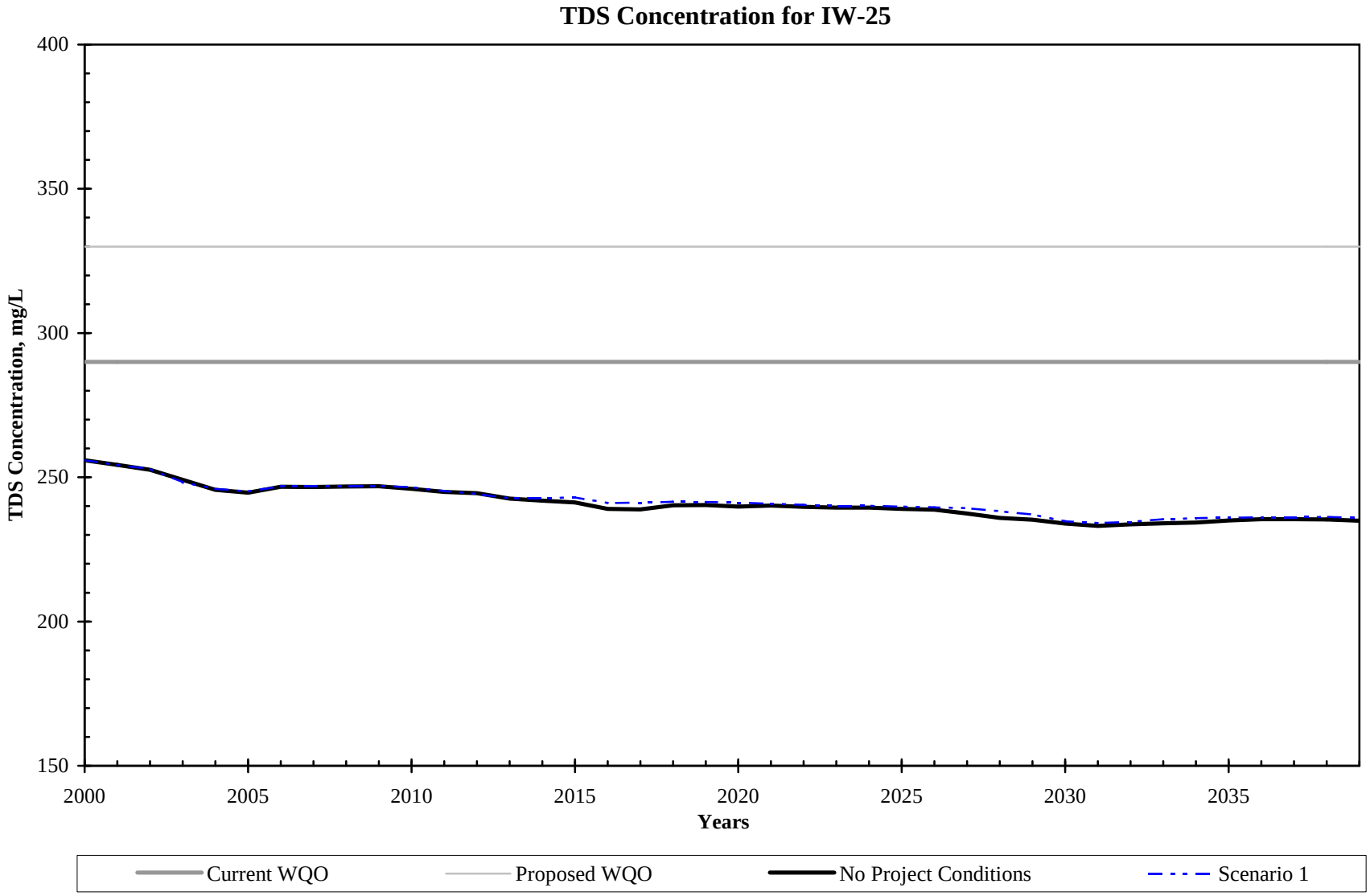

TDS Concentration for IW-25
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(y)

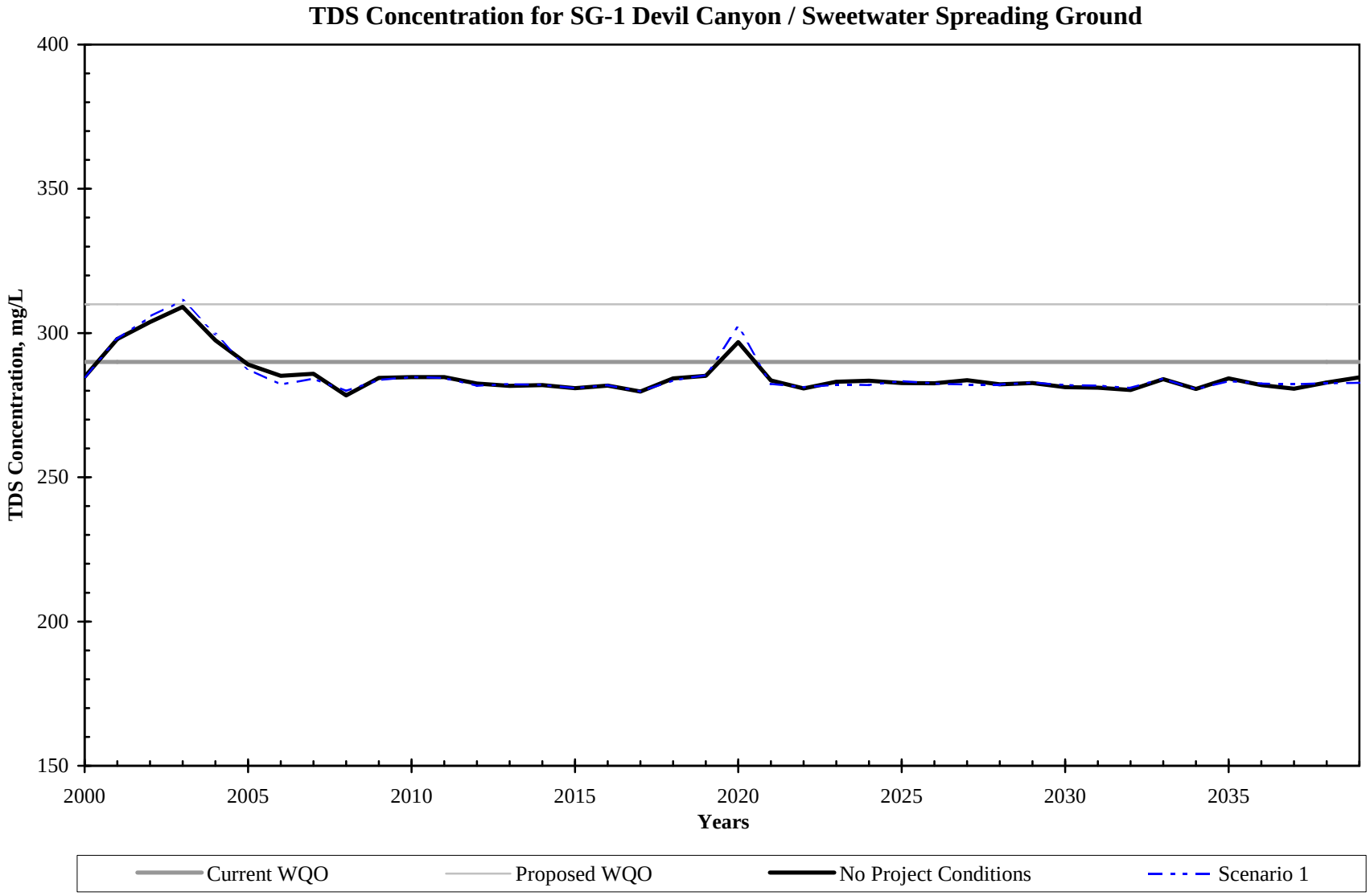

TDS Concentration for SG-1 Devil Canyon / Sweetwater Spreading Ground
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(z)

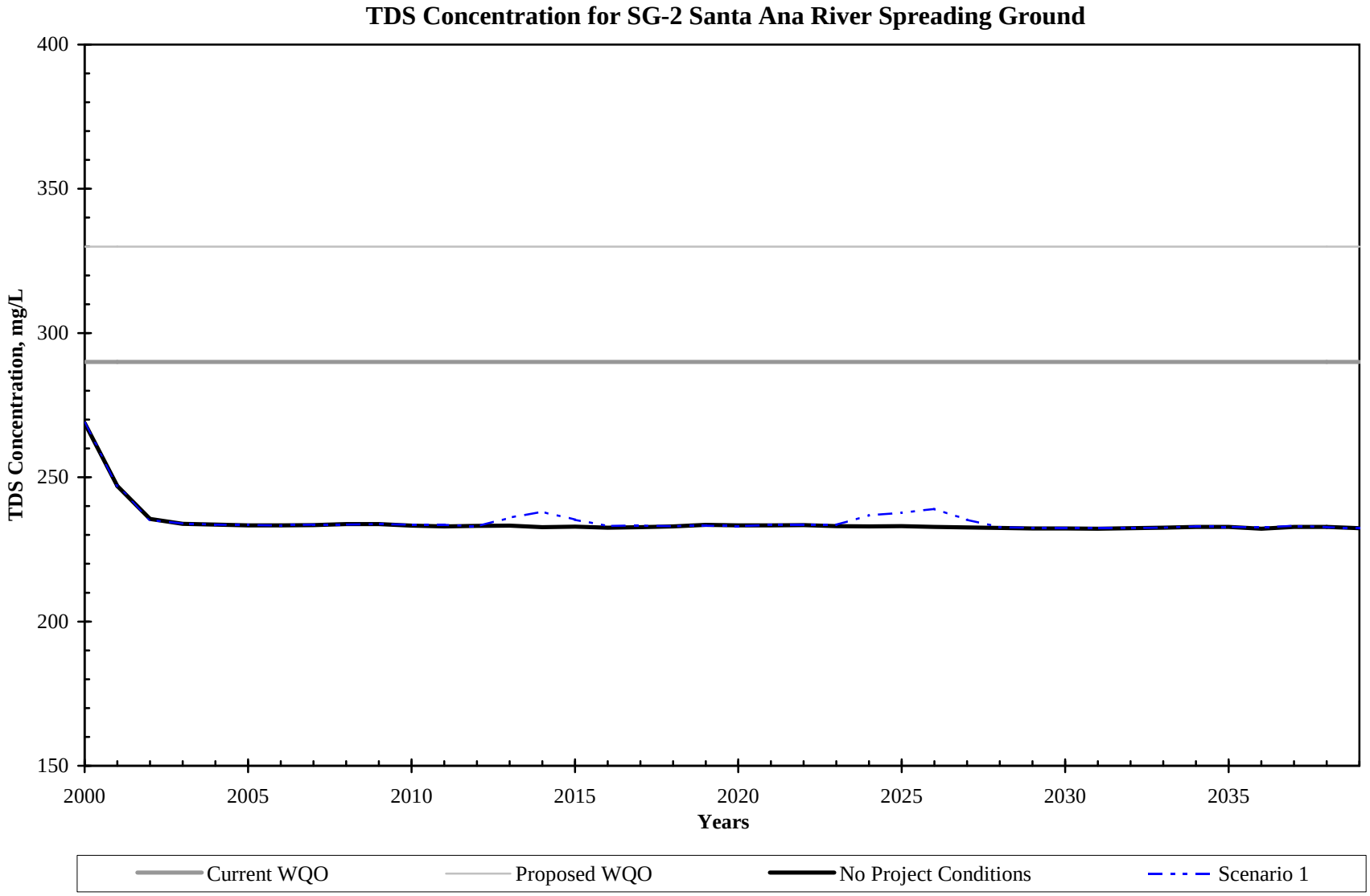

TDS Concentration for SG-2 Santa Ana River Spreading Ground
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(aa)

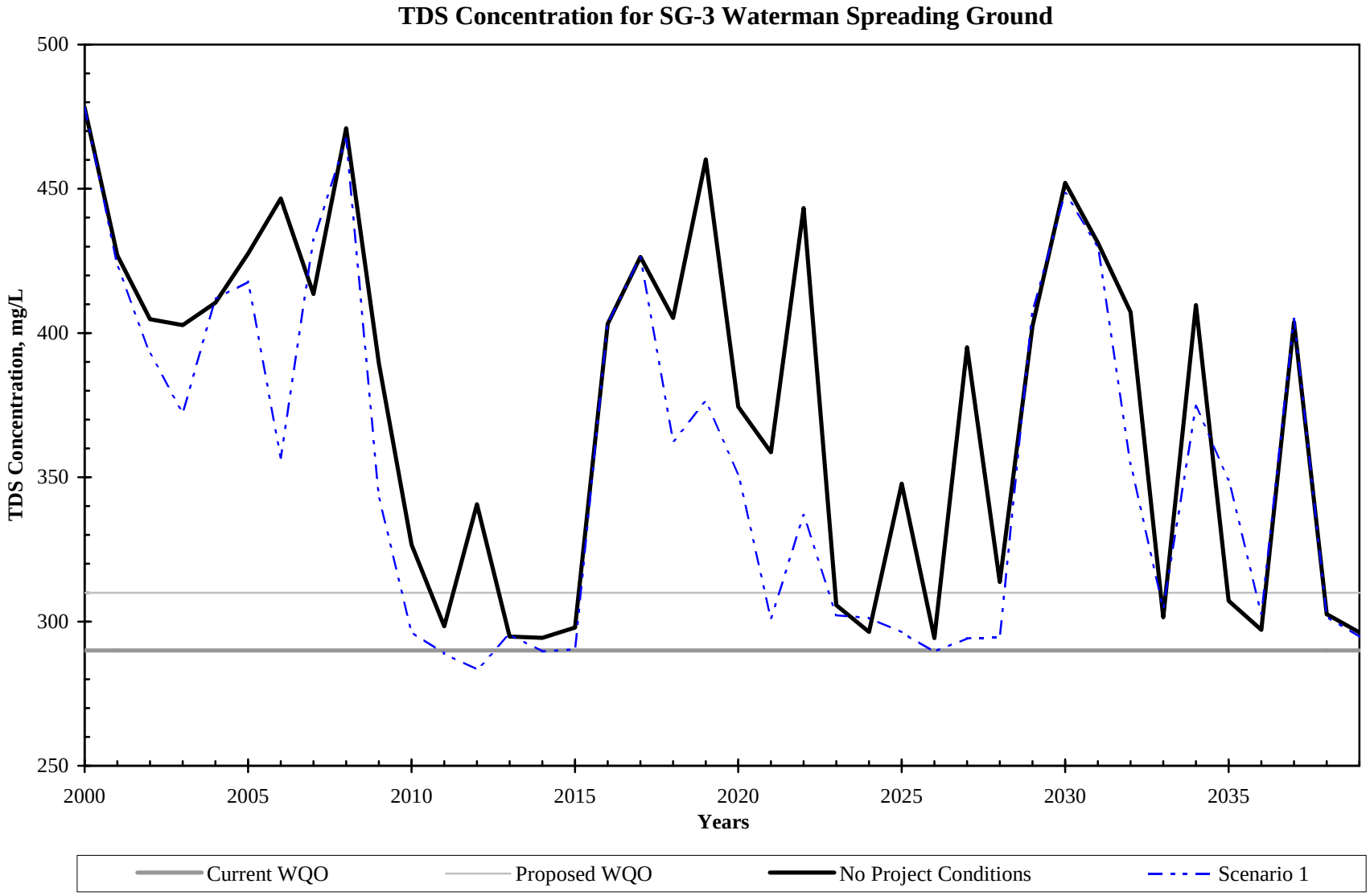

TDS Concentration for SG-3 Waterman Spreading Ground
TDS Concentration, mg/L
500
450
400
350
300
250
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(ab)

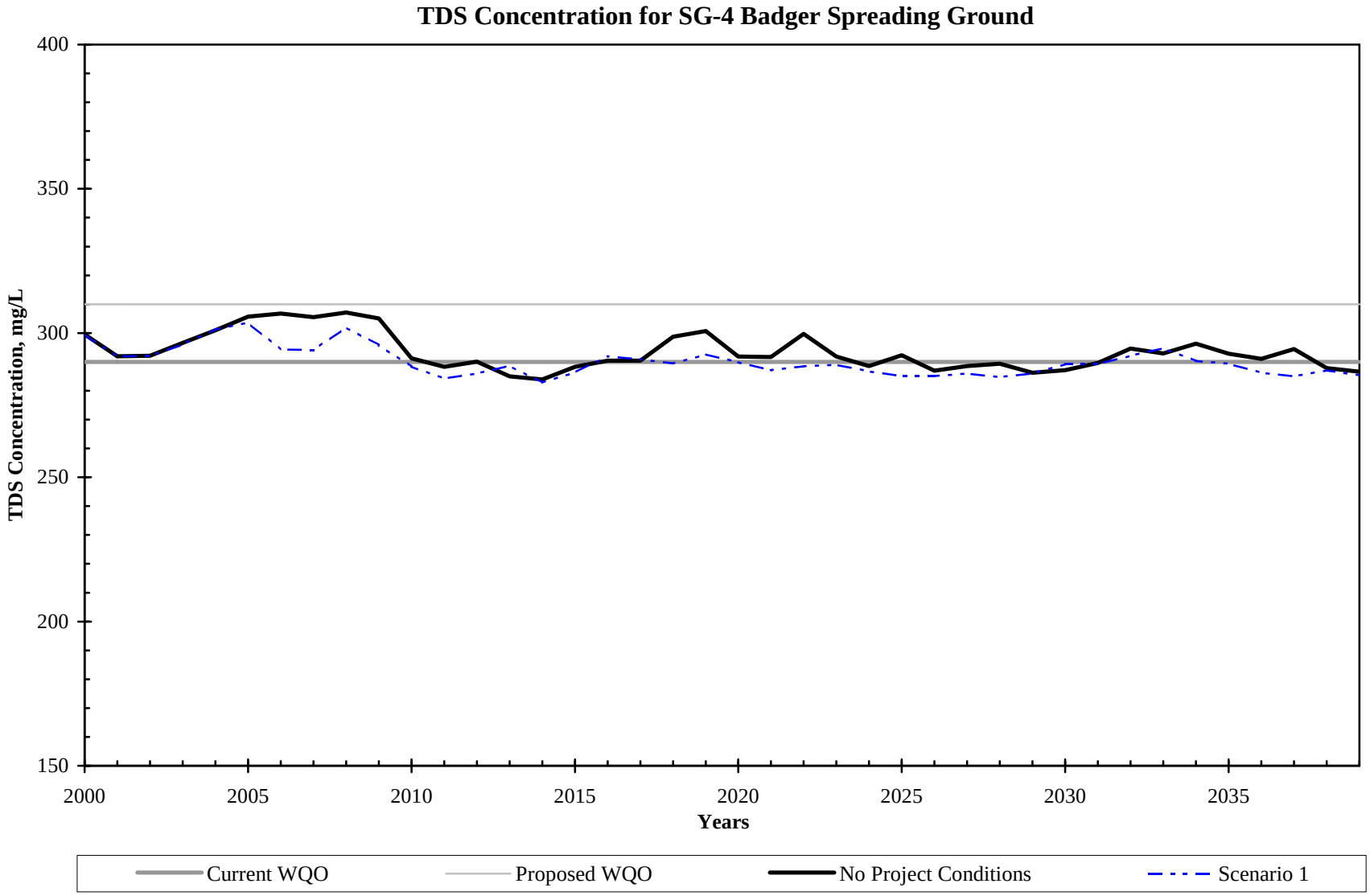

TDS Concentration for SG-4 Badger Spreading Ground
400
350
300
250
200
150
TDS Concentration, mg/L
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(ac)

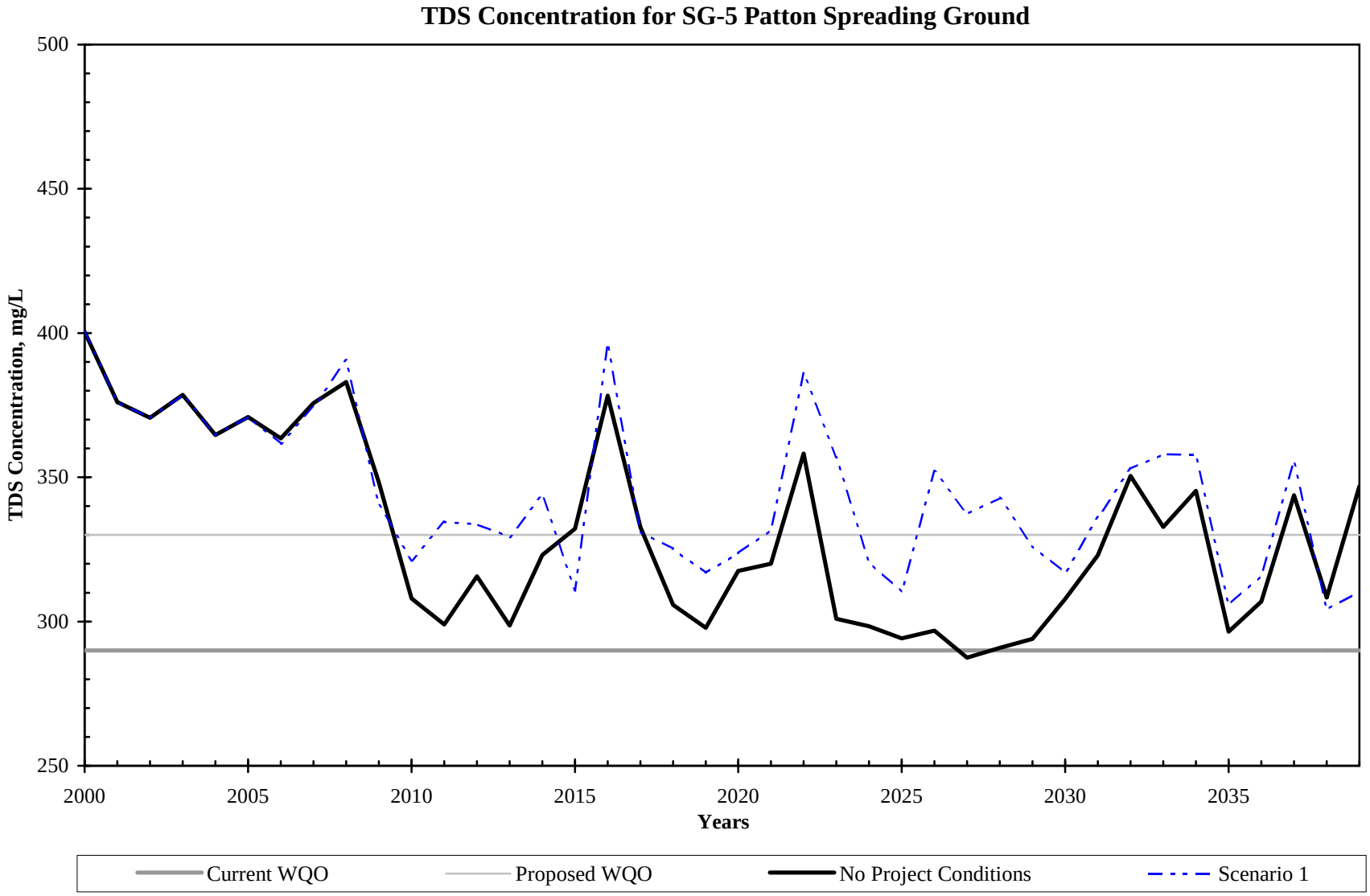

TDS Concentration for SG-5 Patton Spreading Ground
TDS Concentration, mg/L
500
450
400
350
300
250
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(ad)

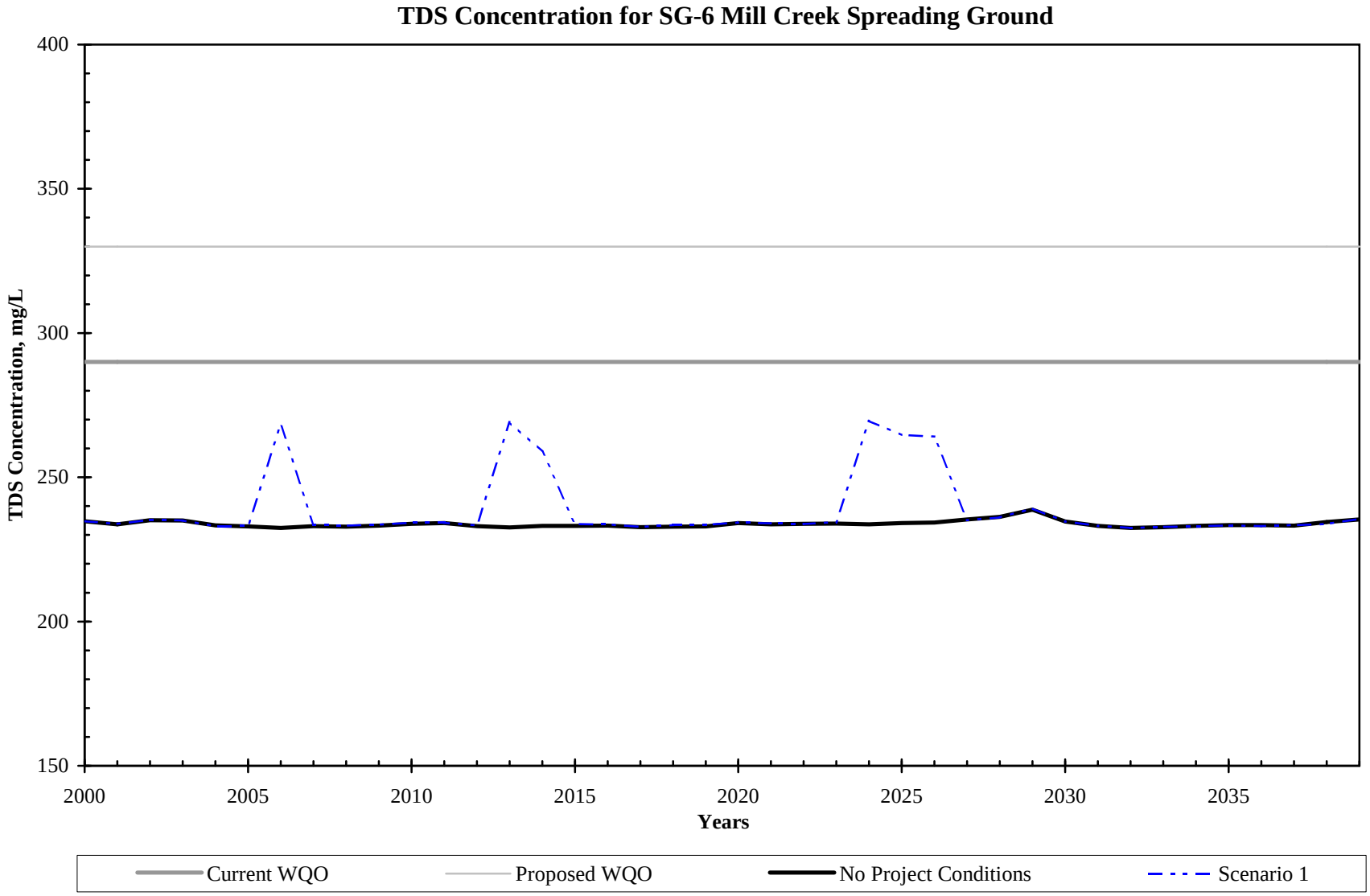

TDS Concentration for SG-6 Mill Creek Spreading Ground
TDS Concentration, mg/L
400
350
300
250
200
150
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(ae)

