CITY OF COACHELLA
AND
COACHELLA WATER AUTHORITY

HEXAVALENT CHROMIUM-6 MITIGATION PROJECT

DRAFT CEQA-Plus
Initial Study/Mitigated Negative Declaration No. 26-03

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& CEQA-Plus (Federal Crosscutters)

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LIST OF ABBREVIATIONS

Term	Definition
$\mu g/m^3$	micrograms per cubic meter
AAM	Annual Arithmetic Mean
AB	Assembly Bill
ABAU	adjusted business-as-usual
ABCI	Augustine Band of Cahuilla Indians
ACBCI	Agua Caliente Band of Cahuilla Indians
AOB	Area of Benefit
APE	Area of Potential Effects
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
BIA	U.S. Bureau of Indian Affairs

BLM	Bureau of Land Management
BMP	Best Management Practice
BO	Biological Opinion
CAA	Clean Air Act
CAAP	Climate Action and Adaptation Plan
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	methane
CHRIS	California Historical Resources Information System
CIWMP	County Integrated Waste Management Plan
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CVAG	Coachella Valley Association of Governments
CVMSHCP	Coachella Valley Multiple Species Habitat Conservation Plan
CVSC	Coachella Valley Stormwater Channel
CVUSD	Coachella Valley Unified School District
CWA	Coachella Water Authority
CVWD	Coachella Valley Water District
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
DDT	dichlorodiphenyltrichloroethane
DDW	Division of Drinking Water
DWSRF	Drinking Water State Revolving Fund

ECVAP	Eastern Coachella Valley Area Plan
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zone
FIRM	Flood Insurance Rate Map
FPPA	Farmland Protection Policy Act
FRA	Federal Responsibility Area
FRAP	Fire and Resources Assessment Program
GHG	greenhouse gas
GIS	Geographic Information Systems
HDD	Horizontal Directional Drilling
HPIR	Historic Property Identification Report
IID	Imperial Irrigation District
IS	Initial Study
IS/MND	Initial Study/Mitigated Negative Declaration
L_{max}	The maximum A-weighted noise level during the measurement period.
LOS	Level of Service
LRA	Local Responsibility Area
LST	Localized Significance Thresholds
LUST	Leaking Underground Storage Tank
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Limit
mm	millimeter
MND	Mitigated Negative Declaration
MRZ	Mineral Resource Zone
MSHCP	Multiple Species Habitat Conservation Plan
$MTCO_2e$	metric tons of carbon dioxide equivalent
N/A	Not Applicable
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards

NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOx	nitric oxides
NPDES	National Pollutant Discharge Elimination System
O_3	Ozone
OPR	Office of Planning and Research
PCB	Polychlorinated Biphenyl
PM_{10}	Particulate Matter Less than 10 Microns in Diameter
$PM_{2.5}$	Particulate Matter Less than 2.5 Microns in Diameter
ppb	parts per billion
ppm	parts per million
PRC	Public Resources Code
Project	Hexavalent Chromium-6 Mitigation Project
RCGP	Restricted Custody General Population
ROG	Reactive Organic Gases
ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SR	State Route
SRA	Source Receptor Area
SRF	State Revolving Fund
SSA	Sole Source Aquifer
SSAB	Salton Sea Air Basin
SSC	California Species of Special Concern
SWRCB	State Water Resources Control Board
TMDCI	Torres Martinez Desert Cahuilla Indians
TMDL	total maximum daily load
USACE	U.S. Army Corps of Engineers

USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
VHFHSZ	Very High Fire Hazard Severity Zones
VMT	Vehicle Miles Traveled
WRP	Water Reclamation Plant

CITY OF COACHELLA
AND
COACHELLA WATER AUTHORITY
HEXAVALENT CHROMIUM-6 MITIGATION PROJECT

DRAFT INITIAL STUDY
MITIGATED NEGATIVE DECLARATION
CHAPTER 1 INTRODUCTION

1.1. PROJECT DESCRIPTION

1.1.1. Introduction

The State of California has determined that the chemical compound Chromium-6 (Hexavalent Chromium, Cr-6 or Cr(VI), which originates in nature and as an industrial pollutant, is hazardous to human health at very low levels, being considered a carcinogen and reproductive toxicant. The state officially adopted a Maximum Contaminant Level (MCL) of 10 parts per billion (ppb) for Chromium-6 in drinking water, effective October 1, 2024. This regulation makes California the first state to set a specific limit for this carcinogen, stricter than the current 100-ppb total chromium federal standard. Until its readoption of the 10-ppb threshold, Cr-6 was regulated in California applying a total chromium 50-ppb threshold.[1] The Coachella Water Authority (CWA) is now required to comply with state requirements to lower Cr-6 levels in drinking water by October 2027.[2]

CWA's existing water system consists of different pressure zones, groundwater wells, storage reservoirs, booster pumping stations, and distribution facilities. CWA has one principal source of water supply: local groundwater pumped from CWA owned and operated wells. There are currently six (6) wells within the CWA's distribution system; all six (6) wells are currently operational. Wells numbers include 11, 12, 16, 17, 18, and 19. A seventh well (Well No. 20) was previously analysed pursuant to CEQA and approved by the City in 2023 and 2025 and has been drilled and is under construction[3] [4] and is further analysed herein The total pumping capacity of active wells is approximately 11,400 gallons per minute (gpm) or 16.5 million gallons per day (MGD). CWA has three (3) storage reservoirs within the City, with a total reservoir storage capacity of 10.5± MG. The current system serves approximately 9,000 customers.

The City of Coachella Chromium-6 Mitigation Project ("Project") involves the retrofitting of six existing City wells and one additional well currently under construction.

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1 Note: The 50-ppb threshold, which still remains, is on Total Chromium, which is a combination of Chrome 3 and Chrome 6. Under this rule, a system could have 50-ppb of Chrome 6 if it had 0-ppb Chrome 3.

2 To further clarify, state regulation requires city comply by October 27, 2027. Regulations also state that the City is required to submit a Compliance Plan to Division of Drinking Water. The plan was submitted and approved showing the subject project completion date of August 2031.

3 Sevilla II Tentative Tract Map No. 38557 TTM 38557; CZ 22-05; CUP 372; AR 23-13; EA 22-06 Final Initial Study & Mitigated Negative Declaration. October 2023.

4 Well 20/City Project W-46 CEQA Exemption, September 2025.

1.1.2. Project Summary

In March 2026, the CWA completed a Cr-6 compliance study which identifies six of existing groundwater wells and one future well (under construction) that will be equipped with treatment facilities that will lower Cr-6 levels below the new 10-ppb threshold. Existing wells No. 11, 12, 16, 17, 18, Well 19 and the future /partially constructed Well 20 will be equipped to provide treatment that will allow CWA to comply with the MCL of 10 µg/L (eq. 10-ppb).

CWA's engineering consultants, Corona Environmental Consulting, LLC (Corona) and Water Works Engineers, LLC (WWE) have completed the preliminary design of each of the well sites' treatment measures using reduction/coagulation/filtration (RCF) treatment technology. The RCF treatment process includes ferrous iron chemical injection to reduce Cr-6 to less soluble trivalent chromium (Cr(III) or Cr-3) through reduction contact vessels. The water is then injected with sodium hypochlorite (SHC) to oxidize residual ferrous iron to ferric iron in the solid form of ferric hydroxide. Water is then sent to filtration vessels to remove the Cr(III) and ferric hydroxide particles.

The Project design includes the release of backwash water into the municipal sewer system. Backwash water management alternatives were evaluated and potential sewer collection system deficiencies addressed with the use of backwash equalization tanks on some of the well sites. Based on the backwash water management and sewer collection analysis, three sewer collection line segments will exceed capacity, requiring sewer pipeline upsizing. Onsite backwash recycling with approximately weekly solids off-hauling to the City wastewater treatment plant for at least one of the Project wells (Well 19). New well equipment would include reduction vessels, filter vessels, associated pumps and motors upgrades (as needed), chemical feed system, and backwash equalization/reclaim tank (as needed).

1.1.3. Project Reduction and Filtration Vessels

As noted above, each of the well sites' treatment measures will be equipped with reduction/coagulation/filtration (RCF) treatment technology, which includes the use of reduction and filter vessels, filter media and pumps. Both small diameter vertical reduction vessels (4-ft diameter by 7-ft side shell) as well as single baffled horizontal reduction vessel (8-ft diameter by 18 to 20-ft side shell) were considered for a 2-minute contact time. Similarly, both small diameter vertical filter vessels (4-ft diameter by 5-ft side shell) and a single horizontal multi-cell pressure filter vessel (8 to 12-ft diameter by 34 to 36-ft side shell) were considered for hydraulic loading rates of 5 to 7.5-gpm/ft^2.

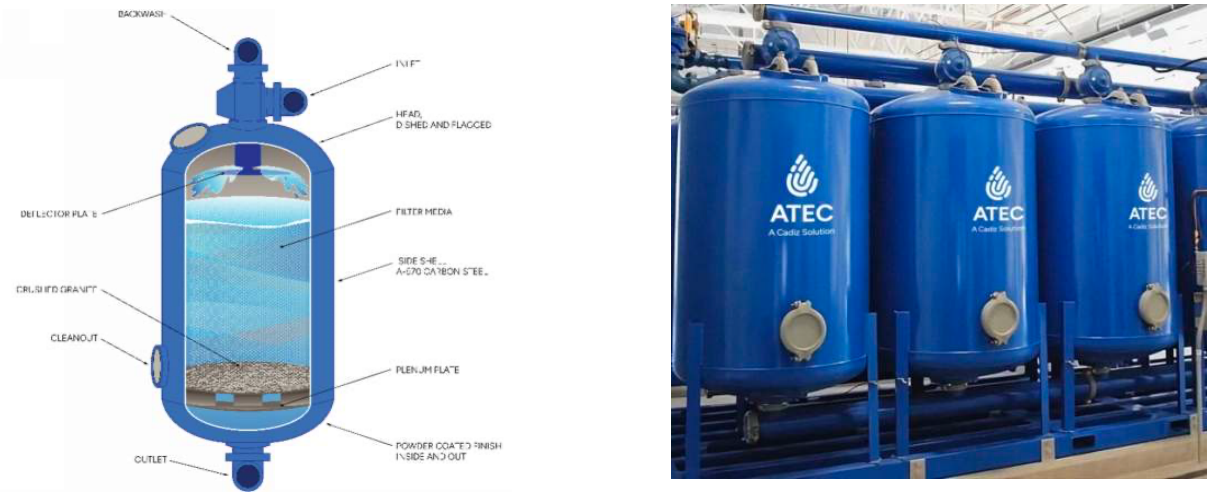


Exhibit 1-1: Small Diameter Vertical Diameter Vertical Pressure Vessel

Reduction vessels and filter vessels were sized for each well design flowrate (2,000-gpm to 2,200-gpm). Site layouts were developed for a horizontal baffled reduction vessel and small diameter vertical filter vessels for two hydraulic loading rates. The horizontal/vertical reduction vessel would have a concrete foundation pad at the supporting legs, and the small diameter filtration vessels would collectively be located on concrete pads measuring approximately 34 feet by 21feet.

1.1.4. Chemical Feed Systems

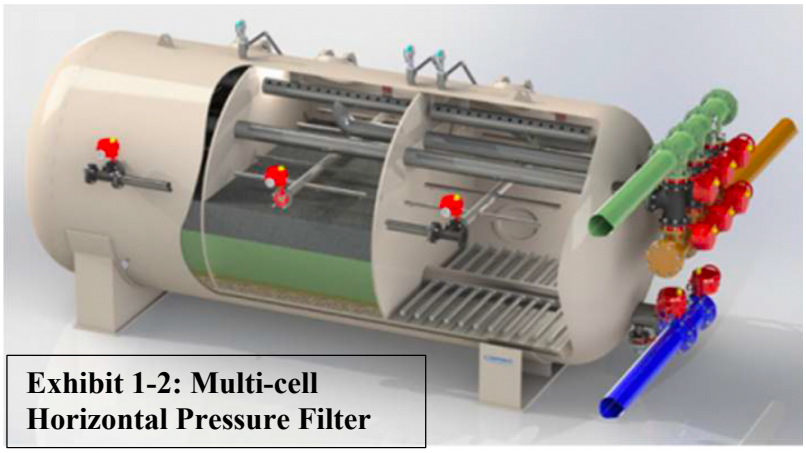


Exhibit 1-2: Multi-cell Horizontal Pressure Filter

In addition to its occurrence in nature, Chromium-6 is primarily used in industrial applications for anti-corrosion coatings, stainless steel production, leather tanning, and wood preservation. The Project RCF treatment and removal process requires a ferrous iron source and an oxidant. Ferrous iron will be provided as ferrous chloride (~14% as iron) and the existing 12.5% sodium hypochlorite which is currently used at each well as a disinfection residual, will be used by the RCF system as the oxidant.

Existing on-site sodium hypochlorite storage tanks at some wells will be augmented with additional enclosed storage areas of about 100 square feet. Wells where the existing sodium hypochlorite storage room and/or electrical room is not sufficient for the additional electrical or chemical feed equipment, an additional sodium hypochlorite or electrical room will be constructed. New storage and feed rooms for ferrous chloride will be installed at each wells site. Additional on-site chemical storage will range from 220 to 500 gallons, and in some cases existing sodium hypochlorite storage will suffice. The Project also calls for the replacement of all the existing well pumps and motors due to a variety of equipment conditions and increased head loss associated with the treatment system that cannot be met by existing pumps and motors while maintaining the existing well flowrate.

1.1.5. Waste Management Systems

The RCF treatment system generates a waste stream comprised of backwash waters and/or solids. Depending on the method of handing, which varies by well, the backwash water can be discharged directly into the City sewer system and conveyed to the wastewater treatment plant for treatment. Alternatively, where access to the City sewer collection system is not available (Well 19 only), decanted backwash water will be recycled to the head of the treatment system and settled backwash solids would be hauled from the well site to an approved connection to the City collection system or directly to the treatment plant. De-watered solids from the wastewater treatment plant will be hauled approximately weekly to a licensed, approved landfill, and will be required to pass a paint filter test and be considered “solid waste” for disposed of at a landfill.

Filter Media Disposal
Over a period of years, and based on periodic inspections and evaluations, the granular filter media may be removed and transferred from the pressure vessels to Caltrans-approved containers for dewatering and disposal by CWA. The media service provider is expected to handle the media waste characterization and disposal. This process may occur as infrequently as once per decade.

1.1.6. Wastewater Collection Infrastructure

As noted, one method of RCF waste stream disposal is direct discharge into the City's municipal wastewater collection system. Based on the Project preliminary design analysis, backwash equalization tanks (BW EQ tanks) are planned at Well 12, Well 16, Well 17 and Well 20 to limit the discharge flowrate and minimize capacity impacts on the anticipated deficient sewer line segments that would serve these wells. Well 11 and Well 18 would discharge directly to sewer at flowrates that do not cause any deficient sewer line segments. As discussed above, Well 19 is outside of the City's wastewater collection system boundary and direct sewer discharge is not possible.

Analysis was conducted of the capacities of sewer lines that could receive direct discharge from Wells 17 and 20, and a combination of the flows from these two wells. The analysis of constraints indicates that even with the addition of the largest backwash equalization tanks available, three sewer line segments will be deficient with the addition of backwash discharge based on depth-to-diameter ratios of 0.5 for 12-in diameter and smaller pipelines and 0.75 for 15-in diameter and larger. A total of 8,460± linear feet of sewer line will need to be replaced to ensure adequate line capacity at times of backwash discharge.

1.1.7. Well Pumps and Motors

For a variety of reasons, the Project includes replacement of pumps and motors at each of the six built wells and the application of equivalent replacement pumps and motors for Well 20. New and replacement motors would range in power from 150 to 250 horsepower (hp) to provide design flow rates of 2,000 to 2,200 gpm. According to the Project Design Report, all electric motors will be replaced with the same horsepower no meaningful change in hp or electrical demand.

1.1.8. Preliminary Well Site Location and Layouts

Preliminary site layouts were developed for each of the seven well sites. Two RCF systems were considered, including the recommended backwash waste and residuals handling approaches based on the RCF treatment system described above. Two site layouts have been developed for each well site to evaluate treatment site improvements, each reflecting the somewhat different means by which wastewater discharge is managed. The differences between siting alternatives for each well site are very limited and result in essentially the same types and intensities of impact. Therefore, Alternative 1 site plans for each of the City's seven wells are presented on the following figures. Each well improvement plan is described as follows:

Well 11 Site Location and Layout (APN 603-232-019 & 030)
Well 11 is located at the northwest corner of Dillon Road and Cabazon Road on APN 603-232-019 & 030. Once the Cr-6 RCF retrofit is complete, Well 11 will operate with a design flow of 2,000 gpm. New facilities will include an 8'x21' horizontal reduction vessel, and an array of up to thirty-two (32) 5' tall by

4’ wide vertical filtration vessels on a concrete pad. Additional new facilities will include a 4’x4’catch basin, ferrous chloride storage building (12’x12’), chemical feed pump, 500-gallon sodium hypochlorite storage tank (replaces existing), and miscellaneous pumps and pipes. Well 11 site improvements will also include removal of fencing and construction of 6 to 8-foot masonry wall topped with barbed-wire. A 6” backwash discharge line will be constructed and run 740± linear feet to connect with local sewer line. (See Figure 1-3).

Well 12 Site Location and Layout (APN 768-210-014)
Well 12 is located immediately west of Mecca Street and a large stormwater detention basin, and within and bounded on the west and north by Bagdouma Park development on APN 768-210-014. Post-retrofit, Well 12 will have a design flow of 2,000 gpm. New facilities will include an 8’x21’ horizontal reduction vessel, and an array of up to thirty-two (32) 5’ tall by 4’ wide vertical filtration vessels on a concrete pad. A horizontal 28,200-gallon (20’ diameter x12’ tall) backwash equalization tank will be constructed on the site. Additional new facilities will include ferrous chloride storage building (12’x12’), chemical feed pump, additional sodium hypochlorite storage feed pump and miscellaneous pumps and pipes. A 4” backwash discharge line will be constructed and run 340± linear feet to connection with a local 8” sewer line. (See Figure 1-4).

Well 16 Site Location and Layout (APN 763-141-019 & 020)
Well 16 is located 1,234± feet north of Ave 54 and 264± feet south of the Tyler Lane cul-de-sac, from which access to Well 16 is taken. Post-retrofit, Well 16 will have a design flow of 2,000 gpm. New facilities will include an 8’x21’ horizontal reduction vessel, and an array of up to thirty-two (32) 5’ tall by 4’ wide vertical filtration vessels on a concrete pad. A 56,900-gallon (22’x20’ tall) backwash tank will be constructed on the site. Additional new facilities will include ferrous chloride storage building (12’x12’), chemical feed pump, replaced and enlarged (to 500 gallon) sodium hypochlorite storage feed pump and miscellaneous pumps and pipes. Existing fencing on the east side of the site will be replaced with a 6 to 8-foot masonry wall topped with barbed wire. A 4” backwash discharge line will be constructed and run 330± linear feet north to connection with a local 10” sewer line in the Tyler Lane cul-de-sac. An adjacent land acquisition of 0.20±-acre is required from APN 768-210-019 (See Figure 1-5).

Well 17 Site Location and Layout (APN 603-220-035 and 051)
Well 17 is located immediately east of Van Buren Street and 1,177± feet north of Avenue 49 (Avenida Guitron) with access taken from Van Buren Street. It is immediately west of basketball courts at the Ranchos Los Flores Park and event venue. The wellsite will be expanded to incorporate a portion of park lands. Once the Project is completed, Well 17 will have a design flow of 2,200 gpm. New facilities will include an 8’x23’ horizontal reduction vessel, and an array of up to thirty-two (32) 5’ tall by 4’ wide vertical filtration vessels on a concrete pad. A 47,700-gallon (20’x12’ tall) backwash tank will be constructed on the site. Additional new facilities will include ferrous chloride storage building (12’x12’), chemical feed pump, and miscellaneous pumps and pipes. Existing fencing on the north side of the site will be replaced with a 6 to 8-foot masonry wall topped with barbed wire. A 4” backwash discharge line will be constructed and run 65± linear feet west to connection with a local 8” sewer line in Van Buren Street. (See Figure 1-6).

Well 18 Site Location and Layout (APN 603-150-017)
Well 18 is located at the immediately north of unimproved Avenue 48, approximately 960± feet east of Tyler Street. Surrounding lands are all in agriculture. Once the Project is completed, Well 18 will have a design flow of 2,000 gpm. New facilities will include an 8’x21’ horizontal reduction vessel, and an array of up to thirty-two (32) 5’ tall by 4’ wide vertical filtration vessels on a concrete pad. Additional new

facilities will also include ferrous chloride storage building (12'x12'), chemical feed pump, and miscellaneous pumps and pipes Raw water will be pumped from a new 2,000 gpm well pump to the RCF Treatment System prior to entering an on-site water storage tank that feeds the distribution system piping exiting the site to the south. Additional backwash equipment will include a 4'x4'catch basin and 6" backwash discharge pipe that will run 1,100± feet in the Avenue 48 right of way and connect to an existing 24" sewer main in the Tyler Street right of way. (See Figure 1-7).

Well 19 Site Location and Layout (APN 612-540-008)
Well 19 is located at the northwest corner of Playa Del Amor Street and El Greco Avenue, and immediately east of Jackson within an existing single-family subdivision. The site is bounded by Jackson Street on the west, a private access road on the north, and single-family homes to the south and east. The Well 19 site is surrounded by a 6-foot masonry to 8 and accessed via gates within the subdivision. Post-retrofit, Well 19 will have a design flow of 2,000 gpm. New facilities will include an 8'x21' horizontal reduction vessel, and an array of up to thirty-two (32) 5' tall by 4' wide vertical filtration vessels on a concrete pad. A maximum 90,000 gallon (30.9'x16' tall) backwash reclaim tank will be constructed on the site. Additional new facilities will include ferrous chloride storage building (12'x12'), chemical feed pump, replaced and sodium hypochlorite feed pump and miscellaneous pumps and pipes. Wastewater bypass blending to reduce Cr-6 levels below thresholds is planned for Well 19. (See Figure 1-8).

Well 20 Site Location and Layout (APN 779-620-041)
As noted above, Well 20 was evaluated pursuant to CEQA in September of 2025[5] and is currently under construction. Well 20 is located immediately west of Van Buren Street and is surrounded by a subdivision retention basin on the north, active agriculture on the south and single-family residences on the east. The site will be accessible from a cul-de-sac within the residential subdivision or directly off of Van Buren Street. Well 20 facilities will include a 2,000 gpm well pump, an 8'x21' horizontal reduction vessel, and an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels on a concrete pad and a 34,000 gallon 22'x12' high backwash equalization tank.
Additional facilities will include a ferrous chloride storage building (12'x12'), a sodium hypochlorite storage building (12'x12'), chemical feed pumps, and miscellaneous pumps and pipes. N 18'x12' electrical control room and an 18'x12' well pump room will also be constructed. An 18'x12' unlined infiltration basin is also planned for the northwest corner of this site. A pad-mounted power transform is planned, and the site will be surrounded by a 6 to 8-foot masonry wall topped with barbed wire. A 4" wastewater discharge line will extend east and connect to an existing 12" sewer line located in the Van Buren Street right of way. (See Figure 1-9) .

[5] Ibid. Coachella, 2025 (Sevilla Subdivision Final Initial Study & Mitigated Negative Declaration. October 2023; also see Well 20/City Project W-46 CEQA Exemption, September 2025.