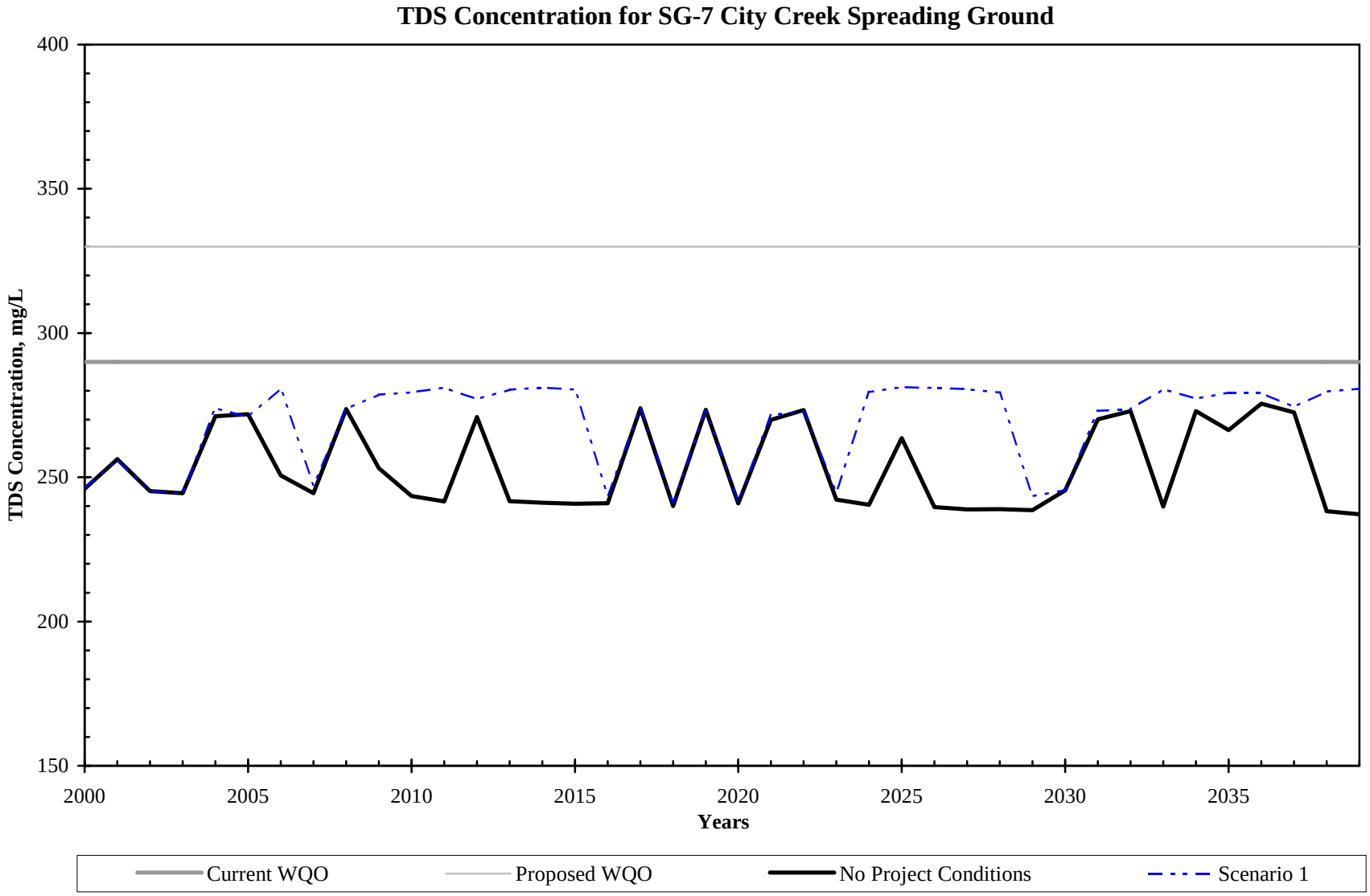

TDS Concentration for SG-7 City Creek Spreading Ground
TDS Concentration, mg/L
400
350
300
250
200
150
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(af)

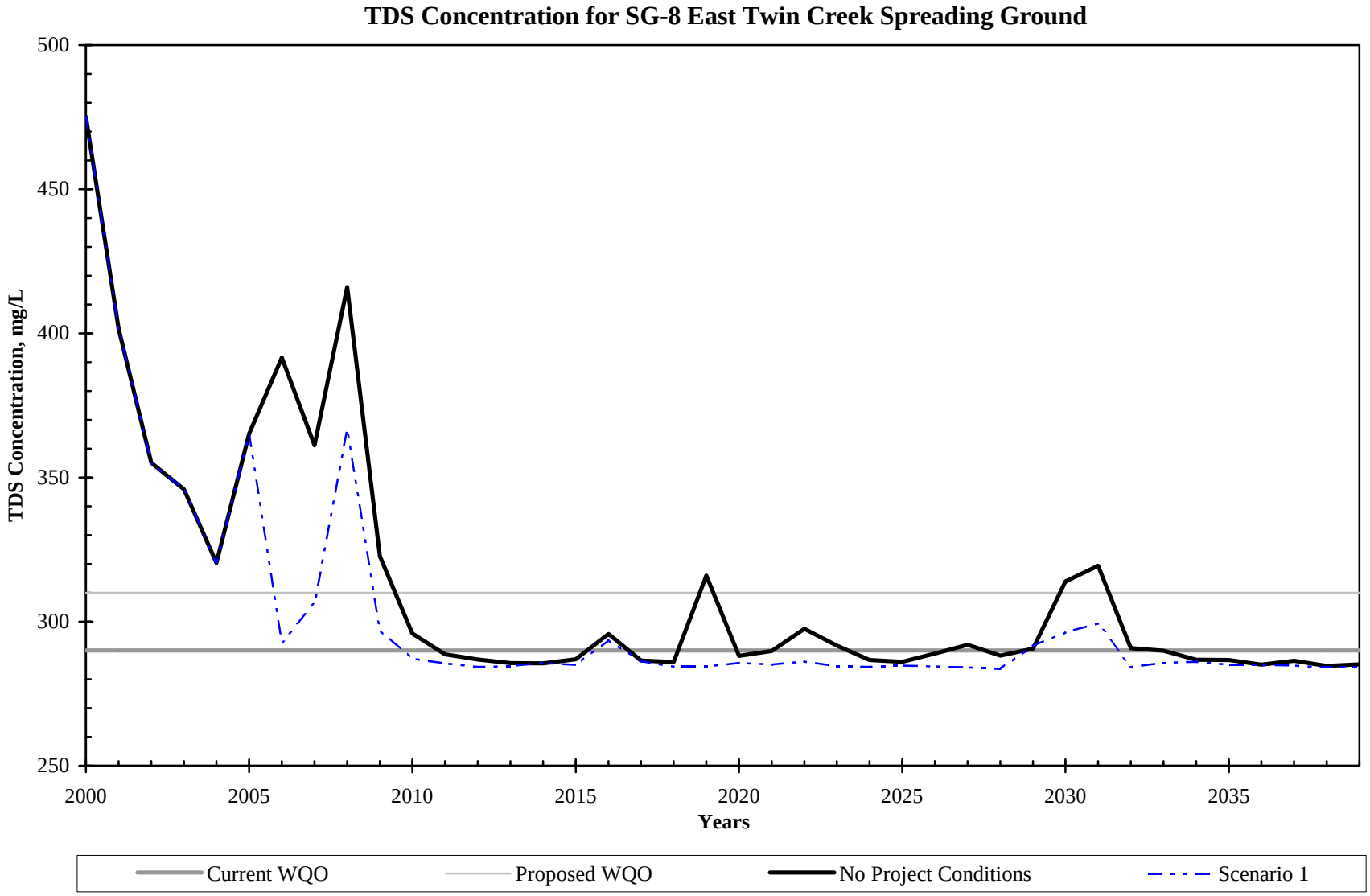

TDS Concentration for SG-8 East Twin Creek Spreading Ground
TDS Concentration, mg/L
500
450
400
350
300
250
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(ag)

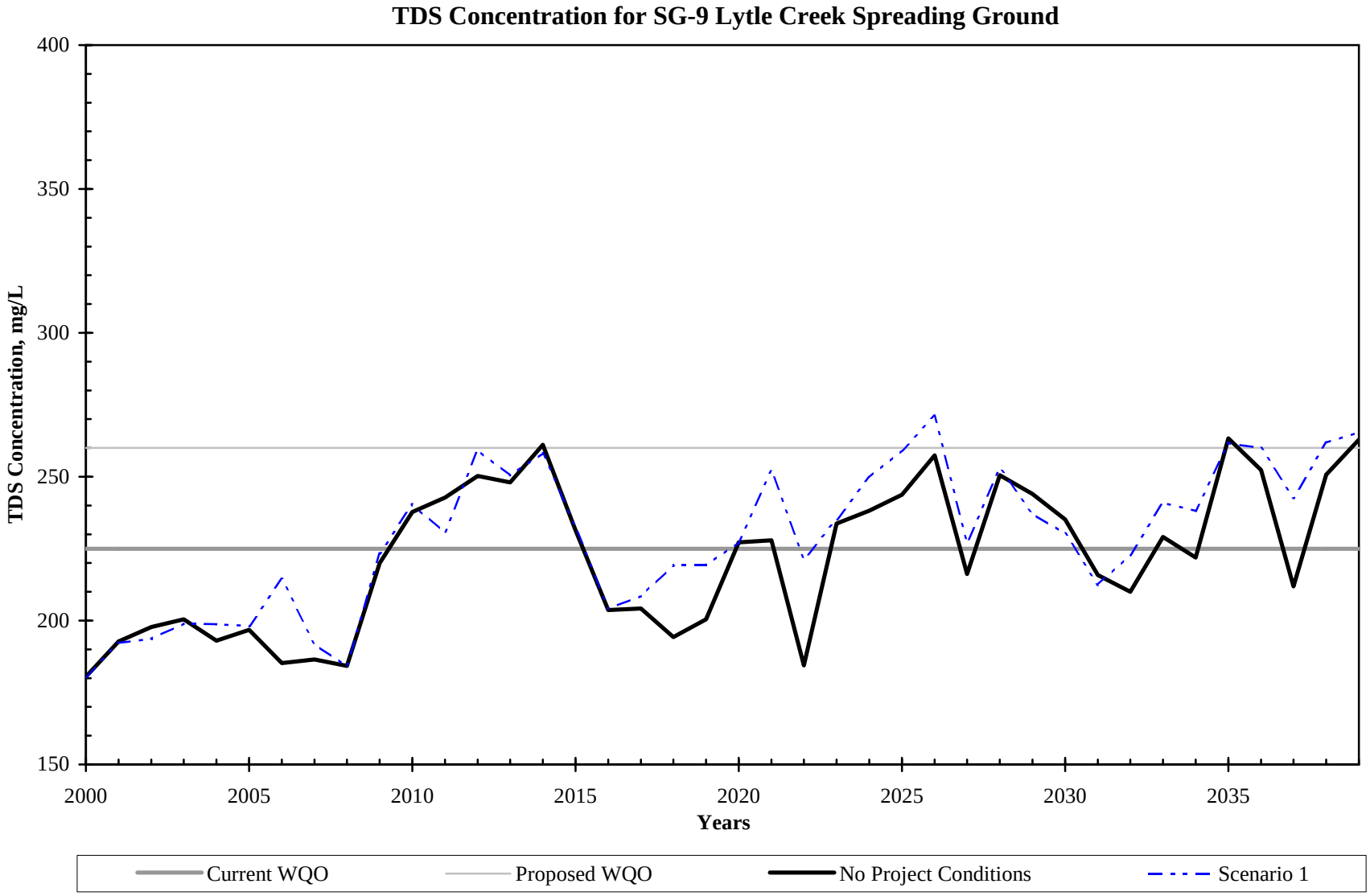

TDS Concentration for SG-9 Lytle Creek Spreading Ground
TDS Concentration, mg/L
400
350
300
250
200
150
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 22(ah)

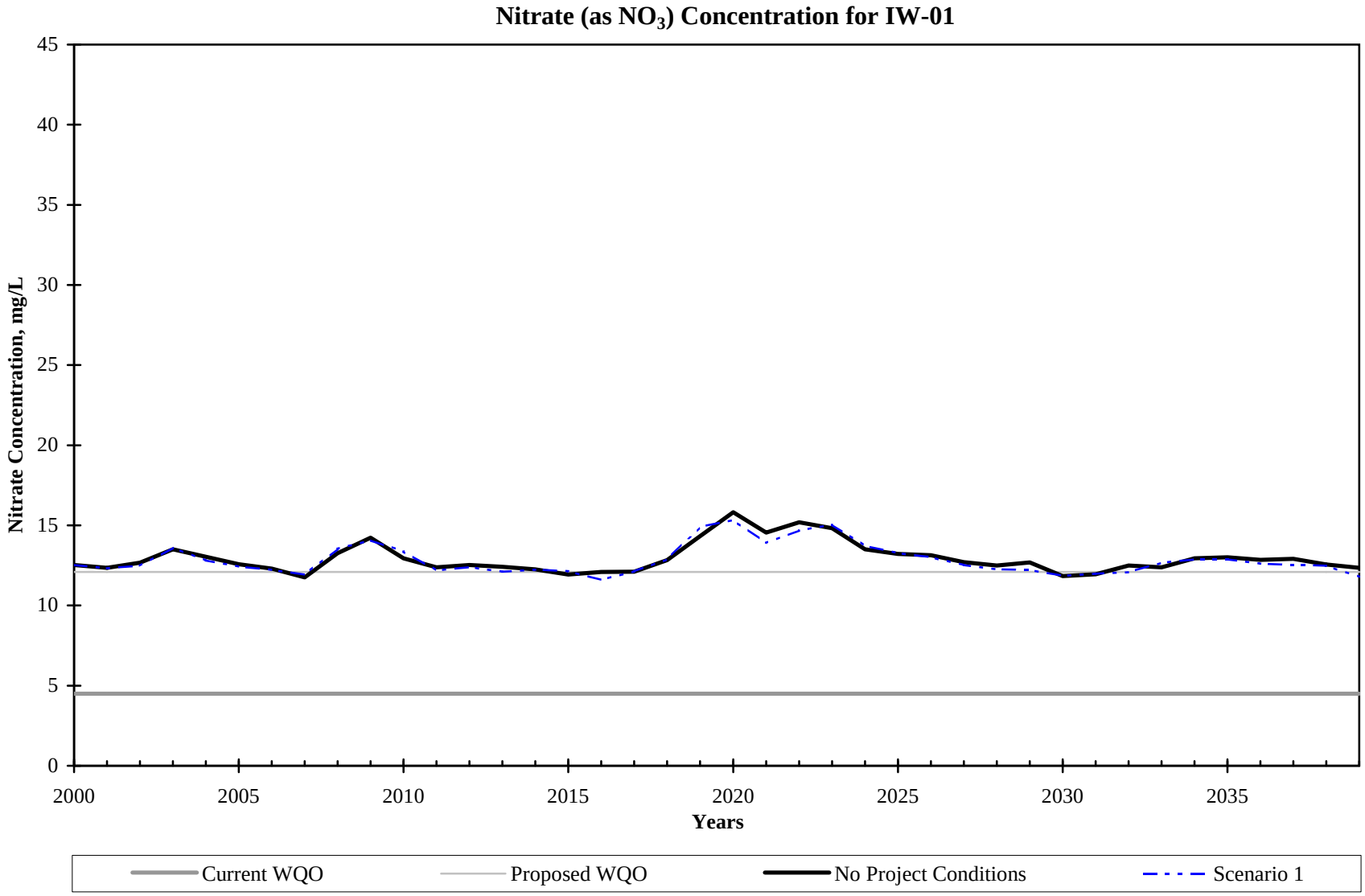

Nitrate (as NO_3) Concentration for IW-01
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(a)

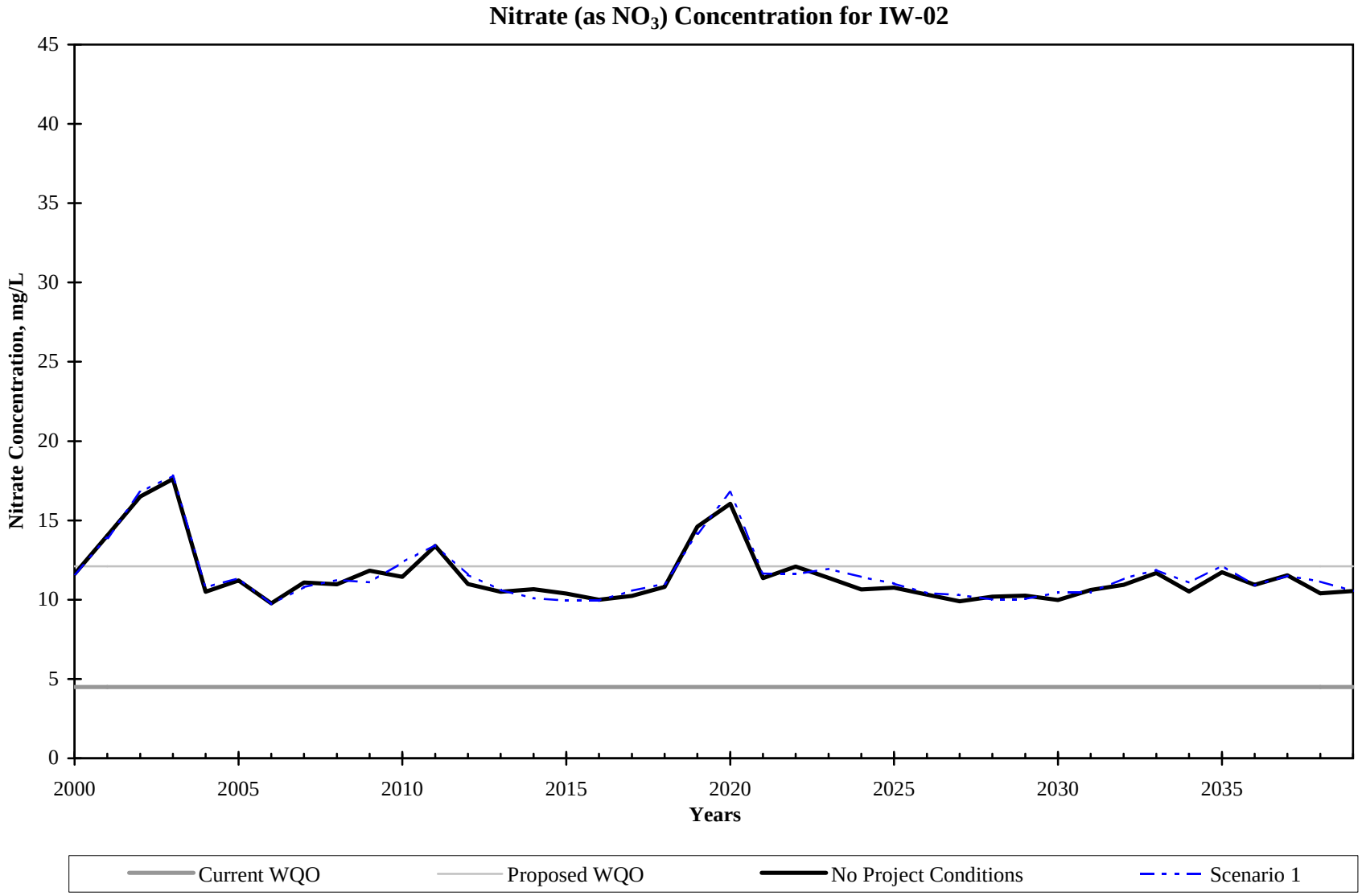

Nitrate (as NO_3) Concentration for IW-02
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(b)

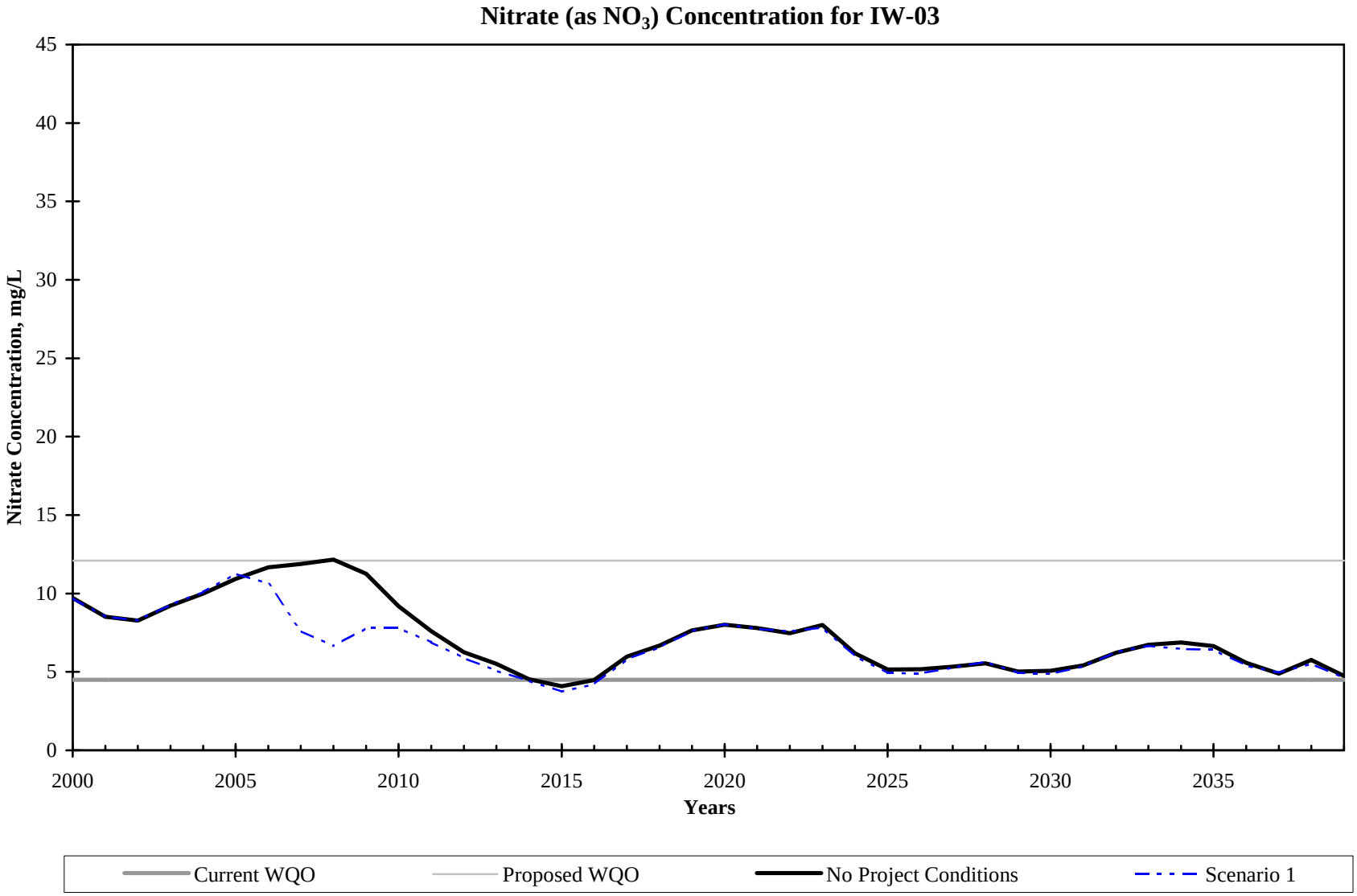

Nitrate (as NO_3) Concentration for IW-03
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(c)

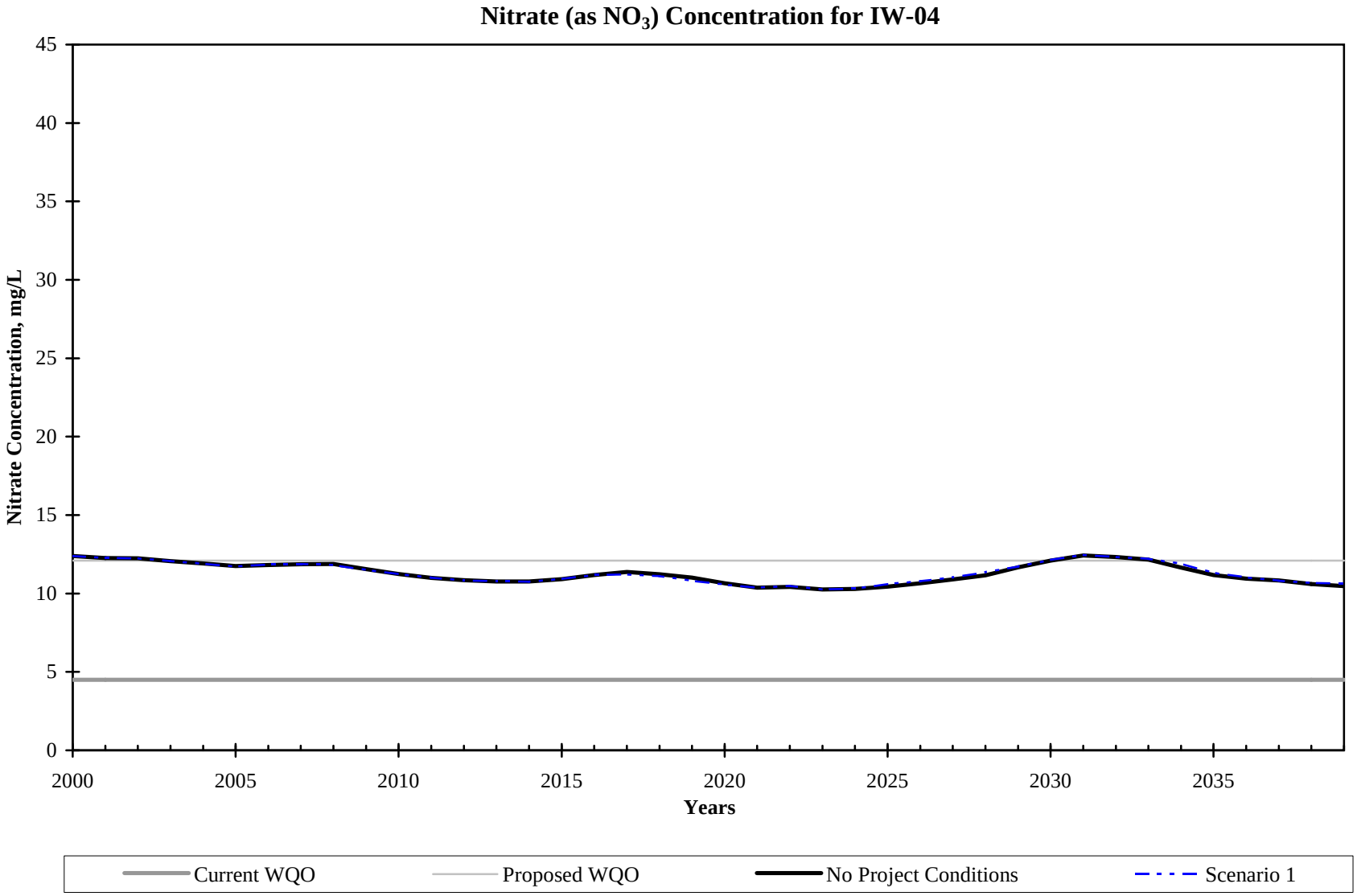

Nitrate (as NO_3) Concentration for IW-04
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(d)

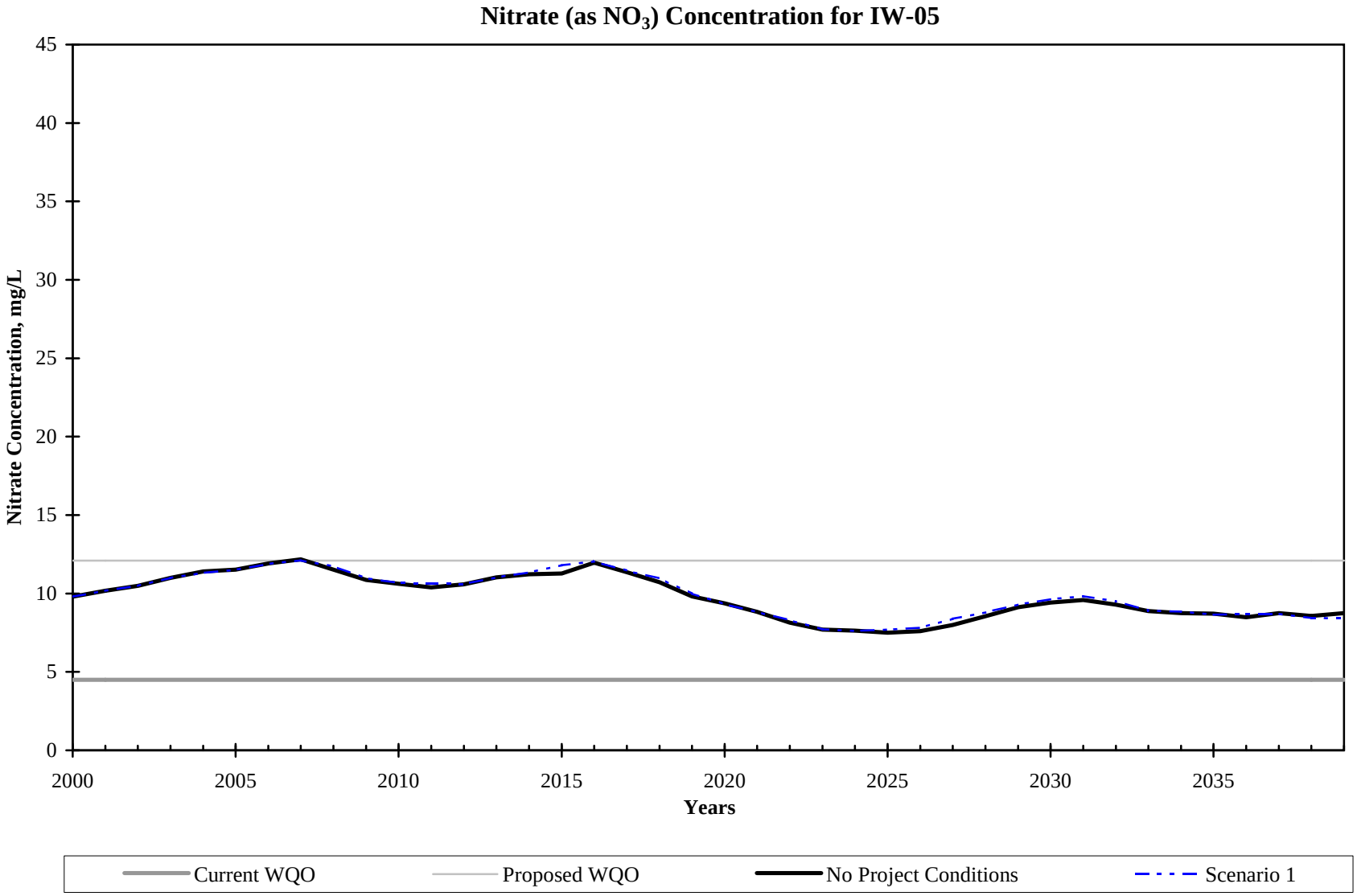

Nitrate (as NO_3) Concentration for IW-05
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(e)

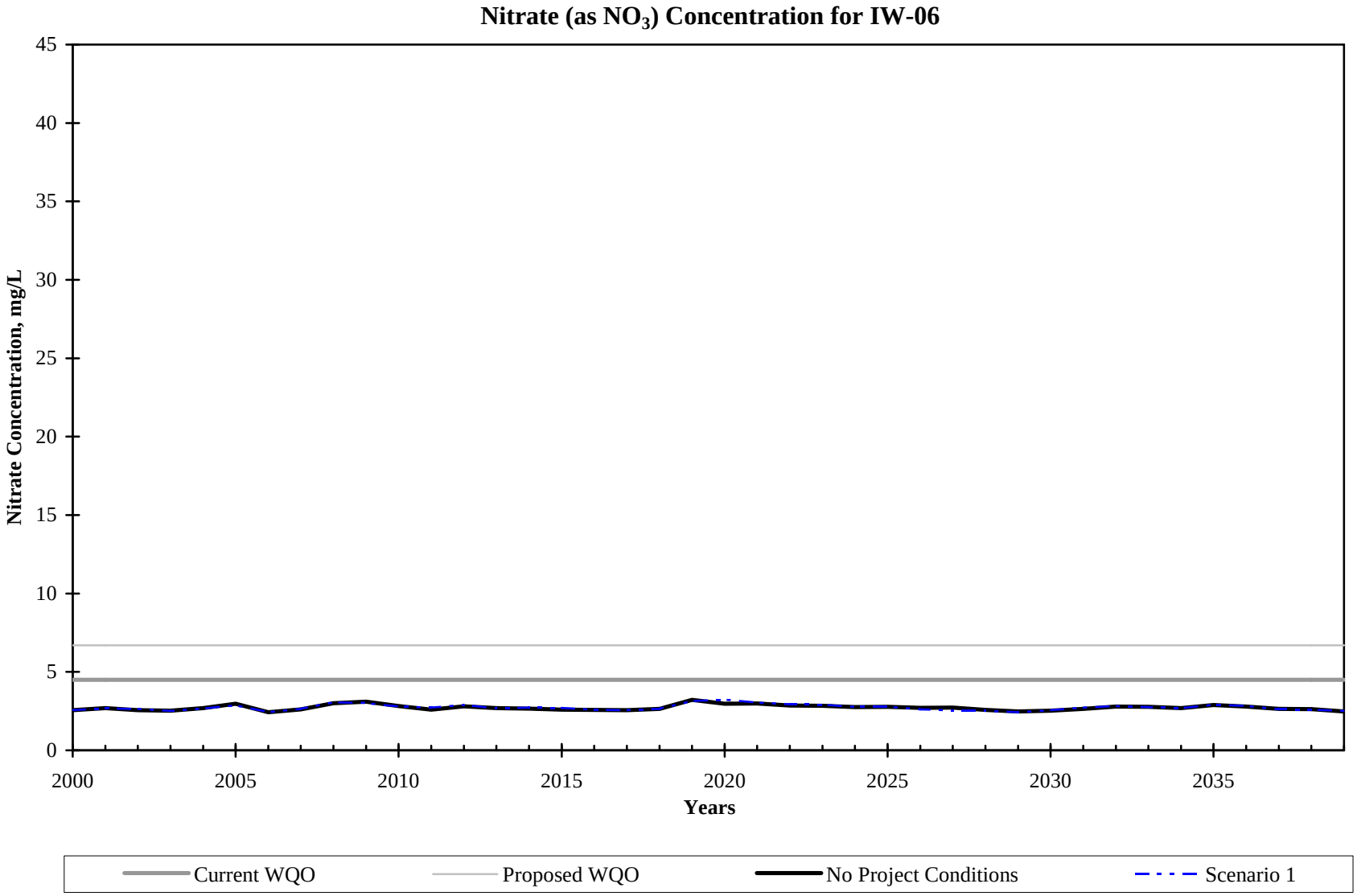

Nitrate (as NO_3) Concentration for IW-06
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(f)

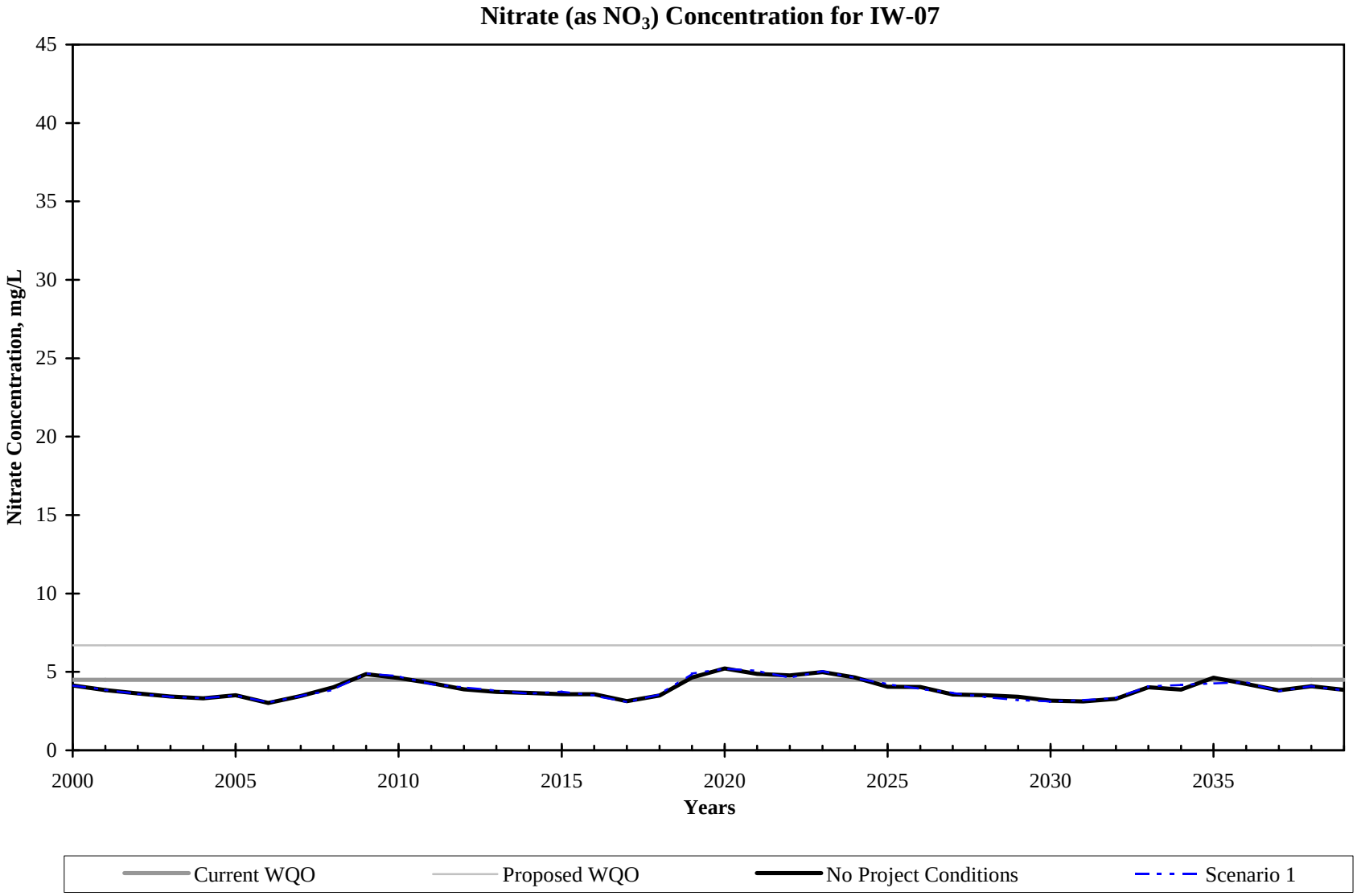

Nitrate (as NO_3) Concentration for IW-07
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(g)

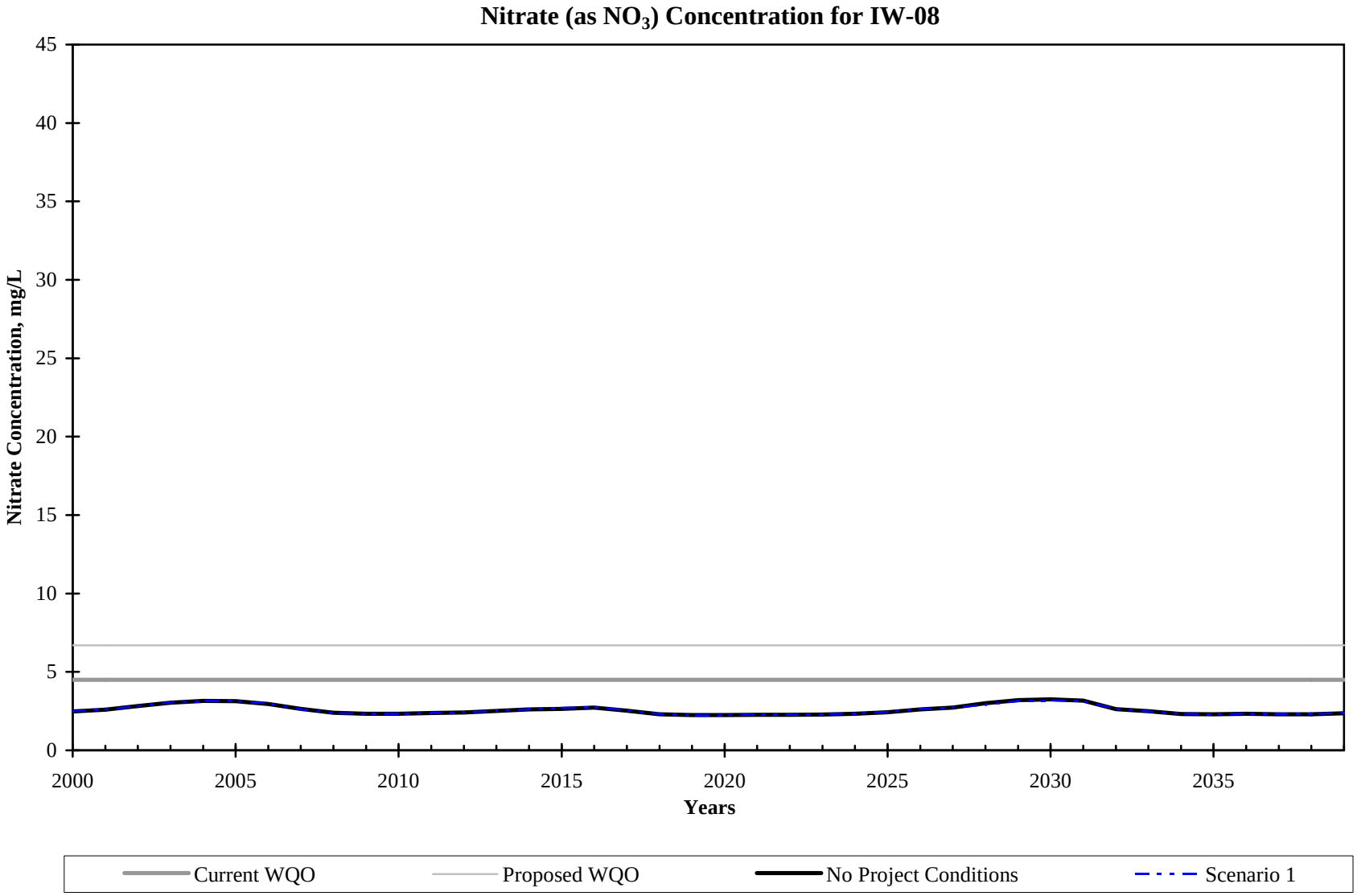

Nitrate (as NO_3) Concentration for IW-08
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(h)

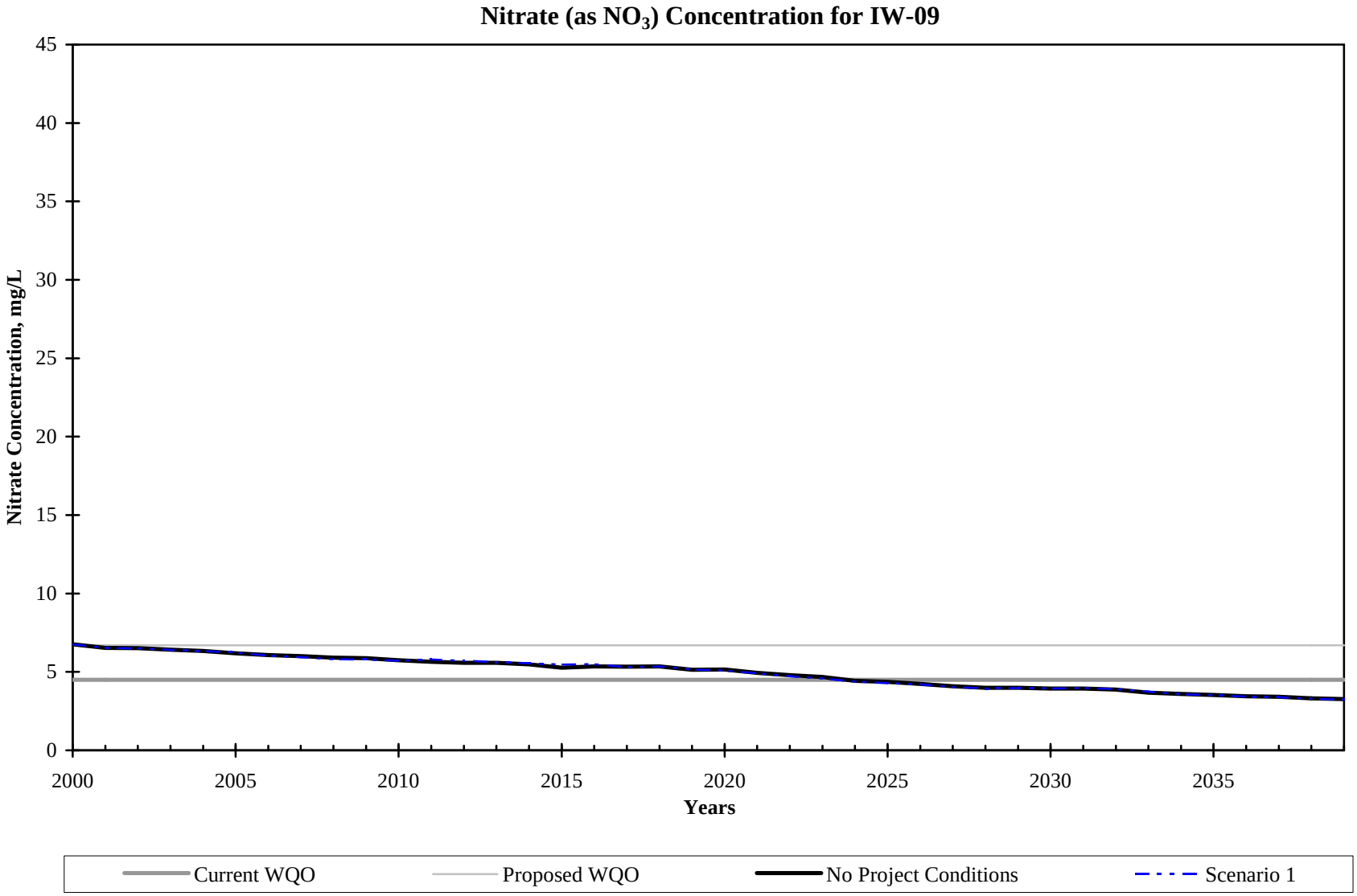

Nitrate (as NO_3) Concentration for IW-09
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(i)

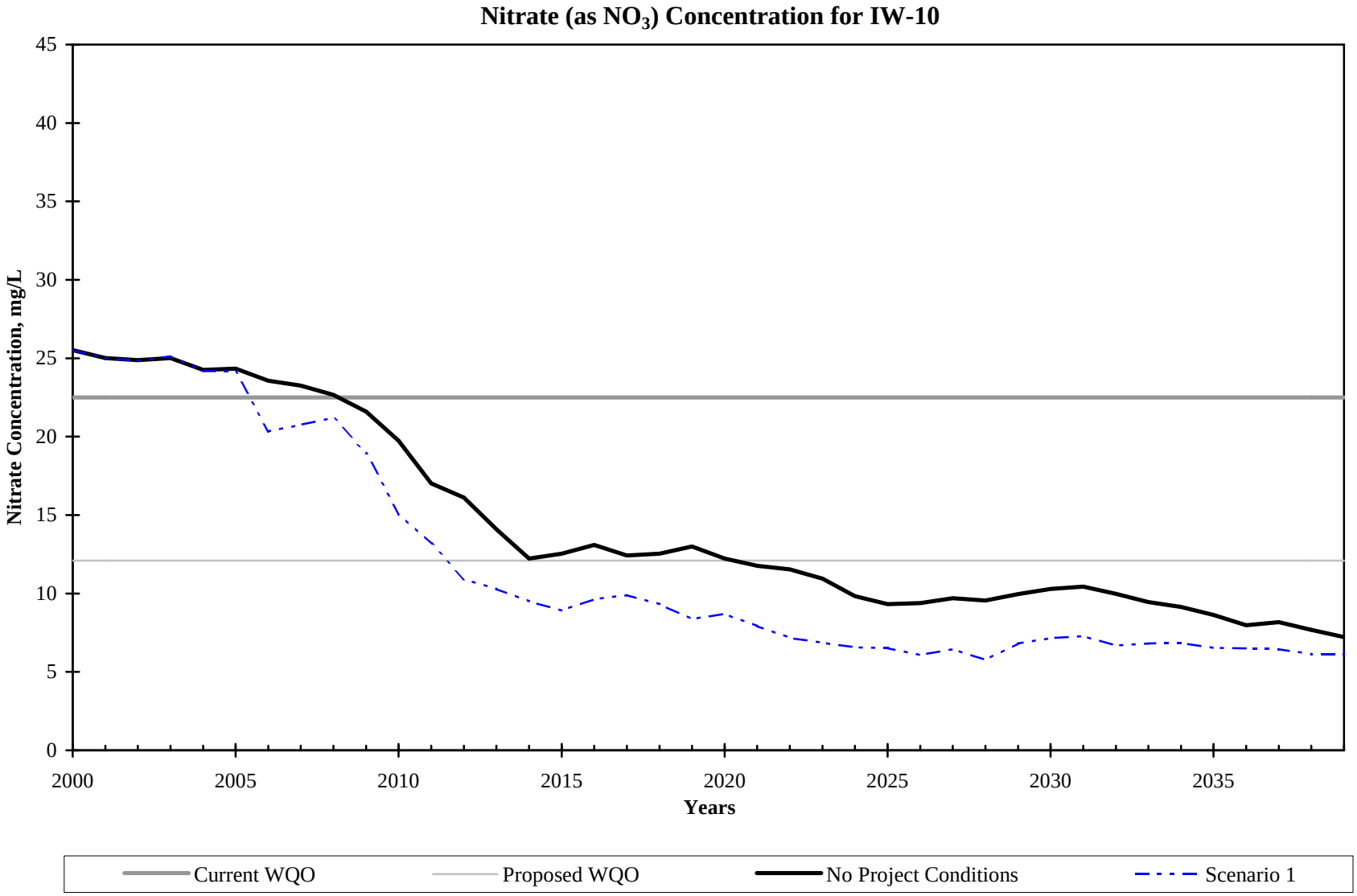

Nitrate (as NO_3) Concentration for IW-10
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(j)