LEGEND:

RW	RAW WATER
BW	BACKWASH WATER
TW	TREATED WATER
SS	SEWER
FECL	FERROUS CHLORIDE
SHC	SODIUM HYPOCHLORITE
	BURIED PIPE
	CMU BLOCKWALL
	PROPERTY LINE
	DEMOLISH
MH	MANHOLE
	GATE VALVE (NO)
	GATE VALVE (NC)
	UTILITY POLE
E	OVERHEAD ELECTRICAL

NOTES:

1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 5-GPM/SF

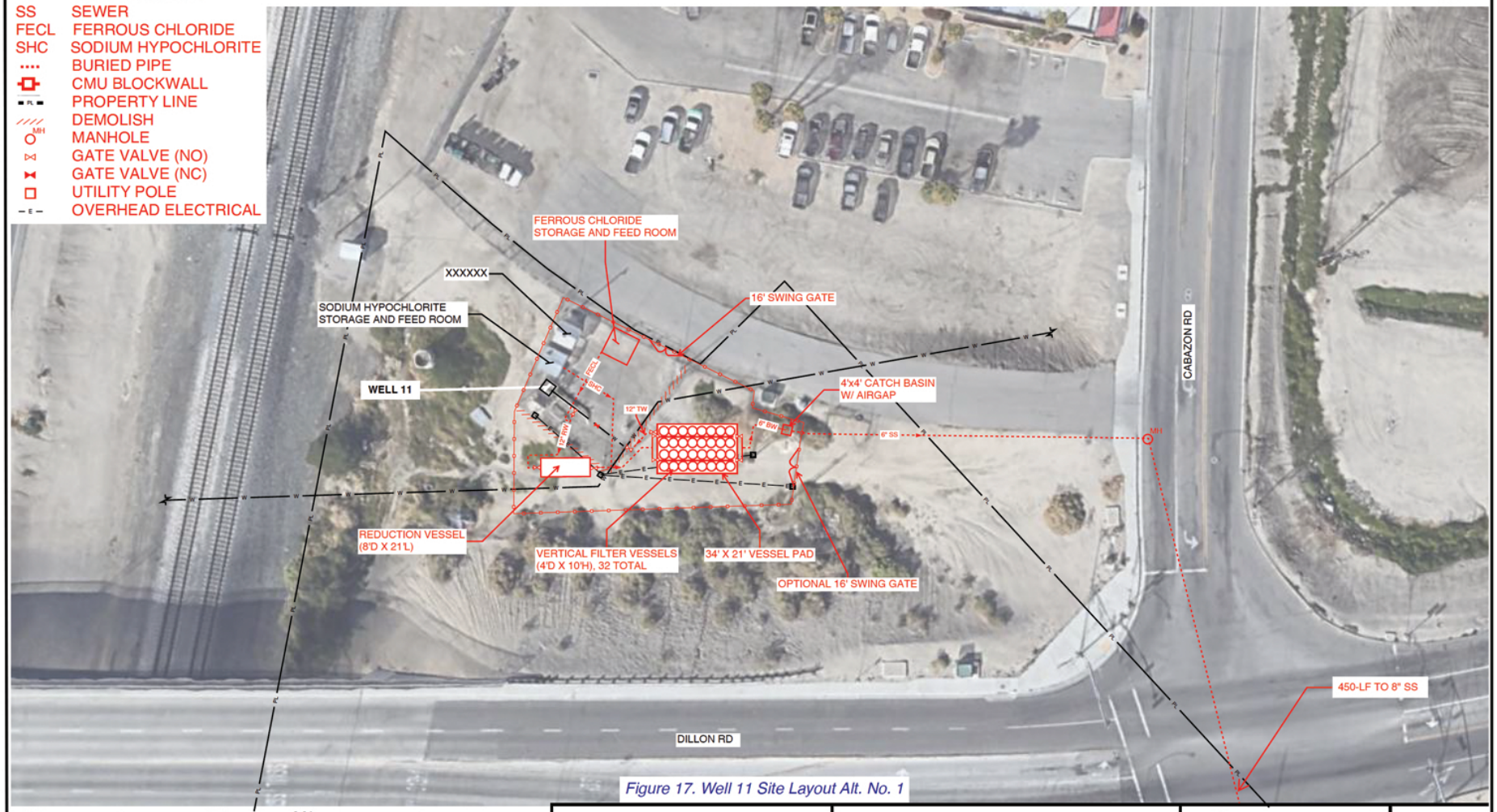


Figure 17. Well 11 Site Layout Alt. No. 1

40' 0' 40' 80'

SCALE 1"= 40'

COACHELLA WATER AUTHORITY	Well 11 - APN 603-232-019 SITE LAYOUT - DIRECT TO SEWER	WATERWORKS ENGINEERS	09.17.26

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Well 11 Site Layout
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure
1-3

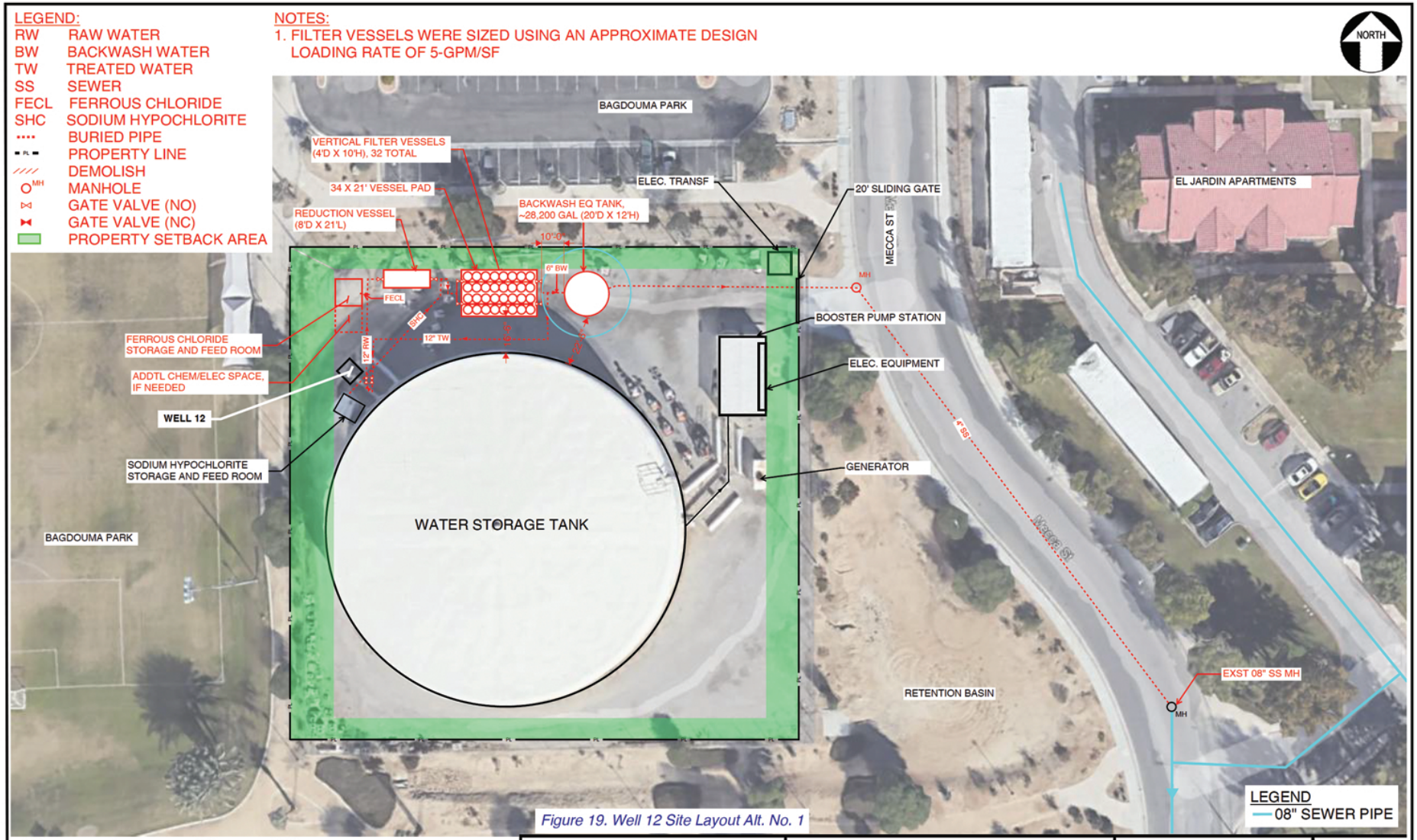


Figure 19. Well 12 Site Layout Alt. No. 1

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Well 12 Site Layout
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure
1-4

LEGEND:

RW	RAW WATER
BW	BACKWASH WATER
TW	TREATED WATER
SS	SEWER
FECL	FERROUS CHLORIDE
SHC	SODIUM HYPOCHLORITE
	BURIED PIPE
	CMU BLOCKWALL
	PROPERTY LINE
	DEMOLISH
MH	MANHOLE
	GATE VALVE (NO)
	GATE VALVE (NC)
	UTILITY POLE
E	OVERHEAD ELECTRICAL

NOTES:
1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 5-GPM/SF

NORTH

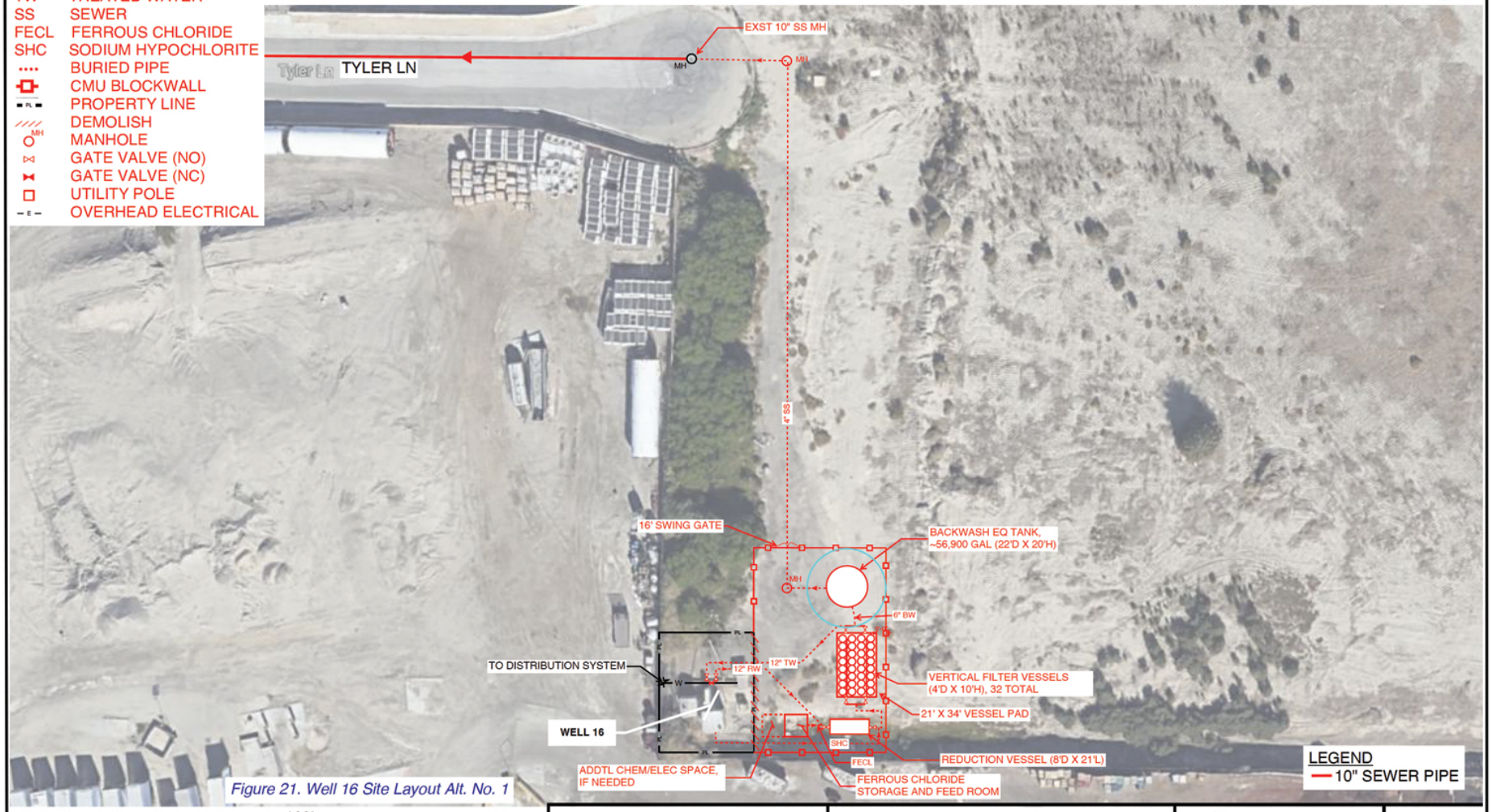


Figure 21. Well 16 Site Layout Alt. No. 1

50' 0' 50' 100'
SCALE 1"= 50'

COACHELLA WATER AUTHORITY	WELL 16 - APN 763-141-020 SITE LAYOUT - EQUALIZED TO SS	WATERWORKS ENGINEERS	09.17.26

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Well 16 Site Layout
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure
1-5

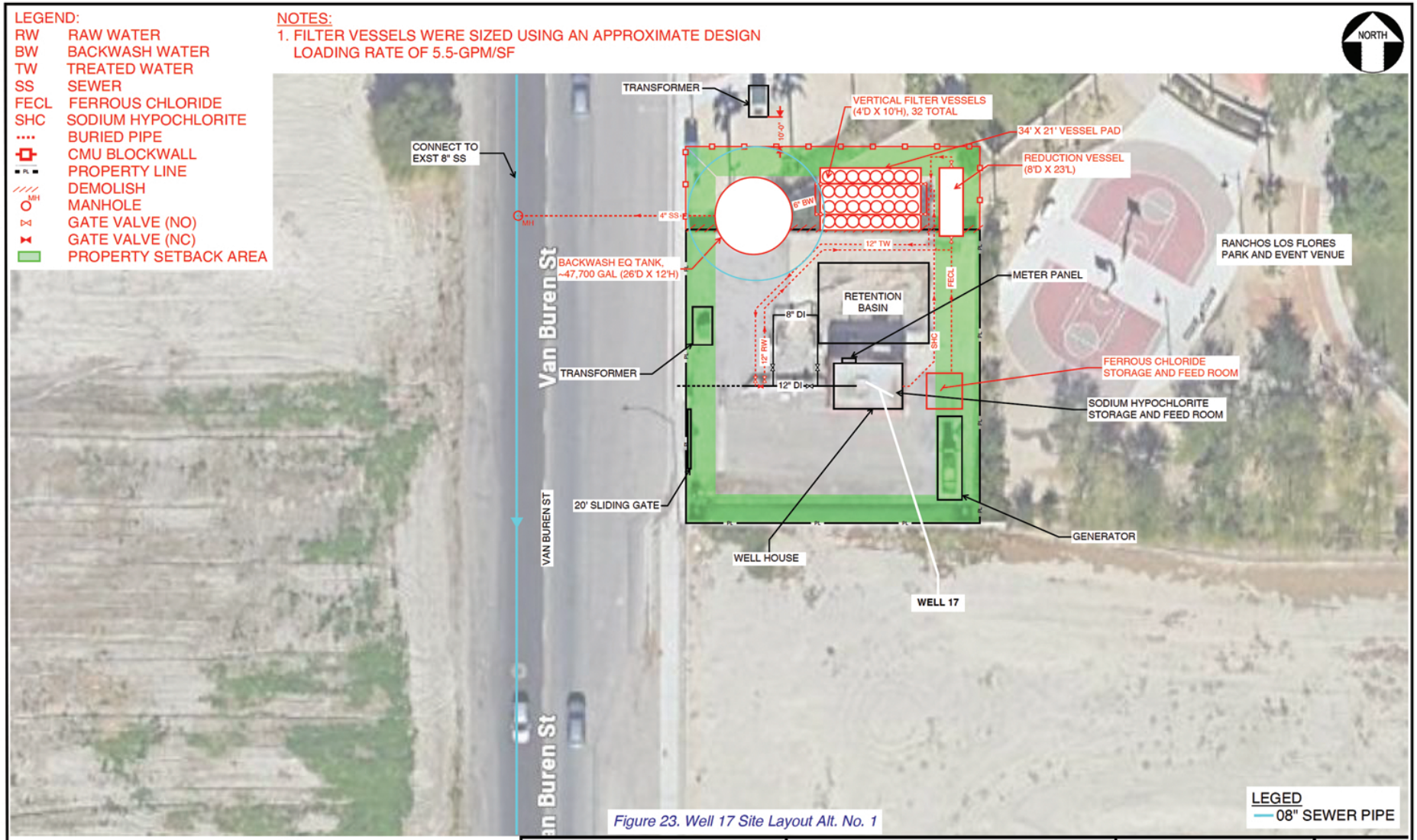


Figure 23. Well 17 Site Layout Alt. No. 1

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Well 17 Site Layout
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure 1-6

LEGEND:

RW	RAW WATER
BW	BACKWASH WATER
TW	TREATED WATER
SS	SEWER
FECL	FERROUS CHLORIDE
SHC	SODIUM HYPOCHLORITE
····	BURIED PIPE
PL	PROPERTY LINE
	DEMOLISH
MH	MANHOLE
	GATE VALVE (NO)
	GATE VALVE (NC)
	PROPERTY SETBACK AREA

NOTES:

1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 5-GPM/SF

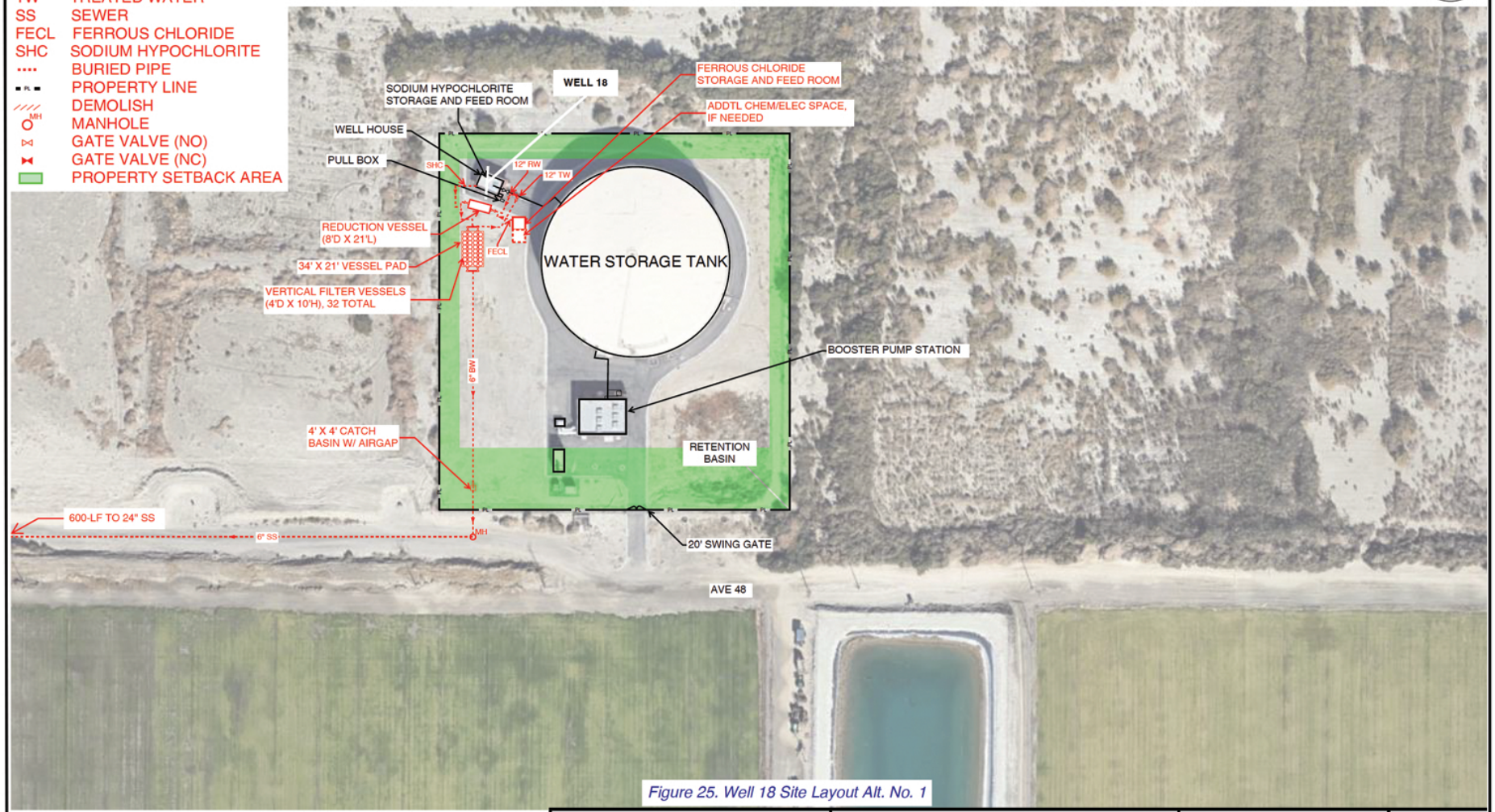


Figure 25. Well 18 Site Layout Alt. No. 1

90' 0' 90' 180'

SCALE 1"= 90'

COACHELLA WATER AUTHORITY	WELL 18 - APN 603-150-017 SITE LAYOUT - DIRECT TO SS	WATERWORKS ENGINEERS 09.17.26

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Well 18 Site Layout
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure 1-7

NOTES:
1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 5-GPM/SF

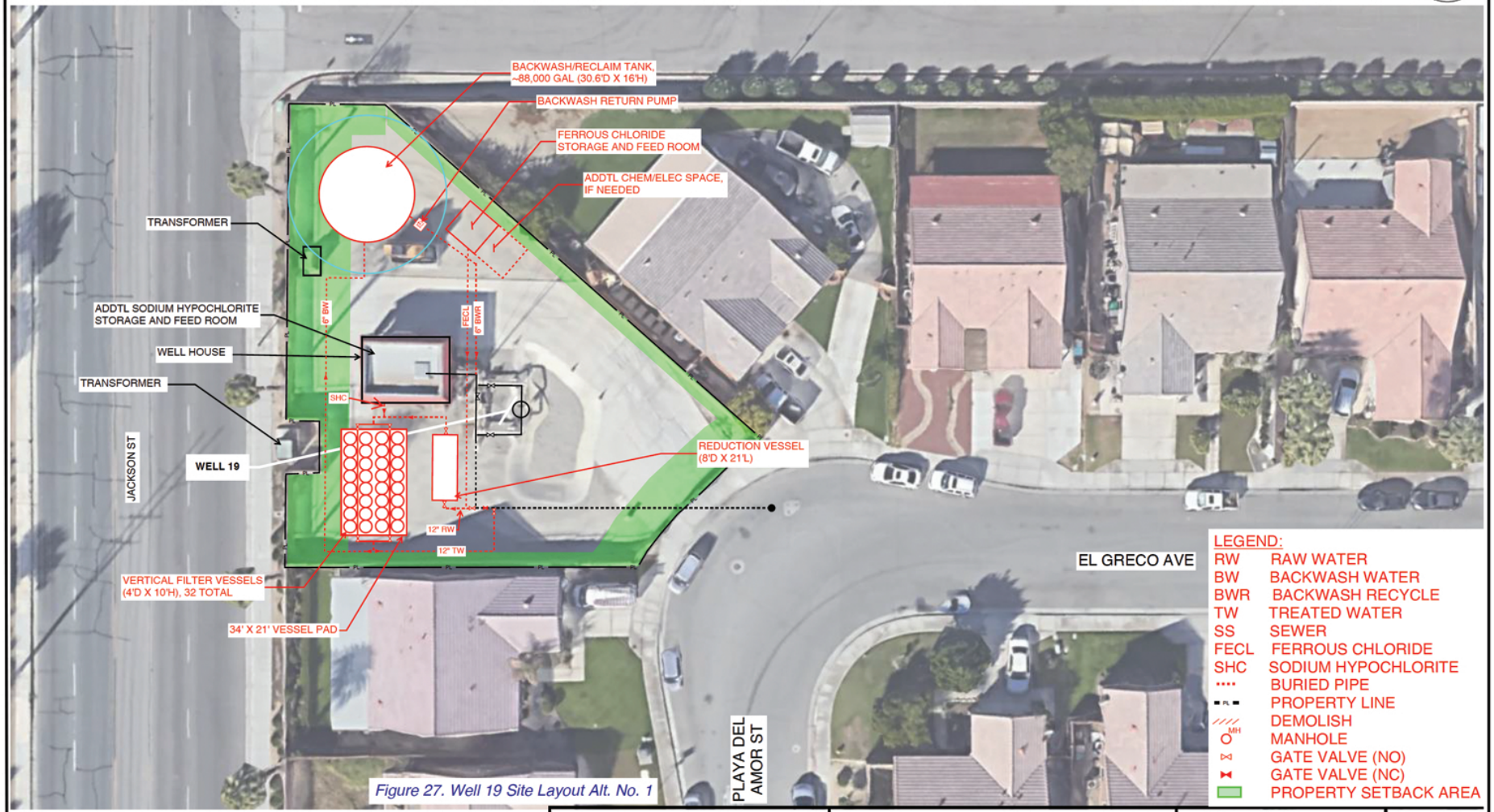


Figure 27. Well 19 Site Layout Alt. No. 1

30' 0' 30' 60'

SCALE 1"= 30'

COACHELLA WATER AUTHORITY	WELL 19 - APN 612-540-008 SITE LAYOUT - BW RECYCLE	WATERWORKS ENGINEERS 09.17.26

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Well 19 Site Layout
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure
1-8

LEGEND:

RW	RAW WATER
BW	BACKWASH WATER
BWR	BACKWASH RECYCLED
TW	TREATED WATER
SS	SEWER
FECL	FERROUS CHLORIDE
SHC	SODIUM HYPOCHLORITE
	BURIED PIPE
	FENCE LINE
PL	PROPERTY LINE
	DEMOLISH
	MANHOLE
	GATE VALVE (NO)
	GATE VALVE (NC)
	PROPERTY SETBACK AREA

NOTES:
1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 5-GPM/SF

NORTH

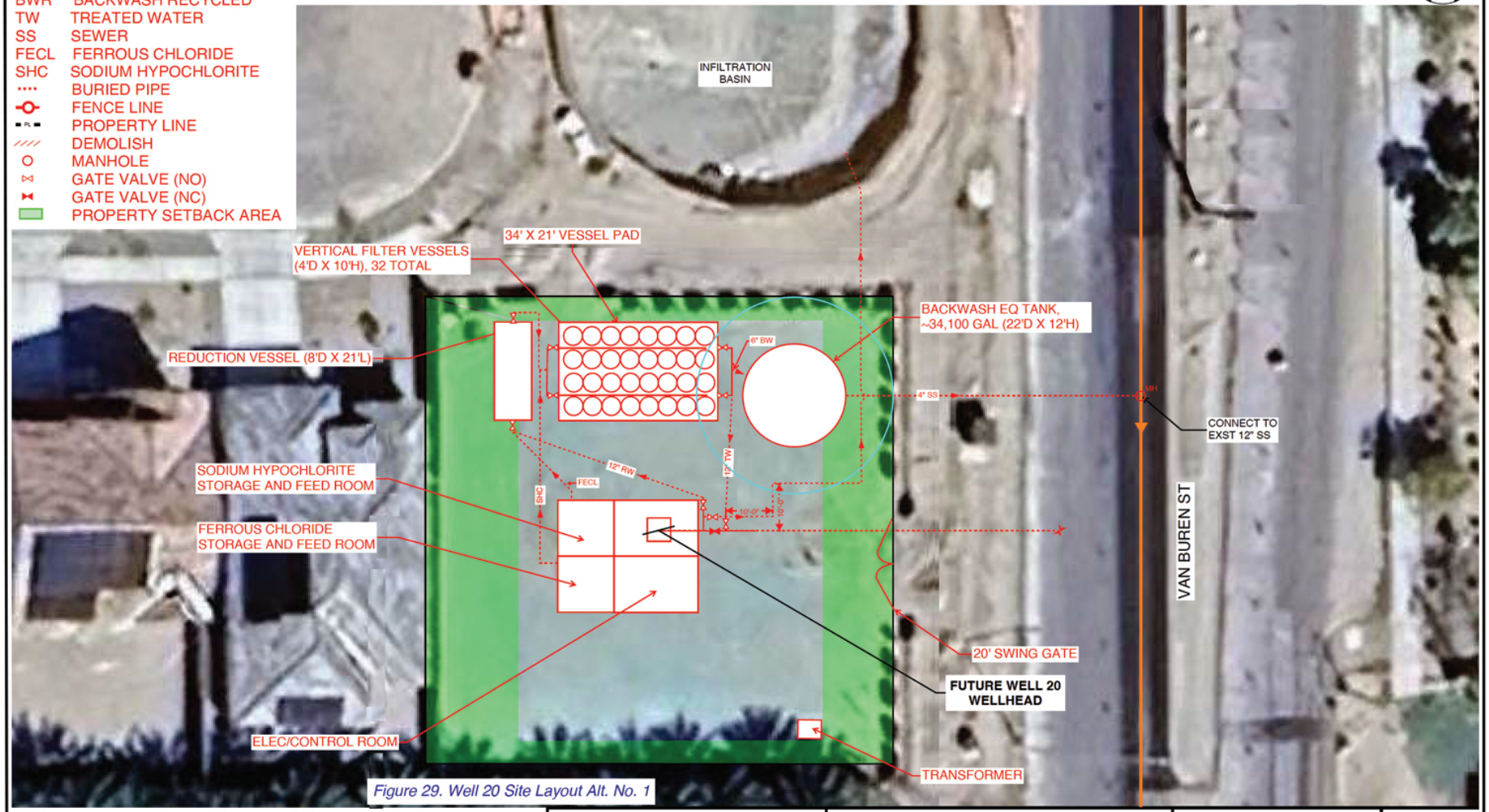


Figure 29. Well 20 Site Layout Alt. No. 1

20' 0' 20' 40'
SCALE 1"= 20'

COACHELLA WATER AUTHORITY

WELL 20 - APN 779-620-041
SITE LAYOUT - EQUALIZED TO SS

WATERWORKS ENGINEERS

09.17.26

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Well 20 Site Layout
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure
1-9

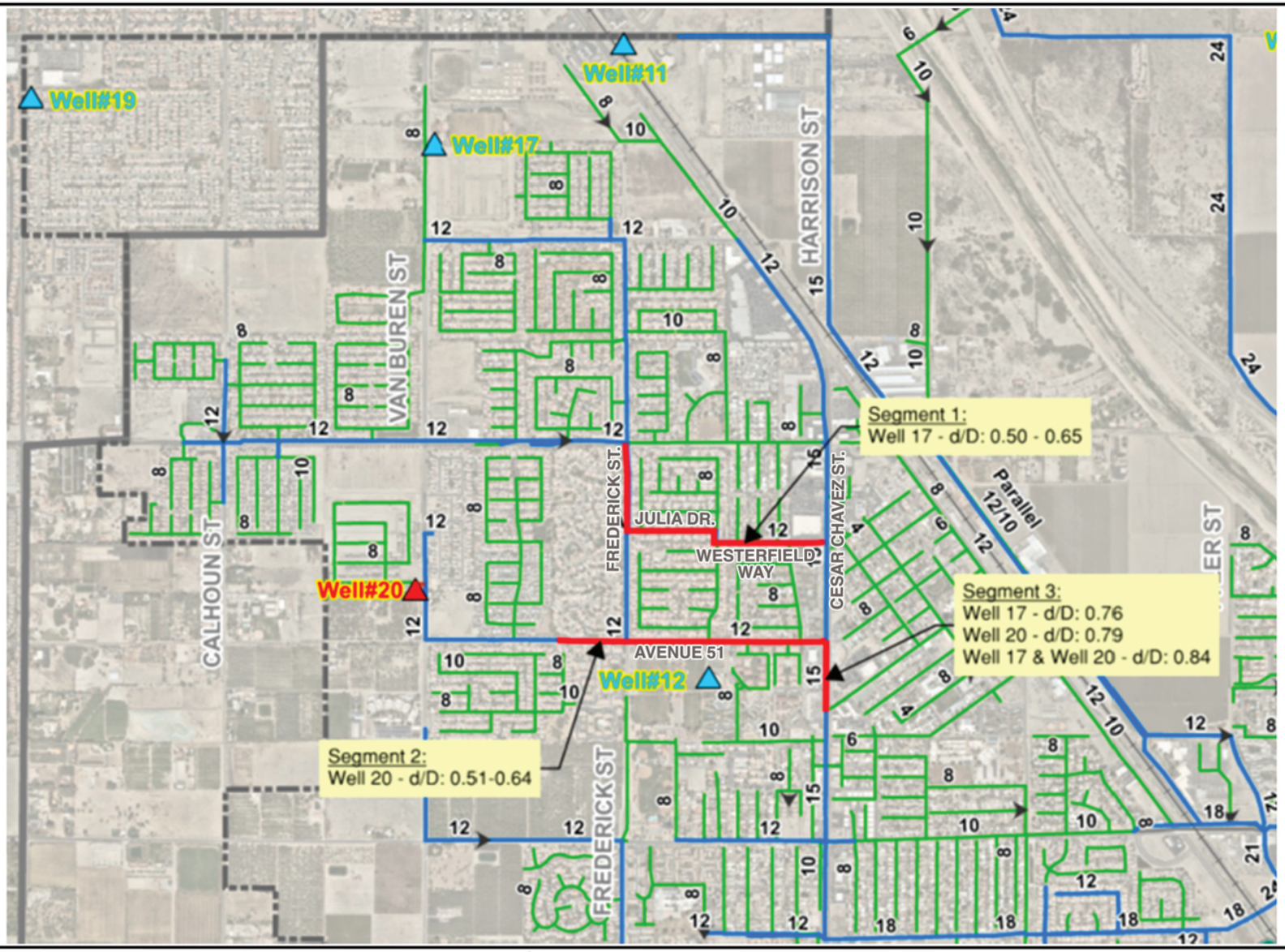
1.1.9. Sewer Upgrades

Hydraulic modeling of the potentially affected segments of the sewer line network has been conducted as a part of the Design Report, which identified three sewer segments that will require upgrading to ensure the Cr-6 discharges do not adversely affect line operations or capacity. Tables 1 identifies each of these line segments.