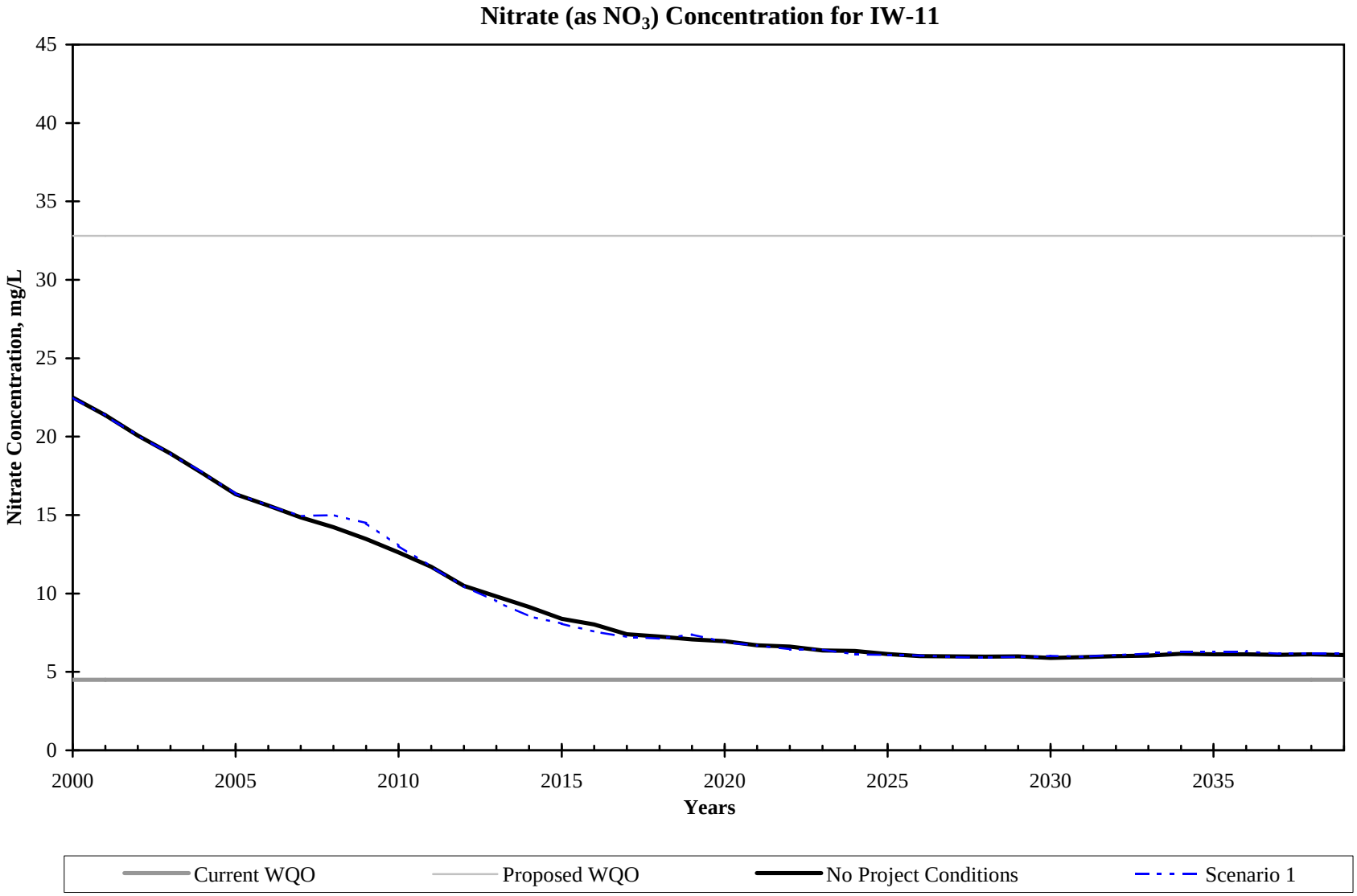

Nitrate (as NO_3) Concentration for IW-11
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(k)

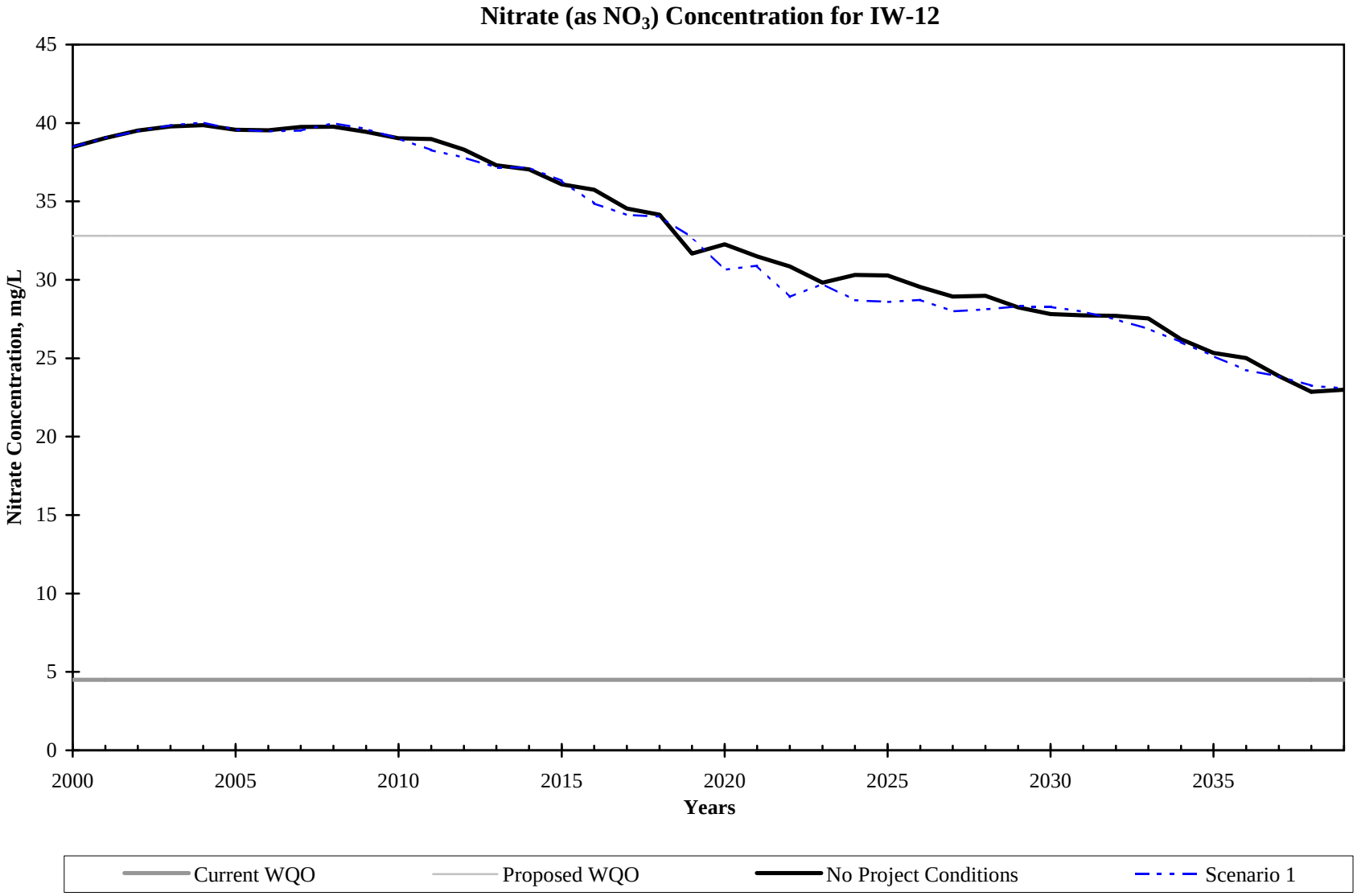

Nitrate (as NO_3) Concentration for IW-12
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(I)

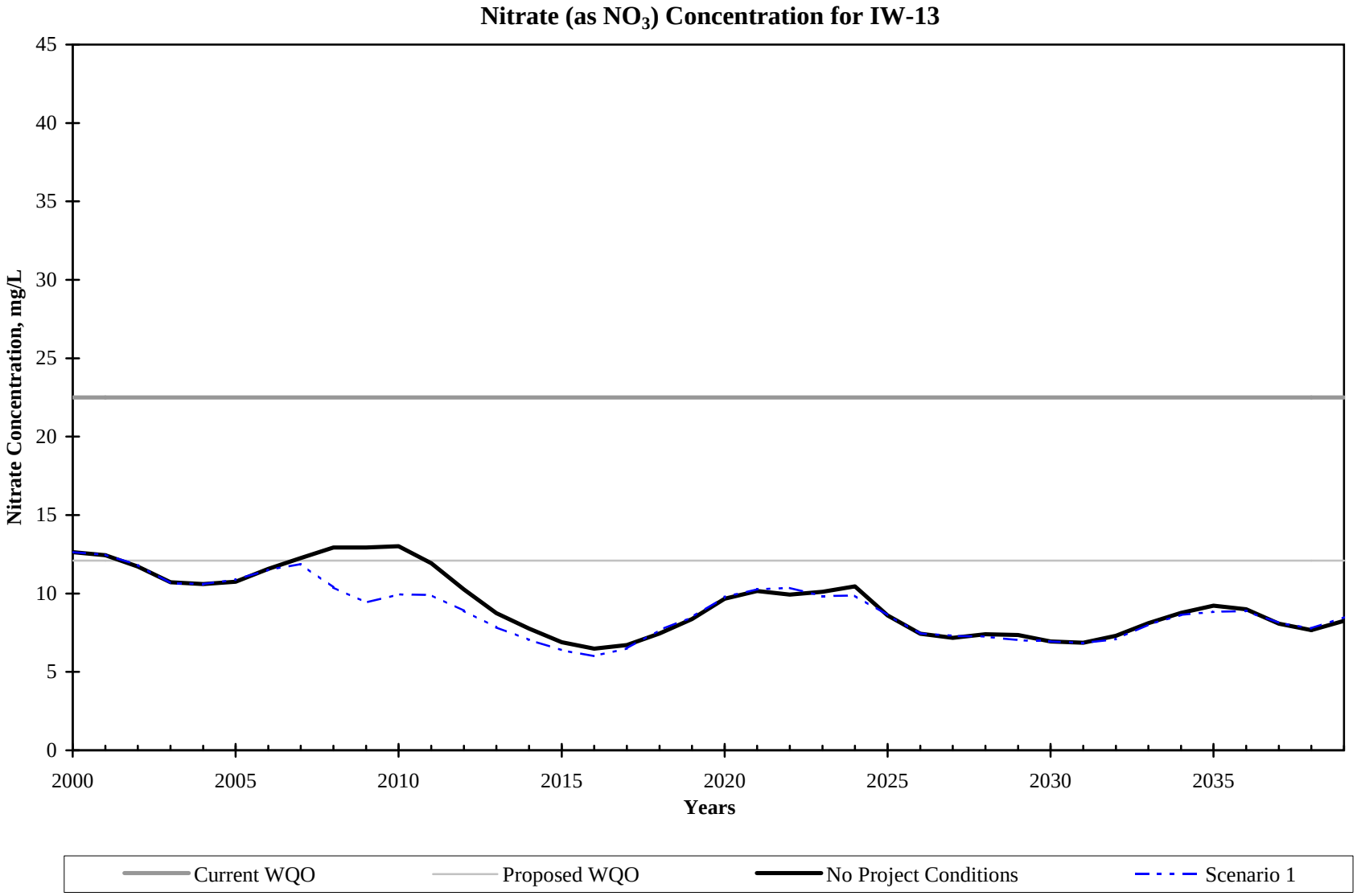

Nitrate (as NO_3) Concentration for IW-13
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(m)

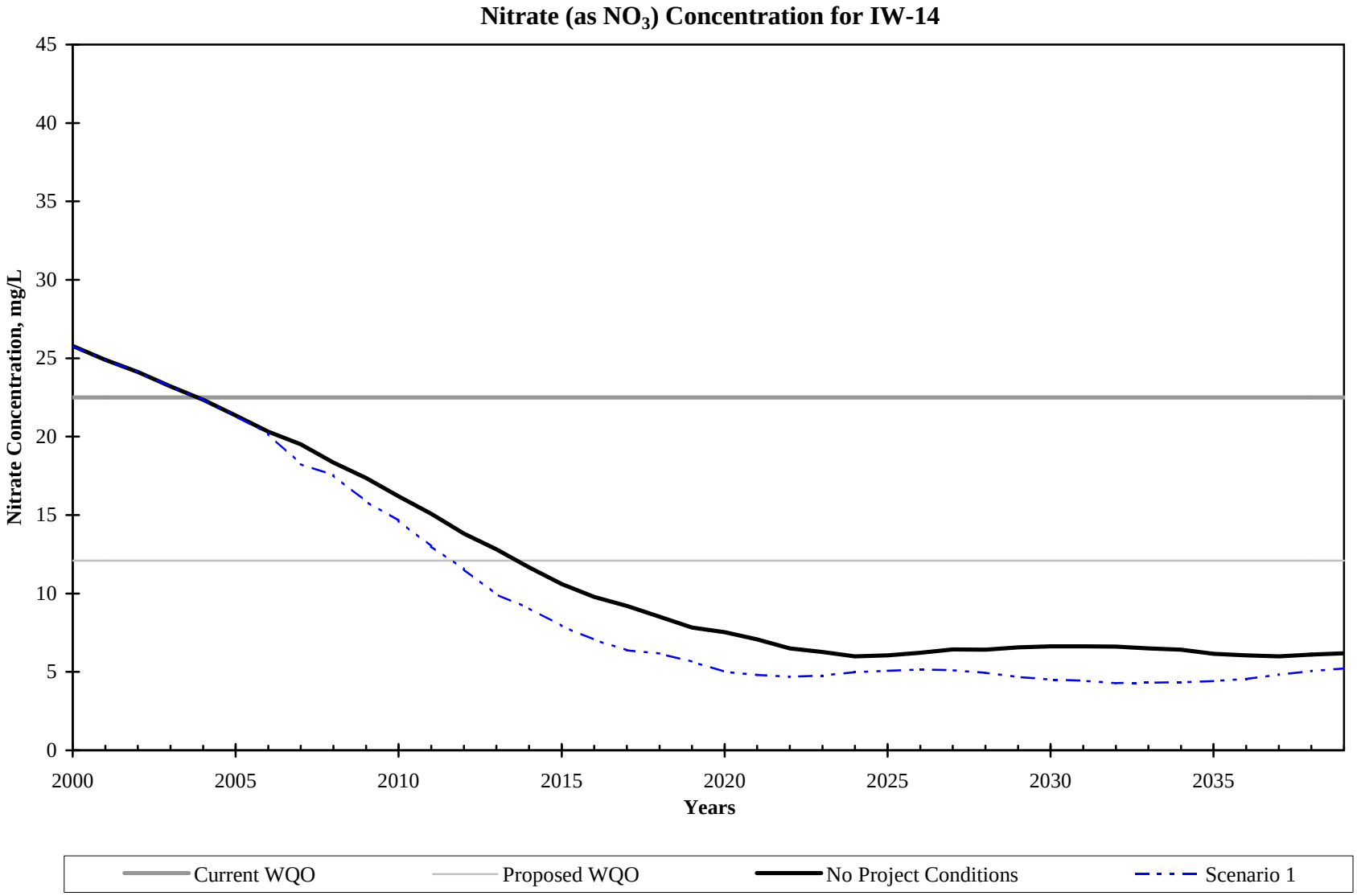

Nitrate (as NO_3) Concentration for IW-14
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(n)

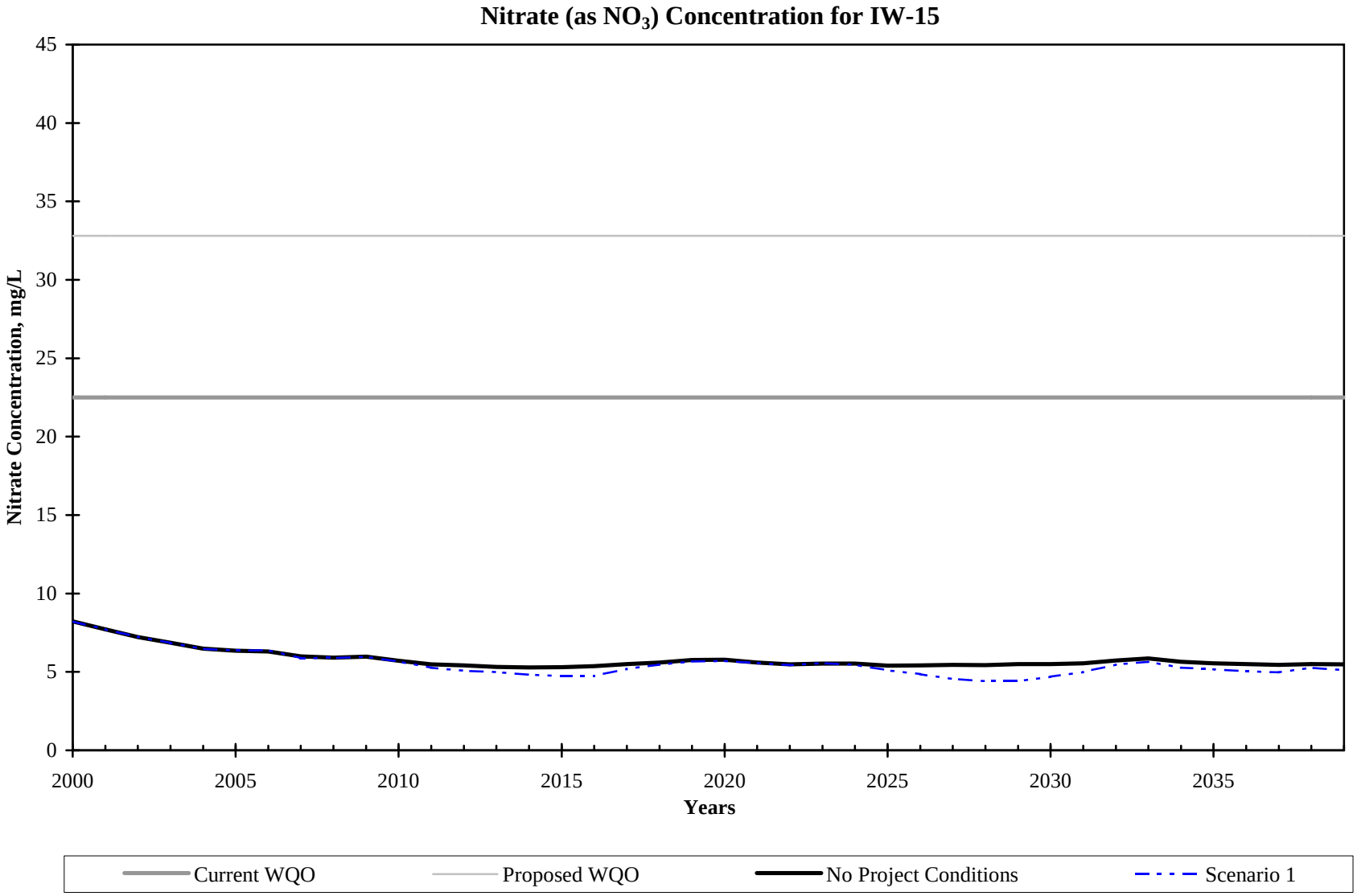

Nitrate (as NO_3) Concentration for IW-15
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(o)

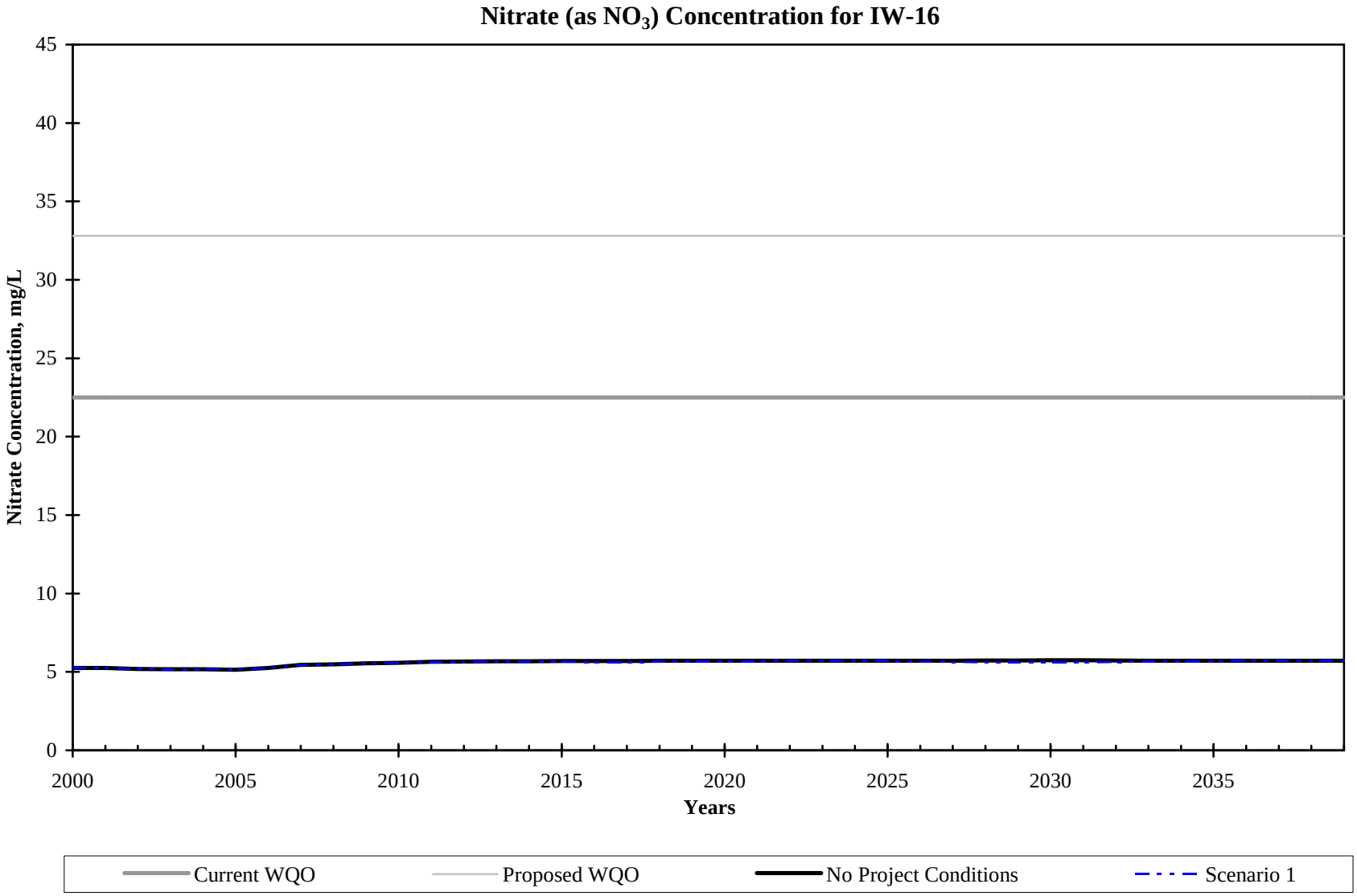

Nitrate (as NO_3) Concentration for IW-16
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(p)

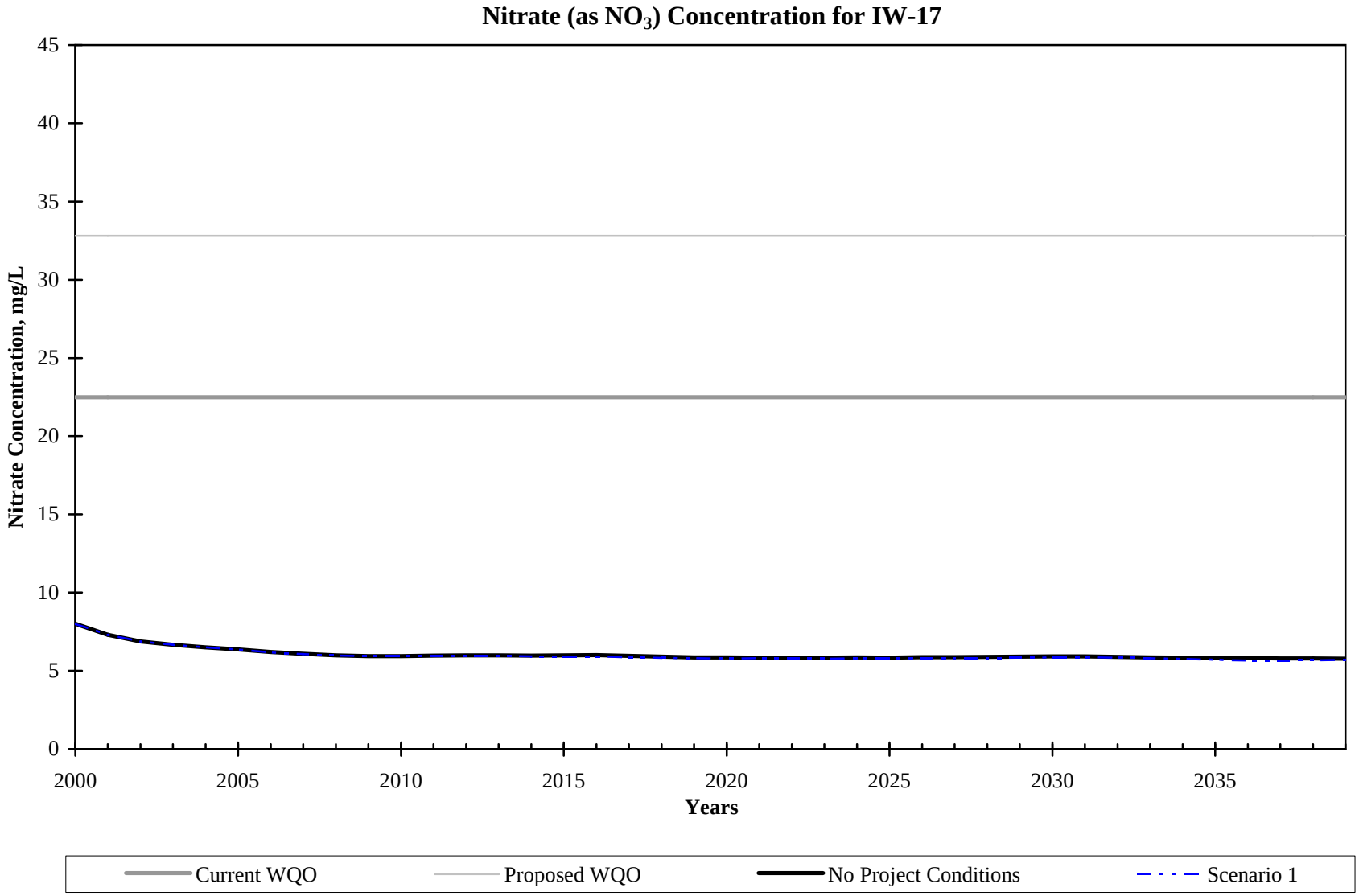

Nitrate (as NO_3) Concentration for IW-17
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(q)

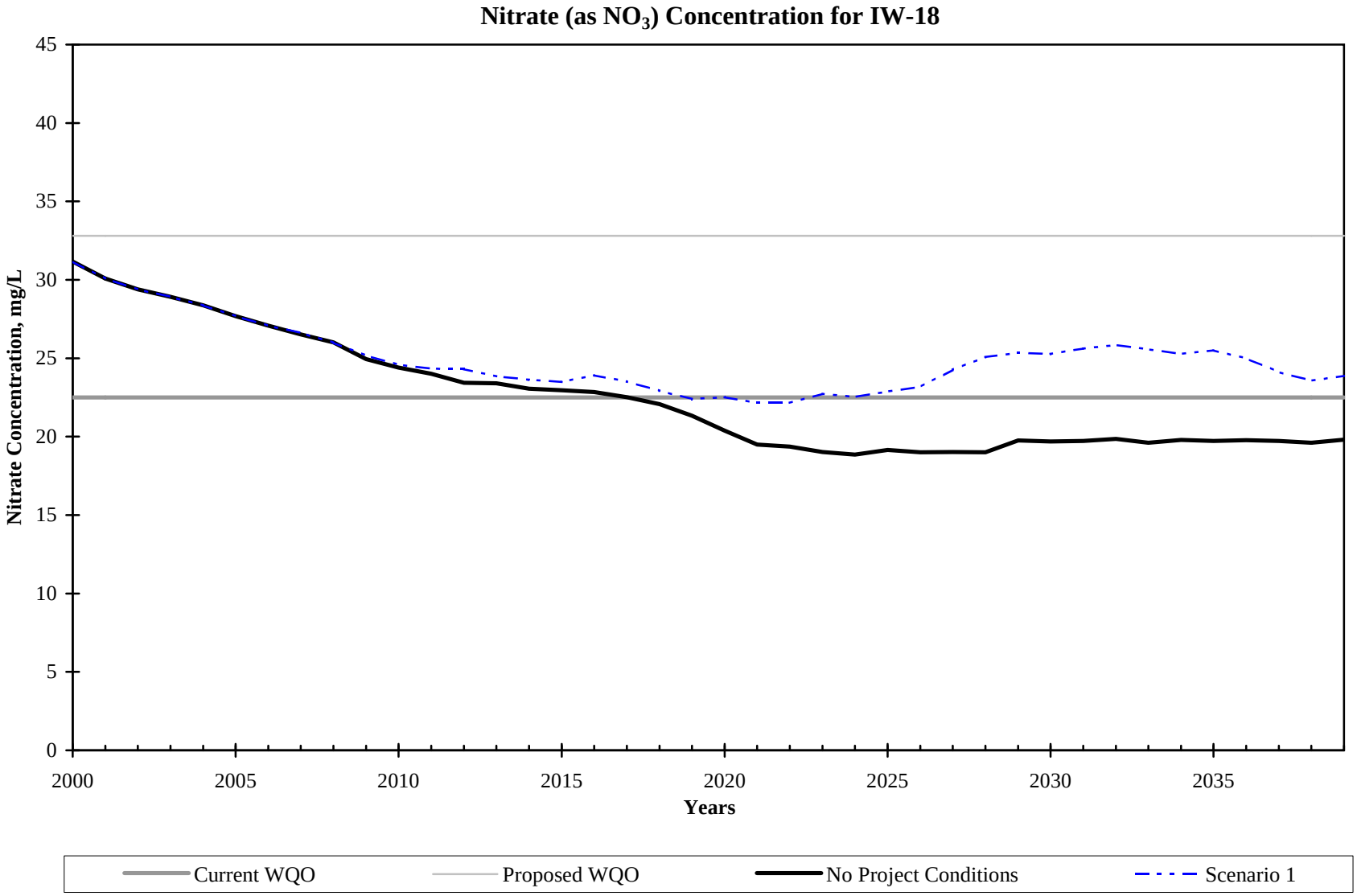

Nitrate (as NO_3) Concentration for IW-18
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(r)

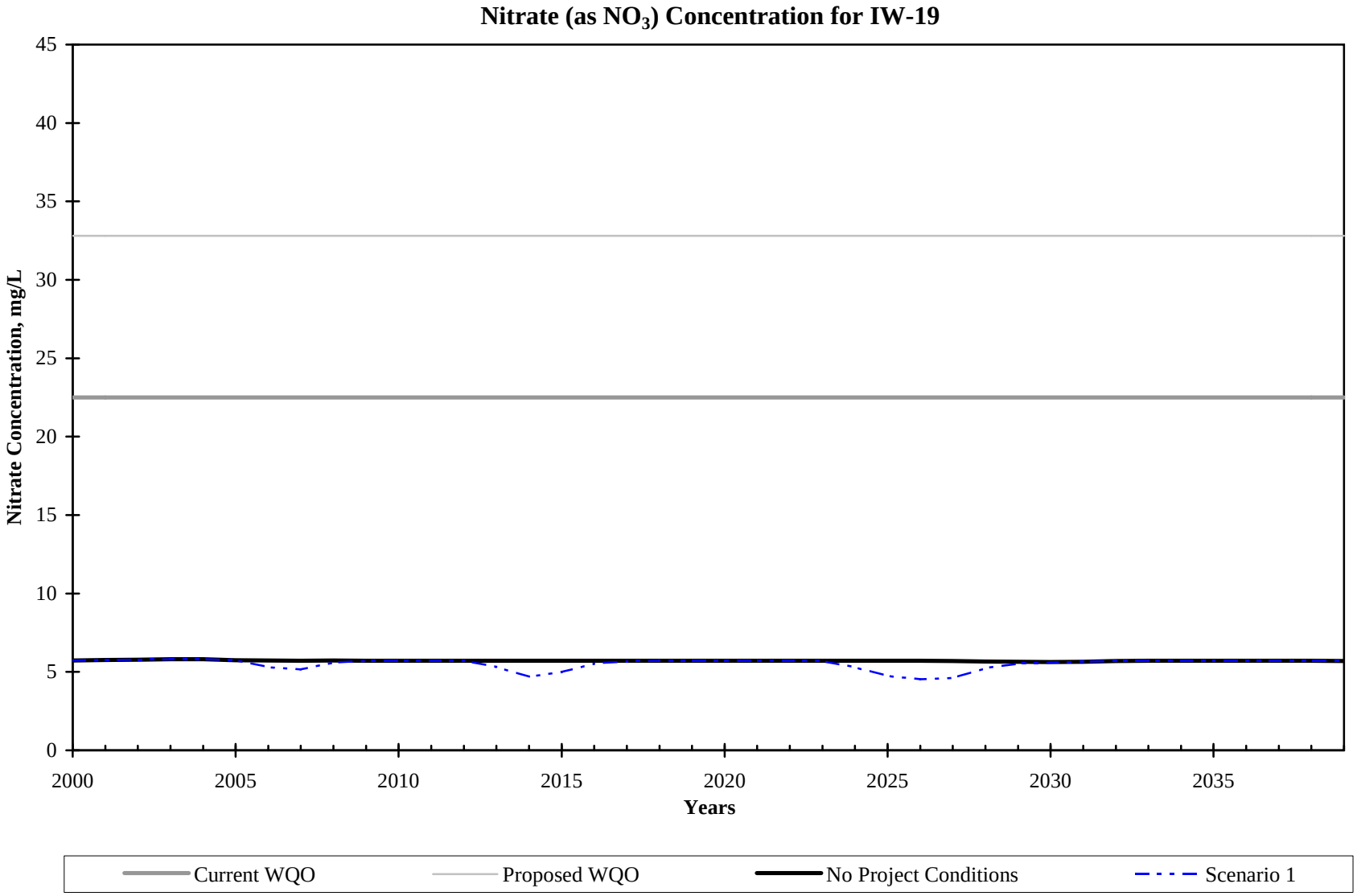

Nitrate (as NO_3) Concentration for IW-19
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(s)

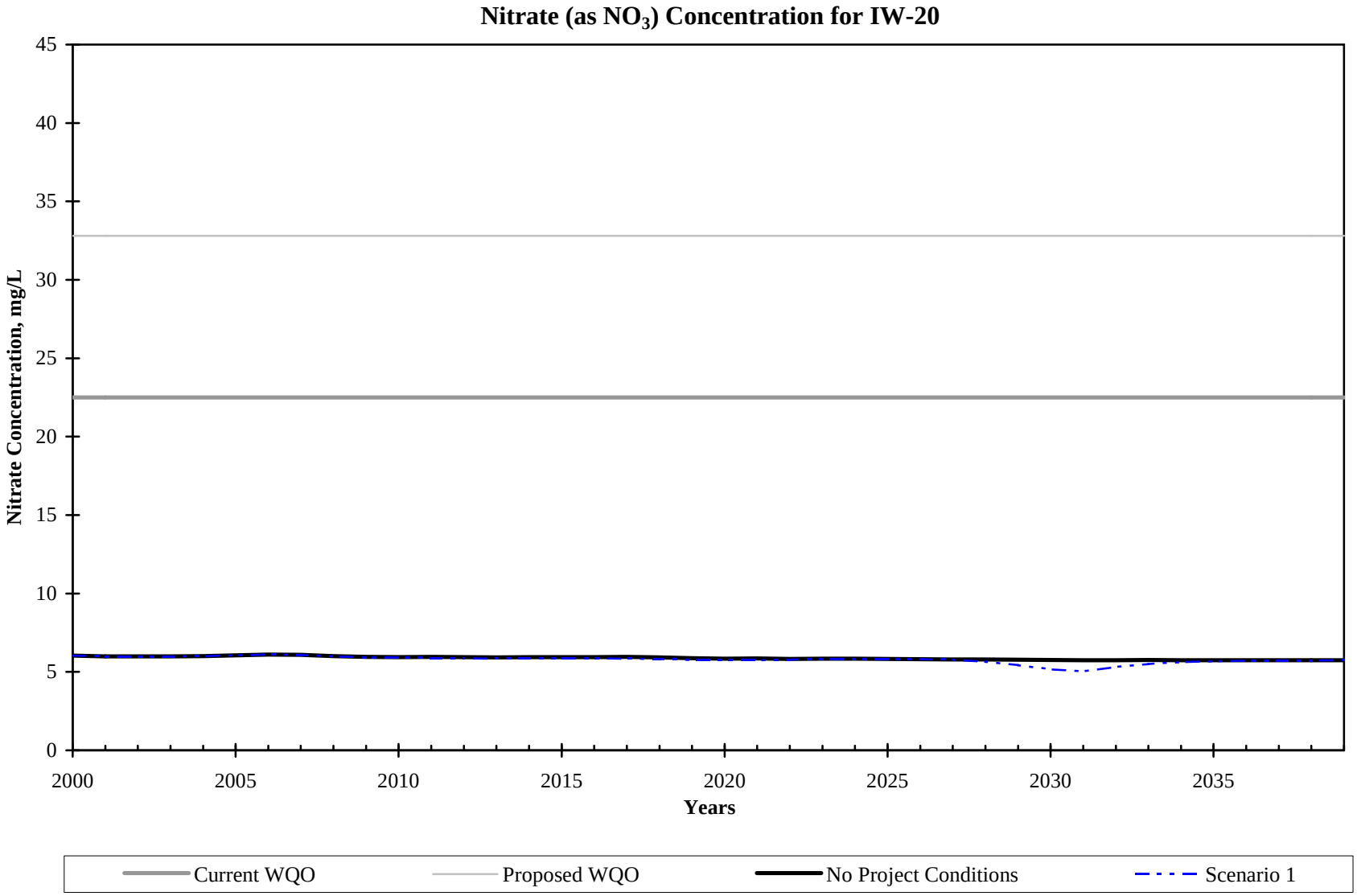

Nitrate (as NO_3) Concentration for IW-20
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(t)

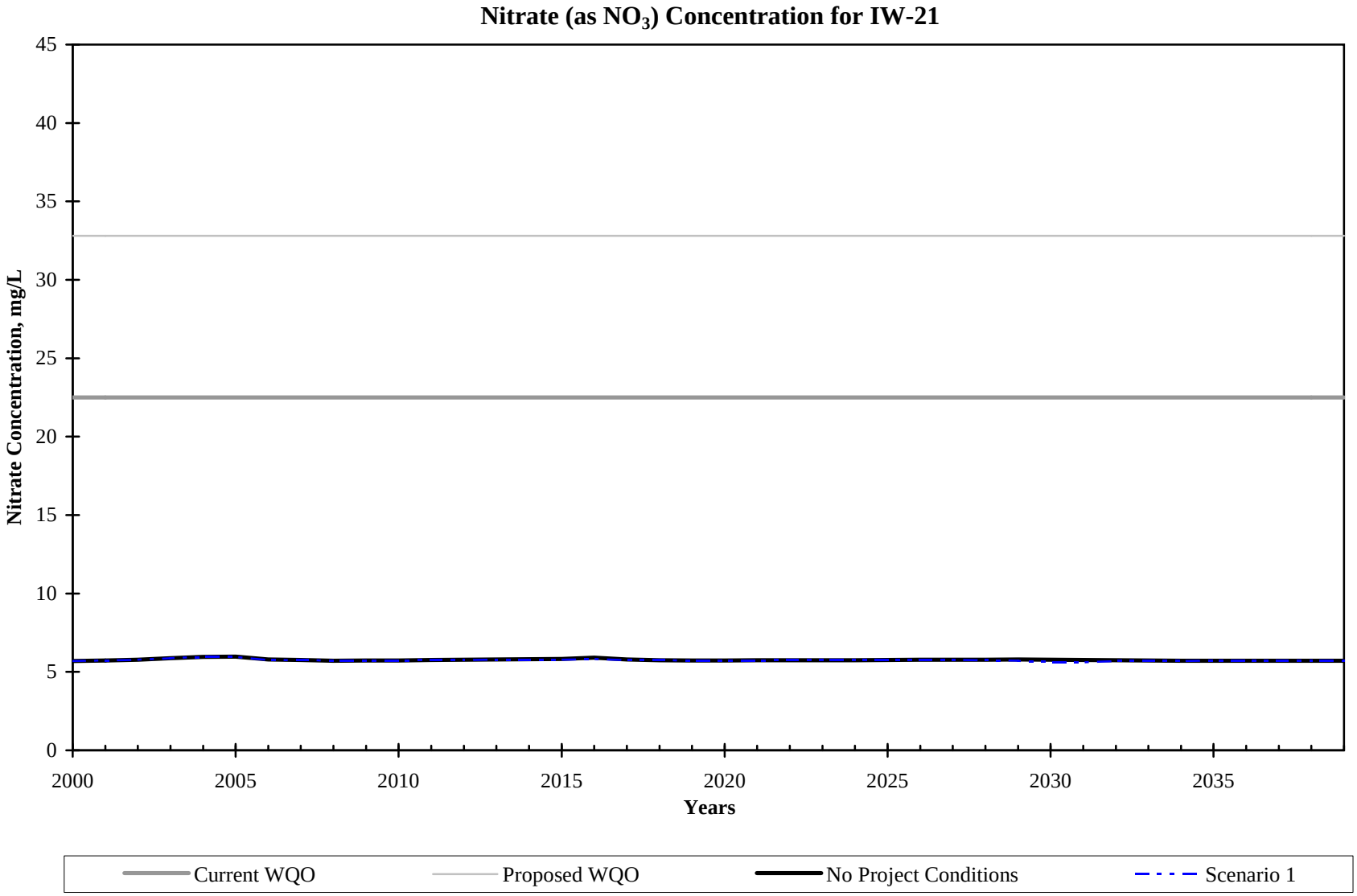

Nitrate (as NO_3) Concentration for IW-21
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(u)

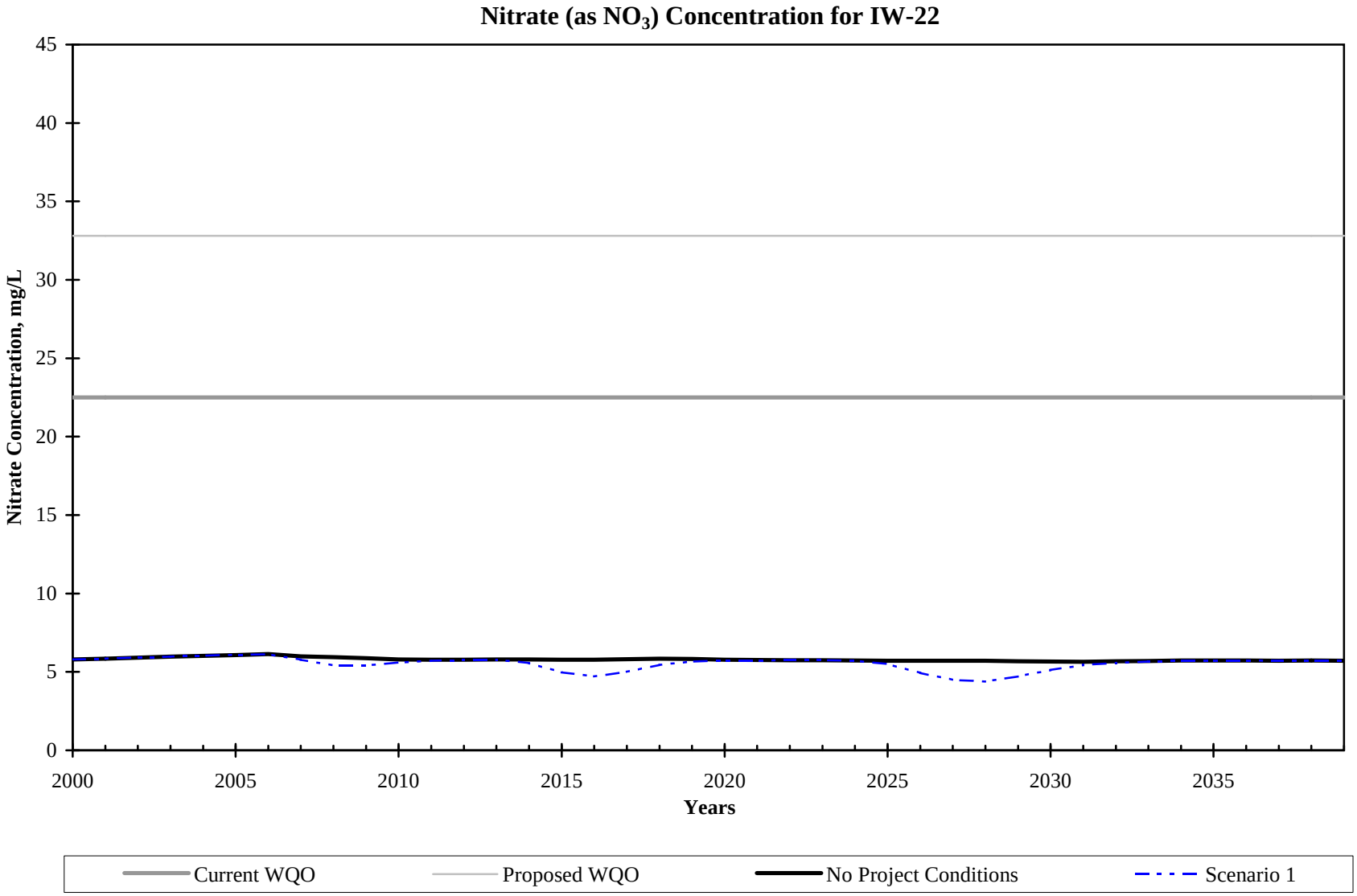

Nitrate (as NO_3) Concentration for IW-22
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(v)

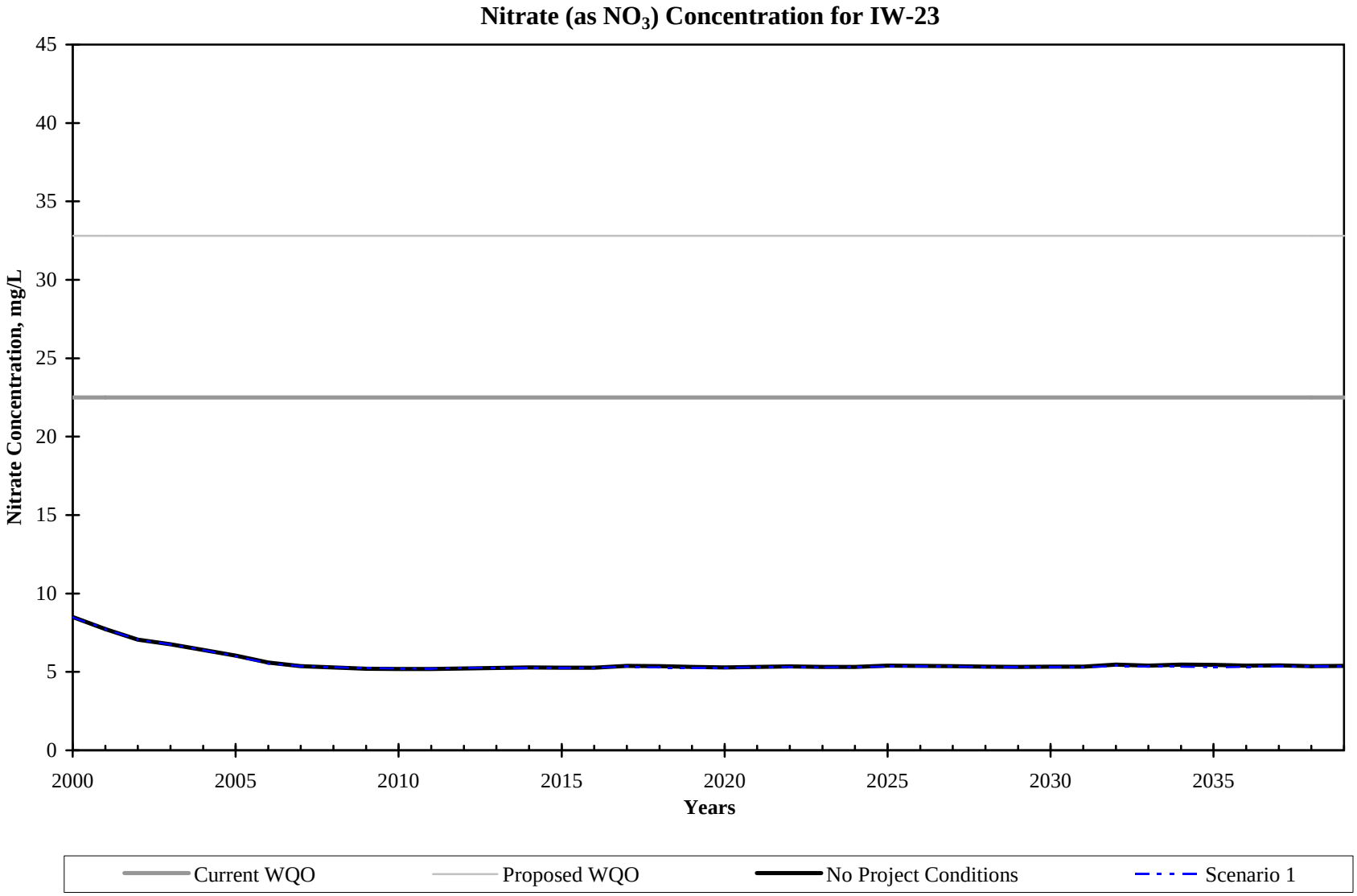

Nitrate (as NO_3) Concentration for IW-23
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(w)

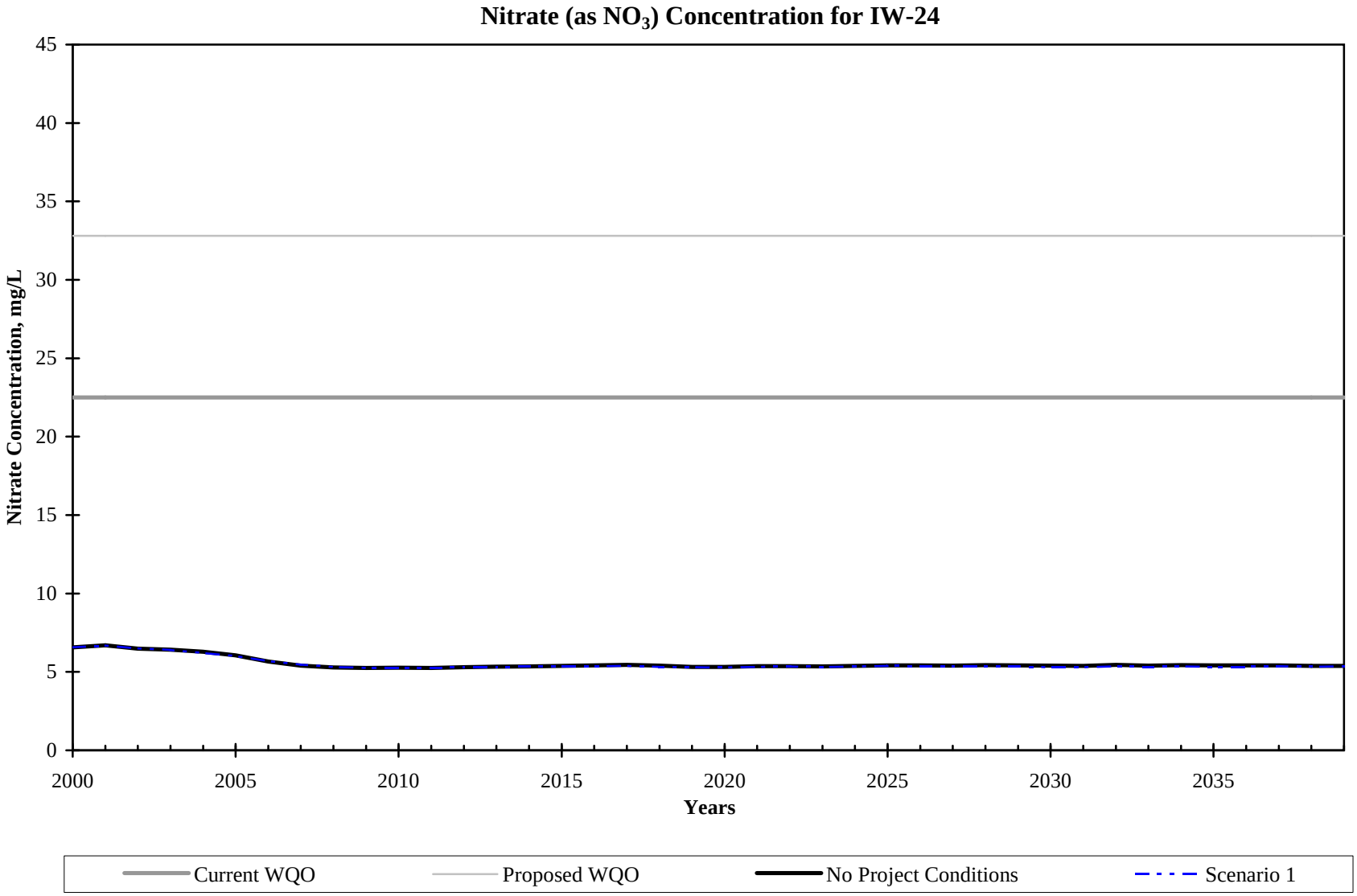

Nitrate (as NO_3) Concentration for IW-24
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(x)