Table 1: Deficient Sewer Line Upgrades

Segment	Line Length (Linear Feet)	Discharging Well Served
Segment 1	3,950	Well 17
Segment 2	3,560	Well 20
Segment 3	950	Well 17 and Well 20

It should be noted that the subject RCF treatment Project is not necessarily dependent on these sewer line upgrades, and the Project may move forward with or without these improvements. All proposed sewer line upgrades, including staging and laydown areas, will occur within existing paved streets and street rights of way. For each segment, progressing trenching, installation and backfilling will involve excavation of 4±-foot wide trenches that will vary in depth from 8 to 14 feet. The CWA will approve contractor-prepared traffic control plans to minimize traffic disruption and ensure safety.



Source: Coachella Water Authority Hexavalent Chromium Treatment Preliminary Design Report, 03.10.2026

08.11.26

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Deficient Sewer Lines to Be Upgraded
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure
1-10

1.2. PROJECT LOCATION

1.2.1. Well Locations

The Project is comprised of seven (7) existing municipal wells sites and three sewer line segments located within existing road rights of way all located within the corporate limits of the City of Coachella and within the service area of the Coachella Water Authority (CWA). The Project planning area is located in eastern Coachella Valley, Riverside County, California.

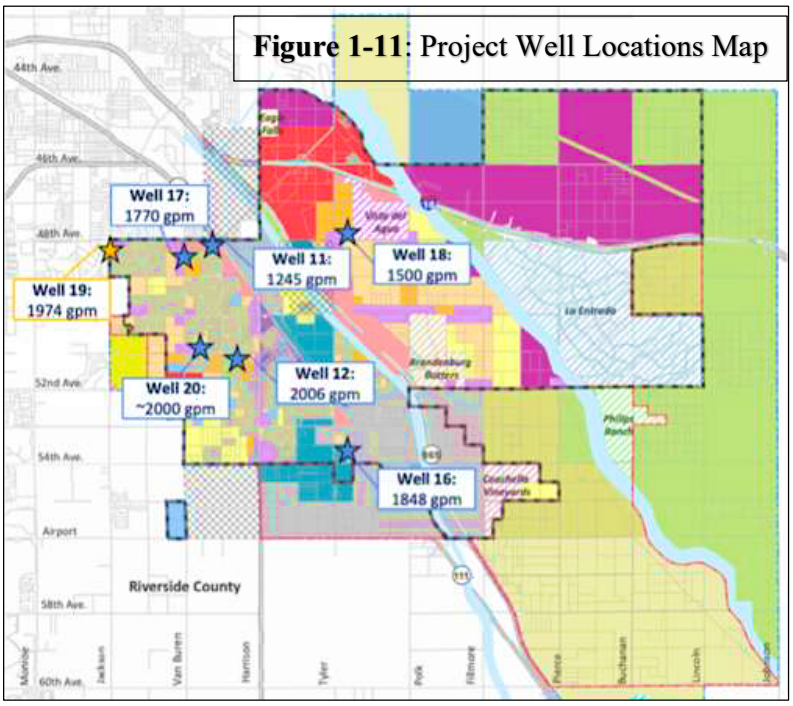


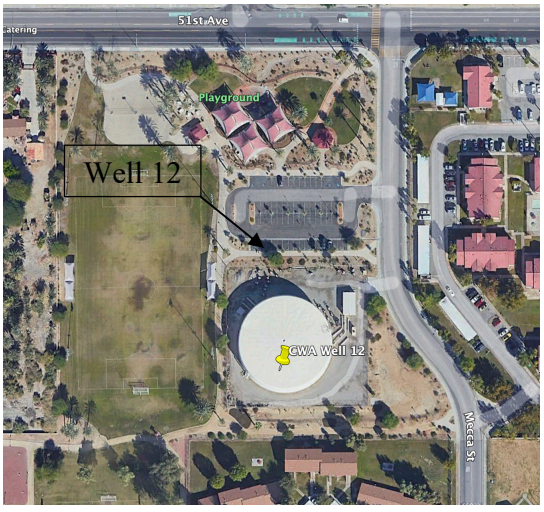
Figure 1-11: Project Well Locations Map

The Project sites are located within diverse physical contexts ranging from fully urbanized and developed neighborhoods to remote sites well removed from existing urban development. The locate of each well site is briefly described and illustrated below.

Well 11
Well 11 is located at the northwest corner of Dillon Road and Cabazon Road on APNs 603-232-019 & 030. It is immediately east of the Union Pacific Railroad (UPRR) lines and Old Highway 86/Grapefruit Boulevard. It is bounded on the north by industrial land uses. The bridge carrying Dillon Road over the UPRR lines and Old Highway 86 forms the south boundary of Well 11.



Well 12
Well 12 is located in the southeast portion of Bagdouma Park. It is bounded on the north by park landscaping, play and picnic areas, and parking. On the west the site is bounded by soccer fields, on the south by apartments and on the east by Mecca Street and apartments beyond.



Well 16
Well 16 is located north of Ave 54, east of Tyler Street and south of the terminus of the Tyler Lane cul-de-sac. Adjoining lands to the northeast are vacant and a portion of these lands will be acquired to expand the Well 16 site. Land uses to the south and west are industrial Access to Well 16 is via the east end of Tyler Lane, which will continue to serve as access for the expanded well











Well 17
Well 17 is located on Van Buren Street south of Avenue 48 in the southwest corner of Rancho Las Flores Park. An undeveloped single-family residential subdivision is located to the immediate south.

Well 18
Well 18 is located on the north side of Avenue 48 and east of Tyler Street. It is surrounded primarily by agricultural lands generally bounded by Highway 86 to the southwest and US I-10 to the northeast.

Well 19
Well 19 is located on Jackson Street on a northwest interior corner lot within a built out single family subdivision approximately ¼ mile south of Avenue 48. The site is immediately adjacent to two homes and is bounded on the west by Jackson Street. Neighborhood commercial development is located to the immediately north with mixed commercial uses on the west side of Jackson Street.

Well 20
Well 20 was reviewed and evaluated as part of the Sevilla II subdivision project and in a subsequent CEQA analysis for the well itself.[6] It is a new, recently drilled well that is located within a partially built out single-family subdivision. The well site was included in the original subdivision approval and is in the southeast corner of the tract at the end of a cul-de-sac and adjacent to an on-site stormwater retention basin. It is bounded on the north by the cul-de-sac and said stormwater retention basin, on the west by a single-family home, on the east by Van Buren Street and on the south by agricultural lands.

1.3. Environmental Setting and Surrounding Land Uses

The City of Coachella and the eastern portion of the Coachella Valley is located at the northwestern extension of the Salton Trough and is bounded by the Santa Rosa Mountains to the west, and the Mecca Hills and the edge of Joshua Tree National Park to the northeast. The Project area is in the Coachella city limits, which is in turn located in the Salton Sea Air Basin and the Whitewater River Watershed. The planning area encompasses urbanized portions of Coachella and surrounding unincorporated lands, the City of Indio to the north, rural desert communities, agricultural production, and the Jacqueline Cochran Regional Airport. The Torres-Martinez Desert Cahuilla Indians Reservation occupies significant portions of the southeastern Coachella Valley; however, no Native American lands are located in proximity of the subject seven CWA wells.

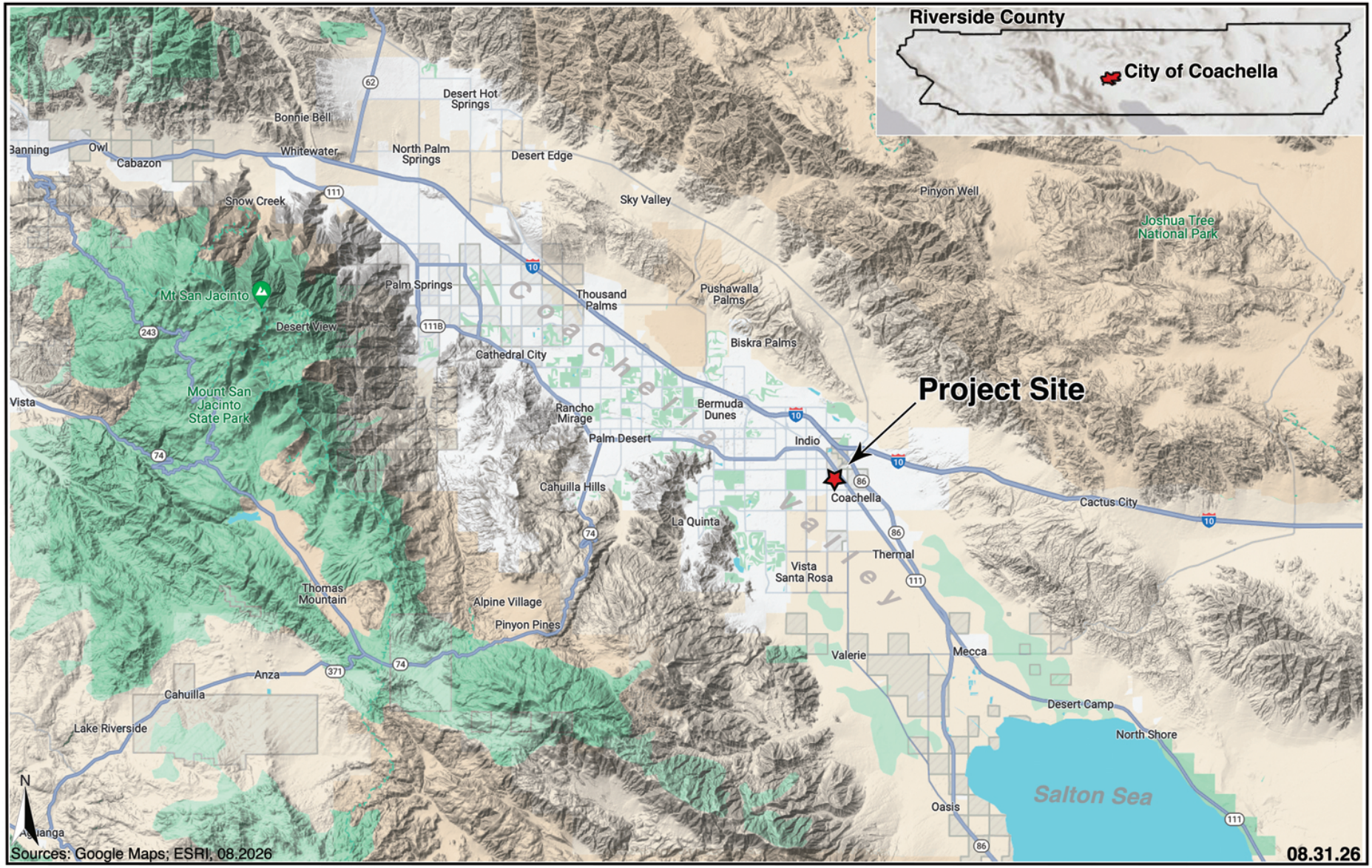
State Routes 111 and 86 are the main north-south connector routes within the Project planning area. The Southern Pacific Railroad runs adjacent to State Route 111 and is designated a "State-eligible Scenic Highway" from Bombay Beach on the Salton Sea to Avenue 66 near Mecca, providing views of the Salton Sea and the surrounding mountainous wilderness. Interstate 10 from Chiriaco Summit to the intersection with State Route 86, approximately nine miles north of the Project area is designated a "County-eligible Scenic Highway".

The Eastern Coachella Valley is traversed by the San Andreas fault, an active fault with a significant probability of earthquake activity; the proposed Project well sites are in an area of high liquefaction susceptibility. None of the Project wells are in a FEMA-mapped flood zone. The desert and mountainous regions in the East Coachella Valley, roughly three miles to the west and to the east of the Project planning area, have a high and very high wildfire susceptibility; however, the wildfire susceptibility is moderate to low in the valley (County of Riverside 2016), including the City.

The Project wells lie within the boundaries of the *Coachella Valley Multiple Species Habitat Conservation Plan and Natural Community Conservation Plan* (CVMSHCP). The CVMSHCP is a comprehensive multiple species habitat conservation planning program that addresses multiple species needs, including habitat and the preservation of natural communities in the Coachella Valley area of Riverside County.

Lands in the Project vicinity include a mix of fully developed urban lands, areas of scattered development, agricultural lands, single-family residences and industrial development.

[6] EA 22-06 Final Initial Study & Mitigated Negative Declaration. October 2023; Well 20/City Project W-46 CEQA Exemption, September 2025.by the City, was approved in 2025 for development.

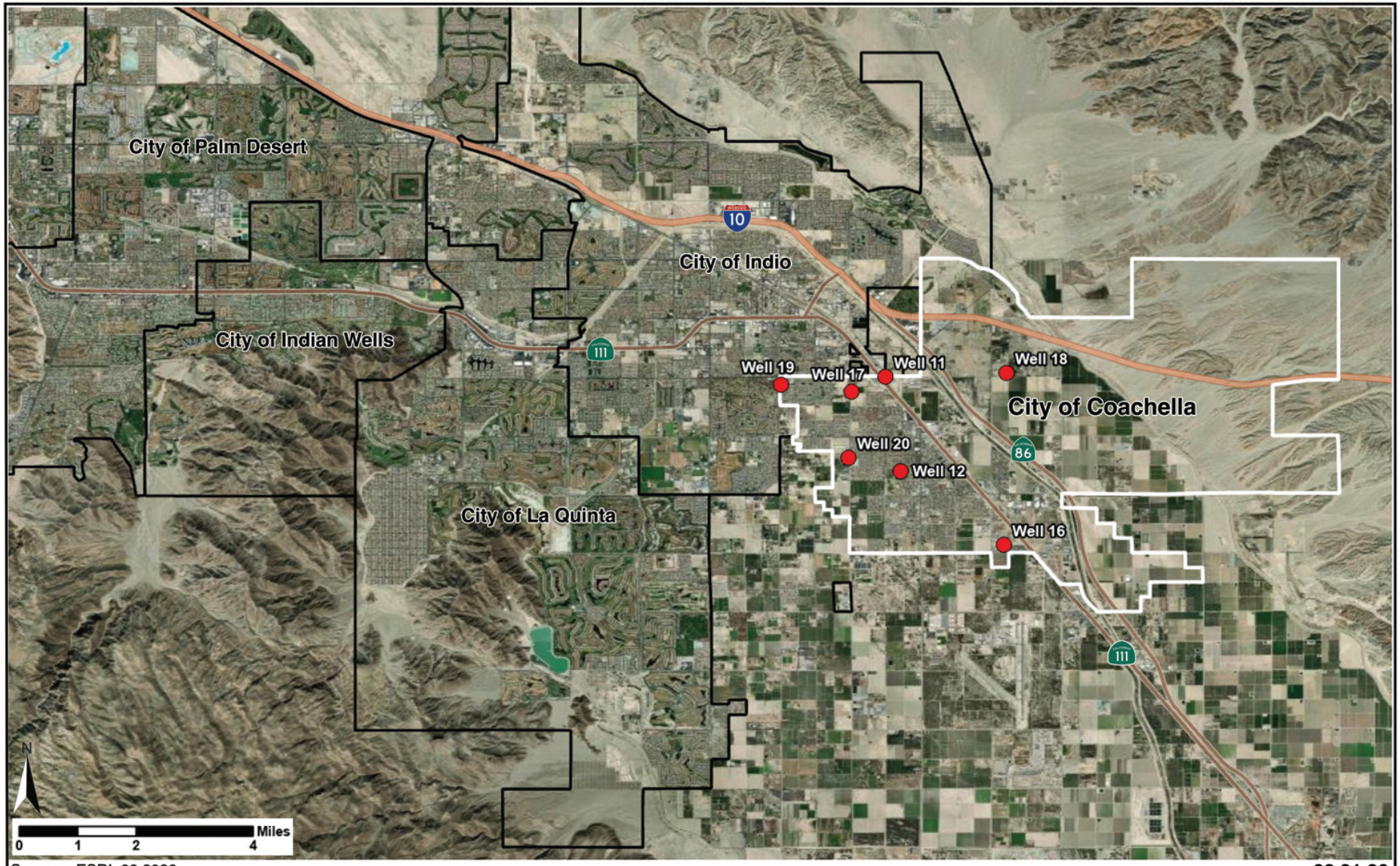


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Regional Location Map
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure
1-1



Sources: ESRI, 08.2026

08.31.26

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Vicinity Map
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure
1-2

1.4. PURPOSE AND NEED

California officially adopted a Maximum Contaminant Level (MCL) of 10 parts per billion (ppb) for Chromium-6 (hexavalent chromium; Cr-6 or Cr(VI)) in drinking water, effective October 1, 2024. This regulation makes California the first state to set a specific limit for this carcinogen, stricter than the current 100-ppb total chromium federal standard. Until its readoption of the 10-ppb threshold, Cr-6 was regulated in California applying a 50-ppb threshold. The Coachella Water Authority (CWA) is now required to comply with state requirements to lower Cr-6 levels in drinking water by October 2027.

1.5. SCOPE OF THIS DOCUMENT

This Initial Study (IS) has been prepared in compliance with the California Environmental Quality Act (CEQA) Guidelines Section 15063 and with relevant and applicable federal regulations, including the Clean Water Act (CWA), Clean Air Act (CAA), state and federal Endangered Species Act (ESA), National Historic Preservation Act (NHPA), etc. (see CEQA-Plus discussion below), to determine if the Project, as proposed, may have a significant effect upon the environment. Based upon the findings contained within this report, the Initial Study may be used in support of the preparation of a CEQA Mitigated Negative Declaration and a federal Finding of No Significant Impact.

This Initial Study/Mitigated Negative Declaration (IS/MND) provides an assessment of the potential impacts to environmental resources that would result from implementing the proposed Project. The discussion and level of analysis are commensurate with the expected magnitude and severity of each impact to environmental resources. This document primarily addresses the environmental effects of constructing and operating the municipal water infrastructure. The analyses in Chapter 3 are based on technical reports and studies prepared for the project, supplemented with other public information sources as provided in the list of references.

This document evaluates the potential for impacts to resources areas identified in Appendix G of the current (2025) *State CEQA Guidelines and* adheres to CWA's Local CEQA Guidelines (2023). These resource areas include:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils, Paleontological Resources
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Utilities and Service Systems
- Tribal Cultural Resources
- Wildfire
- Mandatory Findings of Significance

1.6. CEQA-PLUS

Administration of the Clean Water State Revolving Fund Program in California
As noted, this Initial Study incorporates analysis that is consistent with the requirements of the National Environmental Protection Act (NEPA), and specifically the requirements of Section 7 of the federal Endangered Species Act, Section 106 of the federal NHPA, the federal CAA, Environmental Justice, Farmland Protection Policy Act (FPPA), Flood Plain Management, Migratory Bird Treaty Act (MBTA), Protection of Wetlands/Clean Water Act (Sec 404), and Safe Drinking Water Act, Sole Source Aquifer Protection.

This Project may be financed in part by a Clean Water State Revolving Fund (SRF) loan administered by the State Water Resources Control Board (SWRCB) Division of Financial Assistance. The SRF is partially funded by the U.S. Environmental Protection Agency and is therefore subject to certain federal review requirements.

All applicants seeking SRF financing must comply with CEQA and provide sufficient information so that the SWRCB, whether it acts as a Lead or Responsible Agency, can document compliance with federal environmental laws. The SWRCB calls this federal compliance "CEQA-Plus."

Chapter 4 of this Mitigated Negative Declaration (MND) has been prepared to address the CEQA-Plus requirements to be eligible for SRF loan funds. These requirements include documentation of compliance with applicable federal regulations, including the ESA, the NHPA, the federal CAA, Environmental Justice, Farmland Protection Policy Act, Flood Plain Management, Migratory Bird Treaty Act, Protection of Wetlands/Clean Water Act (Sec 404), and Safe Drinking Water Act, Sole Source Aquifer Protection.

CHAPTER 2. ENVIRONMENTAL ANALYSIS AND DETERMINATION

2.1 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. With adherence to the mitigation program identified within this IS/MND, the potentially significant impacts would be reduced or minimized to a less than significant level.

☒ Aesthetics	☐ Agricultural and Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☐ Geology/ Soils	☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials
☐ Hydrology/ Water Quality	☐ Land Use/ Planning	☐ Mineral Resources
☐ Noise	☐ Population/ Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☐ Utilities/ Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

2.2 IMPACT TERMINOLOGY

The anticipated environmental impacts are identified for each of the resource areas listed above. The level of significance for each resource area uses CEQA terminology as specified below:

- **Potentially Significant.** Adverse environmental consequences that have the potential to be significant according to the threshold criteria identified for the resource, even after mitigation strategies are applied and/or an adverse effect that could be significant and for which no mitigation has been identified. If any potentially significant impacts are identified, an Environmental Impact Report (EIR) must be prepared to meet the requirements of CEQA.
- **Potentially Significant Unless Mitigation is Incorporated.** Adverse environmental consequences that have the potential to be significant, but can be reduced to less than significant levels through the application of identified mitigation strategies that have not already been incorporated into the proposed project.
- **Less than Significant.** Potential adverse environmental consequences have been identified. However, they are not so adverse as to meet the significance threshold criteria for that resource. Therefore, no mitigation measures are required.
- **No Impact.** No adverse environmental consequences have been identified for the resource or the consequences are negligible or undetectable. Therefore, no mitigation measures are required.

2.3 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 impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Prepared by: _____ 9.21.26
John D. Criste, AICP, Principal — Date
Terra Nova Planning & Research, Inc.

Reviewed by: _____ 9-21-26
Itzel Barroso — Date
Assistant Engineer
City of Coachella

Approved by: _____ 9.21.26
Castulo Estrada — Date
Utilities Director
City of Coachella

CHAPTER 3. ENVIRONMENTAL CHECKLIST FORM

1. Project Title: Hexavalent Chromium-6 Mitigation Project

2. Lead Agency and Address: City of Coachella/Coachella Water Authority (CWA)
53462 Enterprise Way
Coachella, California 92236

3. Contact Person: Cástulo Estrada, Utilities Director
City of Coachella/Coachella Water Authority
Phone: (760) 501-8113
Email: cestrada@coachella.org

4. Project Location: Seven CWA Well Locations and Three Sewer Line Segments within the corporate limits of the City of Coachella. Includes Assessor's Parcel Numbers: 603-232-019 & 030; 768-210-014, 763-141-020 & 019, 603-220-035, 603-150-017, 612-540-008, 779-620-041. Please see Section 1.0 of this Initial Study/Mitigated Negative Declaration.

5. Project Sponsor: City of Coachella/Coachella Water Authority
53462 Enterprise Way
Coachella, California 92236

6. General Plan Designation: Various: Public Facilities, Agricultural Rancho, Urban Neighborhood, Open Space,

7. Zoning Designation: Rural Rancho, General Neighborhood, Urban Neighborhood, Open Space.

8. Description of Project: See section 1.1

9. Surrounding Land Uses and Setting: See section 1.2

10. Other Agencies whose approval is/may be required (i.e., permits, financing approval, participation):

- Local:
    - City of Coachella – Encroachment, Road and Construction Permits
    - City of Coachella – Well Modification Permit
    - South Coast Air Quality Management District (SCAQMD) – Fugitive Dust Control Plan; Permit to Construct, Permit to Operate
    - Riverside County Department of Environmental Health - Hazardous Materials Business Plan, California Accidental Release Program, Hazardous Waste Generator Permit, Tiered Permit

  - Imperial Irrigation District – Power connections, upgrading.

- State:
  - Colorado River Regional Water Quality Control Board (RWQCB) – General Permit for Construction Discharges (dewatering/ test water)
  - SWRCB, Division of Drinking Water
  - SWRCB – National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges associated with Construction Activities
- Federal:
  - U.S. Environmental Protection Agency (USEPA)/SWRCB – funding under the Clean Water State Revolving Fund and Drinking Water State Revolving Fund (DWSRF)

11. Native American Consultation: (WILL UPDATE WITH TRIBAL CONSULTATIONS)

Have California Native American tribes traditionally and culturally affiliated with the Project area requested consultation pursuant to Public Resources Code section 2180.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

CWA provided "Notification of Tribal Consultation Opportunity" on September 10, 2026 pursuant to Assembly Bill (AB) 52 to Tribes that have previously requested such a notice from the City. Notification was sent to five (5) Tribes: Agua Caliente Band of Cahuilla Indians (ACBCI), Augustine Band of Cahuilla Indians (ABCI), Cabazon Band of Mission Indians, Morongo Band of Mission Indians, Torres Martinez Desert Cahuilla Indians (TMDCI), and Twenty-Nine Palms Band of Mission Indians, No response or request to consult has been received as of September 18, 2026.