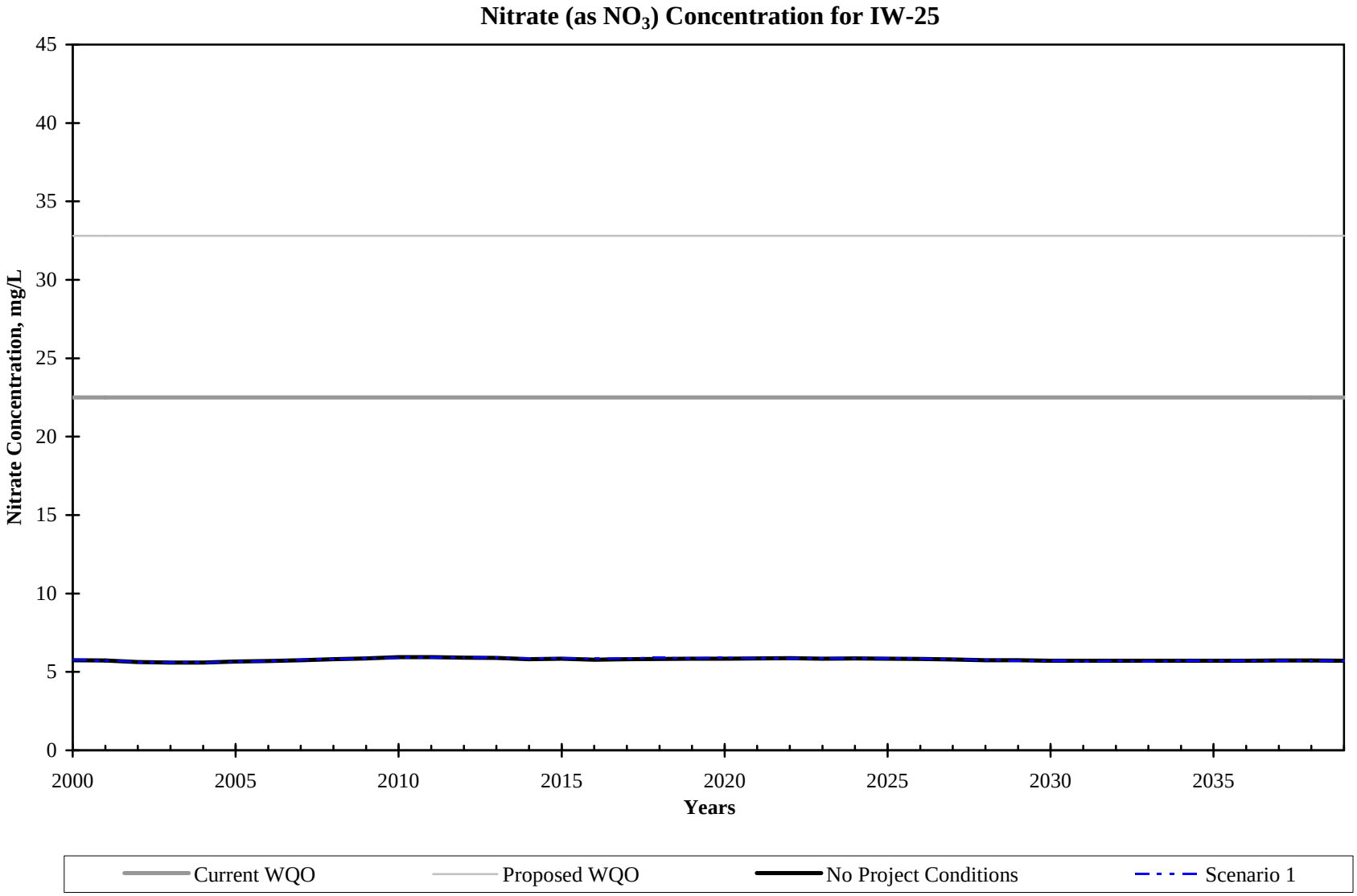

Nitrate (as NO_3) Concentration for IW-25
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(y)

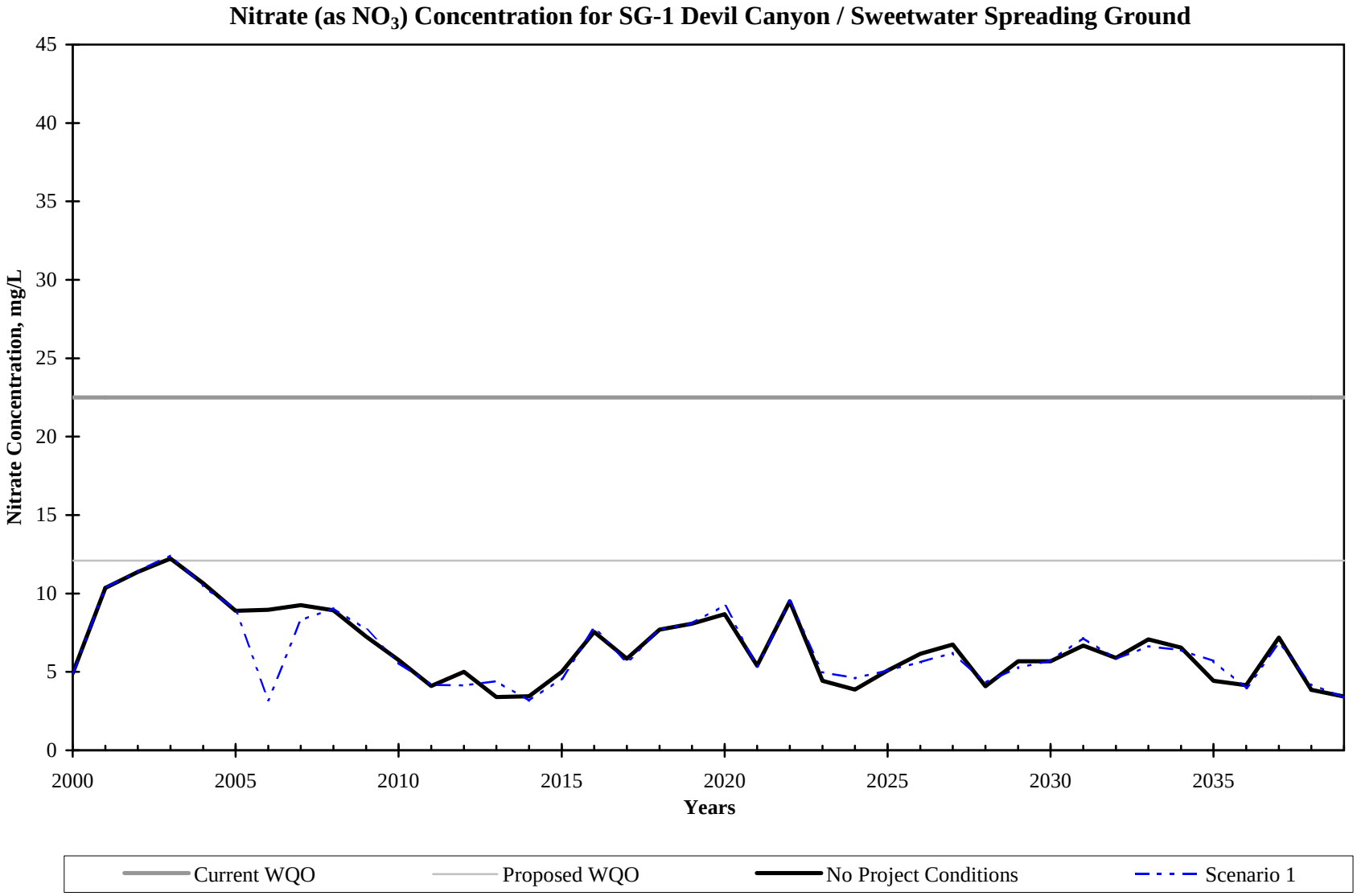

Nitrate (as NO_3) Concentration for SG-1 Devil Canyon / Sweetwater Spreading Ground
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(z)

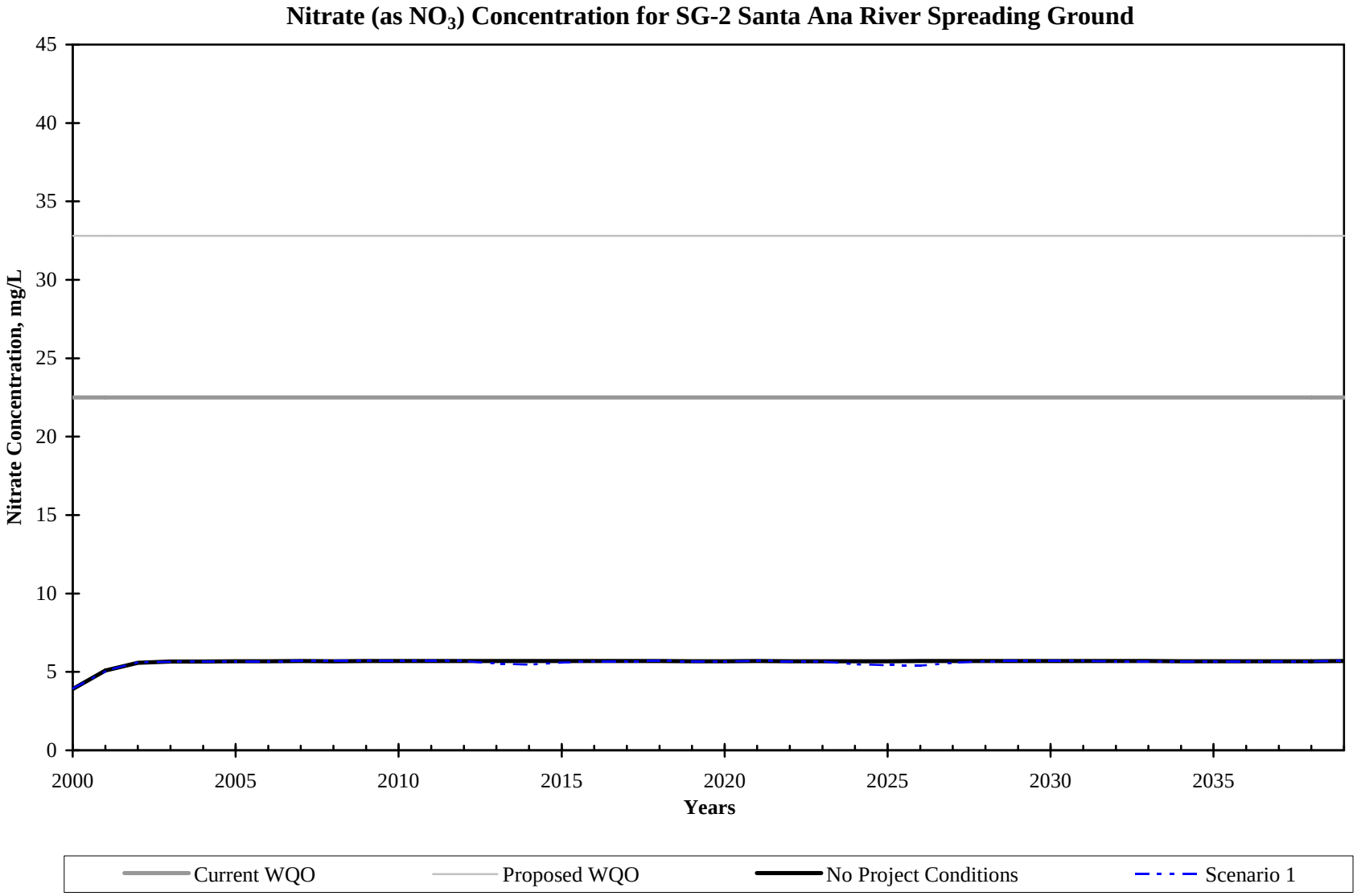

Nitrate (as NO_3) Concentration for SG-2 Santa Ana River Spreading Ground
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(aa)

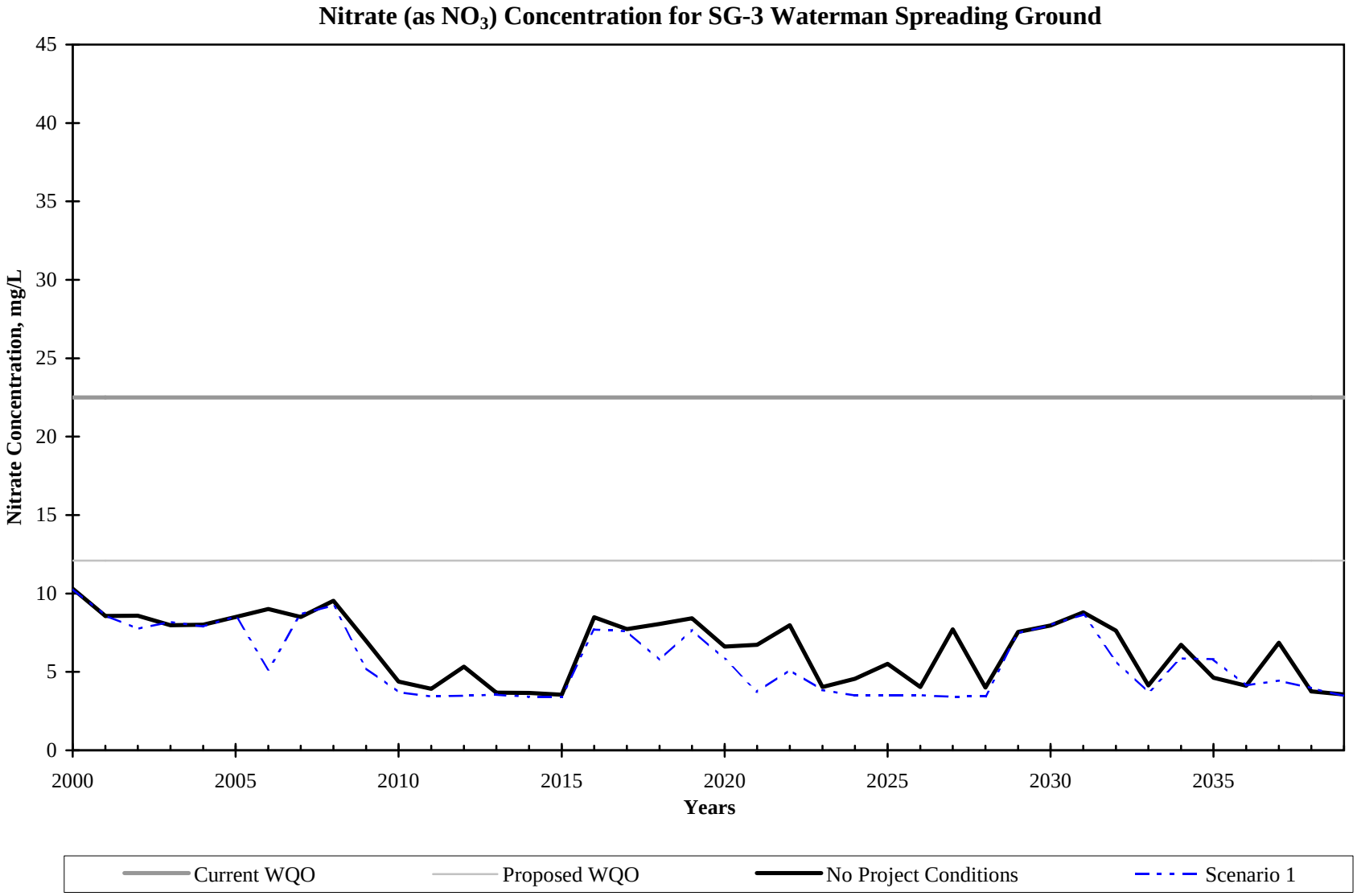

Nitrate (as NO_3) Concentration for SG-3 Waterman Spreading Ground
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(ab)

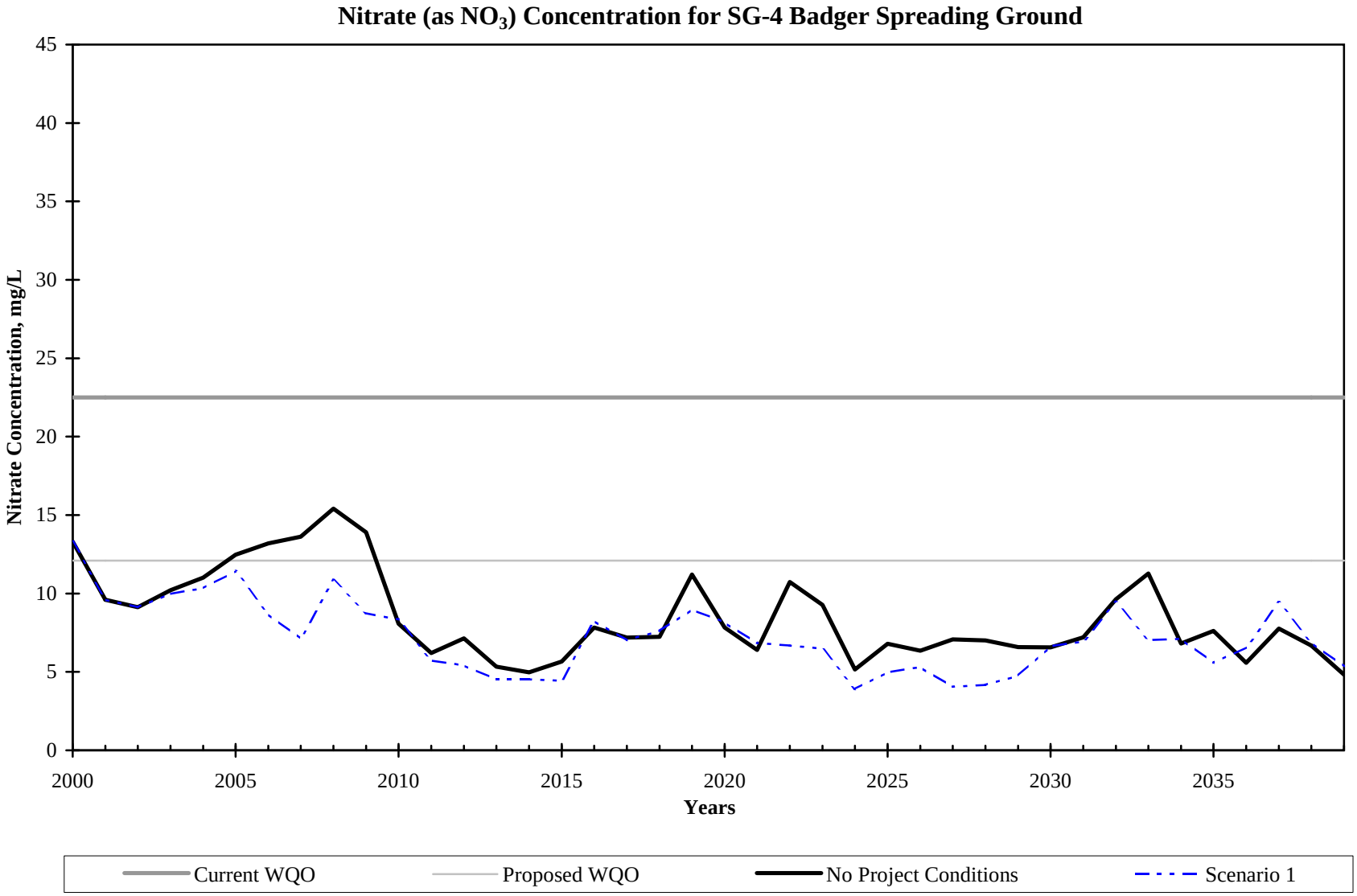

Nitrate (as NO_3) Concentration for SG-4 Badger Spreading Ground
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(ac)

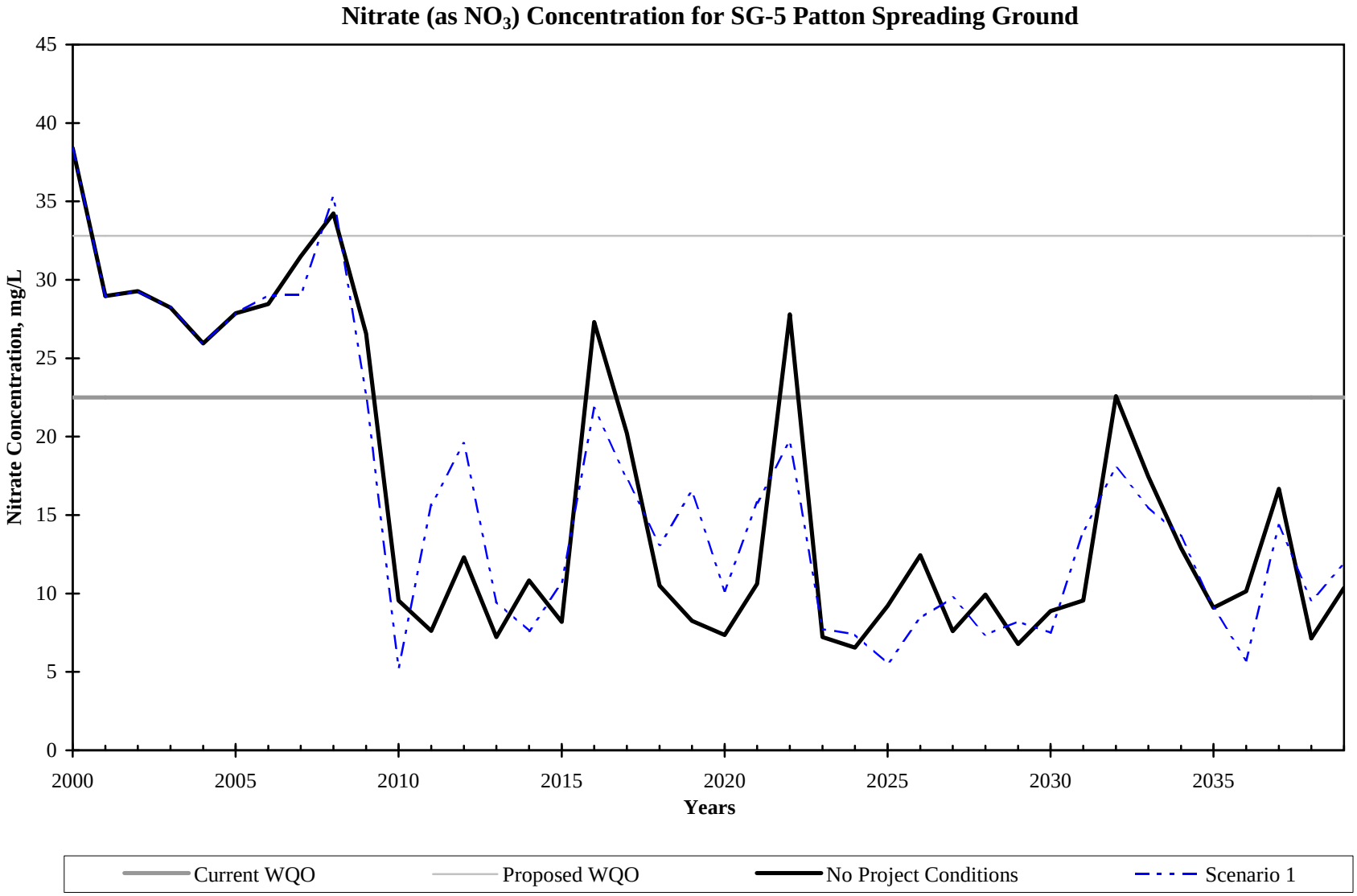

Nitrate (as NO_3) Concentration for SG-5 Patton Spreading Ground
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(ad)

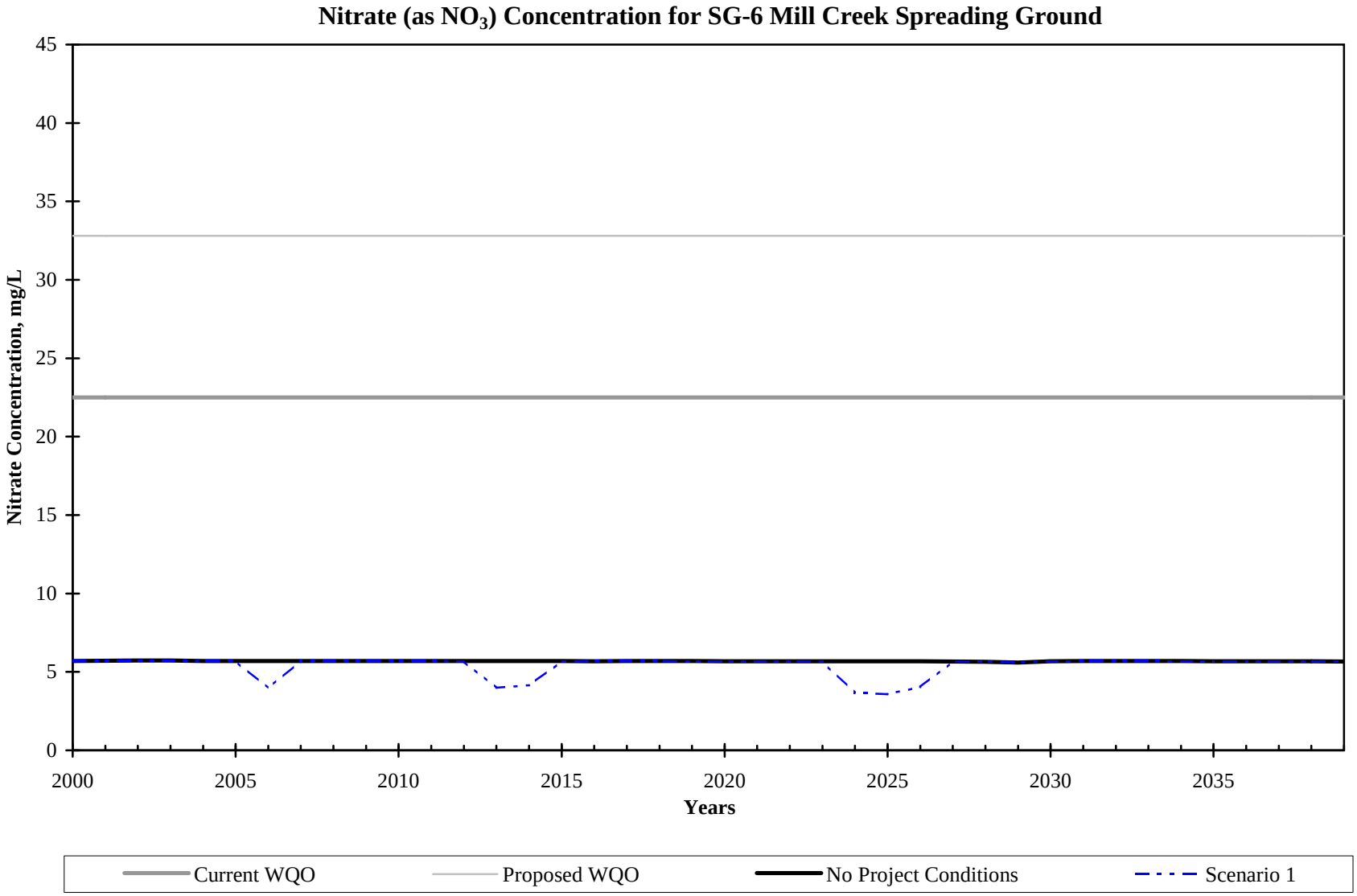

Nitrate (as NO_3) Concentration for SG-6 Mill Creek Spreading Ground
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(ae)