In addition to the AB-52 Tribal consultation process, in June 2026, Project archaeologists submitted a written request to the State of California's Native American Heritage Commission (NAHC) for a records search in the commission's sacred lands file and notified the nearby Torres Martinez Desert Cahuilla Indians of the upcoming archaeological fieldwork which they participated in. Per NAHC's recommendations, Project archaeologists further contacted 12 Native American tribes in the region, both in writing and by telephone, between June 25 and July 20, 2026, to solicit local Native American input regarding any potential cultural resources concerns over the proposed undertaking. Responses from the Native American representatives are in Appendix 2 of the Project cultural resources report.

The NAHC stated that the requested sacred lands record search yielded negative results regarding Native American cultural resources within the APE but recommended that local Native American groups be contacted for further information. For that purpose, the commission provided a list of potential contacts in the region. Project archaeologists contacted all 12 tribes on the NAHC referral list and follow-up telephone solicitations were carried out in July 2026. Input from tribal representatives contacted by the project archaeologists is described in Section 3.5 and 3.18 of this IS/MND.

3.1 AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

Source: Coachella General Plan (2015); Google Earth Pro (7.3.4.8573); Riverside County General Plan Eastern Coachella Valley Area Plan Figure 10 "Scenic Highways"; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.1.1 Setting

The Project well sites are distributed across the City and in surroundings that range from fully developed residential and commercial neighborhoods, to rural agricultural areas. The City is located on the valley floor, which trends northwest/southeast in the eastern Coachella Valley and is flanked by the Little San Bernardino, Santa Rosa, and San Jacinto Mountain Ranges that rise significantly above the valley floor with elevations ranging from 8,716 to 10,834 feet above mean sea level. The Salton Sea, at an elevation of approximately 240 feet below sea level, is located 11.0± miles southeast of the Project sites. The foothills of the Santa Rosa Mountains occur 4.5 to 7.5 miles southwest of the Project site. The foothills of the Little San Bernardino Mountains to the north are farther away and lie lower on the horizon and are of important and valued scenic and aesthetic value to the community. The Mecca Hills are as close as 4.55± miles to the east.

Project area lands are flat to very gently sloping and range from fallow and active agricultural lands to commercial and residential neighborhoods. There are no unique visual or scenic resources within or in the vicinity of the Project well sites that would be affected. The City reviews and conditions new development to ensure that any new development within its jurisdiction does not conflict with any scenic resource programs that may be in place and preserve aesthetic resources (Coachella General Plan 2015).

While the improvements proposed will vary at each well site, each of the seven well sites is either fully built out or is in the final phase of being brought online (Well 20). As discussed in Section 1.1.7 of this Initial Study/Mitigated Negative Declaration (IS/MND), most Project-related well improvements are limited in scope and effect. Relevant to aesthetic resources, each is summarized below.

Well 11: Planned Improvements
Well 11 is located at the northwest corner of Dillon Road and Cabazon Road with no sensitive viewshed to impact, being adjacent to the UPRR lines to the west, industrial uses to the north, elevated Dillon Road to the south and Cabazon Road to the east. New facilities will include a horizontal reduction vessel with overall dimensions of an 8'x21', an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels on a concrete pad. Additional new facilities will include a 4'x4'catch basin, chemical storage building (12'x12'), and miscellaneous pumps and pipes. Well 11 site improvements will also include removal of fencing and construction of 6 to 8-foot masonry wall topped with barbed-wire. A 6" backwash discharge line will be constructed and run 740± linear feet to connect with a local sewer line in Avenue 48. (See Figure 1-3)

Well 12: Planned Improvements
Well 12 is located in the southeast portion of Bagdouma Park. It is bounded on the north by park landscaping, play and picnic areas, and parking. On the west the site is bounded by soccer fields, on the south by apartments and on the east by Mecca Street and apartments beyond. The well site is surrounded by a six-foot chainlink fence topped with barbed wire and buffered from view by trees and other landscaping. The chainlink fence on the east side of the well site will be replaced by an 8-foot masonry wall. New facilities immediately north of the existing reservoir will include an 8'x21' horizontal reduction vessel, and an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels on a 34'x21' concrete pad. Also immediately north of the existing reservoir is planned a horizontal 28,200-gallon (20' diameter x12' tall) backwash equalization tank. Additional new facilities will include a ferrous chloride storage and feed room building (12'x12'). A 4" backwash discharge line will be constructed and run 340± linear feet to connection with a local 8" sewer line. (See Figure 1-4)

Well 16: Planned Improvements
Well 16 is located 1,234± feet north of Ave 54 and 264± feet south of the Tyler Lane cul-de-sac. It is bounded by industrial uses to the west and south and vacant industrial lands to the north and east. New facilities will include an 8'x21' horizontal reduction vessel, and an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels on a 34'x21' concrete pad. A 56,900-gallon (22'x20' tall) backwash tank will be constructed on the site, as well as a new ferrous chloride storage building (12'x12'). Existing fencing on the east side of the site will be replaced with a 6 to 8-foot masonry wall topped with barbed wire. A 4" backwash discharge line will be constructed and run 330± linear feet north to connection with a local 10" sewer line in the Tyler Lane cul-de-sac. (See Figure 1-5)

Well 17: Planned Improvements
Well 17 is located immediately east of Van Buren Street and 1,177± feet north of Avenue 49. It is immediately west of basketball courts at the Ranchos Las Flores Park and event venue. Proposed improvements would encroach approximately 30 feet northward into the park which will remove portions of a landscape planter and a stormwater retention basin. New facilities will include an 8'x23' horizontal reduction vessel, and an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels on a concrete pad. A 47,700-gallon (26' diameter x12' tall) backwash tank will be constructed on the northwest corner of the expanded site. Additional new facilities will include ferrous chloride storage building (12'x12'), and miscellaneous pumps and pipes. Existing fencing on the north side of the site will be moved 30± feet to the north and will be comprised of a 6 to8-foot masonry wall topped with barbed wire. A 4" backwash discharge line will be constructed and run 65± linear feet west to connection with a local 8" sewer line in Van Buren Street. (See Figure 1-6)

Well 18: Planned Improvements
Well 18 is located at the immediately north of unimproved Avenue 48, approximately 960± feet east of Tyler Street. Surrounding lands are all in agriculture (fallow and active cultivation). New facilities will include an 8'x21' horizontal reduction vessel, and an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels on a 34'x21' concrete pad. Additional new facilities will also include ferrous chloride storage building (12'x12'), and miscellaneous pumps and pipes. (See Figure 1-7)

Well 19 Site: Planned Improvements
Well 19 is located at the northwest corner of Playa Del Amor Street and El Greco Avenue, and immediately east of Jackson within an existing single-family subdivision. The site is bounded by Jackson Street on the west, a private commercial access drive on the north, and single-family homes to the south and east. The Well 19 site is surrounded by a 6 to 8-foot masonry wall topped with wrought iron spike fencing and accessed via gates within the subdivision. New facilities will include an 8'x21' horizontal reduction vessel, and an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels on a concrete pad to be located immediately south of the existing well house. A 26.5' diameter x 16' tall backwash reclaim tank will be constructed in the north corner of the site on the site. Additional new facilities will include ferrous chloride storage building (12'x12'), and miscellaneous pumps and pipes. (See Figure 1-8)

Well 20 Site: Planned Improvements
Well 20 has been drilled and enclosed with a 6 to 8-foot masonry wall and chainlink fence. It is located immediately west of Van Buren Street and is bounded by a subdivision retention basin on the north, active agriculture on the south, a single-family residence on the west and Van Buren Street on the east. The site will be accessible from a cul-de-sac within the residential subdivision gates on Van Buren Street. Beyond the well appurtenances, the Cr-6 mitigation Project will involve the installation of an 8'x21' horizontal reduction vessel, and an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels on a 34'x21' concrete pad and a 22' diameter x 12' high backwash equalization tank. Enhanced facilities already part of the approved well project will include a ferrous chloride storage building (12'x12'), a sodium hypochlorite storage building (12'x12'), and miscellaneous pumps and pipes. An 18'x12' electrical control room and an 18'x12' well pump room will also be constructed. A pad-mounted power transform and the site will be surrounded by a 6 to 8-foot masonry wall with barbed wire. (See Figure 1-9)

3.1.2 Discussion of Impacts

a) Have a substantial adverse effect on a scenic vista?

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

Less Than Significant Impact. As discussed above, all the Project well sites are located on the valley floor with the nearest elevated terrain providing scenic vistas occurring several miles to the east, west and north. Furthermore, the subject well sites have already been developed, some for many years, and the proposed Project will augment existing facilities and, in some instances introduce new features that may be visible from surrounding lands. However, it is clear that no scenic vistas readily visible from adjoining lands or public rights of way will be adversely affected. Major new features that could affect scenic vistas include backwash tanks and vertical filtration vessels. These features and their potential effects are summarized for each well site.

The various Project well sites do not harbor nor are they located near scenic resources, such as major landscape or rock/geological features, historic buildings or a state-designated scenic highway. State Routes 111 and 86 are the main north-south connector routes within the Project planning area. The Southern Pacific Railroad runs adjacent to State Route 111 and is designated a "State-eligible Scenic Highway" from Bombay Beach on the Salton Sea north to Avenue 66 near Mecca. Interstate 10 from Chiriaco Summit to the intersection with State Route 86, approximately nine miles north of the Project area is designated a "County-eligible Scenic Highway".

Well 11: Well 11 is located at the northwest corner of Dillon Road and Cabazon Road with no sensitive viewshed to impact, being adjacent to the UPRR lines to the west, industrial uses to the north, elevated Dillon Road to the south and Cabazon Road to the east. Impacts to scenic vistas and resources will be less than significant.

The Well 11 site does not harbor any scenic resources, trees or other landscape of scenic importance, rock outcroppings or other geologic features of interest or importance, or any historic buildings occurring within a state scenic highway. The proposed Well 11 improvements will have less than significant impacts on these resources.

Well 12: Well 12 makes a statement next to city park lands with the existing large reservoir and its site currently buffered by landscaping. The site is bounded by park landscaping, play and picnic areas, and parking. On the west the site is bounded by a walking path, landscaping and soccer fields. All proposed new facilities will be located immediately north of the existing reservoir. Views and scenic vistas visible from apartments to the south and east will not change as a consequence of the proposed Project. Impacts to scenic vistas and resources will be less than significant.

The Well 12 site does not harbor any scenic resources, trees or other landscape of scenic importance, rock outcroppings or other geologic features of interest or importance, or any historic buildings occurring within a state scenic highway. The proposed Well 12 improvements will have less than significant impacts on these resources.

Well 16: Well 16 is located within and is bounded by industrial lands and uses. The site is not visible from any public street, being accessed by an easement extending south from Tyler Lane cul-de-sac. Neither are there currently nor likely future sensitive view receptors that could be adversely affected by proposed Project Cr-6 improvements at Well 16. Furthermore, proposed improvements will be limited an 8'x21' horizontal reduction vessel, up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels, a 22' diameter x 20' high backwash a new ferrous chloride storage building (12'x12'). Existing fencing on the east side of the site will be replaced with a 6 to 8-foot masonry wall topped with barbed wire, substantially enhancing the appearance of this well site. For the vacant industrial lands to the northeast, views and scenic vistas east will not change appreciably as a consequence of the proposed Project. Impacts to scenic vistas and resources will be less than significant.

The Well 16 site does not harbor any scenic resources, trees or other landscape of scenic importance, rock outcroppings or other geologic features of interest or importance, or any historic buildings occurring within a state scenic highway. The proposed Well 16 improvements will have less than significant impacts on these resources.

Well 17: Well 17 is located on the valley floor immediately east of Van Buren Street and immediately west of basketball courts at the Ranchos Las Flores Park and event venue. Proposed improvements including a portion of 26' diameter x12' high backwash tank, an 8'x23' horizontal reduction vessel, and an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels would encroach

approximately 30 feet northward into the park. This will result in the removal of portions of a landscape planter and a stormwater retention basin. Additional new facilities will include an additional chemical storage building (12'x12') on the existing portion of the well site. Scenic vistas are primarily to the San Jacinto and Santa Rosa Mountains to the west and southwest, respectively. The westerly viewshed, as seen from the adjacent basketball courts, will be most impacted. However, this is an active sports area where scenic vistas are less important. Other portions of the park will be less impacted. Overall, impacts to scenic vistas as seen from within the park and the traveling public will be less than significant.

The Well 17 site does not harbor any scenic resources, trees or other landscape of scenic importance, rock outcroppings or other geologic features of interest or importance, or any historic buildings occurring within a state scenic highway. The proposed Well 17 improvements will have less than significant impacts on these resources.

Well 18: Well 18 is located at the immediately north of unimproved Avenue 48, approximately 960± feet east of Tyler Street and is dominated by a large reservoir and booster pump station. Surrounding lands are all in agriculture (fallow and active cultivation), although they are designated "General Neighborhood" on the General Plan land use map. New facilities will include an 8'x21' horizontal reduction vessel and up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels. An additional chemical storage building (12'x12'), and miscellaneous pumps and pipes are also Project improvements. All new improvements would be located in the northwest corner of the well site and 315± feet north of Avenue 48 and a minimum of 40± feet from the well site boundary. The new improvements will be substantially lower and have no new impact on most surrounding views. Impacts to scenic vistas will be less than significant.

The Well 18 site does not harbor any scenic resources, trees or other landscape of scenic importance, rock outcroppings or other geologic features of interest or importance, or any historic buildings occurring within a state scenic highway. The proposed Well 18 improvements will have less than significant impacts on these resources.

Well 19: Well 19 is located at the northwest corner of Playa Del Amor Street and El Greco Avenue, and immediately east of Jackson within an existing single-family subdivision. The site is bounded by Jackson Street on the west, commercial development and access drive on the north, and single-family homes to the south and east. The Well 19 site is surrounded by a 6-foot masonry wall topped with wrought iron spike fencing and accessed via gates within the subdivision. New facilities will include an 8'x21' horizontal reduction vessel, and an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels on a concrete pad to be located immediately south of the existing well house. A 26.5' diameter x 16' tall backwash reclaim tank will be constructed in the north corner of the site on the site. Additional new facilities will include ferrous chloride storage building (12'x12'), and miscellaneous pumps and pipes. Impacts to scenic vistas will be primarily associated with the proposed 26.5-foot-high backwash tank, which will be especially visible from the single-family residence to the immediate northeast; however, views to the northwest and north will remain unobstructed. Less impacted will be the single-family residence to the immediate south, which shares a sideyard with the site and with continued unobstructed westerly views from the backyard. Overall, the proposed Well 19 improvements will have a less than significant impacts on surrounding scenic vistas.

The Well 19 site does not harbor any scenic resources, trees or other landscape of scenic importance, rock outcroppings or other geologic features of interest or importance, or any historic buildings occurring within a state scenic highway. The proposed Well 19 improvements will have less than significant impacts on these resources.

Well 20**:** Well 20 is located immediately west of Van Buren Street and is bounded by a subdivision retention basin on the north, active agriculture on the south, a single-family residence on the west and Van Buren Street on the east. The Project will install an 8'x21' horizontal reduction vessel, an array of up to thirty-two (32) 10' tall by 4' wide vertical filtration vessels, and a 22' diameter x 12' high backwash equalization tank. An ~ 24'x36' building in the center of the site will house chemical storage, electrical control room and well pump room. A pad-mounted power transformer and the site will be surrounded by a 6 to 8-foot masonry wall with barbed wire. The well site is on the desert floor and well removed from surrounding elevated terrain. Views along the west side of Van Buren Street are obscured by date gardens and other agricultural crops and new homes. Although the subject well improvements will be visible from southbound Van Buren Street, intervening walls and landscaping will further soften and obscure these improvements. The single-family home to the immediate west shares a sideyard with the well site and while portions of the storage/pump building may be visible, these are not primary views and would be substantially more impacted if another home were built on this parcel. Overall, impacts of the proposed project on scenic vistas in the area will be less than significant.

The Well 20 site does not harbor any scenic resources, trees or other landscape of scenic importance, rock outcroppings or other geologic features of interest or importance, or any historic buildings occurring within a state scenic highway. The proposed Well 20 improvements will have less than significant impacts on these resources.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less Than Significant Impact. The Project well sites are located within both non-urbanized and urbanized portions of the city. The seven subject wells are existing, and the project will augment well facilities with additional facilities and structures, which vary with each site. In all cases, the Project well are consistent with and do not conflict with applicable City zoning and other regulations meant to protect scenic quality or resources of the community.

Lands at each Project well site are essentially flat with surrounding distant mountains providing topographic relief. Construction of the proposed Project facilities augment treatment of the municipal water supply and will supplement existing structures, in some instances adding backwash tanks and reduction and filtration vessels. While Project improvements may add to perceived clutter at the well sites, these improvements will not substantially degrade the existing character of each site, nor will it substantially degrade views of the well sites or surrounding lands.

d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

Less Than Significant With Mitigation. Currently, a variety of safety and security lighting are incorporated into each of the seven well sites. New lighting is expected to be limited and will supplement existing fixtures, which include pole-mounted lights and structure mounted security lights, all of which currently appear to illuminate each site without spilling light onto surrounding lands. Existing lighting levels are also affected by existing lighting on surrounding lands, which not be adversely impacted by supplemental well site lighting. Supplemental lighting associated with planned well site improvements

will not create a new substantial source of light or glare, and there will be less than significant effects on daytime or nighttime views. Impacts will be less than significant. Mitigation measures set forth below will further ensure that impacts are less than significant.

3.1.3 Mitigation Measures

AES-1 Construction lighting, including that associated with work area safety and security, shall be placed to avoid and minimize impacts on road travelers and adjoining properties.

AES-2 Security lighting shall be the lowest illumination practicable and shall be of a height and fully shielded so as to avoid light spillage onto the adjoining public street, surrounding properties or the night sky. It is further recommended that to the extent practicable said security lighting shall be actuated by movement sensors and will otherwise be turned off.

3.2 AGRICULTURAL AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?		☐	☐	☐	☒
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?		☐	☐	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest use?		☐	☐	☐	☒
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?		☐	☐	☐	☒

Sources: Coachella General Plan (2015); Riverside County General Plan Figure OS-2 "Agricultural Resources;" Riverside County Land Information Service (Map My County), accessed June 2026; California Important Farmland Finder, California Department of Conservation, accessed June 2026; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.2.1. Setting

The Project well sites are located across the City and in both relatively undeveloped agricultural areas and fully urbanized neighborhoods. The subject well sites are all existing facilities and are generally located on major arterial roadways and are all undergoing various levels of ongoing urbanization. As noted, General Plan land use and Zoning designations on these lands range from industrial to low density residential.

Well 11 is located in an industrial area,
Well 12 is located within Bagdouma Park,
Well 16 is located on designated and partially developed industrial land,
Well 17 is located adjacent to Rancho Las Flores Park and a developing residential neighborhood,
Well 18 is in an agricultural area with General Plan designations for residential development,
Well 19 is located on a residential lot within the Tierra Del Sol subdivision, and
Well 20 is located on a residential lot within the Pyramid Rancho subdivision

According to the California Important Farmland Finder by the California Department of Conservation, lands in the vicinity of the subject well sites is designated as Urban and Built-Up Land (California Important Farmland Finder 2026), while some areas still reflect the Prime Farmland, Farmland of Local Importance designations. The proposed Project will not impact lands in or planned for agricultural uses.

3.2.2 Discussion of Impacts

a-e) No Impact. The Project proposes the retrofitting of existing municipal wells to expand treatment of well water to comply with new State of California standards for hexavalent chromium (Cr-6) in the City's drinking water. While three well sites will be expanded to facilitate new treatment facilities, none will impact lands in agriculture of planned for agricultural uses. The three segments of sanitary sewer lines that are also a part of the proposed Project, will occur within existing street rights-of-way and will not impact any lands in agriculture or planned for agricultural uses. According to the Riverside County Land Information Service (Map My County), there are no Agricultural Preserve lands under a Williamson Act contract. The Project well sites will not adversely impact agricultural lands, including those under a Williamson Act contract.

Project construction activities associated with the installation of the subject water treatment facilities will be constructed within existing well sites, on limited adjoining land, and existing and planned future street rights-of-way and will disturb paved and unpaved roadway sections. The Project will have neither temporary nor permanent impacts on nay adjacent or nearby agricultural activities and designated farmlands. Project-related water and sewer lines will be located within existing and future public right-of-way of established streets, and within private drives. Therefore, there will be no construction-related impacts to agricultural activities and farmlands. Upon completion of the Project construction there will be no long-term impact on agricultural activities and farmlands in the Project area. The proposed Project will not conflict with zoning for agricultural uses or a Williamson Act contract, nor will it have any direct or indirect impact on conversion of farmland to non-agricultural uses. The Project will not cause development of non-agricultural uses within 300 feet of agriculturally zoned property. Therefore, the Project will have no impact on agricultural resources.

The Project site does not contain any forested lands and Project area vegetation is limited to scattered trees, shrubs and ruderal growth along the roadway. Project lands are not zoned for forest land, timberland, or timberland zoned Timberland Production. There will be no conflict with existing zoning for, or cause rezoning of such lands. There are no forest lands or forest uses in the Project area. Therefore, the Project will have no direct or indirect impact on the conversion of forest land to non-forest use.

3.2.3 Mitigation Measures

None required.

3.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b)	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?	☐	☐	☒	☐
c)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Sources: Coachella General Plan (last amended in 2015); "2022 Air Quality Management Plan," prepared by South Coast Air Quality Management District, December 2022; South Coast Air Quality Management District (AQMD) Air Quality Significance Thresholds, April 2019; "2003 Coachella Valley PM_{10} State Implementation Plan," August 1, 2003; "Final Localized Significance Threshold Methodology," prepared by the South Coast Air Quality Management District, Revised, July 2008; Air Quality/Greenhouse Gas (GHG) Analysis prepared by Terra Nova Planning & Research, Inc. on California Emissions Estimator Model (CalEEMod) Version 2022.1.0, August 2026; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.3.1 Setting

The State of California is divided into 15 air basins based on topography, climate, and regional air quality characteristics. The central portion of Riverside County, including the City of Coachella and the Project well sites and pipeline alignments, is located in the Salton Sea Air Basin (SSAB). The SSAB encompasses the Coachella Valley portion of Riverside County and all of Imperial County. The Coachella Valley portion of the SSAB falls under the jurisdiction of the South Coast Air Quality Management District (SCAQMD), the regional agency responsible for enforcing the federal Clean Air Act and California's air quality program and for regulating stationary-source emissions within its boundaries (all of Orange County and portions of Los Angeles, Riverside, and San Bernardino counties, plus the Coachella Valley).

Federal and State Standards

Under the federal Clean Air Act, the U.S. Environmental Protection Agency establishes National Ambient Air Quality Standards (NAAQS) for criteria pollutants. California's air quality program, administered by the California Air Resources Board, sets corresponding California Ambient Air Quality Standards (CAAQS), which are often more stringent. Both the NAAQS and CAAQS are designed to protect the segment of the population that is most susceptible to respiratory distress or infection, including the elderly, children, asthmatics, or those who are weak from disease or illness. Table 2 shows the state and national ambient air quality standards.

Table 2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards	
		Concentrations[1]	Primary	Secondary
Ozone (O_3)	1 Hour	0.09 ppm	--	
	8 Hour	0.070 ppm	0.070 ppm	
Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	
	AAM[2]	20 µg/m^3	--	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	--	35 µg/m^3	
	AAM	12 µg/m^3	9.0 µg/m^3	15 µg/m^3
Carbon Monoxide	1 Hour	20 ppm	35 ppm	--
	8 Hour	9.0 ppm	9 ppm	--
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm	100 ppb	--
	AAM	0.030 ppm	53 ppb	
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm	75 ppb	--
	3 Hour	--	--	0.5 ppm
	24 Hour	0.04 ppm	0.14 ppm	--
	AAM	--	0.030 ppm	--
Lead	30 Day Average	1.5 µg/m^3	--	--
	Calendar Quarter	--	1.5 µg/m^3	
	Rolling 3-Month Average	--	0.15 µg/m^3	
Visibility Reducing Particles	8 Hour	--	No National Standards	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)		

[1] µg/m^3 = micrograms per cubic meter of air
[2] AAM = Annual Arithmetic Mean
Source: California Air Resources Board, Ambient Air Quality Standards (July 2024).

Criteria air pollutants are contaminants for which both the federal NAAQS and California's CAAQS have been established. Within the Coachella Valley portion of the SSAB, ambient concentrations currently exceed state and federal standards for ozone (O3) and particulate matter (PM_{10}). Ambient air quality in the SSAB, including the Project site, does not exceed state and/or federal standards for carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, sulfates, hydrogen sulfide, or Visibility Reducing Particles. The following Table 3 shows the Riverside County portion of SSAB's state and federal attainment status for criteria pollutants.

Table 3 Regional Attainment Status – Coachella Valley	
Criteria Pollutant	**Attainment Status**
Ozone (O_3)	Nonattainment (Severe-15 (2015); Extreme (2008))
Carbon Monoxide (CO)	Attainment
Fine Particulate Matter ($PM_{2.5}$)	Attainment
Particulate Matter (PM_{10})	Nonattainment (Serious)
Nitrogen Dioxide (NO_2)	Attainment
Lead (Pb)	Attainment
Sulfur Dioxide (SO_2)	Attainment
Source: EPA Green Book (Updated June 2, 2026).	

Because of these nonattainment designations, all development in the Coachella Valley portion of the SSAB, including the proposed Project, is subject to the 2022 SCAQMD Air Quality Management Plan (AQMP) (which addresses the 2015 8-hour ozone standard), the 2003 PM10 Coachella Valley State Implementation Plan (SIP), and the 2008 Coachella Valley 8-Hour Ozone SIP (including the 2024 Coachella Valley Attainment Plan for the 2008 8-Hour Ozone Standard and related contingency measure revisions).

The SCAQMD operates and maintains a network of regional air quality monitoring stations throughout its jurisdiction. The Project is located within Source Receptor Area (SRA) 30 (Coachella Valley), which includes monitoring stations in Palm Springs, Indio, and Mecca. The two primary pollutants of concern in the Coachella Valley, including the Project area, are O_3 and particulate matter (PM_{10}). SCAQMD operates and maintains three air quality monitoring stations within SRA 30 (Coachella Valley). SRA 30 includes the Indio and Palm Springs monitoring stations, which have been operational since 1985 and 1987, respectively. The Mecca monitoring station has been in operation since 2013; however, monitoring data is only partially released.

Ozone

O_3 is formed when combustion byproducts react in the presence of ultraviolet sunlight. This process occurs in the atmosphere where oxides of nitrogen combine with reactive organic gases, such as hydrocarbons, in the presence of sunlight. Ozone is a pungent, colorless, toxic gas, and a common component of photochemical smog. Although also produced within the Coachella Valley, most ozone pollutants affecting the valley are transported by coastal air mass from the Los Angeles and Riverside/San Bernardino areas, thereby contributing to occasionally high local ozone concentrations. The Coachella Valley has a history of exceeding regulatory ozone standards.

Table 4 below shows that the Palm Springs monitoring station exceeds the 1-hour and 8-hour federal and state ozone standards more frequently than the Indio site. This exceedance is attributable to the Palm Springs station's location closer to the San Gorgonio Pass, where ozone is transported into the SSAB from the South Coast Air Basin to the west.

Table 4
Ozone Monitoring Data for the Coachella Valley

Monitoring Station	Year	Max. Concentration		No. Days Standard Exceeded		
				Federal[2]	State	
		1 Hour ppm	8 Hour ppm[1]	8 Hour	1 Hour	8 Hour
Palm Springs	2016	0.103	0.092	46	6	48
	2017	0.113	0.097	57	18	63
	2018	0.111	0.099	56	11	58
	2019	0.100	0.085	34	5	39
	2020	0.119	0.094	49	9	53
	2021	0.110	0.092	35	10	38
	2022	0.106	0.089	39	7	43
	2023	0.116	0.093	38	8	39
	2024	0.105	0.091	55	8	56
Indio	2016	0.099	0.090	27	3	29
	2017	0.107	0.094	44	8	47
	2018	0.106	0.091	49	4	52
	2019	0.103	0.088	43	4	47
	2020	0.097	0.085	42	2	44
	2021	0.099	0.078	18	2	24
	2022	0.072	0.069	0	0	0
	2023[3]	*	*	*	*	*
	2024	0.098	0.080	27	2	31

Source: iAdam: Air Quality Data Statistics, California Air Resources Board; www.arb.ca.gov/adam (accessed May 2026).
[1] 8-Hour Average National 0.07 ppm Standard Maximum
[2] Days Exceeding National 0.070 ppm Standard
[3] * = There was insufficient (or no) data available to determine the value.

PM_{10}

Particulate Matter PM_{10} consists of fine suspended particles of ten microns in diameter, and are the byproducts of blowing sand, road dust, diesel soot, windstorms, and the abrasion of tires and brakes. The elderly, children and adults with pre-existing respiratory or cardiovascular disease are most susceptible to the effects of particulate matter. Elevated PM_{10} levels are also associated with an increase in mortality rates, respiratory infections, occurrences and severity of asthma attacks and hospital admissions.

SCAQMD, in conjunction with the Coachella Valley Association of Governments (CVAG), Riverside County and local jurisdictions, prepared the "2003 Coachella Valley PM_{10} State Implementation Plan," which includes PM_{10} control program enhancements and requests an extension of the region's PM_{10} attainment date. The Coachella Valley is designated as a serious non-attainment area for PM_{10} and is subject to the 2003 SIP and local dust control regulations and guidelines.

The following Table 5 shows that the National 24-hour standard for PM_{10} has been exceeded more frequently at the Indio and Mecca stations.

Table 5
Particulate Matter 10 Monitoring Data

Monitoring Station	Year	Maximum Concentration (µg/m³/24 hours)		Number of Days Standard Exceeded		Annual Arithmetic Mean[3]
		National	State[2]	National	State	
Palm Springs	2016	447.2	113.1	1.1	*	23.1
	2017	105.6	60.5	0	*	22.1
	2018	442.3	37.4	2.0	0	22.9
	2019	75.6	51.8	0	6.0	20.7
	2020	129.8	40.8	*	*	23.2
	2021	35.2	34.5	0	0	18.4
	2022	159.5	156.3	*	*	21.1
	2023	173.6	170.1	*	*	23.1
	2024	*	*	*	*	*
Indio	2016	393.2	261.2	*	135.7	37.0
	2017	198.6	143.1	1.0	*	34.8
	2018	336.0	149.6	2.2	88.4	34.8
	2019	141.9	80.3	0	25.7	28.5
	2020	145.2	53.8	0	*	31.6
	2021	100.4	100.6	0	29.3	28.6
	2022	160.0	160.3	*	*	19.8
	2023	*	*	*	*	*
	2024	*	*	*	*	*
Mecca	2016	468.9	183.1	*	*	41.1
	2017	477.6	198.8	*	81.5	47.5
	2018	275.2	59.8	6.3	*	40.8
	2019	232.9	213.7	*	49.2	35.0
	2020	680.6	62.6	10.0	*	45.5
	2021	334.5	118.3	3.0	*	41.5
	2022	*	*	*	*	*
	2023	*	*	*	*	*
	2024	*	*	*	*	*

Source: iAdam: Air Quality Data Statistics, California Air Resources Board; www.arb.ca.gov/adam (accessed May 2026).
[1] Note: National maximum concentration is based on the highest *standard-conditions* 24-hour PM_{10} average observed within a year. State maximum concentration is based on the highest *local-condition* 24-hour PM_{10} average.
[2] * = There was insufficient (or no) data available to determine the value.
[3] National Annual Average Standard AAM exceeding 50 µg/m³

Local Thresholds

To determine whether a project's air quality impacts would be significant under CEQA, the SCAQMD has established quantitative significance thresholds for both construction and operational emissions of criteria pollutants. These mass-daily thresholds apply to regional emissions of volatile organic compounds (VOC), nitrogen oxides (NOx), carbon monoxide (CO), sulfur oxides (SOx), and particulate matter (PM10

and PM2.5). Projects that would generate emissions exceeding the applicable thresholds are considered to have a potentially significant air quality impact and may require mitigation. Table 6 presents the SCAQMD significance thresholds for construction and operational emissions that are used in this analysis.

Table 6
South Coast AQMD Air Quality Significance Thresholds

Criteria Pollutant	Construction	Operation
Oxides of Nitrogen (NO_x)	100 lbs/day	55 lbs/day
Reactive/Volatile Organic Compounds (ROG/VOC)	75 lbs/day	55 lbs/day
Particulate Matter (PM_{10})	150 lbs/day	150 lbs/day
Fine Particulate Matter ($PM_{2.5}$)	55 lbs/day	55 lbs/day
Oxides of Sulfur (SO_x)	150 lbs/day	150 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Lead (Pb)	3 lbs/day	3 lbs/day
Source: South Coast AQMD CEQA Handbook (1993), updated March 2023		

3.3.2 Discussion of Impacts

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

No Impact: A project's impacts on air quality would be significant if the project does not conform to, or if it obstructs, an applicable Air Quality Management Plan. Consistency with the SCAQMD AQMP is evaluated based on two criteria:

1. The project would not result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
2. The project would not exceed the assumptions (e.g., population, employment, or land use growth projections) used in preparing the AQMP or otherwise obstruct its implementation.

The Project is located in the Coachella Valley region of central Riverside County and is subject to the rules and regulations of the SCAQMD, including Rule 403 (fugitive dust). Within the Coachella Valley Planning Area, projects are subject to the SCAQMD 2022 AQMP, the 2003 Coachella Valley PM10 SIP, and the 2008 Coachella Valley 8-Hour Ozone SIP. The 2022 AQMP is the comprehensive regional plan that establishes control strategies for reducing emissions to achieve state and federal ambient air quality standards. It was prepared in cooperation with CARB and SCAG and is based, in part, on local land use plans and growth forecasts, including the City of Coachella General Plan. The 2003 PM10 SIP and ozone SIPs contain additional control measures specific to the Coachella Valley's nonattainment status for those pollutants.

The Project is consistent with the growth and infrastructure improvement assumptions in the City of Coachella General Plan 2035, which anticipates ongoing upgrades to public water facilities to support existing and planned development. Because the AQMP relies on SCAG's regional growth forecasts (which incorporate local general plans such as Coachella's), projects that align with those forecasts, including necessary well-site treatment and infrastructure improvements, do not conflict with the AQMP's emission projections or control strategies.

The subject Project will result in the installation of well water treatment facilities to reduce levels of hexavalent chromium to permitted levels. Construction activities will include pouring concrete pads to mount equipment, reduction and filtration vessels, backwash tanks and other treatment equipment. In some instance, new and expanded chemical storage and pump buildings will also be constructed with the well site. Excavation and trenching will also occur during construction, including that associated with the installation of 8,500± linear feet of upgraded sewer line. These discrete construction activities will use a variety of vehicles and equipment for grading and excavation, materials deliveries, assembly and erection of on-site equipment and facilities.

The Project would generate criteria pollutant emissions during construction and operation, as analyzed under impact (b) below. However, it would not conflict with or obstruct implementation of the applicable air quality plans for the following reasons:

- As analyzed in impact (b) below, Project emissions would remain below all applicable SCAQMD regional and localized significance thresholds. Therefore, the Project would not result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of applicable air quality standards or the interim emission reductions specified in the 2022 AQMP, 2003 PM10 SIP, or ozone SIPs.
- The Project is a public utility improvement that involves no change in land use and will not result in any population or employment growth. Construction and operation of the Cr-6 treatment facilities will neither increase well capacities nor generate or induce any direct or indirect development. The Project is consistent with the goals and policies of the City of Coachella General Plan Infrastructure + Public Services Element, as well as with the growth projections and land-use assumptions underlying the SCAQMD 2022 AQMP. It also does not conflict with the control strategies of the 2003 PM10 SIP or applicable ozone SIPs. Therefore, the Project would not exceed the regional growth assumptions used in developing these plans.

The Project is consistent with the AQMP consistency criteria and with the applicable SIPs, and would not conflict with or obstruct implementation of applicable air quality plans. There will be no impacts.

b) 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?

Less Than Significant Impact: The Project will have a significant impact if it causes a considerable net increase of any criteria pollutant for which the Coachella Valley Planning Area is in nonattainment per federal or state ambient air quality standards. Currently, the Coachella Valley is designated as extreme nonattainment for the 2008 and 8-hour ozone standard, severe for the 2015 8-hour ozone standard, and serious for the 1987 PM10 standard.

Project-related emissions were quantified using the California Emissions Estimator Model (CalEEMod) Version 2022.1 (Appendix A), based on the Project description, engineering plans, and construction estimates. Criteria air pollutants will be released primarily during the construction phase of the proposed Project. Post-construction, no new emissions associated with use of electrical energy are expected to be generated during operation. Electrical equipment that is a part of the project will use the same or equivalent replacement motors, which effectively results in a zero net change in electricity consumption. However, to ensure an adequately conservative analysis, Project power demand is projected to increase by 25% (605,466 kWh annually) over current demand and a well utilization rate of 98% is applied for all well sites.

The following buildout assumptions were used as inputs in CalEEMod:

- Total Area of Disturbance: 1.31 acres
    - 0.27 acres for concrete equipment pads:
        - 7 filter vessel pads, average 714 SF per pad, 4,998 SF total.
        - 7 reduction vessel pads, average 455 SF per pad, 3,185 SF total.
        - 5 backwash tank pads, average 707 SF per pad, 3,535 SF total.
    - 0.04 acres for ancillary building pads
        - Building pads range from 12'x12' to 12'x24', 1,548 SF total
    - 0.22 acres for well discharge lines (off-site), 6 well sites, excluding Well Site 19
    - 0.78 acres for off-site sewer line upgrades (3 segments)
- Total Length of Utility Improvements: 2.07 miles
- Increase in energy (kWh) demand: 605,466 kWh annually
- 62 annual maintenance trips, 14-miles roundtrip, 868 annual vehicle miles traveled (VMT)

Table 7 summarizes short-term construction-related emissions, and Table 8 summarizes ongoing emissions generated during Project operation with an assumed 25% increase is electric power demand. The operational emissions are minimal and limited to emissions from pavement off-gassing and periodic well site maintenance visits. Emissions associated with a 25% power demand increase and associated CalEEMod input data and output tables are provided in Appendix A of this Initial Study.

Construction Emissions

For analysis purposes, it is assumed that construction will occur over a 6-month period and is currently planned commence and conclude in 2027. Construction would include limited site preparation, removal and excavation, pouring of concrete pads, construction of tanks, storage and pump buildings, pipe fitting, equipment deliveries and assembly, well construction, and re-paving. Areas requiring paving or re-paving are anticipated to be limited to new equipment and building pads.

Project construction also includes 8,500± linear feet of sewer line installation. For analysis purposes, it is also assumed that construction activities will be limited to trenching, installation of aggregate bed, pipe installation, backfilling and compacting, and repaving. A four-foot-wide trench and maximum depth of 15 feet is also assumed.

Sources of construction-related emissions include the operation of construction equipment, material imports, as well as vehicles transporting workers to and from the Project well sites. Material export during construction will be limited and include soil displaced by tank and building foundations (approximately 475 cubic yards (CY) of export). Imported materials will include treatment equipment and water tanks, base aggregate and miscellaneous equipment.

Construction emissions were calculated based upon the daily use of various types of construction equipment throughout the entire construction period. Note that not all equipment will be used every day or at the same time, and various construction activities generate different quantities of emissions. CalEEMod projected the maximum daily emissions for all construction activities. As shown in Table 7 below, construction-related activities for the Project are projected to remain below established daily thresholds for all criteria pollutants.

Table 7
Projected Construction Emissions (pounds per day)

	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Daily Maximum	24.81	19.80	2.17	0.04	2.96	1.87
SCAQMD Thresholds	**550**	**100**	**75**	**150**	**150**	**55**
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod Version 2022.1 (output tables provided in Appendix A).
Maximum daily emissions, unmitigated, with the exception of PM_{10} and $PM_{2.5}$, which show emissions after adherence to required dust control measures.

As shown in the above table, the Project's construction emissions are projected to be below the SCAQMD thresholds. Construction-related PM_{10} and $PM_{2.5}$ fugitive dust emissions are reduced through adherence to SCAQMD Rule 403, which requires the application of a dust control plan and dust suppression techniques during all phases of construction. For purpose of this analysis, the CalEEMod model assumes that exposed areas will be watered twice daily, per standard dust control measures. Overall, the Project construction is not expected to violate state or federal air quality standards or contribute to existing air quality violation in the air basin.

Operational Emissions

Operational emissions are ongoing emissions that will occur over the life of the Project. The Project will operate as an augment to the water treatment systems at each well site. Post-construction, facilities maintenance is expected to be at levels of frequency currently applied to each well site, including deliveries of treatment chemicals. Therefore, excepting the approximately 62 14-mile round trip visits per year to Well 19 for sludge disposal, no new operational trips are expected to be generated by the Project.

Paving associated with the Project would be limited and result in negligible area-source emissions from pavement off-gassing. No new stationary emissions, such as those associated emergency generators, will be generated. The operational emissions are limited and will be negligible as shown in Table 8 below. As noted, although all well sites are expected to operate with the current level of electric power demand, a 25% increase was assumed to ensure a sufficiently conservative analysis. Emissions associated with this increased electricity demand are greenhouse gas (GHG) emissions and are evaluated in Section 3.7 (Greenhouse Gas Emissions). They are not criteria pollutant emissions and therefore do not contribute to the operational criteria pollutant totals presented in Table 8.

Because the Project operations are projected to remain well below established daily thresholds for all criteria pollutants, the Project is not expected to violate state or federal air quality standards or contribute to existing air quality violation in the air basin.

Table 8
Maximum Daily Operational-Related Emissions Summary (pounds per day)

Operational Emissions	CO	NO_x	ROG	SO_2	PM_{10}	$PM_{2.5}$
Daily Maximum	0.06	0.00058	0.04	0.000005	0.00012	0.00009
SCAQMD Thresholds	**550**	**55**	**55**	**150**	**150**	**55**
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**
See Appendix A for modeling outputs.						

Cumulative Contribution

A significant impact could occur if the Project would make a considerable cumulative contribution to federal or state non-attainment pollutants. The Coachella Valley portion of the SSAB is classified as a nonattainment area for PM_{10} and ozone. Ozone is formed through photochemical reactions involving ozone precursors, primarily reactive organic gases (ROG) and nitrogen oxides (NO_x). Because air pollutants disperse regionally, cumulative air quality impacts are evaluated at the regional scale rather than a localized (neighborhood or city) scale.

The SCAQMD does not recommend quantified cumulative emissions analyses of multiple projects and does not provide specific methodologies or thresholds for assessing multi-project cumulative impacts. Instead, SCAQMD guidance recommends that a project's potential contribution to cumulative impacts be evaluated using the same significance thresholds applied to project-specific impacts. Under this approach, if an individual project's construction and operational emissions are less than significant, the project is not considered to generate a cumulatively considerable increase in emissions of nonattainment pollutants.

As shown in the tables above, Project-related emissions of PM_{10}, NO_x, and ROG would remain below SCAQMD significance thresholds. Therefore, the Project would result in incremental but not cumulatively considerable contributions to regional PM_{10} or ozone levels.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact: According to SCAQMD[7], sensitive receptors include residences, schools, playgrounds, childcare centers, retirement homes, hospitals, long-term health care facilities, rehabilitation centers, and convalescent centers. Sensitive receptors in the immediate vicinity of Project wells include parklands, residences, industrial uses and agricultural lands.

SCAQMD Localized Significance Thresholds (LSTs) are used to evaluate whether a project could result in significant air quality impacts on nearby sensitive receptors. LST look-up tables are provided for receptor distances of 25, 50, 100, 200, and 500 meters. The LST methodology is intended for projects of five acres or less (or projects involving no more than five acres of daily disturbance) and is available in 1-, 2-, and 5-acre increments. The Project includes seven well sites and associated sewer line improvements, totaling approximately 1.3 acres of disturbance. Although multiple well sites are proposed, emissions from a single representative well site (approximately 0.3 acres) were modeled to characterize localized construction impacts near a sensitive receptor. Because the maximum daily disturbance at any one well site is well under one acre and the nearest sensitive receptor is immediately adjacent to a well site, the 1-acre LST look-up tables for a 25-meter receptor distance were used.

[7] Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning, prepared by the South Coast Air Quality Management District. 2005.

Table 9 shows maximum on-site emission concentrations during construction and operation of a typical well site will be negligible, and thus would not result in significant adverse localized air quality impacts. Overall, the impacts will be less than significant.

Table 9
Localized Significance Thresholds Emissions – Typical Well Site
(pounds per day)

Maximum Emissions	CO	NO_x	PM_{10}	$PM_{2.5}$
Construction [1]	33.41	25.50	3.41	2.11
LST Threshold	**878**	**132**	**4**	**3**
Exceed?	**No**	**No**	**No**	**No**
Operation[2]	**0.01**	**0.0001**	**0.00002**	**0.00002**
LST Threshold	**878**	**132**	**1**	**1**
Exceed?	**No**	**No**	**No**	**No**

See Appendix A for modeling outputs.
[1] Includes implementation of fugitive dust control measures required by SCAQMD under Rule 403.
[2] Operational emissions that affect sensitive receptors are limited to on-site area emissions. Energy and mobile emissions occur off-site and are excluded from the total.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact: Once in operation, the Project wells are not expected to generate objectionable odors. Each well is or will be fitted with chemical treatment systems that disinfect groundwater before distributing it throughout the municipal system. For this Project, treatment chemicals include sodium hypochlorite and ferrous chloride: sodium hypochlorite, which is already used at City wells to disinfect, has a sharp, pungent chlorine or bleach smell, while ferrous chloride has a faint, highly acidic, or metallic iron-like odor.

Well water treatment uses closed systems to inject chemicals into the water. Chemical are stored in approved vessels and introduced into the water treatment flow by closed pipe networks. Concentrated spillage, leakage or improper storage can allow release of chemical odors. The planned chemical storage and injection systems will be in enclosed buildings and are designed with standard odor control measures, including ventilation. This will ensure that impacts associated with potential odors will be less than significant.

During construction, the proposed Project has the potential to result in short-term odors associated with vehicle and construction equipment exhaust, which is expected to be minimal. In addition, any such odors will be quickly dispersed below detectable thresholds as distance from the construction site increases. All off-site water and sewer lines will be located underground. Project well sites will be stabilized with aggregate and/or soils stabilizers and otherwise returned to preexisting conditions upon completion of construction. Therefore, the Project will not expose the surrounding area to long-term odors. Overall, impacts from objectionable odors are expected to be less than significant.

Minimization Measures

While Project air emissions are projected to have a less than significant impact on air quality, the following minimization measures will be applied:

Per SCAQMD Rule 403, the contractor's fugitive dust control plan shall be prepared and shall be approved by the Project Engineer. Said plan shall include, but not be limited to, the following best management practices:

A. Chemically treat soil where activity will cease for at least four consecutive days;

B. All construction excavation, grading and other earth moving operations shall cease when winds exceed 25 miles per hour;

C. Water well site and grading/excavation equipment twice a day, morning and evening, as well as during all earth-moving operations;

D. Operate street-sweepers on paved roads adjacent to site;

E. Stabilize temporary disturbance as needed to accomplish each phase of development;

F. Wash off trucks as they leave the Project site as necessary to control fugitive dust emissions;

G. Cover all transported loads of soils, wet materials prior to transport, provide adequate freeboard (space from the top of the material to the top of the truck) to reduce PM_{10} and deposition of particulate matter during transportation;

H. Use track-out reduction measures such as gravel pads or rattle grates at the Project access points to minimize dust and mud deposits on roads affected by construction traffic.

3.3.3 Mitigation Measures

None required.

3.4 BIOLOGICAL RESOURCES

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☒	☐	☐
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?	☐	☒	☐	☐
c)	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
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?	☐	☐	☒	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
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?	☐	☒	☐	☐

Sources: Draft Biological Resources Assessment Report Coachella Water Authority Chromium-6 (Cr6) Well Sites Project, prepared by WSP USA, Inc., August 2026; Coachella Valley Multiple Species Habitat Conservation Plan," September 2007, as Amended; U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory, www.fws.gov/wetlands/Data/Mapper.html, accessed June 8, 2026; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.4.1 Setting

The Project site is located on the valley floor of the eastern Coachella Valley. The area has been a major agricultural region of the County for more than 100 years. Agriculture and urban development started following the extension of rail lines through the valley in 1876, including rail spurs to service local

business and agriculture. Six of the seven subject well sites have been developed for several years, while Well 20 is part of an adjacent residential subdivision, was drilled in 2026 and is currently being equipped. With the exception of Well 18, lands surrounding the subject well sites have been subject to various levels of urbanization.

Literature Search

A biological assessment (BA) was prepared WSP USA for the Project and finalized in August 2026. In advance of field surveys conducted on each well site, discharge lines and upgraded sewer lines, a comprehensive literature search was conducted to identify sensitive biological resources that occur or may occur at and within a five-mile radius of the Project site (Appendix B, WSP 2026). These include forty-two (42) special status plants, one (1) special status vegetation community, seven (7) special status invertebrates, two (2) special status fishes, two (2) special status amphibians, four (4) special status reptiles, twenty-three (23) special status birds and fifteen (15) special status mammals were reported occurring within the vicinity of the study area. Appendix E of the BA provides a complete list of these special status biological resources, their respective conservation/legal status, a summary of their habitat associations and their individual occurrence potentials at the existing facilities.

Of the ninety-six (96) special status biological resources reported from the vicinity, eighty-two (82) are considered to be either absent from the study area due to a lack of suitable habitats, unsuitable elevational parameters (i.e., study area lower in elevation than the lowest known elevational range of species) and/or the location of the study area is outside the known geographic range of these species and/or because the proposed project activities are anticipated to occur in areas (i.e., mostly within the fenced facilities) and/or are adjacent to areas that do not provide potentially suitable habitat for those species. These include all forty-two (42) special status plant species, the one (1) special status vegetation community, all seven (7) of the special status invertebrates, the two (2) special status fishes, the two (2) special status amphibians, all four (4) of the special status reptiles, sixteen (16) of the special status birds and eight (8) of the special status mammals (Appendix E of BA).

Project Site Surveys

The subject well sites and a 500±-foot buffer area were surveyed on June 9, 2026. Conditions were excellent with 0% cloud cover and clear skies, temperatures ranging from 79 to 98°F calm winds between 0 and 3 mph. Adjacent lands within the study area are also largely developed with existing commercial, industrial and residential developments surrounding most of the facilities (see Figures 1-3 through 1-9). Two City parks (i.e., Bagdouma Park and Rancho Las Flores Park) are also present adjacent to Wells 12 and 17 respectively. Undeveloped, natural, semi-natural and heavily disturbed, vacant areas are intermittently present adjacent to some of the fenced facilities (Wells 11, 16, 17 and 18).

All (100%) of the soils within the existing fenced, cleared and developed facilities and the proposed new facility (Well 20), as well as the alignments of proposed discharge lines and sewer line segments planned for upgrading, have been heavily altered (graded, paved and/or developed). Most of the soils within the study areas adjacent to nearly all of the existing facilities have also been similarly developed, heavily disturbed and/or altered. Some of the undeveloped areas adjacent to Wells 16 and 18 exhibit the least amount of disturbance (where quailbush scrub and the mesquite and saltcedar thickets are present). Other site disturbances observed within the study areas of the existing facilities included unimproved (dirt) roads and trails, evidence of off-road vehicular use, vegetation clearance and discing of the soils (weed control/fire breaks), agricultural practices, the presence of stray domestic cats and dogs, illegal dumping and the accumulation of trash.

All of the onsite and adjacent anthropomorphic (man-made) disturbances have had adverse impacts to the natural environment, including the formerly native soils, in the immediate vicinity of all of the existing facilities and have very likely affected the distribution, diversity and abundance of native flora and fauna in negative and detrimental ways.

Vegetation

Vegetation Communities

The subject well and pipeline sites have been entirely cleared of nearly all vegetation and it was evident that the facilities are routinely maintained to keep the sites clear of any vegetative growth. As a result, only very sparse, young (sapling) and low-profile living plants (mostly annuals) were observed within the fenced facilities and pipeline alignments. Some of the facilities were entirely barren with no living plants detected while very sparse vegetation was detected at others. Plant species detected included but were not limited to: narrow-leaf johnstonella (*Johnstonella angustifolia*), smallseed sandmat (*Euphorbia polycarpa*), Bermuda grass (*Cynodon dactylon*) and Mediterranean grass (*Schismus barbatus*).

Vegetation observed within the study areas adjacent to each of the facilities largely consisted of non-native, exotic species commonly used for landscaping in the Coachella Valley as most of the adjacent areas have also been entirely developed and/or landscaped. Areas of undeveloped open space were observed intermittently adjacent to a few of the facilities (i.e., Wells 11, 16, 17 & 18). Natural, or semi-natural vegetation communities present at these locations included: *Atriplex lentiformis* Shrubland Alliance (quailbush scrub), *Neltuma odorata (formerly Prosopis glandulosa)–Neltuma (formerly Prosopis) velutina–Strombocarpa (formerly Prosopis) pubescens* Woodland Alliance (mesquite thicket), *Tamarix* spp. Shrubland Semi-Natural Alliance (tamarisk thicket) and *Bromus rubens-Schismus* (*arabicus*, *barbatus*) Herbaceous Semi-Natural Alliance (Red Brome or Mediterranean Grass Grassland) as described by *A Manual of California Vegetation* (Sawyer et. al. 2009) (see IS Appendix B, Figures 5 a-g). Heavily disturbed and/or largely barren areas were also present adjacent to some of the facilities.

Special Status Vegetation Communities

No special status vegetation communities (i.e., California Fan Palm Oasis or Desert Microphyll Woodlands) were detected anywhere on the existing facilities, line alignments or within the adjacent study areas. Although not reported as occurring in the area by the literature review, mesquite bosques and/or hummocks are designated as a sensitive biological resource under the CVMSHCP. Although a mesquite thicket is present within the study area adjacent to Well 16, this vegetation community does not represent a “bosque” or “hummock”. It appears to have been planted along the existing fenceline of the adjacent private property to the west. It is possible that it is a remnant of what may have been a more widespread area of naturally occurring mesquite in the area.

Special Status Plants

No special status plant species were observed or are anticipated to occur within the study area; suitable habitats for these species are not present anywhere within the study area where project activities are proposed. A total of forty-five (45) plant species were identified within the study areas during the assessment. Because the existing facilities are mostly developed and are routinely maintained to remove any and all vegetation, the vast majority of the plants observed were located outside of the existing facilities but within the adjacent study areas. Many of these were ornamental species, planted as landscaping along the various roadways, in City parks and/or around residential or commercial developments. Many of the ornamental plant species were not identified. The identified plant species, including their common and scientific names, are listed in Appendix B of IS Appendix B.