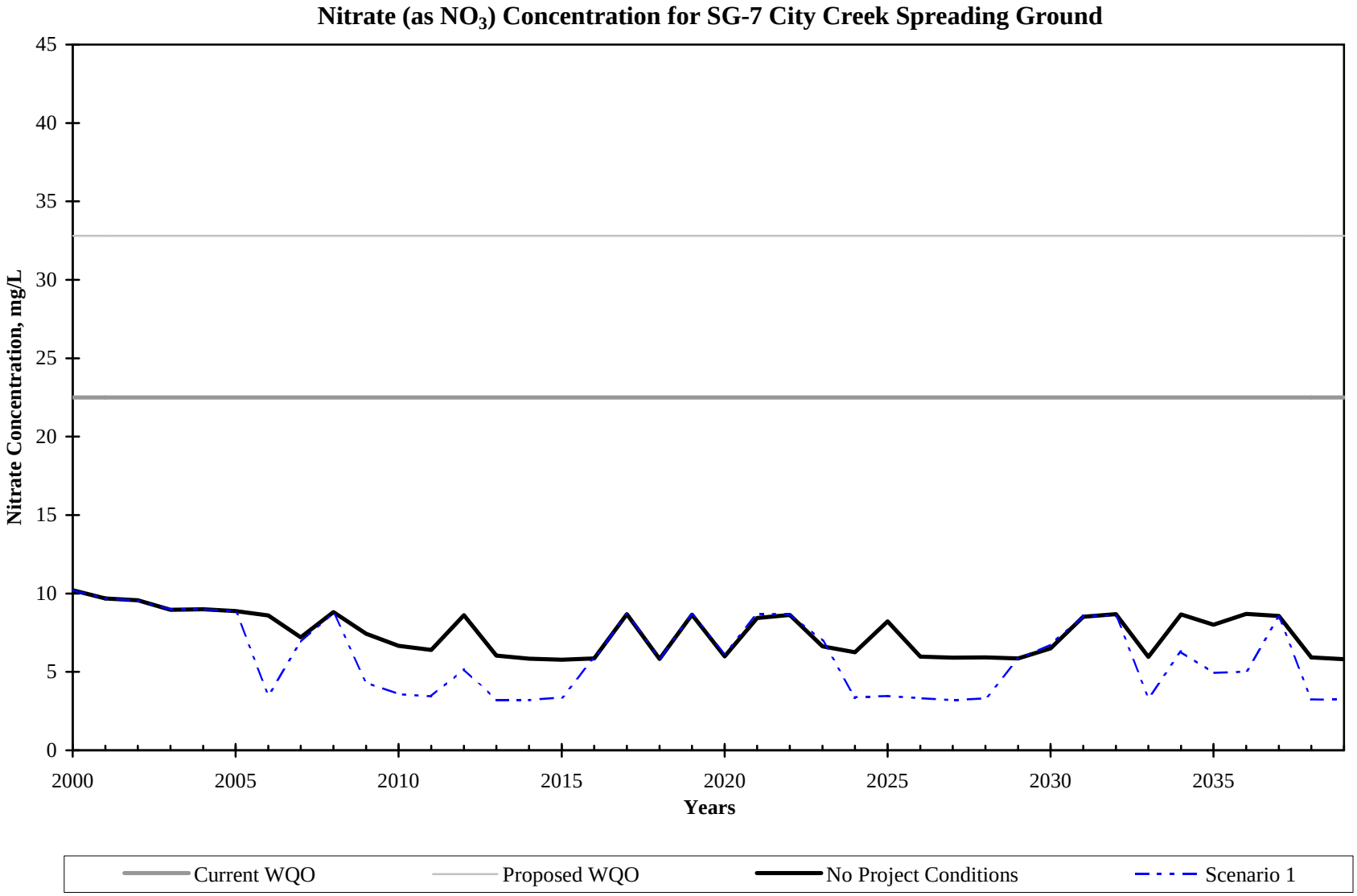

Nitrate (as NO_3) Concentration for SG-7 City Creek Spreading Ground
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(af)

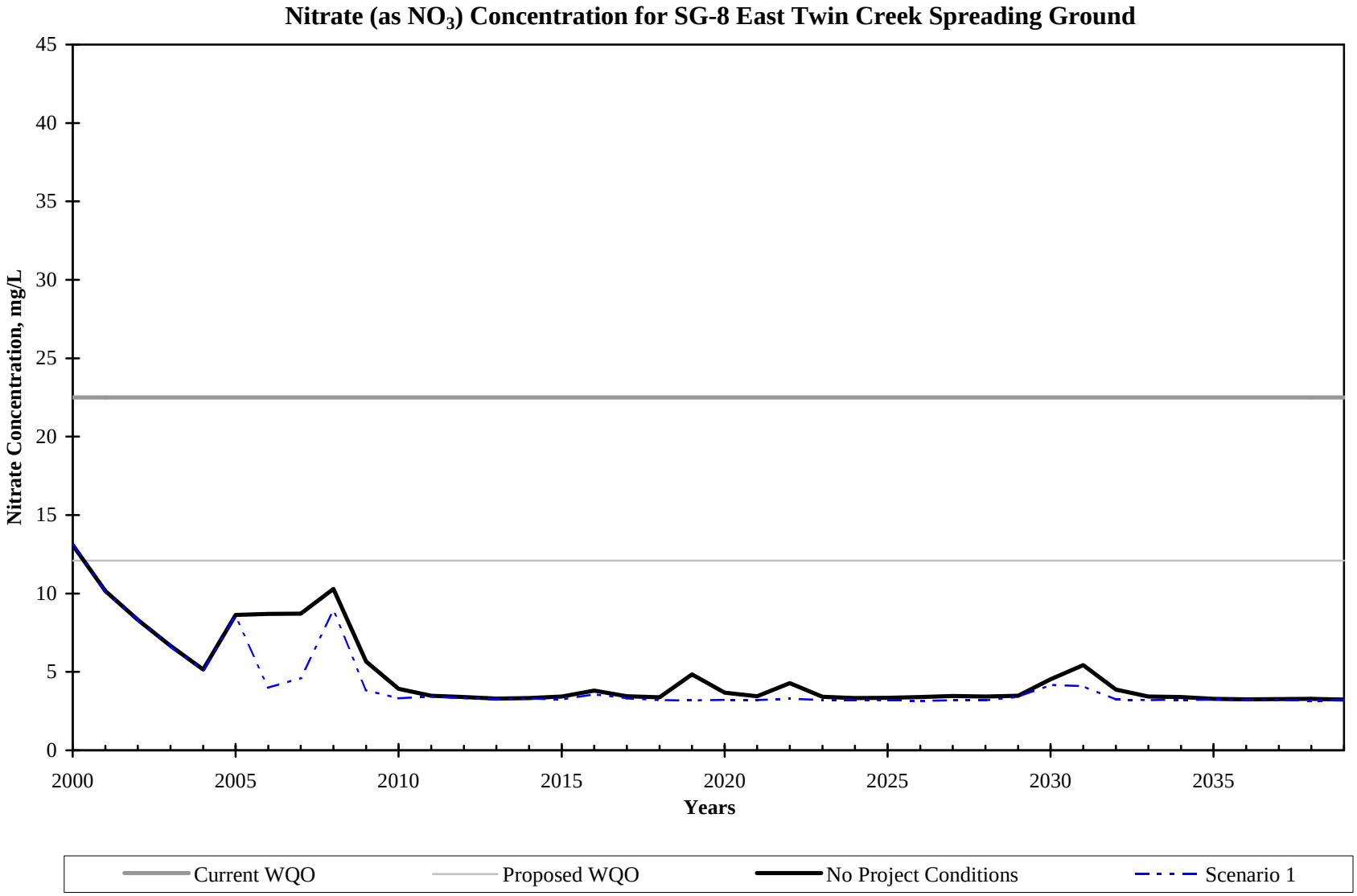

Nitrate (as NO_3) Concentration for SG-8 East Twin Creek Spreading Ground
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(ag)

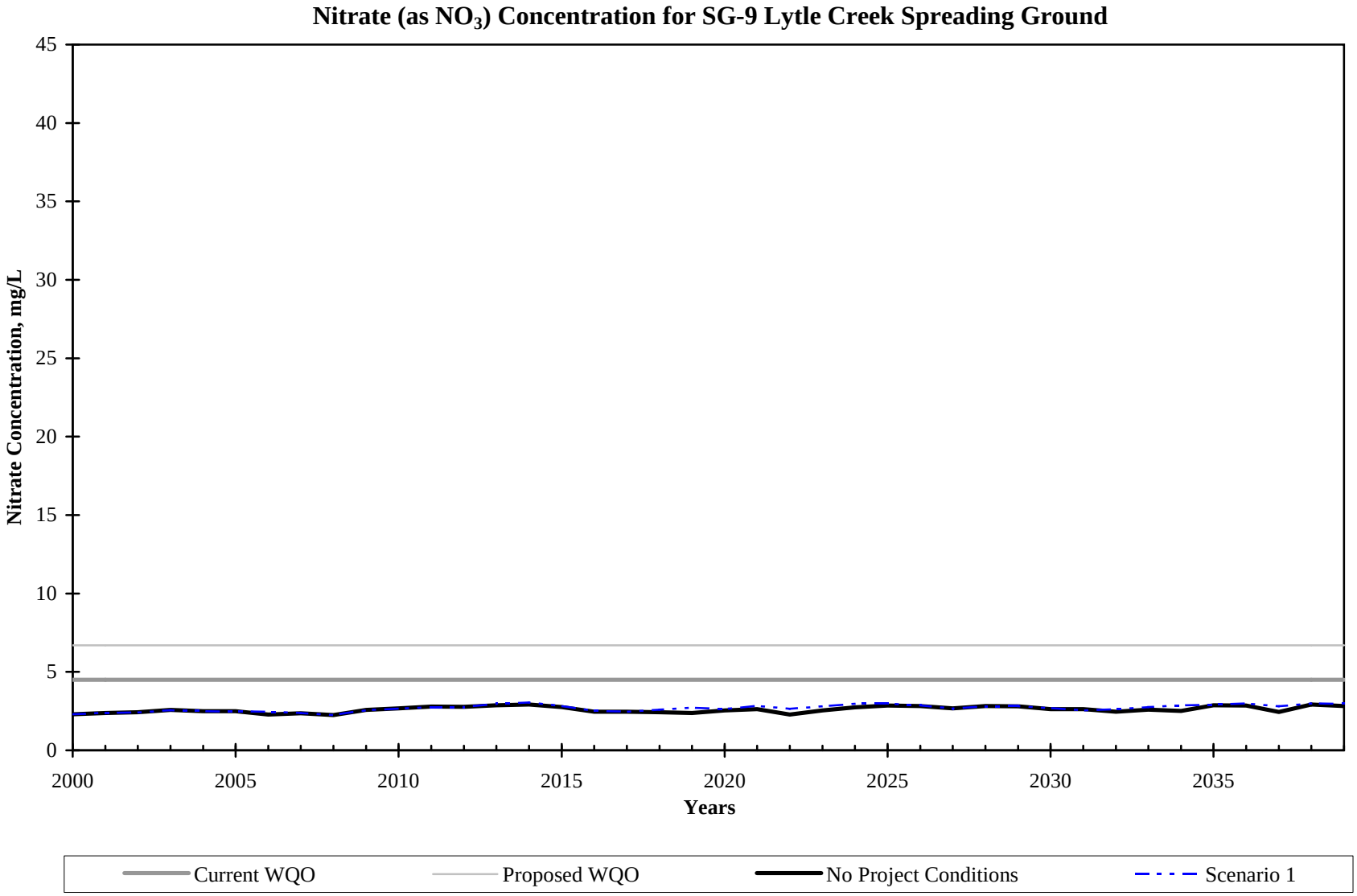
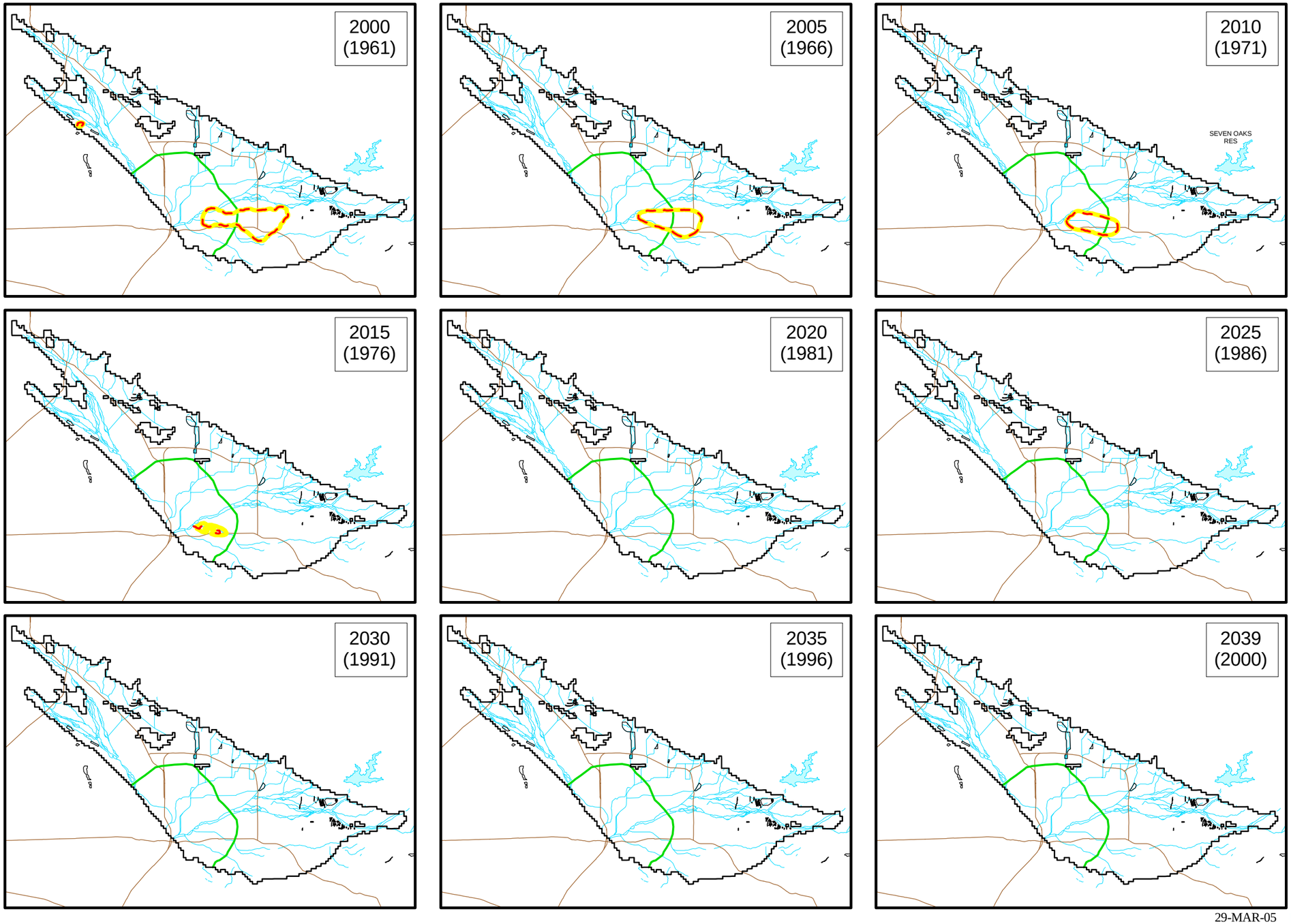

Nitrate (as NO_3) Concentration for SG-9 Lytle Creek Spreading Ground
Nitrate Concentration, mg/L
45
40
35
30
25
20
15
10
5
0
2000
2005
2010
2015
2020
2025
2030
2035
Years
Current WQO
Proposed WQO
No Project Conditions
Scenario 1

Figure 23(ah)

PERCHLORATE PLUME BOUNDARY LAYER 1 NO PROJECT CONDITION VERSUS SCENARIO 1



EXPLANATION

Yellow Line	Perchlorate Plume Boundary (6 ug/L) Layer 1, No Project Condition
	Perchlorate Plume Boundary (6 ug/L) Layer 1, Scenario 1
2000 (1961)	Model Year (Assumed Hydrological Year)
	Pressure Zone
	Model Grid of the San Bernardino Basin Area Groundwater Model
	Streams or Rivers Within Groundwater Basin Boundary
	Spreading Grounds or Basins
	Freeway

29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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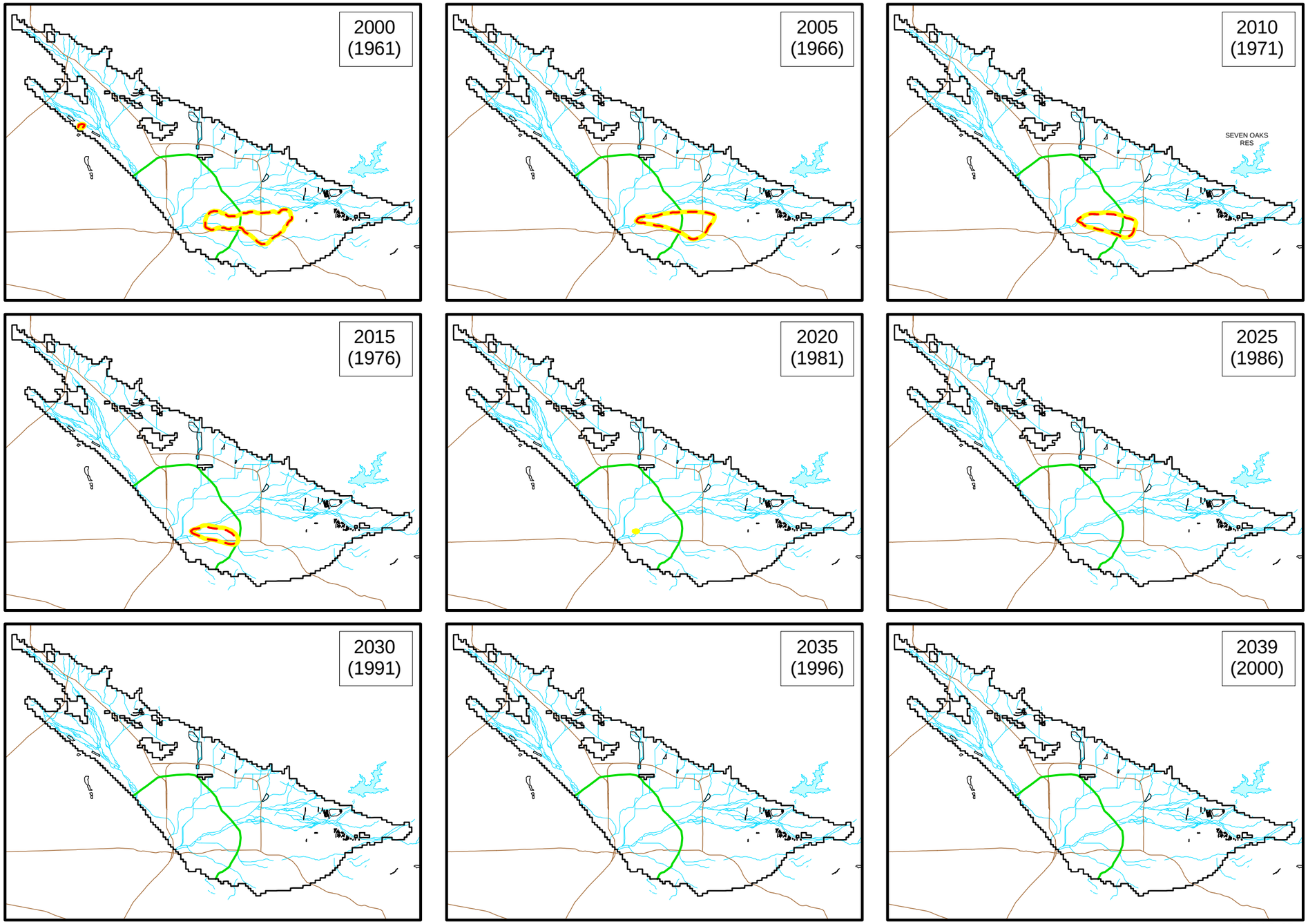
Tel: (909) 920-0707 Fax: (909) 920-0403
www.gssiwater.com

Figure 24

GIS_proj\western_mwd_riv-cor_feeder\model_figures\figs_group_2.apr

PERCHLORATE PLUME BOUNDARY LAYER 2 NO PROJECT CONDITION VERSUS SCENARIO 1A



EXPLANATION

- Yellow Line — Perchlorate Plume Boundary (6 ug/L) Layer 2, No Project Condition
- Perchlorate Plume Boundary (6 ug/L) Layer 2, Scenario 1
- 2000 (1961) — Model Year (Assumed Hydrological Year)
- Pressure Zone
- Model Grid of the San Bernardino Basin Area Groundwater Model
- Streams or Rivers Within Groundwater Basin Boundary
- Spreading Grounds or Basins
- Freeway

29-MAR-05

Prepared by: DWB

Map Projection:
State Plane 1927 (California Zone V)

NORTH

0 5 10 Miles

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www.gssiwater.com

Figure 25

GIS_proj\western_mwd_riv-cor_feeder\model_figures\figs_group_2.apr

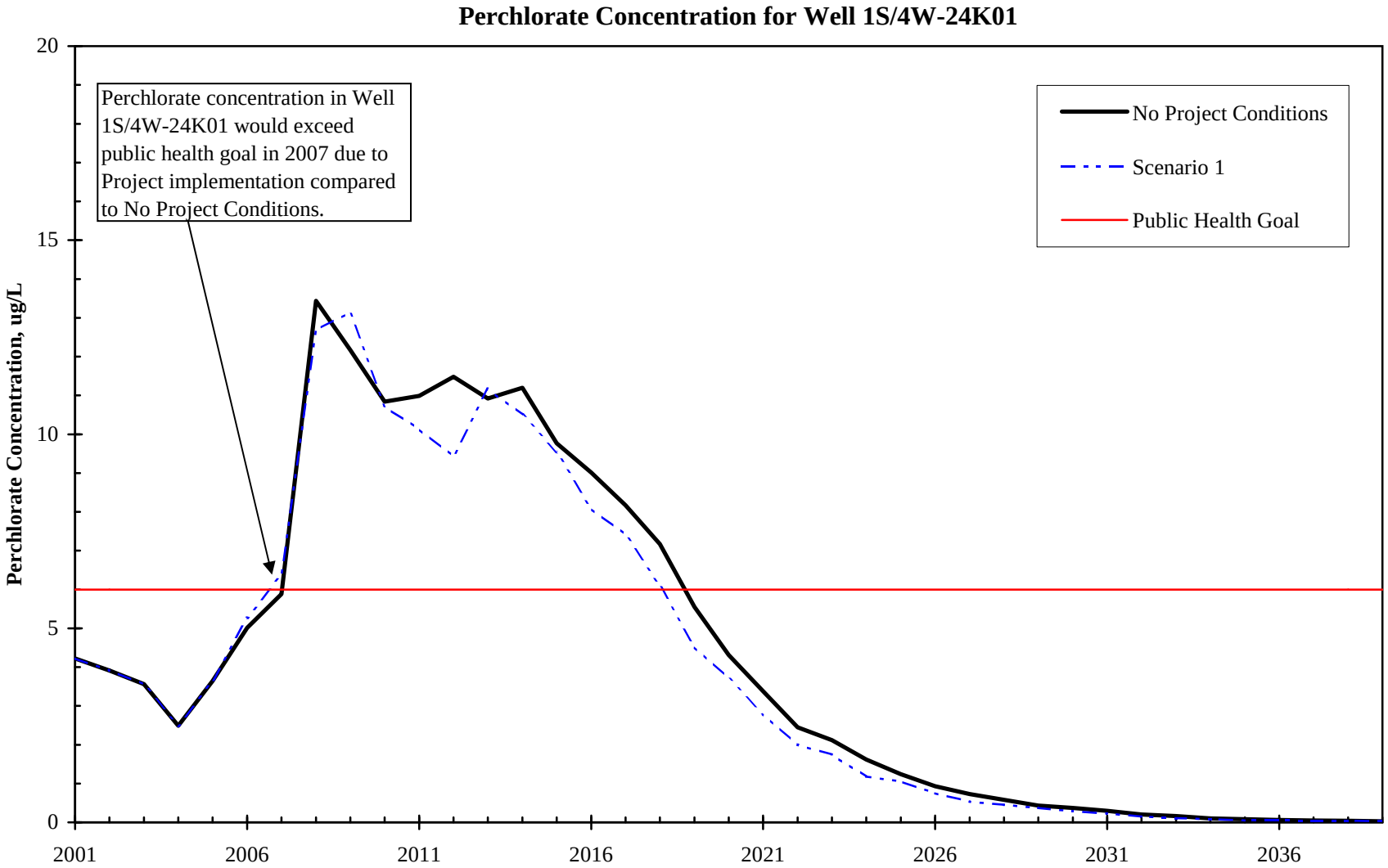
Perchlorate Concentration for Well 1S/4W-24K01
Perchlorate concentration in Well 1S/4W-24K01 would exceed public health goal in 2007 due to Project implementation compared to No Project Conditions.
No Project Conditions
Scenario 1
Public Health Goal
Perchlorate Concentration, ug/L
0
5
10
15
20
2001
2006
2011
2016
2021
2026
2031
2036