State or Federal Protected Wetlands and Waters of the US

The Project biologists assessed Project lands, including well sites and pipeline alignments, for the occurrence of jurisdictional waters of the state or US. The various resource surveys conducted for the Project found no drainages that would likely be considered jurisdictional by the USACE and/or CDFW at or adjacent to the existing facilities or line alignments. No canals, creeks, lakes, marshes, ponds, seeps, springs, streams or washes were observed anywhere within the study area. At least two manmade flood control detention basins were observed within the study areas adjacent to two of the existing facilities, one was east of Well 12 and one was north of Well 20. A shallow manmade drainage feature that directs surface flows into the nearby detention basin mentioned above is also present adjacent to and south of Well 12. A manmade agricultural pond also occurs within the study area, southeast of Well 18. Existing manmade beneficial reuse ponds/overflow areas (for reservoir discharges) were also present in some of the facilities (Wells 17, 18 & 19). Some of these were cement or concrete lined while others appeared to be soft-bottomed. These onsite beneficial reuse ponds/overflow areas are closed systems without any visible connections to any drainages (natural or manmade). For these reasons, no impacts to jurisdictional waters of any kind are anticipated to occur as a result of project implementation.

Wildlife

Vertebrates

Vertebrate wildlife directly observed and/or otherwise detected through presence of sign (e.g., scat, bones, prints, feathers, burrows, etc.) during the assessment was not notably diverse or abundant across the planning area. Vertebrates recorded within the study area during the assessment included 29, mostly common species. These included: one (1) reptile, twenty-two (22) birds and six (6) mammals. Appendix C of IS Appendix B provides a complete list of vertebrate species detected during the assessment.

Reptiles

One reptile species, side-blotched lizard (*Uta stansburinana*), was detected during the assessment, is ubiquitous and very common. Although not detected, other common, introduced and/or disturbance-tolerant species such Mediterranean gecko (*Hemidactylus turcicus*), western whiptail (*Aspidoscelis tigris*) and coachwhip (*Masticophis flagellum*) may also occur within the study area.

Birds

Representative bird species observed onsite included but were not limited to red-tailed hawk (*Buteo jamaicensis*), Gambel's quail (*Callipepla gambelii*), mourning dove (*Zenaida macroura*), Say's phoebe (*Sayornis saya*), common raven (*Corvus corax*), verdin (*Auriparus flaviceps*), cliff swallow (*Petrochelidon pyrrhonota*), northern mockingbird (*Mimus polyglottos*) and Abert's towhee (*Pipilo aberti*). Other common resident and/or migrant bird species are also expected to occur and possibly nest mostly within the study areas adjacent to the existing facilities and line alignments. A complete list of the bird species detected during the assessment is included in Appendix C of IS Appendix B.

Several active and inactive bird nests were detected within the study areas of two of the existing facilities (see BA Appendix A, Figure 7a & 7d; Appendix D, Photos 6 & 18; Appendix I). Live burrowing owls were observed within the study area adjacent to Well 11 (BA Appendix A, Figure 7a & Figure 7d; Appendix D, Photos 4-5; Appendix I). Other burrows suitable for burrowing owls (i.e., California ground squirrel burrows) but lacking owl sign (i.e., whitewash, pellets, feathers, tracks, prints and/or adornments) were also observed adjacent to Wells 11 and 17 (BA Appendix A, Figure 7a & Figure 7d; Appendix D, Photo 19). Lastly, several inactive bird (stick) nests were also observed within the study area adjacent to Well 17 (Appendix A, Figure 7d; Appendix D, Photo 18). Burrowing owls and nesting birds protected by the MBTA and Fish and Game Code (FGC) and are discussed further below.

Mammals

Mammals detected within the study area during the assessment included only common species. These included Botta's pocket gopher (*Thomomys bottae*), Audubon's cottontail (*Sylvilagus audubonii*), California ground squirrel (*Otospermophilus beecheyi*) and coyote (*Canis latrans*). Domestic (stray) dogs and cats were also observed. Other common mammal species, particularly common rodents, have some potential to occur within the study area. Representative examples include but are not limited to: deer mouse (*Peromyscus maniculatus*), exotic rats (*Rattus* spp.) and Virginia opossum (*Didelphis virginiana*).

Special Status Wildlife

Special Status Invertebrates

No special status invertebrates were detected within the study area during the biological assessment. Seven (7) special status invertebrates have been reported from the vicinity (see BA Appendix E, Table 3). These include monarch butterfly (*Danius plexippus*), Casey's June beetle (*Dinacoma caseyi*), Algondones euparagia (*Euparagia unindentata*), Juniper metallic wood-boring beetle (*Juniperella mirabilis*), Coachella giant sand treader cricket (*Macrobeantes valgum*), cheeseweed owlfly (*Oliarces clara*) and Knull's metallic wood-boring beetle (*Trichinorhipus knulli*). Monarch butterfly is currently proposed as Federally listed as Threatened and Casey's June beetle is Federally listed as Endangered by the USFWS.

The remaining special status invertebrates have no Federal or State status but have been ranked S1-S2 by the State meaning that they are considered to be "critically imperiled" to "imperiled". All seven (7) are considered to be absent from the fenced facilities and line alignments, where the majority of the proposed improvements and construction is expected to occur, and the adjacent study areas as a result of a combination of a lack of suitable habitat, the absence of larval host plants (i.e., milkweeds for the monarch butterfly, juniper for the juniper metallic wood-boring beetle and jojoba for Knull's metallic wood-boring beetle) and/or microhabitats (i.e., sand dunes or hummocks Coachella giant sand treader cricket and Algodones euparagia; rocky canyons for cheeseweed owl fly) and/or are outside of the known geographic range (i.e., Casey's June beetle).

It should be noted, however, that although not detected, milkweed is commonly planted as landscaping in the region, and it is possible that they occur within the various existing commercial and/or residential developments within the study area. Impacts to milkweed (and monarch butterfly), if present, are not anticipated to occur as a result of project implementation. For these reasons, impacts to special status invertebrates are not expected, and impact avoidance, minimization or mitigation measures are not recommended or anticipated to be required for this project.

Special Status Fish

No special status fish species, or any fish species, were observed within the study area during the assessment. Two (2) special status fish species have been reported from the vicinity of the study area (see BA Appendix E, Table 3). These include desert pupfish (*Cyprinodon macularius macularius*) and razorback sucker (*Xyrauchen texanus*). Both are listed as Endangered by the USFWS and the CDFW. Due to a lack of suitable aquatic habitats entirely within the study area, both special status fish species are considered to be absent. Impacts to these Federally and State Endangered fishes are not anticipated. No impact avoidance, minimization and/or mitigation measures are recommended or anticipated to be required for this project.

Special Status Amphibians

No special status amphibians were detected within the study area during the assessment. Two (2) special status amphibian species have been reported from the vicinity of the study area (see BA Appendix E, Table 3). These include desert slender salamander (*Batrachoseps major aridus*) and Couch's spadefoot (*Scaphiopus couchii*). The desert slender salamander is Federally and State listed as Endangered by the USFWS and CDFW while Couch's spadefoot is managed as "sensitive" by the BLM and designated as a Species of Special Concern (SSC) by the CDFW. No suitable habitat for either of these special status amphibians is present within the study area for the Project. The desert slender salamander is also only known from Hidden Palm and Guadalupe Canyons on the eastern slopes of the Santa Rosa Mountains, while the study area is located on the floor of the Coachella Valley. As a result, impacts to desert slender salamander and Couch's spadefoot are not anticipated to occur as a result of project implementation. For these reasons, no impact avoidance, minimization and/or mitigation measures are recommended or anticipated to be required for this Project.

Special Status Reptiles

No special status reptiles were observed within the study area during the assessment. Four (4) special status reptiles have been reported from the vicinity (Appendix E, Table 3). These include northern red diamond rattlesnake (*Crotalus ruber*), Mojave desert tortoise (*Gopherus agassizi*), flat-tailed horned lizard (*Phrynosoma mcallii*) and Coachella Valley fringe-toed lizard. Of these, only Mojave desert tortoise and Coachella Valley fringe-toed lizard are listed by the USFWS and CDFW. Both are listed as Threatened by the USFWS and listed as Endangered by the CDFW. Northern red diamond rattlesnake and flat-tailed horned lizard are designated as Species of Special Concern (SSC) by the CDFW. Flat-tailed horned lizard is also managed as "sensitive" by the BLM. No suitable habitat for any special status reptiles is present within the study area. As a result, Project-related impacts to special status reptiles are not expected to occur as a result of project implementation and no impact avoidance, minimization or mitigation measures are recommended or anticipated to be required for this project.

Special Status Birds

Twenty-three (23) special status bird species are known from the vicinity, including golden eagle (*Aquila chrysaetos*), great egret (*Ardea alba*), great blue heron (*Ardea herodias*), burrowing owl, ferruginous hawk (*Buteo regalis*), Costa's hummingbird (*Calypte costae*), snowy egret (*Egretta thula*), southwestern willow flycatcher (*Empidonax traillii extimus*), prairie falcon (*Falco mexicanus*), gull-billed tern (*Gelochelidon nilotica*), bald eagle (*Haliaeetus leucocephalus*), yellow-breasted chat (*Icteria virens*), loggerhead shrike (*Lanius ludovicianus*), black-crowned night heron (*Nycticorax nycticorax*), white-faced ibis (*Plegadis chihi*), black-tailed gnatcatcher (*Polioptila melanura*), vermilion flycatcher (*Pyrocephalus obscurus*), Yuma Ridgeway's rail (*Rallus obsoletus yumanesis*), American avocet (*Recurvirostra americana*), black skimmer (*Rynchops niger*), crissal thrasher (*Toxostoma crissale*), LeConte's thrasher (*Toxostoma lecontei*) and least Bell's vireo (*Vireo bellii pusillus*).

During field surveys four (4) special status bird species were observed within the study areas adjacent to four of the facilities (i.e., Well 11, 12, 16 & 17), included: burrowing owl, Costa's hummingbird, willow flycatcher (*Empidonax traillii* ssp.) and vermilion flycatcher. As noted above, two (2) live burrowing owls were observed within the study area adjacent to Well 11. These owls were occupying at least two (2) different burrows located on the north-facing slope of the manufactured approach to the west-bound lane of the Dillion Road Bridge spanning the adjacent Union Pacific railroad easement, at least one utility line easement (i.e., Kinder Morgan pipeline) and Grapefruit Boulevard (State Route 111 [SR-111]). These burrows are approximately 12.8 m (42 ft) southeast of the existing fenced facility at the closest point and approximately 7.9 m (26 ft) at the closest point to the proposed expansion of this facility.

Burrowing owls are currently a Candidate for State listing as Endangered. This species is also managed as a Bird of Conservation Concern (BCC) by the USFWS, managed as "sensitive" by the BLM and designated as a Species of Special Concern by the CDFW. Burrowing owls, like nearly all other non-game native birds, are also afforded additional protections by the MBTA and state FGC. Although the burrowing owl is one of the twenty-seven (27) species covered under the CVMSHCP, additional actions for full compliance with the CVMSHCP, CESA, MBTA and FGC are required. Suitable nesting and foraging habitat for burrowing owl is present within the study areas adjacent to Well 11, 17 and 18. No suitable nesting or foraging habitat is present within the study areas adjacent to Well 12, 16, 19 and 20. Impact avoidance, minimization and mitigation measures for burrowing owl at the wells where suitable habitat is present are discussed below.

One male Costa's hummingbird was detected perching, calling and displaying within the study area adjacent to Well 12. Suitable nesting and foraging habitat is also present within the study areas of all the existing facilities. Costa's hummingbird is not listed or a Candidate for listing as Threatened or Endangered. This species is, however, designated as a BCC by the USFWS and like all other native, non-game bird species protected by the MBTA and state FGC. While Costa's hummingbird typically nests in native desert trees along washes, alluvial fans and bajadas in the region, this species has also readily adapted to nest in trees and vegetation commonly used in landscaping in the Coachella Valley. For these reasons impacts to nesting Costa's hummingbirds resulting from project implementation are possible. Impact avoidance measures for nesting Costa's hummingbird (and other native bird species) are discussed further below.

A single willow flycatcher (*E. t.* ssp.) was observed perching and calling from the dense mesquite thicket immediately adjacent to Well 16. Although the species was present and calling at this location, mesquite thickets generally do not provide suitable nesting habitat for this riparian-obligate species. In Southern California, willow flycatchers breed and nest in mature riparian woodlands and forests in proximity to flowing water, neither of which is present at, nor adjacent to, any of the existing facilities. Mesquite thickets are rarely used by willow flycatchers for nesting and only when those thickets are located immediately adjacent to mature riparian woodlands or forests such as in the Lower Colorado River Basin in Arizona and southeastern California. The mesquite thicket located within the buffer zone area of Well 16 is not located adjacent to riparian vegetation of any kind. The individual detected adjacent to the existing facility is suspected to either be a very late migrant moving through the area or perhaps temporarily disoriented or lost individual. Willow flycatchers are not anticipated to nest or even regularly occur at this location. Due to a lack of suitable nesting habitat within the study area, impacts to nesting willow flycatcher are not expected or anticipated to be required, despite the unexpected observation.

A pair of vermilion flycatchers were observed perching, calling and foraging within the buffer zone adjacent to Well 17 (Appendix A, Figure 7d; Appendix I). An adult male and an adult female were observed foraging within the trees and perching on the chain link fences at the Rancho Las Flores Park located immediately adjacent to the fenced facility. Several inactive stick nests (species undetermined) were also observed in several of the trees adjacent to this facility. It is possible that one or more of the observed nests belong to this species. Vermilion flycatchers nest in semi-open desert woodlands, desert riparian strips (near mesquite, willow, and cottonwood) and man-made irrigated environments like City parks, golf courses and the tree-planted margins of agricultural areas. The trees and shrubs at Rancho Las Flores Park adjacent to Well 17 and Bagdouma Park adjacent to Well 12 provide suitable nesting habitat for this species. For these reasons, impact avoidance for nesting vermilion flycatchers (and other native bird species) are discussed below.

Although not observed, potentially suitable nesting and foraging habitat for loggerhead shrike, black-tailed gnatcatcher, crissal thrasher and LeConte's thrasher is also present within the study areas adjacent to some of the existing facilities (i.e., Wells 16 & 18). For these reasons, impact avoidance measures for these species (and other nesting birds) are discussed below.

Special Status Mammals

No special status mammals were observed or detected in the study area during the assessment. Fifteen (15) special status mammals are known from the vicinity. These include pallid bat (*Antrozous pallidus*), pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), earthquake Merriam's kangaroo rat (*Dipodomys merriami collinus*), spotted bat (*Euderma maculatum*), western mastiff bat (*Eumops perotis californicus*), western yellow bat (*Lasiurus xanthinus*), Colorado Valley woodrat (*Neotoma albigula venusta*), San Diego desert woodrat (*Neotoma lepida intermedia*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), desert bighorn sheep (*Ovis canadensis nelsoni*), Peninsular bighorn sheep distinct population segment (DPS) (*Ovis canadensis nelsoni* [Pop. 2]), Palm Springs pocket mouse (*Perognathus longimembris bangsi*), American badger (*Taxidea taxus*) and Palm Springs round-tailed ground squirrel (*Xerospermophilus tereticaudus chlorus*).

Of these, only Peninsular bighorn sheep is Federally listed as Endangered and State listed as Threatened. Although not listed by the USFWS or CDFW, the desert bighorn sheep is managed as "fully protected" by the CDFW. The remaining species are either managed as "sensitive" by the BLM and/or designated as SSC's by the CDFW. Townsend's big-eared bat, spotted bat, western mastiff bat and western yellow bat are ranked as "High Risk" by the Western Bat Working Group (WBWG) in Region 8, where the study area is located. Most of these special status mammals are considered to be absent from the study area due to a lack of suitable habitats. The special status mammals generally considered to be absent from the study area include pallid San Diego pocket mouse, roosting Townsend's big-eared bat, earthquake Merriam's kangaroo rat, roosting spotted bat, Colorado Valley woodrat, San Diego desert woodrat, desert bighorn sheep, Peninsular bighorn sheep DPS and Palm Springs pocket mouse.

Bats

Any of the special status bat species may forage at or in the immediate vicinity of the existing facilities, particularly over water (when present within the onsite and/or adjacent overflow/beneficial reuse ponds or detention basins), which are dry most of the time. Bats may also be found around existing (or future) artificial lighting; however and as noted above, suitable roosting habitat for some of these species is not present at any of the existing facilities. There is, however, at least a low potential for several of the bat species (i.e., pallid bat, western mastiff bat, western yellow bat and pocketed free-tailed bat) to roost within the buffer zone areas adjacent to all of the existing facilities as these species have been known to roost in trees, including trees used as landscaping, man-made structures such as buildings and bridges and/or beneath roof tiles. Additionally, there is also a very low potential for American badger and Palm Springs round-tailed ground squirrel to occur within the undeveloped open space present within the buffer zone study areas adjacent to Wells 16 and 18. For these reasons, impact avoidance measures for these species are discussed below.

Migratory Bird Treaty Act (MBTA) Compliance

A variety of common bird species are protected by the MBTA and FGC, but excluded from coverage under the CVMSHCP, including virtually all native migratory and resident bird species, including birds already known to occur in the vicinity. Active and inactive bird nests were observed within the buffer zone study area adjacent to Wells 11 and 17. Many active cliff swallow nests were observed on the side

of the approach to and beneath the existing Dillon Road Bridge over the Union Pacific Railroad easement and Grapefruit Boulevard/SR-111, the closest being approximately 33.5 m (110 ft) south of the existing fenced Well 11 and 22.5 m (74 ft) from the proposed expansion area of this facility.

Several inactive bird (stick) nests were also observed within some of the existing trees within the buffer zone study area of Well 17, one of which was immediately adjacent to (within an approximate 1 m [3.3 ft]), just outside of, the existing masonry wall at this facility and within the proposed northern expansion of this facility. The bird species that these inactive nests belong to is currently not known, but one or more could belong to the vermilion flycatcher as this species was observed within the study area adjacent to this facility.

Active bird nests for all native, non-game bird species, and the birds that occupy them are protected by the MBTA and FGC. Due to the presence of active bird nests (i.e., cliff swallows adjacent to Well 11), inactive bird nests (i.e., stick nests adjacent to Well 17) and suitable nesting habitat (in the buffer zones adjacent to all facilities), native resident and migratory songbirds, including some raptors, could potentially nest in and/or on the fenced facilities (i.e., killdeer [Charadrius vociferus], mourning dove, cliff swallow, black phoebe [Sayornis nigricans], Say's phoebe, etc.) and within the buffer zone areas adjacent to all of the facilities. Avoidance of impacts to all native, nesting migratory and resident birds is a requirement of the Federal permit issued for the CVMSHCP. To avoid impacts to nesting birds, nesting bird clearance surveys should be conducted by a qualified biologist immediately prior to (within 3 days) initial Project-related disturbance (i.e., vegetation removal or trimming, site grading, structural demolition, excavation, blading, operation of heavy equipment, etc.). Impact avoidance and minimization measures are discussed further below.

3.4.2 Discussion of Impacts

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?

Less Than Significant Impact with Mitigation: The subject seven well sites are existing facilities that have been in operation for several years, with the exception of the new Well 20 and all unvegetated. The sewer line extensions portion of the Project all occur within existing street rights of way and most well discharge lines will also occur within existing improved street rights of way. With the exception of Well 18, all of the sites are located within urban or urbanizing areas of the City.

As discussed above, the Project has the potential to impacts sensitive bird and mammal species that may not be fully addressed as "Covered Species" under the CVMSHCP and associated permits. It should be noted that most of the surrounding areas within the Project buffer zone study areas adjacent to each of the facilities and along line alignments are also largely developed with only a few undeveloped open space areas present. Nevertheless, direct and indirect impacts to some of the special status biological resources known to occur in the vicinity are possible. Construction activities proposed for locations adjacent to but outside the existing fenced facilities (i.e., facility expansions, utility line connections, access, parking, staging, etc.) have the potential to affect burrowing owls (Wells 11 & 17), nesting birds (all facilities), a few species of roosting bats (all facilities), American badger (Wells 16 & 18) and Palm Springs round-tailed ground squirrel, if present (Wells 11, 16 & 18). Potential direct and indirect impacts are discussed below.

Potential Impacts To Burrowing Owl

Two (2) live burrowing owls were observed adjacent to Well 11 and it is possible that additional live burrowing owls also occur here. The Project would expand the existing facility to the south and east and encroach closer to the two (2) occupied burrowing owl burrows, as well as other suitable burrows in the same area. California ground squirrel burrows suitable for burrowing owl but lacking sign (i.e., whitewash, pellets, feathers, eggshell fragments, prints, tracks, burrow adornments, etc.) were also detected within 50 feet of Well 17 with adjacent suitable burrowing owl habitat is present. As noted, the burrowing owl is currently a State Candidate species for listing as Endangered, therefore a 2081 incidental take permit (ITP) application should be filed with the CDFW for unavoidable impacts to this species. Additionally, it will be necessary to perform protocol-level presence/absence owl surveys and take avoidance (pre-construction) surveys in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012). CDFW determine additional requirements such as an Avoidance, Relocation and Mitigation Plan for burrowing owl, will also likely be required.

Potential Impacts to Other Special Status Birds

As discussed above and in the Project BA, Willow flycatcher, Costa's hummingbird and vermilion flycatcher were observed within the buffer zone study areas adjacent to some of the facilities. A single willow flycatcher observed is considered to either be a late migrant, temporarily moving through the area, or perhaps a lost and/or disoriented individual as no suitable breeding or nesting habitat for willow flycatcher, including the mesquite thicket, is present anywhere within any of the study areas adjacent to any of the facilities. For these reasons, potential impacts to willow flycatcher are not anticipated to occur because of Project implementation and no further actions for willow flycatcher are recommended or anticipated to be required for this project.

A single Costa's hummingbird and an adult pair of vermilion flycatchers were observed adjacent to Wells 12 and 17 respectively. No suitable nesting habitat for either of these species was observed within any of the existing facilities or line alignments. Suitable nesting habitat for Costa's hummingbird is present within the buffer zone study areas adjacent to all of the facilities and suitable nesting habitat for vermilion flycatcher was observed within the buffer zone study areas of Wells 12 and 17 in adjacent park lands.

Potentially suitable nesting habitat for other special status bird species including loggerhead shrike, black-tailed gnatcatcher, crissal thrasher and LeConte's thrasher, is also intermittently present within the existing vegetation communities (i.e., quailbush scrub, mesquite thicket and saltcedar thicket) within the buffer zone study area adjacent to some of the facilities (i.e., Wells 11, 16 & 18). For these reasons, direct and indirect impacts to these species while nesting are possible. Pre-construction nesting bird surveys (also discussed below) are now recommended year-round to ensure that project activities do not impact nesting bird species, both within the existing facilities and within the buffer zone study areas adjacent to all of the existing facilities. With mitigation set forth below, potential impacts to nesting birds will be less than significant.

Potential Impacts to Other Nesting Birds

Active and inactive bird nests were observed adjacent to some of the facilities, including active cliff swallow nests beneath the Dillon Road Bridge adjacent to the Well 11 site. Several inactive stick nests were observed within the buffer zone adjacent to Well 17, one of which was located immediately outside the existing masonry wall on the north side where site expansion is proposed. Although no bird nests were observed on any of the existing structures within the existing facilities, some of the structures and even the highly disturbed and barren areas within all of the facilities could be used for nesting by a variety of common birds that are protected while nesting by the MBTA and FGC.

For these reasons, clearance surveys for nesting common bird species should be conducted at all existing facilities and within the adjacent buffer zone study areas of all of the existing facilities prior to the commencement of Project activities that could potentially impact nesting birds (i.e., operation of heavy equipment, structural demolition, vegetation clearance, grading, excavation, construction, etc.). With mitigation set forth below, potential impacts to nesting birds will be less than significant.

Potential Impacts to Roosting Bats

No bats or sign of bats (i.e., guano, staining) were detected anywhere within the study area, although potentially suitable roosting habitat for some special status bat species is present adjacent to all of the existing facilities. As noted above, sensitive bat species are known to roost in a variety of habitats, including man-made structures such as the underside of bridges and beneath roof tiles. Pallid bats are also known to roost in cliff swallow nests, which were detected adjacent to Well 11 and have the potential to occur on structures within and adjacent to all of the existing facilities.

Other sensitive bat species that could potentially occur in the planning area include Western mastiff bats and Western yellow bats. Pocketed free-tailed bats are known to roost in/on buildings and underneath roof tiles, which are intermittently present throughout the study area. Potential roosts are present within the buffer zone areas adjacent to all of the facilities, as is roosting and foraging habitat for pallid bat, western mastiff bat, western yellow bat and pocketed free-tailed bats within the buffer zone areas of all the existing facilities. Therefore, pre-construction clearance surveys for roosting bats are recommended at and within the buffer zone study areas at all of the existing facilities prior to the commencement of Project activities that could potentially impact roosting bats (i.e., operation of heavy equipment, structural demolition, vegetation clearance, grading, excavation, construction, etc.). With mitigation set forth below, potential impacts to roosting bats will be less than significant.

Consistency With The CVMSHCP

The Project study area is located within the boundaries of the Coachella Valley MSHCP but is well removed from any of that plans Conservation Areas. No known wildlife corridors, biological linkages, sand transport areas, core or modeled habitats are mapped on or adjacent to the Project study area. Although potentially impacted species are among the twenty-seven (27) covered under the CVMSHCP, additional actions are required (i.e., Avoidance, Relocation and Mitigation Plan, protocol presence/absence surveys and take avoidance [pre-construction] surveys. With the implementation of these mitigation measures, the Project's implementation will be consistent with the CVMSHCP.

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?

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impacts: No drainages considered jurisdictional by the USACE and/or CDFW were detected at or adjacent to the existing facilities. No canals, creeks, lakes, marshes, ponds, seeps, springs, streams or washes were observed anywhere within the study area. At least two manmade stormwater detention basins were observed within the study areas adjacent to two of the existing facilities, one was east of Well 12 and one was north of Well 20.

Existing manmade beneficial reuse ponds/overflow areas were also present in some of the facilities (Wells 17, 18 & 19). Some of these were cement or concrete lined while others appeared to be soft-bottomed. These onsite beneficial reuse ponds/overflow areas are closed systems within any visible connections to any drainages (natural or manmade). For these reasons, no impacts to jurisdictional waters of any kind are anticipated to occur as a result of project implementation.

Therefore, no impacts to riparian habitat or other sensitive natural community, including state or federally protected wetlands or riparian habitat, or jurisdictional waters of either the State or of the US are anticipated to occur as a result of Project implementation. Therefore, no impact avoidance, minimization and/or mitigation is recommended or expected to be required for jurisdictional areas. There will be no impacts to state or federal wetlands or jurisdictional waters.

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?

No Impacts: The Project study area is not located within or immediately adjacent to any of the CVMSHCP conservation areas. The nearest conservation area, the East Indio Hills Conservation Area, is located approximately 1.4 km (0.9 mi) northeast of the study area for Well 18 at its closest point. No known wildlife corridors, biological linkages, sand transport areas, core or modeled habitats are mapped on or adjacent to the study area. Therefore, impacts to any known wildlife corridors, biological linkages, sand transport areas, core or modeled habitats are not anticipated and thus no impact avoidance, minimization or mitigation measures pertaining to the protection of biological resources in or adjacent to conservation areas, known wildlife corridors, biological linkages, sand transport areas, core of modeled habitats are recommended or expected to be required for the implementation of this Project.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

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?