Figure 26(a)

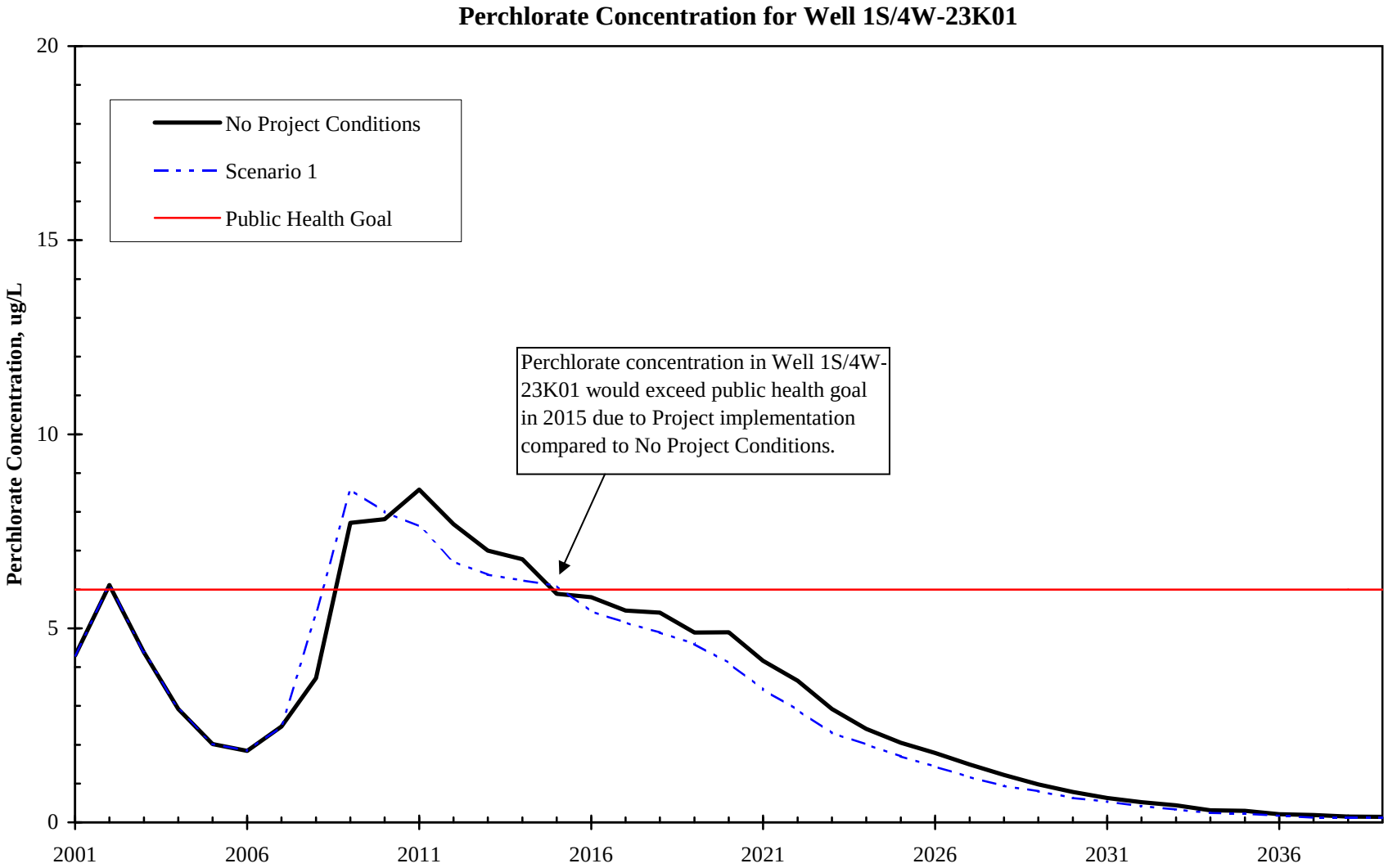
Perchlorate Concentration for Well 1S/4W-23K01
Perchlorate Concentration, ug/L
20
15
10
5
0
2001
2006
2011
2016
2021
2026
2031
2036
No Project Conditions
Scenario 1
Public Health Goal
Perchlorate concentration in Well 1S/4W-23K01 would exceed public health goal in 2015 due to Project implementation compared to No Project Conditions.

Figure 26(b)

Table 1

Summary of Annual Extraction and Annual Replenishment Schedule (Units in Acre-ft)

Year	Total Annual Extraction	Water Budget Remaining Surplus 1	Interrupt Replenish-ment Service	Replenishment for Scenario 1								
				SAR SG	City Creek SG	Water-man SG	East Twin Creek	Badger SG	Devil Canyon / Sweet-water SG	Lytle Creek SG	Mill Creek SG	Total
2001	0			0	0	0	0	0	0	0	0	0
2002	0			0	0	0	0	0	0	0	0	0
2003	0			0	0	0	0	0	0	0	0	0
2004	0			0	0	0	0	0	0	0	0	0
2005	0			0	0	0	0	0	0	0	0	0
2006	5,000	198,101		0	20,000	15,000	10,000	2,000	10,000	2,000	6,000	65,000
2007	10,000			0	0	0	0	0	0	0	0	0
2008	15,000	131,672		0	0	0	0	0	0	0	0	0
2009	20,000			0	10,000	5,000	5,000	1,000	0	0	0	21,000
2010	20,000			0	10,000	10,000	10,000	1,000	0	0	0	31,000
2011	25,000			0	15,000	9,000	9,000	0	0	0	0	33,000
2012	20,000	7,279		0	12,000	7,000	6,000	1,000	0	0	0	26,000
2013	10,000	278,184		5,000	15,000	4,000	2,000	0	0	2,000	6,000	34,000
2014	10,000	215,782		5,000	15,000	2,000	4,000	0	2,000	2,000	6,000	36,000
2015	20,000			0	10,000	5,000	5,000	0	0	0	0	20,000
2016	40,000		yes	0	0	0	0	0	0	0	0	0
2017	15,000			0	0	0	0	0	0	0	0	0
2018	10,000	240,965		0	0	15,000	12,000	1,000	0	2,000	0	30,000
2019	10,000	421,712		0	0	18,000	15,000	1,000	0	2,000	0	36,000
2020	20,000			0	0	0	0	0	0	0	0	0
2021	10,000	458,935		0	0	12,000	10,000	0	0	2,000	0	24,000
2022	10,000	958,656		0	0	16,000	14,000	2,000	0	2,000	0	34,000
2023	25,000	52,812		0	0	6,000	5,000	0	0	2,000	0	13,000
2024	10,000	210,171		5,000	15,000	6,000	5,000	0	0	2,000	6,000	39,000
2025	10,000	389,845		5,000	17,000	8,000	9,000	1,000	0	2,000	6,000	48,000
2026	20,000	77,571		5,000	18,000	10,000	10,000	1,000	0	2,000	6,000	52,000
2027	30,000			0	10,000	15,000	5,000	1,000	0	0	0	31,000
2028	30,000			0	10,000	10,000	10,000	1,000	0	0	0	31,000
2029	40,000		yes	0	0	0	0	0	0	0	0	0
2030	40,000		yes	0	0	0	0	0	0	0	0	0
2031	40,000		yes	0	0	0	0	0	0	0	0	0
2032	15,000			0	0	10,000	10,000	1,000	0	2,000	0	23,000
2033	25,000			0	15,000	4,000	3,000	1,000	0	2,000	0	25,000
2034	15,000			0	8,000	4,000	3,000	1,000	0	2,000	0	18,000
2035	20,000			0	15,000	0	0	0	0	0	0	15,000
2036	30,000			0	15,000	0	0	0	0	2,000	0	17,000
2037	15,000			0	0	10,000	7,000	1,000	0	2,000	0	20,000
2038	20,000			0	15,000	0	0	0	0	0	0	15,000
2039	30,000			0	20,000	0	0	0	0	0	0	20,000
Total	**685,000**			**Total =**								**757,000**

SG = Spreading grounds

1 Denotes the amount of imported water available to MWD that cannot be used to meet MWD demand or put into MWD

Assumptions for Extraction Distribution

Priority	Well Number	Model i	Model j	Annual Extraction [acre-ft]								
				Total = 0	Total = 5,000	Total = 10,000	Total = 15,000	Total = 20,000	Total = 25,000	Total = 30,000	Total = 35,000	Total = 40,000
Priority 1	1	76	86	0	714	1,429	2,143	1,818	2,273	1,765	2,059	2,000
Priority 1	2	77	84	0	714	1,429	2,143	1,818	2,273	1,765	2,059	2,000
Priority 1	3	78	81	0	714	1,429	2,143	1,818	2,273	1,765	2,059	2,000
Priority 1	4	78	86	0	714	1,429	2,143	1,818	2,273	1,765	2,059	2,000
Priority 1	5	79	84	0	714	1,429	2,143	1,818	2,273	1,765	2,059	2,000
Priority 1	6	80	81	0	714	1,429	2,143	1,818	2,273	1,765	2,059	2,000
Priority 1	7	82	81	0	714	1,429	2,143	1,818	2,273	1,765	2,059	2,000
Priority 2	8	84	102	0	0	0	0	1,818	2,273	1,765	2,059	2,000
Priority 2	9	84	100	0	0	0	0	1,818	2,273	1,765	2,059	2,000
Priority 2	10	84	98	0	0	0	0	1,818	2,273	1,765	2,059	2,000
Priority 2	11	84	96	0	0	0	0	1,818	2,273	1,765	2,059	2,000
Priority 3	12	72	87	0	0	0	0	0	0	1,765	2,059	2,000
Priority 3	13	73	84	0	0	0	0	0	0	1,765	2,059	2,000
Priority 3	14	74	81	0	0	0	0	0	0	1,765	2,059	2,000
Priority 3	15	74	86	0	0	0	0	0	0	1,765	2,059	2,000
Priority 3	16	75	84	0	0	0	0	0	0	1,765	2,059	2,000
Priority 3	17	76	81	0	0	0	0	0	0	1,765	2,059	2,000
Priority 4	18	84	92	0	0	0	0	0	0	0	0	2,000
Priority 4	19	84	90	0	0	0	0	0	0	0	0	2,000
Priority 4	20	84	88	0	0	0	0	0	0	0	0	2,000

Table 2

Groundwater Budgets for No Project Condition - 2001 to 2039 (Units in acre-ft)

Water Years	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
	INFLOW									OUTFLOW				
	Recharge from Gaged Streamflow	Artificial Recharge at SAR Spreading Grounds	Artificial Recharge at Other Spreading Grounds	Recharge from Local Runoff Generated by Precipitation	Infiltration from Direct Precipitation	Return Flow from Groundwater Pumping	Recharge from Ungaged Mountain Front Runoff	Underflow Recharge	Total Inflow	Evapo-transpiration	Groundwater Pumping	Underflow Discharge	Total Outflow	CHANGE IN GROUNDWATER STORAGE
2001	85,964	3,922	4,477	3,611	1,137	34,131	10,291	3,780	147,312	2,929	213,577	3,687	220,193	**-72,881**
2002	46,333	412	4,751	5,948	1,137	36,833	5,348	3,726	104,488	2,314	226,198	3,350	231,861	**-127,374**
2003	42,718	407	5,096	3,388	1,137	37,795	5,467	3,690	99,699	1,845	223,541	3,015	228,401	**-128,702**
2004	114,427	1,754	6,537	7,446	1,137	36,908	12,653	3,654	184,516	1,947	219,247	2,801	223,994	**-39,478**
2005	152,284	5,766	5,979	5,060	1,137	34,171	20,139	3,609	228,145	2,919	206,346	2,742	212,007	**16,139**
2006	198,295	9,406	4,644	5,876	1,137	36,892	18,871	3,563	278,683	6,407	219,373	2,650	228,430	**50,253**
2007	80,503	4,232	4,342	2,572	1,137	36,379	9,173	3,534	141,871	4,583	217,068	2,538	224,189	**-82,318**
2008	403,245	31,262	1,800	10,958	1,137	36,263	66,749	3,482	554,895	9,532	217,493	2,699	229,725	**325,171**
2009	94,234	10,330	14,794	4,988	1,137	37,211	11,583	3,453	177,729	6,812	222,244	2,879	231,935	**-54,206**
2010	74,103	5,587	26,466	4,616	1,137	39,615	9,605	3,415	164,542	5,074	233,592	2,822	241,489	**-76,947**
2011	63,788	2,192	30,269	2,349	1,137	40,269	7,170	3,364	150,539	4,484	236,459	2,712	243,655	**-93,116**
2012	120,816	18,169	33,901	4,975	1,137	37,068	17,518	3,328	236,912	4,879	221,775	2,640	229,294	**7,617**
2013	92,732	5,310	46,590	5,163	1,137	38,619	11,448	3,292	204,291	5,270	228,285	2,592	236,147	**-31,857**
2014	73,218	3,834	49,213	4,091	1,137	39,754	9,605	3,238	184,090	4,970	233,440	2,538	240,948	**-56,858**
2015	76,009	3,771	32,090	5,167	1,137	40,542	9,480	3,211	171,406	4,029	237,104	2,473	243,606	**-72,199**
2016	61,392	1,918	4,108	5,114	1,137	41,868	7,170	3,166	125,872	2,125	243,362	2,384	247,871	**-121,999**
2017	425,220	48,152	21,854	10,573	1,137	40,384	33,981	3,121	584,422	7,548	237,296	2,430	247,275	**337,147**
2018	208,058	34,614	14,131	5,643	1,137	37,851	31,634	3,078	336,145	10,002	226,252	2,577	238,831	**97,314**
2019	338,405	33,310	9,050	9,110	1,137	38,462	67,712	3,049	500,234	13,531	230,070	2,936	246,536	**253,698**
2020	89,740	6,426	22,921	3,947	1,137	40,082	10,291	2,995	177,539	8,118	237,805	3,230	249,154	**-71,614**
2021	136,442	9,963	24,376	7,859	1,137	39,587	18,943	2,959	241,265	6,322	235,723	3,341	245,385	**-4,120**
2022	333,415	11,516	7,079	11,788	1,137	38,985	50,284	2,923	457,126	13,164	231,722	3,857	248,744	**208,383**
2023	106,962	6,381	38,470	3,062	1,137	39,086	11,986	2,871	209,954	9,789	231,310	4,314	245,413	**-35,458**
2024	82,778	186	38,298	3,738	1,137	40,696	9,480	2,833	179,146	6,603	237,872	4,281	248,756	**-69,610**
2025	114,260	6,755	30,796	5,324	1,137	37,970	13,304	2,805	212,351	5,817	225,004	4,129	234,949	**-22,598**
2026	64,199	0	26,372	4,469	1,137	41,968	7,495	2,745	148,384	4,636	243,576	3,853	252,065	**-103,681**
2027	59,562	1,402	9,711	4,177	1,137	41,651	6,474	2,716	126,829	2,735	241,762	3,512	248,009	**-121,180**
2028	47,528	2,096	26,758	2,479	1,137	43,576	5,467	2,671	131,712	3,055	250,721	3,151	256,927	**-125,215**
2029	36,353	357	10,506	2,808	1,137	45,526	3,977	2,627	103,292	1,721	259,938	2,833	264,493	**-161,201**
2030	75,505	5,321	8,532	6,118	1,137	42,852	8,175	2,590	150,230	1,609	247,257	2,609	251,475	**-101,245**
2031	111,338	7,941	7,572	6,894	1,137	40,738	12,181	2,553	190,354	1,728	237,522	2,472	241,723	**-51,369**
2032	434,599	38,877	22,332	9,016	1,137	40,128	52,483	2,501	601,072	7,402	235,822	2,529	245,753	**355,319**
2033	86,408	5,493	29,262	4,755	1,137	40,400	11,042	2,467	180,963	5,660	237,214	2,638	245,512	**-64,549**
2034	308,150	17,369	25,194	7,419	1,137	40,110	38,408	2,417	440,204	10,064	236,378	2,783	249,225	**190,979**
2035	111,526	8,265	44,570	6,414	1,137	41,686	14,265	2,372	230,236	8,055	243,919	2,906	254,880	**-24,645**
2036	95,677	9,061	46,648	5,952	1,137	41,747	11,042	2,329	213,593	6,274	244,242	2,885	253,401	**-39,808**
2037	278,042	35,337	21,723	9,945	1,137	40,199	35,918	2,300	424,600	10,880	236,816	3,057	250,753	**173,848**
2038	63,821	3,736	50,185	2,332	1,137	42,436	4,315	2,239	170,201	7,603	247,332	3,182	258,117	**-87,916**
2039	53,125	4,150	43,963	4,318	1,137	42,992	3,836	2,212	155,732	4,620	251,375	3,092	259,087	**-103,356**
Average	**139,517**	**10,384**	**21,932**	**5,627**	**1,137**	**39,575**	**17,820**	**2,997**	**238,989**	**5,822**	**233,488**	**3,003**	**242,313**	**-3,324**

Note:
[1] Model-Calculated
[2] Model input data from Allocation Model
[3] Model input data from Allocation Model
[4] Model input based on historical conditions
[5] Model input based on historical conditions
[6] Model input data from Allocation Model
[7] Model input based on historical conditions
[8] Model input based on historical conditions
[9] = sum of [1] through [8]
[10] Model-Calculated
[11] Model input data from Allocation Model
[12] Model input based on historical conditions and model-calculated water level in Heap Well
[13] = sum of [10] through [12]
[14] = [9]-[13]

Table 4

Groundwater Budgets for Scenario 1 - 2001 to 2039 (Units in acre-ft)

Water Years	[1] Recharge from Gaged Streamflow	[2] Artificial Recharge at SAR Spreading Grounds	[3] Artificial Recharge at Other Spreading Grounds	[4] Recharge from Local Runoff Generated by Precipitation	[5] Infiltration from Direct Precipitation	[6] Return Flow from Groundwater Pumping	[7] Recharge from Ungaged Mountain Front Runoff	[8] Underflow Recharge	[9] Total Inflow	[10] Evapo-transpiration	[11] Groundwater Pumping	[12] Underflow Discharge	[13] Total Outflow	[14] CHANGE IN GROUNDWATER STORAGE
	INFLOW									OUTFLOW				
2001	85,964	3,922	4,477	3,611	1,137	34,131	10,291	3,780	147,312	2,929	213,577	3,687	220,193	**-72,881**
2002	46,333	412	4,751	5,948	1,137	36,833	5,348	3,726	104,488	2,314	226,198	3,350	231,861	**-127,374**
2003	42,718	407	5,096	3,388	1,137	37,795	5,467	3,690	99,699	1,845	223,541	3,015	228,401	**-128,702**
2004	114,427	1,754	6,537	7,446	1,137	36,908	12,653	3,654	184,516	1,947	219,247	2,801	223,994	**-39,478**
2005	152,284	5,766	5,979	5,060	1,137	34,171	20,139	3,609	228,145	2,919	206,346	2,742	212,007	**16,139**
2006	198,281	9,406	69,644	5,876	1,137	36,892	18,871	3,563	343,670	9,882	224,373	2,639	236,894	**106,776**
2007	80,501	4,232	4,342	2,572	1,137	36,379	9,173	3,534	141,869	4,708	227,068	2,523	234,299	**-92,430**
2008	397,450	31,262	1,800	10,958	1,137	36,263	66,749	3,482	549,101	9,849	232,493	2,626	244,969	**304,132**
2009	94,227	10,330	35,794	4,988	1,137	37,211	11,583	3,453	198,722	8,094	242,244	2,746	253,083	**-54,361**
2010	74,092	5,587	57,466	4,616	1,137	39,615	9,605	3,415	195,531	6,689	253,592	2,683	262,964	**-67,433**
2011	63,802	2,192	63,269	2,349	1,137	40,269	7,170	3,364	183,553	6,178	261,459	2,577	270,213	**-86,660**
2012	120,805	18,169	59,901	4,975	1,137	37,068	17,518	3,328	262,900	6,241	241,775	2,534	250,550	**12,351**
2013	92,741	10,310	75,590	5,163	1,137	38,619	11,448	3,292	238,300	7,207	238,285	2,527	248,018	**-9,718**
2014	73,211	8,834	80,213	4,091	1,137	39,754	9,605	3,238	220,083	7,213	243,440	2,506	253,160	**-33,076**
2015	76,006	3,771	52,090	5,167	1,137	40,542	9,480	3,211	191,404	5,518	257,104	2,448	265,069	**-73,665**
2016	61,402	1,918	4,108	5,114	1,137	41,868	7,170	3,166	125,882	2,480	283,362	2,285	288,127	**-162,246**
2017	419,068	48,152	21,854	10,573	1,137	40,384	33,981	3,121	578,269	7,968	252,296	2,331	262,596	**315,673**
2018	207,842	34,614	44,131	5,643	1,137	37,851	31,634	3,078	365,929	11,837	236,252	2,483	250,573	**115,356**
2019	333,148	33,310	45,050	9,110	1,137	38,462	67,712	3,049	530,977	15,691	240,070	2,879	258,639	**272,338**
2020	89,935	6,426	22,921	3,947	1,137	40,082	10,291	2,995	177,734	8,267	257,805	3,181	269,253	**-91,519**
2021	136,169	9,963	48,376	7,859	1,137	39,587	18,943	2,959	264,992	7,612	245,723	3,321	256,655	**8,338**
2022	330,897	11,516	41,079	11,788	1,137	38,985	50,284	2,923	488,608	14,986	241,722	3,999	260,707	**227,901**
2023	107,260	6,381	51,470	3,062	1,137	39,086	11,986	2,871	223,253	10,505	256,310	4,440	271,255	**-48,002**
2024	82,785	5,186	72,298	3,738	1,137	40,696	9,480	2,833	218,153	9,352	247,872	4,478	261,702	**-43,549**
2025	114,172	11,755	73,796	5,324	1,137	37,970	13,304	2,805	260,264	9,406	235,004	4,586	248,996	**11,268**
2026	64,252	5,000	73,372	4,469	1,137	41,968	7,495	2,745	200,437	8,134	263,576	4,390	276,100	**-75,663**
2027	59,514	1,402	40,711	4,177	1,137	41,651	6,474	2,716	157,781	4,875	271,762	3,713	280,350	**-122,569**
2028	47,507	2,096	57,758	2,479	1,137	43,576	5,467	2,671	162,691	4,913	280,721	3,238	288,871	**-126,180**
2029	36,344	357	10,506	2,808	1,137	45,526	3,977	2,627	103,283	1,845	299,938	2,781	304,565	**-201,282**
2030	75,712	5,321	8,532	6,118	1,137	42,852	8,175	2,590	150,437	1,685	287,257	2,477	291,419	**-140,982**
2031	111,093	7,941	7,572	6,894	1,137	40,738	12,181	2,553	190,109	1,795	277,522	2,307	281,624	**-91,515**
2032	430,278	38,877	45,332	9,016	1,137	40,128	52,483	2,501	619,751	8,841	250,822	2,374	262,037	**357,714**
2033	86,075	5,493	54,262	4,755	1,137	40,400	11,042	2,467	205,630	7,073	262,214	2,456	271,743	**-66,113**
2034	307,962	17,369	43,194	7,419	1,137	40,110	38,408	2,417	458,015	11,522	251,378	2,569	265,469	**192,546**
2035	111,209	8,265	59,570	6,414	1,137	41,686	14,265	2,372	244,919	9,402	263,919	2,671	275,992	**-31,073**
2036	95,742	9,061	63,648	5,952	1,137	41,747	11,042	2,329	230,657	7,546	274,242	2,553	284,341	**-53,684**
2037	280,106	35,337	41,723	9,945	1,137	40,199	35,918	2,300	446,664	12,421	251,816	2,706	266,943	**179,721**
2038	63,798	3,736	65,185	2,332	1,137	42,436	4,315	2,239	185,179	8,886	267,332	2,822	279,040	**-93,862**
2039	53,042	4,150	63,963	4,318	1,137	42,992	3,836	2,212	175,649	5,815	281,375	2,645	289,835	**-114,186**
Average	**138,927**	**11,025**	**40,702**	**5,627**	**1,137**	**39,575**	**17,820**	**2,997**	**257,809**	**7,087**	**251,052**	**2,951**	**261,090**	**-3,281**

Note:
[1] Model-Calculated
[2] Model input data from Allocation Model
[3] Model input data from Allocation Model
[4] Model input based on historical conditions
[5] Model input based on historical conditions
[6] Model input data from Allocation Model
[7] Model input based on historical conditions
[8] Model input based on historical conditions
[9] = sum of [1] through [8]
[10] Model-Calculated
[11] Model input data from Allocation Model and projected Project Pumping
[12] Model input based on historical conditions and model-calculated water level in Heap Well
[13] = sum of [10] through [12]
[14] = [9]-[13]

Average Contaminated Footprint Area (acres) and Corresponding Production Well Contamination for PCE, TCE and Perchlorate Plumes

Contaminant	Project Scenario	No Project Contaminated Footprint Area (acres) [a]	Project Contaminated Footprint Area (acres)[a]	Decrease in Footprint Area as a Result of Project Implementation (acres)[a]	Number of Additional Wells with Contaminant Greater than the MCL as a Result of Project Implementation[b]	Number of Additional Wells with Contaminant Less than the MCL as a Result of Project Implementation[b]	Decrease in Number of Wells with Contaminant Greater than the MCL as a Result of Project Implementation[b]
PCE	**Scenario 1**	1,941	1,925	16	5 [c]	7	2
TCE	**Scenario 1**	1,749	1,308	441	1	37	36
Perchlorate	**Scenario 1**	1,192	1,128	64	2	24	22

a. Acreage averaged over the 39-period.
b. May include wells contaminated in multiple years.
c. Four of these wells are the Newmark wells and are connected to PCE treatment facilities operated by City of San Bernardino

Table 5

Table 6

Average Concentration at the End of Model Simulation (Year 2039)

Groundwater Sub-Basins	TDS, mg/L		Nitrate (as NO3), mg/L	
	No Project Condition	Scenario 1	No Project Condition	Scenario 1
Bunker Hill I	358	353	11	11
Bunker Hill II	291	290	12	12
Bunker Hill Pressure Zone	285	292	11	10
Lytle	212	213	4	4

Groundwater Basin	TDS, mg/L		Nitrate (as NO3), mg/L	
	No Project Condition	Scenario 1	No Project Condition	Scenario 1
SBBA	293	295	11	11