Less Than Significant With Mitigation: The City of Coachella is a signatory to and participates in the implementation of the Coachella Valley Multiple Species Habitat Conservation Plan. The CVMSHCP recognizes the importance of establishing and maintaining local water and sewerage facilities and makes provision for such maintenance even in Conservation Areas.[8] The nearest conservation area, the East Indio Hills Conservation Area, is located approximately 1.4 km (0.9 mi) northeast of the Project study area for Well 18 at its closest point. As a Permittee under the CVMSHCP, the City must ensure that the Project complies with all applicable terms and conditions of the CVMSHCP and Implementing Agreement (See Section 13.0 of the CVMSHCP Implementing Agreement). The Project would not conflict with any local, state, or federal policies or ordinances meant to protect biological resources. Compliance with the mitigation measures presented below, including compliance with all requirements of the CVMSHCP, will ensure that the Project will not conflict with any local policy, ordinance, or Habitat Conservation Plan. Therefore, with mitigation impacts will be less than significant.

[8] See Coachella Valley Multiple Species Habitat Conservation Plan, Section 7.3.1.1: Covered Operation, Maintenance, and Safety Activities within Existing Rights-of-Way or Easements.

Compliance with the provision of mitigation measures requiring pre-construction nesting bird surveys, regardless of the time of year, will ensure that the Project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state conservation plan. Impacts will be less than significant with mitigation.

3.4.3 Mitigation Measures

BIO-1 **Notification of the Presence of Burrowing Owls.** Burrowing owls were observed immediately adjacent to Well 11 and other suitable burrows and habitat were detected within the buffer zone study areas adjacent to Wells 11, 16, 17 and 18. Therefore, notification to CDFW is a requirement for CVMSHCP compliance. Communications and coordination with the CDFW (and CVCC) will help ensure that the appropriate actions are implemented for avoidance, minimization and mitigation for potential take of burrowing owls. It is advisable to initiate this notification and dialogue with the CDFW (and the CVCC) as soon as possible to avoid potential delays in the implementation of the required measures and anticipated project schedule.

BIO-2 **Burrowing Owl Management Plan.** To offset potential project-related impacts to burrowing owl and its habitat, a Burrowing Owl Management Plan shall be developed by a qualified biologist who has experience working with and/or managing burrowing owls on project sites. The Burrowing Owl Management Plan shall outline project- and/or well site-specific protection measures that are in accordance with CDFW's *Staff Report on Burrowing Owl Mitigation* (Staff Report; CDFG 2012).

The Burrowing Owl Management Plan shall also identify protection measures to be implemented should the species be found at the well sites or study areas where they are found to occur at any time of the year (i.e., migration periods, breeding/summer, and wintering). This may include protocol focused surveys for burrowing owl conducted in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012) in the areas containing suitable habitat, The Burrowing Owl Management Plan shall outline specific survey methods and timing in accordance with the Staff Report and shall include instruction on survey requirements should there be a lapse in construction or project activities.

Avoidance, minimization and/or mitigation methods outlined in the Burrowing Owl Management Plan shall include, but not be limited to, establishment of no-disturbance buffers around potential or occupied burrowing owl burrows, additional biological monitoring requirements during project activities, and any passive relocation or active translocation. Monitoring of the burrowing owls may also be required. Regular reporting timeframes and requirements for communication with CDFW shall also be clearly outlined in the Burrowing Owl Management Plan. The Burrowing Owl Management Plan shall be submitted to CDFW for review and subject to CDFW approval prior to the start of project ground-disturbing activities.

BIO-3 **Pre-construction Clearance Surveys for Costa's Hummingbird, Vermilion Flycatcher, Black-tailed Gnatcatcher, Crissal Thrasher, LeConte's Thrasher and Other Nesting Birds Protected under the MBTA and FGC.** Pre-construction clearance surveys for Costa's hummingbird, vermilion flycatcher, black-tailed gnatcatcher, crissal thrasher, LeConte's thrasher and other nesting birds protected under the MBTA and FCG shall be conducted by a qualified biologist prior to the commencement of initial project activities (i.e., vegetation removal, grading, structural demolition, operation of heavy equipment, etc.) that are proposed or

scheduled to occur. The nesting season for birds in the Coachella Valley is now considered to be year-round (January-December) therefore pre-construction clearance surveys for nesting birds are now required to be conducted prior to site disturbance at all times of the year to ensure that nesting birds protected by the MBTA and FGC are not impacted as a result of project implementation.

The pre-construction surveys for Costa's hummingbird, vermilion flycatcher, black-tailed gnatcatcher, crissal thrasher, LeConte's thrasher and other nesting birds shall include the project site and adjacent areas where project activities have the potential to cause distress to nesting birds and/or potential nest failure. The surveys shall be conducted no more than three (3) days prior to the start of ground-disturbing activities. If no active bird nests are found, vegetation removal, grading, ground disturbance, structural demolition, etc. may commence. If active bird nests are found, disturbance avoidance buffer zones (i.e., Environmentally Sensitive Areas [ESAs]) would need to be established, clearly marked in the field, observed and monitored. No work would be permitted within the ESAs until young have fledged as determined by a qualified biologist. While there is no established protocol for nesting bird ESAs, when consulted, the CDFW generally recommends avoidance buffers of about 30-91 m (100-300 ft) for unlisted songbirds and 152 m (500 ft) for listed songbirds and raptors (i.e., eagles, hawks, owls, and falcons). Once nesting is complete, young have fledged and/or the nests are determined to no longer be active by the monitoring biologist, work may commence within the ESAs.

BIO-4 **Pre-construction Clearance Surveys for Roosting Bats.** Prior to site disturbance, structural demolition, tree trimming or removal and/or ground-disturbing activities that may have the potential to affect roosting bat habitat (e.g., buildings with tile roofs, palm trees with untrimmed aprons, mesquite trees, etc.), a qualified biologist shall conduct a pre-construction clearance survey for special status roosting bat species that are known from the area. The survey should be performed no more than 14 days prior to the start of construction or site disturbance that has the potential to disturb roosting bats. If no active bat roosts or maternity colonies are found, structural demolition, vegetation trimming or removal and ground disturbance may proceed without additional restrictions related to special status roosting bat species.

All potential bat roosting habitat located in areas would have the potential to be affect by the project should be removed in a manner approved by the qualified biologist outside the maternity season (March 15-August 31). If bat roosts are identified, a no disturbance 100-ft (or as otherwise determined appropriate by the qualified biologist) ESA should be established, clearly marked in the field and observed by project personnel, until the biologist has confirmed that young are volant (able to fly) and the roost is no longer active. Also, if bat roosts are found, a bat avoidance and mitigation plan would likely be required. Removal of the roost(s) shall only occur when the mitigation plan has been approved by the appropriate resource agencies (e.g., City, CDFW, CVCC) and only when bats are not present in the roost.

If avoidance is not feasible, coordination with the appropriate resource agencies should occur to determine appropriate mitigation measures.

3.5 CULTURAL RESOURCES

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☐	☒	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☒	☐	☐
c)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Sources: Identification and Evaluation of Chromium 6 Well Retrofit Project, prepared by CRM TECH. August 21, 2026; Torres Martinez Tribe Land Status Map accessed June 2026; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.5.1 Setting

Background

The Coachella Valley has long been occupied by the Cahuilla people, a Takic-speaking group of hunters and gatherers. Anthropologists study the Cahuilla as three distinct groups based on geographic setting: the Pass Cahuilla of the San Gorgonio Pass – Palm Springs area; the Mountain Cahuilla of the San Jacinto and Santa Rosa Mountain and the Cahuilla Valley; and the Desert Cahuilla of the eastern Coachella Valley. Little population data for the Cahuilla prior to European contact is available but estimates range from 3,600 to 10,00 persons. The Cahuilla population was decimated as a result of the introduction of European diseases in the 19th century. Today, Native Americans of Pass or Desert Cahuilla heritage are mostly affiliated with one or more of the Indian reservations in and near the Coachella Valley, including Torres Martinez, Augustine, Cabazon, Agua Caliente, Twenty-Nine Palms and Morongo (CRM TECH 2026).

The Euro-American settlement of the Coachella Valley began in the 1870s with the establishment of railroad stations along the Southern Pacific Railroad. With the development of underground water sources such as artesian wells, and eventually the completion of the Coachella Canal in 1948-1949, farming became the dominant economic activity in the area. The date palm was introduced to the valley around the turn of the 20th century and became the agricultural staple for the region by the late 1910s. Starting in the 1920s, resorts and other tourism-related industries made the Coachella Valley into a popular winter destination.

The City of Coachella traces its roots to a siding on the Southern Pacific Railroad, known originally as Woodspur. In 1901-1902, a townsite was developed around the siding, and a new name for the locale, Coachella, was coined from Coahuilla and Conchilla, two names that had been used alternatively for the Coachella Valley (Gunther 1984:121-122). The Coachella post office was established in late 1901, and the plat of the townsite was filed by the Coachella Land and Water Company the next year. The town was incorporated in 1946, the 12th community in Riverside County to do so. Since then, it has grown into a city of some 30 square miles, with a population of more than 43,000. (CRM TECH 2026)

No portions of the Project Area of Potential Effects (APE) occur within the reservation lands of the Torres Martinez Desert Cahuilla or any other tribe. The cultural resources assessments prepared for the Project comply with Section 106 of the NHPA. The purpose of these studies was to provide CWA, the SWB and other responsible and cooperating agencies with the necessary information and analysis to determine whether the undertaking would have an adverse effect on any "historic properties," as defined by 36 Code of Federal Regulations (CFR) 800.16(l), or "historical resources," as defined by California Public Resources Code (PRC) §5020.1(j), that may exist in the APE.

Resource Setting

Intermittently and over several centuries, centuries, Native Americans in the region were greatly influenced by the periods of inundation and subsequent desiccation of Holocene Lake Cahuilla, an ancient freshwater lake that repeatedly filled the Salton Basin over a period of at least 2,300 years before the 1730s A.D. (Rockwell et al. 2022). The shoreline of the lake during its last high stand around 1731-1733 coincided roughly with the present-day 42-foot AMS contour (*ibid.*; Wilke 1978; Waters 1983). Because of the many natural resources offered by the lake, the former lakeshore would be a favored setting for aboriginal settlement and is thus highly sensitive for prehistoric archaeological remains today. In contrast, locations at the bottom of the lake during its high stands are generally considered to be of lesser archaeological sensitivity. Located roughly 60-130 feet below the shoreline in elevation, the Project APE would be fully submerged by Holocene Lake Cahuilla during the last high stand.

The CWA Cr6 Project includes the equipping and retrofitting of seven (7) existing municipal wells with water treatment and management facilities to comply with the State of California's new Chromium-6 drinking water standard. In essence, the Project is a state-mandated mitigation program. In addition to installing additional equipment and water storage to meet new state requirements, the Project includes the extension of backwash water discharge lines of varying lengths and within existing street rights of way to connect to the City's existing sanitary sewer collection system. The Project also includes upgrading of three segments of sewer main within existing paved streets to accommodate additional flows from well water treatment. All areas potentially impacted by the Project have been previously disturbed as part of past well construction, graded and paved public streets and otherwise disturbed lands.

Records and Literature Research

In June of 2026, an historical/archaeological resources records search was conducted at the South Coastal Information Center (SCIC) of the California Historical Resources Information System. Located on the campus of San Diego State University, the SCIC is the designated repository of cultural resources records for Riverside County. During the records search, Project archaeologists examined the SCIC's digital maps, records, and databases for previously identified cultural resources and existing cultural resources reports within a one-mile radius of the Project APE. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Riverside County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

Historical background research included published literature in local and regional history, U.S. General Land Office (GLO) land survey plat maps dated 1856, USGS topographic maps dated 1904-1979, and aerial/satellite photographs taken in 1953-2026. The historic maps are available at the websites of the USGS and the U.S. Bureau of Land Management (BLM), and the aerial/satellite photographs are available at the Nationwide Environmental Title Research (NETR) Online website, through Google Earth software, and from the Geospatial Collection of the University of California, Santa Barbara (UCSB).

As a part of the research procedures, Project archaeologists also conducted geoarchaeological analysis to assess the Project APE's potential for the deposition and preservation of subsurface cultural deposits from the prehistoric period, which cannot be detected through a standard surface archaeological survey. Sources consulted for this purpose included primarily topographic and geologic maps pertaining to the project vicinity. Findings from these sources were used to develop a geomorphologic history of the Project APE and address geoarchaeological sensitivity of the vertical APE.

Geoarchaeological Analysis

Archaeologists have studied the Coachella Valley and greater Salton Trough for many decades, and a large number of historic and cultural resource surveys and studies have been conducted. The application of geoarchaeological analysis provides further context for determining the likely presence of these resources. As summarized in the Project cultural resources report, the Project APE is situated upon sediments identified as *Qa*, or Quaternary alluvial sand and clay of valley areas, and *Qc*, or clay of playa lakes that are light gray and generally alkaline with some micaceous silt (Dibblee 2008). The abundance of the *Qc* sediments confirms that the APE was a part of the lakebed for Holocene Lake Cahuilla during the last high stand in the 1730s.

Before the final desiccation of Lake Cahuilla, long-term habitation by the Native population concentrated along the lakeshore, some 60-130 feet higher in elevation than the APE. After Lake Cahuilla vanished, the focal points of habitation shifted to the remaining water sources, including the Whitewater River (Coachella Valley Stormwater Channel) and the occasional walk-in wells known as "Indian wells." The Whitewater River lies at least a half-mile from the APE, and no "Indian wells" are known to have been located in the immediate vicinity of any portion of the APE (see Appendix C, Fig. 6). More importantly, since extensive ground disturbances in the past have left little vestige of the native landscape within the APE boundaries, the likelihood of encountering any intact subsurface archaeological deposits of prehistoric origin within the vertical extent of the APE is considered to be relatively low. Therefore, the vertical APE is assigned a generally low archaeological sensitivity.

Native American Consultations

In June 2026, Project archaeologists submitted a written request to the State of California's Native American Heritage Commission (NAHC) for a records search in the commission's sacred lands file and notified the nearby Torres Martinez Desert Cahuilla Indians of the upcoming archaeological fieldwork which they participated in. Per NAHC's recommendations, Project archaeologists further contacted 12 Native American tribes in the region, both in writing and by telephone, between June 25 and July 20, 2026, to solicit local Native American input regarding any potential cultural resources concerns over the proposed undertaking. Responses from the Native American representatives are in Appendix 2 of the Project cultural resources report and summarized below.

The NAHC stated that the requested sacred lands record search yielded negative results regarding Native American cultural resources within the APE but recommended that local Native American groups be contacted for further information. For that purpose, the commission provided a list of potential contacts in the region. Project archaeologists contacted all 12 tribes on the NAHC referral list and follow-up telephone solicitations were carried out in July 2026.

As of late August 2026, five tribes responded in writing, and one provided comments via telephone. Among them, the Soboba Band of Luiseño Indians deferred to other tribes in closer proximity to the APE. The Augustine Band of Cahuilla Indians stated that the Tribe was not aware of any specific cultural resources within the APE but asked that if any cultural resources were discovered during the project, the NAHC be contacted immediately.

The Torres Martinez Desert Cahuilla Indians stated that the APE was a part of the Tribe's prehistoric settlement pattern, Desert Cahuilla traditional Land Use, and Ancient Lake Cahuilla Receding Shoreline areas of concern. The Torres Martinez requested that Phase I survey and Phase II testing be implemented prior to the undertaking, archaeological and Native American monitoring be required during ground-disturbing activities, and that all cultural resources documentation for the undertaking be reviewed by the Tribe. In addition, the tribe requested further consultation during the rest of the project planning process.

The Agua Caliente Band of Cahuilla Indians identified the APE as a part of the Tribe's Traditional Use Area and stated there were Tribal Cultural Resources and village sites within a one-mile radius of each Project location although no information was provided. The Tribe requested to review all cultural resource documentation generated in connection with the undertaking, including records search results.

The Twenty-Nine Palms Band of Mission Indians determined that the APE was within the Chemehuevi Traditional Use Area but that there were no known cultural resources within the APE. The tribe's representative requested that the lead agencies follow specific conditions for all cultural resources on any development plans or entitlement applications.

AB-52 Consultations

Forthcoming: Tribal consultation pursuant to Assembly Bill 52 has been initiated and input from consultations will be summarized in the Final IS/MND.

Field Surveys

In June 2026, Project archaeologists carried out the field surveys of the Project APE with the assistance of Paul Mirelez, Cultural Resource representative from the Torres Martinez Desert Cahuilla Indians. The survey was completed at an intensive level by walking a series of parallel north-south transects at each Project location at three- to five-meter (approximately 10- to 30-foot) intervals. In this way, the ground surface in the entire APE was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic period (i.e., 50 years or older). Depending on the presence or absence of pavement, gravel, or other ground cover, and on the density of vegetation growth, visibility of the native ground surface varied from very poor (0-2%) to excellent (90-100%). In light of the extensive ground disturbance that has occurred at all seven Project well locations, ground visibility is not considered a major factor in the survey process.

Research Results

SCIC records show that portions of the Project APE were covered by eight previous cultural resource studies completed between 1985 and 2004 (see Appendix C, Figs. 5a, 5b), but no cultural resources were previously recorded within the Project APE boundary at any of the Project locations. Within the one-mile scope of the records search, SCIC records identify a total of 144 previous studies on various tracts of land and linear features, attesting to the rapid development of the Coachella area in recent decades. In all, more than half of the land within the scope of the records search has been surveyed, resulting in the identification of 151 historical/archaeological sites and isolates—i.e., localities with fewer than three artifacts—within the one-mile radius.

Among these previously recorded cultural resources, 40 sites and 25 isolates were of prehistoric—i.e., Native American—origin, while 10 sites and 2 isolates contained both prehistoric and historic-period elements. The sites were typical of prehistoric cultural remains found in the Coachella Valley, including ceramic, lithic, and faunal artifacts, hearths, habitation debris, and cremation remains. These sites were scattered throughout the valley floor but showed some notable concentrations, such as along the Whitewater River. The prehistoric isolates were predominantly groundstone, flaked-stone, and ceramic artifacts.

The other 72 sites and 2 isolates dated solely to the historic period. The sites consisted mainly of buildings but also included infrastructure features such as the Southern Pacific (now Union Pacific) Railroad, the Coachella Canal, the Coachella Valley Stormwater Channel, and various roads. Other site types included refuse scatters, structural foundations, a date palm garden, and a cemetery. None of these sites or isolates were found within or immediately adjacent to the Project APE. Therefore, the proposed undertaking has no potential to affect their current condition and integrity.

Regulatory Setting

Section 15064.5(a)(3)(D) of the CEQA Guidelines defines archaeological resources as any resource that "has yielded, or may be likely to yield, information important in prehistory or history." These resources document evidence of past human endeavors, and can include tools, utensils, carvings, fabric, and building foundations. Section 15064.5 of the CEQA Guidelines defines a historic resource as a resource that is: listed in, or determined to be eligible for listing in the California Register of Historical Resources (California Register):

1) included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code); or
2) identified as significant in a historical resource survey (meeting the criteria in Section 5024.1(g) of the Public Resources Code).

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register.

3.5.2 Discussion of Impacts

a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

Less Than Significant. As noted above and in the Project historical and cultural resources surveys and report, no sites, buildings, or other structures of historical significance are located within the Project APE. The historical and cultural resources study concluded that no "historic properties" or "historical resources" are present within the APE and that the extensively disturbed subsurface sediments in the various APE components appear to be relatively low in sensitivity for potentially significant archaeological remains. Accordingly, the Project archaeologists conclude that "No "historic properties" or "historical resources" will be affected by the proposed undertaking" (CRM TECH 2026). Therefore, the Project will have a less then significant impact on such resources.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

c) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact with Mitigation. As noted above, the Project APE encompasses lands that are within the existing well sites and paved and otherwise disturbed road rights-of-way. The seven existing domestic water wells, associated pipes and valves, supporting structures, water tanks, and/or retention basin, and the ground at all seven well locations is highly disturbed, typically with imported gravel on the surface. No buildings, structures, objects, sites, features, or artifact deposits more than 50 years of age were found within or adjacent to the APE boundary at any of the seven locations.

Based on the extensive number and breadth of previous historical and archaeological resources studies conducted in the Project area, the well-documented geoarchaeological constraints to locating sensitive resources in the Project APE, the potential for sensitive resources is well understood. Furthermore, Native American input, including participation in Project site surveys, did not identify any tribal cultural resources in the immediate vicinity of the Project APE, and no notable cultural features were known to be present within the Project APE boundaries during this historic period. Based on these findings, and in light of the significance criteria listed in the Project cultural resources report, the study concludes that no archaeological resource pursuant to CEQA § 15064.5 are present within the APE.

Evidence of human remains, including cremations or skeletal remains were not encountered anywhere within or near the Project APRE during resource surveys. Evidence of archaeologically sensitive burials or cremations have been identified elsewhere in the Coachella Valley and have frequently been associated with the shoreline of ancient Lake Cahuilla, village sites, the mouth of canyons and on alluvial fans. The subject ancient lake bottom underlying the Project APE is not a typical locality for Native American cremation sites. Nonetheless, the potential, although considered to be very low, of encountering human remains cannot be ruled out and mitigation measure CUL-2 will further ensure that potential impacts are less than significant.

3.5.3 Mitigation Measures

CUL-1 If buried cultural materials are inadvertently discovered during the undertaking, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the find.

CUL-2 Pursuant to State of California Health and Safety Code Section 7050.5, if human remains are encountered during the undertaking, no further disturbance should occur in the area until the Riverside County Coroner has made the necessary findings as to origin. If the Coroner determines the remains to be Native American, further consultation should be undertaken with the "Most Likely Descendant" identified by the Native American Heritage Commission (NAHC) to formulate the proper treatment of the remains under the provisions of PRC §5097.98.

3.6 ENERGY

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Sources: Coachella General Plan (last amended in 2015); Air Quality/Greenhouse Gas (GHG) Analysis prepared by Terra Nova Planning & Research, Inc. on California Emissions Estimator Model (CalEEMod) Version 2022.1.0, August 2026; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.6.1 Setting

Sources of energy include primary and secondary sources. Primary energy, which is the energy contained in raw fuels, include fossil fuels (oil, coal and natural gas), nuclear, and renewable sources such as wind, solar, geothermal, and hydropower. Secondary sources of energy, which refers to energy that has been converted or stored, include electricity, heat, biofuels, hydrogen, and gasoline.

The Project's demand for energy is limited to additional electric power demand that will be created by the use of additional pumps and related equipment to accomplish the requisite water treatment and backwash disposal. Therefore, the following discussion is limited to electrical energy and the Projects demand for this power source.

California Electricity Sources
Currently, most electricity is generated by harnessing power from one of the above-referenced sources to turn a dynamo, or through the direct conversion of solar energy to electricity via the photovoltaic process. The California electric grid provides electricity from a variety of sources, including those mentioned above. Natural gas is the state's largest single energy source, providing approximately 37.9% of the total electric power mix in 2021. Renewable energy sources, such as wind, solar, geothermal, and biomass, provided approximately 33.6% of California's energy mix in 2021. California thermal and non-renewable sources, including natural gas, as well as nuclear, large hydro, and coal, contributed 66.4% of the power mix in 2021.[9]

According to the California Energy Consumption Database, state-wide electricity consumption in 2021 was 280,738.38 million kWh.[10] The 2021 Integrated Energy Policy Report (IEPR) Energy Demand Forecast projects that state-wide electricity consumption could reach 340,000 million kWh by 2030.[11]

[9] California Energy Commissions, 2021 Total System Electric Generation,https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation.

[10] Ibid.

[11] Based on the mid-case electricity consumption forecast in the California Energy Demand Forecast, California Energy Commission Final 2021 IEPR Volume IV, p.21.

In addition to utility-provided electrical power, many homes and business are installing rooftop solar and storage. New construction and renovation is required to conform to the state's strict building code, as set forth in the Title 24 regulations, which further serves to ensure that energy resources are used economically and wisely. These regulations require that all new single family residential and commercial buildings install solar photovoltaic systems. Both the regulatory environment and the economy have moved toward greater energy efficiency and reliance on non-polluting renewables sources.

IID Electricity Sources
The Imperial Irrigation District (IID) is California's sixth-largest electrical utility, and its third largest public power utility. IID has been incrementally increasing the amount of renewable energy sources in its generating portfolio. For 2021, the IID Power Content Label[12] indicates that natural gas (35.6%) comprised its largest source of energy used to generate electricity. This is followed by "eligible renewables" at 40%, nuclear at 3.5% and large hydroelectric at 4.8%. Eligible renewables were led by "solar", which generated 12.3% of IID power in 2021, followed close by geothermal which provided 12.1%.

Electricity
The Project site is located within the electric power service boundaries of IID. IID is California's sixth-largest electrical utility, and its third largest public power utility. IID began generating and distributing electricity in 1936, using small hydropower units it installed along its own system of irrigation canals. Today it provides electricity and water to customers in Imperial County and parts of San Diego and Riverside Counties and has facilities in the Project area.

Alternative Energy
The IID provides electric power to the Project area. IID is California's sixth-largest electrical utility, and its third largest public power utility. IID has been incrementally increasing the amount of renewable energy sources in its generating portfolio. For 2021, the IID Power Content Label[13] indicates that natural gas (35.6%) comprised its largest source of energy used to generate electricity. This is followed by "eligible renewables" at 40%, nuclear at 3.5% and large hydroelectric at 4.8%. Eligible renewables were led by "solar", which generated 12.3% of IID power in 2021, followed close by geothermal which provided 12.1%.

3.6.2 Discussion of Impacts

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

[12] Imperial Irrigation District 2021 Power Content Label; http://www.iid.com/energy/renewable-energy/power-content - label

[13] Imperial Irrigation District 2021 Power Content Label; http://www.iid.com/energy/renewable-energy/power-content - label

Less Than Significant Impact. The Project area is located within the electric power service boundaries of IID. IID has overhead, high-voltage transmission and power distribution lines throughout the City and is currently providing electrical power to all of the CWA wells. IID also has transmission lines along the west side of Harrison Street and lower voltage distribution lines along the east side of Tyler Street.

The Project will generate both temporary (construction) and operational energy demand. While some of the construction equipment (primarily hand tools) used to install Project equipment and faculties may be electric powered, liquid petroleum fuels (diesel and gasoline) will also be used to power heavy construction equipment, including haul truck, cranes, compactors, etc. Based on inputs provided by the Project engineers, the following construction-related energy demand is summarized.

A list of the type and number of pieces of construction equipment needed to construct the Project were developed and reviewed by CWA and project engineers. Based on this input, operational parameters and fuel demand were estimated for the aggregate of the various construction components, including site preparation, grading and excavation, building and facilities construction, paving and pipeline installations. On this basis, an estimated 19,522 gallons of diesel fuel will be used to buildout the Project.[14]

Direct construction-related energy demand comes from the operation of construction equipment and off-site manufacturing of construction materials. While material manufacturing is out of the scope of Project analysis, the contractor will be required to comply with SCAQMD rules including specific standards that limit vehicle and equipment idling times.

The Design Report for the proposed Project provides a breakdown and projection of new operational energy demand that will be created by the Project. In the aggregate and across all seven well sites, once installed the Cr-6 treatment systems are project to increase electrical demand by 605,466 kWh annually, roughly the annual electric power demand of 50 homes in the Coachella Valley.[15] CWA's Cr-6 water treatment project has been developed to provide the most cost-efficient reductions in Cr-6 levels in the City's drinking water. The most modern and efficient pumps and motors will be used, as costs associated with the operation of the mandated treatment systems are passed on directly to the consumer.

No wasteful, inefficient, or unnecessary consumption of energy resources would occur. The Project will not interfere with any state or local plan that promotes renewable energy or energy efficiency. Impacts on energy resources will be less than significant.

3.5.3 Mitigation Measures

None required.

[14] The aggregate fuel consumption rate for all equipment is estimated at 18.5 horsepower hour per gallon (hp-hr-gal.), per the California Air Resource Board's (CARB's) Carl Moyer Program Guidelines (2017), Table D-21 Fuel Consumption Rate Factors. (The Carl Moyer Program Guidelines Volume I: Program Overview, Program Administration and Project Criteria, approved by the California Environmental Protection Agency Air Resource Board on April 27, 2017. https://ww2.arb.ca.gov/sites/default/files/2020-06/2017_cmpgl.pdf)

[15] Chromium-6 Water Treatment Facilities Report (EIR), prepared by the Coachella Valley Water District. 2016.

3.7 GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
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 wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

Sources: Coachella General Plan (2015); Google Earth Pro (7.3.4.8573); Technical Background Report to the Safety Element, Coachella General Plan, 2014; Web Soil Survey. U.S. Department of Agriculture. Accessed August 2026. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx; Land Subsidence, Groundwater Levels, and Geology in the Coachella Valley, California, 1993–2010, USGS,2014; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.7.1 Setting

Geology

The Coachella Valley is bounded by the San Bernardino Mountains in the northwest, the San Jacinto and Santa Rosa Mountains to the west and south, and the Little San Bernardino Mountains in the northeast. The valley makes up the northwestern portion of the Salton Trough, a tectonic depression which extends from the San Gorgonio Pass in the northwest, southeast towards the Gulf of Mexico (U.S. Geological Survey; Geology of the Salton Trough; Alles 2011). The Salton Sea, a terminal lake sustained by irrigation runoff, is located 12.5± miles southeast of the Project area. The Salton Trough and most of the valley's geologic composition is primarily formed by the San Andreas Fault Zone, which runs through and along the northeastern portion of the valley.

The tectonics of the San Andreas Fault, as well as of the nearby San Jacinto and Elsinore Faults, produce a variety of seismic hazards in the valley, including ground rupture, ground shaking, liquefaction, slope instability, and expansive soils. Together, the San Andreas and San Jacinto faults are considered to be the most seismically active fault zones in Southern California. In 1972, the Alquist-Priolo Earthquake Fault Zoning Act established regulatory zones around active faults in California to reduce the hazards associated with surface fault rupture. The nearest Alquist-Priolo Earthquake Fault Zone is the San Andreas 1± mile northeast of Well 18, while all other Project sites are 2.5± miles or more from the nearest AP zone. (California Department of Conservation California Earthquake Hazards Zone Application 2026).

Soils Wind Erosion

The Project area and surrounding lands are identified as having a high potential for strong winds and associated soil erosion. When barren sand or sandy loam soils are disturbed and exposed to high wind in the absence of moisture, wind erosion can occur. While soil can be blown away at virtually any height, the majority (over 93 percent) of soil movement takes place at or within one meter (3 feet) of the ground surface. Lands in the Project area are range from fully urban to active and fallow agricultural lands. Removal of surface vegetation and its stabilizing effects cause disruption of soil and can lead to increased wind erosion. While predominant winds are from the San Gorgonio Pass and the northwest, the area is also subject to seasonal off-shore winds (Santa Ana winds) that result from high pressure to the north and east.

Soils

The episodic flooding of major drainages, such as the Whitewater River, and strong winds from the San Gorgonio Pass transport and deposit sands and gravel on the floor of the Coachella Valley. The Natural Resources Conservation Service Web Soil Survey Map identifies several soil types in the vicinity of the Project site. Gilman fine sandy loam (GbA and GdA, Gilman silt loam (GeA) and GfA, Indio very fine sandy loam (Is and Ir). Gilman soils are very deep, well drained soils found on flood plains and alluvial fans. Indio soils are very deep, well to moderately well drained soils, formed in alluvium from mixed rock sources. It is typically found on alluvial fans, lacustrine basins, and flood plains. (USDA, NRCS 2026a).

Paleontological Resources

Paleontological resources are the remains or traces of prehistoric plant and animal life, including fossils and the sedimentary rock formations in which they occurred. Rock and soil type may be used as an indicator for the likelihood of the presence of paleontological resources. According to the Coachella General Plan EIR (Coachella 2014) and Riverside County EIR for the General Plan Update (Riverside

County 2015), the Project sites are located in an area with paleontological sensitivity ranging from low to high, and primarily associated with the occurrence of bivalves such as the freshwater clams (*Anodonta californiensis),* gastropods (*Amnicola longinqua*, *Tryonia protea*, and *Helisoma trivolvis), and* ostropods *(Cypridopsis vidua)* which are common throughout the Salton Sea lacustrine basin.

3.7.2 Discussion of Impacts

a.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.

No Impact. No portion of the Project sites or alignments are located within or near an Alquist-Priolo Earthquake Fault Zone. The nearest active fault zone is the San Andreas Fault Zone is located approximately 1± miles northeast of the Well 18 site and the balance of the Project sites are located 2.5± miles or more from the closest active fault. There are no known active faults in the immediate vicinity of the Project area and there is no significant potential for earthquake-induced ground rupture at these locations. No impact will result from implementation of the proposed Project.

a.ii) Strong seismic ground shaking?

Less Than Significant Impact. The Project planning area is in a seismically active region where earthquakes originating on local and regional faults can produce severe ground shaking. Several known active and potentially active earthquake faults pass through and near the Coachella Valley, including the San Andreas Fault, San Jacinto Fault, and Elsinore Fault, which are all capable of producing significant earthquakes with a magnitude of 6.7 or greater. To reduce impacts associated with ground shaking on people, buildings and essential infrastructure, the City implements the latest seismic safety design standards outlined in the California Building Code (CBC). The 2025 edition of CBC is currently in effect. Engineered design and motion-resistant construction methods to be implemented at the Project sites will help minimize infrastructure damage in the event of a strong earthquake. There is a limited amount and scale of new elevated storage associated with this Project. Adherence to the CBC and related seismic design standards will further ensure that impacts to the Project from ground shaking will be less than significant.

a.iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefaction occurs primarily in saturated, loose, fine- to medium-grained soils in areas where the groundwater table is within approximately 50 feet of the surface. The Project vicinity is identified as an area that ranges from low to high liquefaction susceptibility due to shallow groundwater, and susceptible soils and potential for high ground (Technical Background Report for the Coachella General Plan, ESI, 2014). Distance from areas of active faulting may serve to reduce the liquefaction potential in these areas. In accordance with the Seismic Hazards Mapping Act (SHMA), all projects within a State-delineated Seismic Hazard Zone for liquefaction must be evaluated by a Certified Engineering Geologist and/or Registered Geotechnical Engineer (typically a civil engineer with training and experience in soil engineering). Adherence to the CBC and CWA's design requirements will further ensure that impacts to the Project from liquefaction will be less than significant.

a.iv) Landslides?

Less Than Significant Impact. The Project planning area has generally flat topography, with a mild gradient consistent with the area-wide agricultural drain system that directs flows to the southeast. This topography is not prone to landslides or rockfall hazards. Lateral spreading is the tendency of unstable or liquefied soil to move, either downslope or toward an open face such as a channel. Lateral spreading is not a likely occurrence in the Project planning area because it is relatively flat and potentially associated impacts will be less then significant.

Site development may result in temporary excavations varying up to a depth of approximately 15 feet but generally less than 10 feet in depth. Based on the physical properties of Project area soils, temporary excavations exceeding 4 feet in height could collapse and therefore shall be cut back based on the stability of trenches and temporary slopes. Applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Healthy Act of 1970, and the Construction Safety Act shall be applied during Project construction. Given the relatively flat topography of the Project sites, the risk of landslide, lateral spreading, collapse, or rockfall hazards is less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. The proposed well improvements and discharge and sewer line extensions will be installed in and adjacent to already disturbed and developed well sites and along paved/unpaved streets. The Project well improvements are planned on a previously graded and developed site with limited addition of lands to Well 16, that are graded, stabilized and devoid of most vegetation. Construction is expected to require incremental excavating and pouring of concrete pads, trenching, facilities installation, backfilling and, in some cases, repaving of asphalt along individual discharge/sewer line segments. Associated incremental site disturbance could result in a minimal loss of topsoil but primarily within existing well sites and road rights of way. The Project will be required to implement measures to control fugitive dust (see Air Quality, Section 6). A dust control plan will be approved by CWA prior to the initiation of construction and will ensure that soil erosion is avoided or minimized.

In addition, through the CWA bid package and process the contractor will be required to describe and implement Best Management Practices (BMPs) associated with runoff from the Project site. The Site Design and Source Control BMPs imposed by the CWA through bid package compliance, conditions of approval or permit conditions will ensure that erosion resulting from storm flows or construction area watering are controlled on and off site. Overall impacts associated with soil erosion and loss of topsoil will be less than significant.

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

Less Than Significant Impact. The Project area is essentially flat. Underlying soils consist of Gilman and Indio soils series. They include Gilman fine sandy loam (GbA and GdA, Gilman silt loam (GeA) and GfA, Indio very fine sandy loam (Is and Ir). Gilman soils are very deep, well drained soils found on flood plains and alluvial fans. Indio soils are very deep, well to moderately well drained soils, formed in alluvium from mixed rock sources. As described above, the site has moderate to high liquefaction susceptibility due to shallow groundwater, susceptible soils and potential for strong ground shaking. The Project sites may also be susceptible to lateral spreading, which is associated with the shallow water table.

Above ground structures will include filter arrays, in some cases on-site backwash tanks, and pumps and equipment buildings. As noted above, proper foundation and seismic design required by the CBC and CWA design guidelines ensure that potential impacts are less than significant.

According to the General Plan Technical Background Report to the Safety Element, documented subsidence zones are associated with groundwater extraction in portions of the Coachella Valley. According to recent subsidence analysis conducted by the U.S. Geological Survey (U.S. Geological Survey [USGS] 2014) the Project area lies east and outside areas of significant ground subsidence. Project impacts associated with unstable soils and geologic units are expected to be less than significant.

The Project sites all occur on essentially flat terrain and are located well removed from landslide and rockfall hazard areas to the southwest (USGS 2014). The Project planning area consists of, and is surrounded by, relatively flat terrain; therefore, no impacts associated with on- or off-site landslides or rockfalls are anticipated. Impacts will be less than significant.

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

Less Than Significant Impact. Expansive soils are those that have 'swell' potential upon contact with water, and in the valley are generally associated with clay deposits. The Gilman fine sandy loam (GbA and GdA), Gilman silt loam (GeA and GfA), Indio very fine sandy loam (Is and Ir) present at and along the Project well sites and line alignments may contain silty clay loam beyond eight inches below ground surface. However, the majority of the Project will require a typical trench depth of 10 feet or less, with a few segments at up to 15± feet in depth. The swelling clays map published by USGS identifies the Project area as data insufficient to indicate clay content of unit and/or swelling potential of clay. Soils at the well and associated tank sites will be further evaluated prior to ground preparation and construction to ensure that the facilities and pipelines will not be adversely impacted by expansive soils. Final site and facilities engineering, and adherence to applicable State and City codes and regulations, impacts regarding expansive soil are expected to be less than significant.

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 wastewater?

No Impact. The proposed Project is limited to the installation of domestic water treatment facilities at seven existing City wells, discharge lines from these facilities, and upgrading of three sewer line segments. The Project does not involve development that would require new or altered septic systems. The Project will not result in new septic tanks or alternative wastewater disposal systems. No impact will occur.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact. According to the County General Plan (Figure OS-8) and Land Information Service, the Project area has undetermined potential or high sensitivity for paleontological resources. The Project site consists of developed well sites, paved and unpaved roadways and otherwise disturbed lands, and is not known to contain unique paleontological or geologic features. The possible occurrence of fossilized bivalves has been well documented and no associated surveys or monitoring are

required. The Project sites have been heavily disturbed from above and underground infrastructure installations, and before urbanization past and ongoing agricultural activities. Any Project-related impact on unique paleontological resources or a unique geologic feature is expected to be less than significant.

3.7.3 Mitigation Measures

None required.

3.8 GREENHOUSE GAS EMISSIONS

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Generate gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b)	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Sources: City of Coachella Climate Action Plan, April 2015; Terra Nova CalEEMod Version 2022.1 model run. SCAQMD Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans, 2008; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.8.1 Setting

Certain gases, known as greenhouse gases (GHGs), impact the earth's surface temperature by trapping heat, similar to the function of glass in a greenhouse. GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. GHGs are produced through natural and human processes, but emissions from human activity have significantly increased since the industrial revolution. This increase in emissions has led to the intensification of the greenhouse effect, and thus the overall warming of the earth's climate.

The State of California has taken a leading role to curb GHG emissions and has developed laws and regulations to reduce these emissions. State legislation and regulations call for better integrated land use planning and curtailing energy production away from nonrenewable sources and toward new renewable sources, such as solar and wind. California SB 375 in part implements greenhouse gas reduction targets set forth in AB 32 and encourages regional land use planning to reduce vehicle miles traveled; it also requires jurisdictions to adopt a sustainable communities strategy. The California Air Resources Board continues to draft regulations to implement the Scoping Plan.

State law mandates that all cities decrease their GHG emissions to 1990 levels by the year 2020. The 2022 Scoping Plan provides CARB's update to the 2017 Plan. Pursuant to SB 32, the plan sets forth the state's plan to stay on track towards reducing GHG emissions by at least 40 percent below 1990 levels by 2030. The 2022 Plan Update expands on earlier targets, establishing a new goal of reducing GHG emissions to 85 percent below 1990 levels by 2045. Additionally, the 2022 Plan establishes a path for the state to achieve carbon neutrality by 2045 through technologically feasible, cost-effective means.

The City of Coachella completed its first Greenhouse Gas Inventory in conjunction with the Climate Action Plan (2015) and 2035 General Plan update. The plan guides City policies and planning to achieve energy efficiency and comply with state mandates on emission reduction. The citywide GHG inventory determined that 2005 emissions totaled 312,628 metric tons CO_2e (MT CO_2e), which grew to 382,787 MT CO_2e (8.2 MT CO_2e per service population) in 2010. The Coachella Climate Action Plan (CAP) set a 49 percent reduction target from the 2010 per service population emission level by 2035, or 4.2 MT CO_2e per capita per year.

GHG Thresholds

SCAQMD has developed a tiered approach for evaluating the significance of GHG emissions under CEQA. A project's GHG emissions are generally considered significant if it cannot demonstrate compliance with at least one of the following tiers:

Tier 1: Is there an applicable exemption?
Tier 2: Is the project compliant with a greenhouse gas reduction plan that is, at a minimum, consistent with the goals of AB 32?
Tier 3: Is the project below an absolute threshold (10,000 $MTCO_2e$/year for industrial projects; 3,000 $MTCO_2e$/year for residential and commercial projects)?
Tier 4: Is the project below a (yet to be set) performance threshold?
Tier 5: Would the project achieve a screening level with off-site mitigation?

The City currently uses this approach in considering project-specific greenhouse gas emissions under CEQA. The analysis provided below is based on this tiered approach.

3.8.2 Discussion of Impacts

a) Generate gas emissions, either directly or indirectly, that may have a significant impact on the environment?

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

Less than Significant Impact. CalEEMod Version 2022.1 was used to quantify air pollutant emission projections, including greenhouse gas emissions (see detailed output tables in Appendix A). The buildout assumptions input to CalEEMod are detailed Section 3.3, Air Quality. The proposed Project will primarily generate GHG emissions during construction. At buildout, GHG emissions are limited to mobile sources (maintenance trips) and energy use (production of electricity).

Construction

Construction activities will generate short-term GHG emissions from the operation of construction equipment, worker and vendor vehicle trips, and material hauling. As shown in Table 10, total construction emissions are estimated at approximately 196 $MTCO_2e$ over the six-month construction period.

No construction-specific GHG emissions thresholds currently apply to projects of this nature. To evaluate cumulative impacts, the total construction GHG emissions were amortized over a 30-year period and added to the Project's annual operation emissions for comparison against the applicable GHG thresholds.

Operation

During operations, most development projects generate emissions in five source categories which may contribute either directly or indirectly to operational GHG emissions, including energy usage, water usage, solid waste disposal, area emissions (landscaping equipment), mobile sources (vehicle trips), and stationary sources.

The Project would operate as an augmentation to the existing water treatment systems at each well site. Post-construction, routine facilities maintenance is expected to occur at the same frequency currently applied to each well site, including chemical deliveries, with the exception of Well 19. The only new operational vehicle trips would be approximately 62 round trips per year (14 miles each) to Well 19 for sludge disposal.

No new stationary sources, such as emergency generators, would be installed. Electrical equipment installed as part of the Project would be equivalent to existing facilities (and planned facilities at Well 20); with the proposed Project implemented, the net increase in electricity consumption under typical operating conditions was estimated to be 605,466± kWh annually. To ensure a conservative (worst case) analysis a well utilization rate of 98 percent was applied to all well sites.

Operational emissions from mobile and energy sources are projected to be 75 $MTCO_2e$ per year. The combined total of amortized construction emissions and operational emissions is projected to be 81.54 $MTCO_2e$ per year, as shown in Table 10.

Table 10
Projected GHG Emissions Summary

Phase	$MTCO_2e$ Per Year
Construction	196.17
Operational	
Mobile	1.36
Energy	73.64
Total (30-year amortized construction + operational)[1]	**81.54**
SCAQMD Threshold (Residential/Commercial)	**3,000**

Emission Source: CalEEMod Version 2022.1.
1. Buildout construction GHG emissions were amortized over 30-years then added to buildout operational GHG emissions. 196.17/30 = 6.54
$MTCO_2e$ = metric tons of carbon dioxide equivalent

According of SCAQMD's Tier 3 criterion, a project's greenhouse gas emissions would be considered less than significant if emissions are below an absolute threshold of 10,000 $MTCO_2e$ per year for industrial projects or 3,000 $MTCO_2e$ per year for residential and commercial projects. While SCAQMD does not have a threshold for infrastructure projects, the proposed Project's projected emissions of 81.54 $MTCO_2e$ per year are well below the lowest of SCAQMD's Tier 3 thresholds (3,000 $MTCO_2e$ per year).

The Project is also consistent with the City of Coachella 2015 CAP. The CAP establishes community-wide GHG reduction targets of 15 percent below 2010 per-service-population levels by 2020 and 49 percent below 2010 per-service-population levels by 2035. It emphasizes measures that reduce energy use, vehicle miles traveled, and resource consumption, including General Plan Policy SNE 3.1 (water conservation performance targets that exceed State Green Building Code standards) and related Water Use and Supply policies that aim to reduce the energy required to treat and convey water. The CAP also includes municipal operations policies (Chapter 5) directing efficiency improvements to City infrastructure. As a well and water-treatment system improvement project, the Project enhances existing public water infrastructure with only minimal new operational emissions. It supports the CAP's water-related and municipal efficiency goals without inducing substantial new growth, energy demand, or vehicle travel, and would not impede the City's ability to achieve its GHG reduction targets.

The Project's generation of GHG emissions would not make a cumulatively considerable contribution, and would not conflict with an applicable plan, policy, or regulation for the purpose of reducing GHG emissions.

3.8.3 Mitigation Measures

None required.

3.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
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?	☐	☐	☒	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
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?	☐	☐	☐	☒
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 or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

Sources: Coachella General Plan and Final EIR, 2015; California Department of Toxic Substances Control "EnviroStor" Database, accessed May 2026; State Water Resources Control Board Geotracker, September 2026; Riverside County Airport Land Use Compatibility Plan Policy Document - Jacqueline Cochran Regional Airport (Amended 2006); CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.9.1 Setting

The improper handling, transport, storage, use, and disposal of hazardous materials can cause harmful effects on humans and the environment. Federal laws and regulations, such as the 1970 Environmental Protection Act, regulate the storage, use, generation, transport, and disposal of hazardous materials. In the eastern Coachella Valley, the Riverside County Department of Environmental Health, Hazardous Materials Branch provides additional oversight over facilities that handle and generate hazardous materials, underground storage tanks, or other hazardous materials.

In the City of Coachella, the use, storage, disposal, and cleanup of hazardous waste is regulated by an extensive framework of state and federal laws, such as those implemented by the US and California EPA, Occupational Safety and Health Administration, and regional agencies including the Colorado River Regional Water Quality Control Board. Coachella Fire Services, as part of the Riverside County Fire Department, supports the Riverside County Health Department in maintaining a permit program that applies to anyone operating a hazardous occupancy or using, storing, or transporting substantial amounts of hazardous materials.

Hazardous Materials/Contamination Sites

The California Water Board and Department of Toxic Substances Control (DTSC) provide databases of records for cleanup sites and hazardous waste facilities and sites with known or potential contamination. A review of the available databases indicates that there are no known contaminated sites or active cleanup sites at or in the immediate in the vicinity of the Project sites. Identified DTSC sites include the following:

Wells 11 and 17: Only one hazardous materials site identified on the DTSC Envirostor web site located immediately northwest of Well 11 and 0.51± miles northeast of Well 17 (ES ID # 60002127). The site is U.S. Metals (US Auto Salvage) recycling facility. The operator was cited for soils contamination associated with elevated levels of Arsenic, Lead, Copper, Zinc, and PCBs concentrations. Latest updates indicate that a requisite Remedial Action Workplan has not yet been submitted.

Well 12: One hazardous materials site identified on the DTSC Envirostor web site located on 1st Street 0.50± miles northeast of Well 12 (ES ID # 33280137). The site is Foster-Gardner which currently stores herbicides, soil and grain fumigants, insecticides, nematocides, fungicides, fertilizers. Fertilizers are stored and sold in bags and in bulk liquids. This site has been certified for both soil and groundwater contamination. A recent 5-year groundwater monitoring showed that the chemicals of concern were still within an actionable level and monitoring is ongoing.

The Geotracker web site managed by the State Water Resources Control Board was also queried. Identified hazardous materials sites within one-half mile of each well are summarized as follows:

Well 11: Located adjacent to the Union Pacific Railroad lines and an industrial materials recycling business, hazardous sites (open cases and closed) included the LUST (leaking underground storage tank) at EZ Serve Truck Stop (T0606500674: case closed in 2014). The second nearby site is Coachella Valley Steet (T0606500697: case closed in 1996) located approximately 925 feet north of Well 11. To the northwest two LUST cases include Kennedy Brothers (T0606500683: case closed 1997) and vacant Larson Property (T0606500683: closed 1997),

Well 12: Located within and adjacent to Bagdouma Park, Well 12 is located within one-half mile of one Geotracker-identified hazardous material site, Lucky's Auto Service located 1,042± feet east of the Well 12 site. The case (T0606500948) was closed in 1995. An active site assessment is underway at the SECO Apple Market (LUST Case T0606500945); this case is active and ongoing.

Well 16: A single hazardous materials site in the Geotracker database within a half mile of this site is Rancho Coachella (Lusardi) (LUST Case No. T0606500942) involving a leaking gasoline fuel tank. The case was closed in 1998.

Well 17: Four hazardous materials sites have been identified to the east and northeast and within one-half mile of the Well 17 site. These include two sites adjacent to one another: the Walter Eversen site (LUST Case T0606500946) the investigation of which was closed in 1993, and Quail Oil (LUST Case T0606500954) which was closed in 2022.

Well 18: No hazardous materials sites are identified by Geotracker within one half mile of the Well 18 site.

Well 19: No hazardous materials sites are identified by Geotracker within one half mile of the Well 19 site.

Well 20: No hazardous materials sites are identified by Geotracker within one half mile of the Well 20 site.

Current Well Operations
Six of the Project wells have been in operation for several years and generally are equipped with groundwater wells and pumps, motors, equipment buildings, and chlorinating systems. Current treatment is limited to sodium hypochlorite addition for disinfection at the individual well sites before entering the distribution system.

Project Residue
A typical dewatered solids concentration of approximately 5 to 6% is the Project operational target, which would be expected to meet USEPA SW-846 Test Method 9095B: Paint Filter Liquids Test (paint filter test) for landfill disposal. Following dewatering, sludge would be considered solid waste and may qualify as hazardous waste based on DTSC landfill regulations including the limits set by the total threshold limit concentration (TTLC), soluble threshold limit concentration (STLC), toxicity characteristic leaching procedure (TCLP), and waste extraction test (WET) (see Section 5.8.1 of the Project Design Report, Appendix D for more information on waste disposal).

3.9.2 Discussion of Impacts

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

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?

Less Than Significant Impact. Consistent with current operations at City wells, potentially hazardous materials are and will continue to be used at these sites. Currently, each well site (excepting forthcoming at Well 20) is equipped with chemical storage and injection equipment using sodium hypochlorite as a disinfectant. To address Cr-6 levels and comply with new state standards, the Project includes the installation of the CR-6 remediation equipment to be installed at each well site. Included in these improvements will be expanded storage and handling equipment for sodium hypochlorite and the addition of storage and injection equipment for Cr-6 treatment chemicals, limited to ferrous chloride.

CWA applies well established methods and approaches to managing these and other chemicals as a part of managing and operating its wells, storage and distribution systems. In compliance with applicable regulations, the introduction and use of chemical associated with the selected Cr-6 reduction methods will not create a significant hazard, such as upsets or other accidental releases, during transport, storage, use of disposal. Impacts will be less than significant.

Construction of the planned well facilities and discharge and sewer lines may require the use, transport, and/or disposal of hazardous materials during construction phase. Construction of the Project will involve the use of excavation, hauling and other construction equipment and vehicles which will require limited

quantities of oil, fuel, and other potentially flammable or toxic substances. Minor maintenance and/or repair of equipment may be required onsite and could result in fuel or oil spills if not properly managed. The Project bid package will include reference to management of site development and implementation of best management practices to project soil and ground and surface water. The Project contractor will be required to use approved staging areas for storing material and equipment and implement BMPs to assure that any spills are captured, limited and immediately and properly remediated. The Project contractor will be required to adhere to applicable local, state, and federal laws on occupational safety and disposal of hazardous materials. Any Project impacts will be temporary and less than significant, and no adverse long-term impacts associated with hazardous materials are anticipated. Impacts will be less than significant.

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

Less Than Significant Impact. There are numerous schools within the Project planning area, including Martin Van Buren Elementary, Cesar Chavez Elementary, as well as Palm View Elementary, Coachella Valley Adult School, and the Bobby Duke Middle School located 0.31 miles or more east of Well 12. The Coral Mountain Academy is located 025 miles south of Well 20, while the Riverside County Imagine Schools campus at Ave 51 and Calhoun Street is closest to a Project site, being 0.3 miles east of Well 20. As noted above, construction of the Project components has a less than significant potential to improperly use or emit hazardous or acutely hazardous materials. Also as noted, the operation of Project wells once retrofitted will not introduce any acutely hazardous chemicals or other hazardous materials, will be consistent with standard municipal domestic well operations, and will have a less than significant potential to improperly use or emit hazardous or acutely hazardous materials

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?

No Impact. According to the EnviroStor database (EnviroStor 2026) maintained by the Department of Toxic Substances Control, no portions of the Project sites or alignments are listed as a hazardous materials cleanup site or a site regulated for hazardous materials, nor are any such sites located in the vicinity of the proposed Project. The SWRCB Geotracker web site identified only one active hazardous materials site (LUST within one half mile of Well 12 An active site assessment is underway at the SECO Apple Market (LUST Case T0606500945); this case is active and ongoing. This site is also located 1,500± feet east and across-gradient from Well 12 and will have no impact on the proposed Project. See response to threshold questions a and b, above. No impact would occur.

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 or excessive noise for people residing or working in the project area?

Less Than Significant Impact. The Jacqueline Cochran Regional Airport is located south of the Project planning area. The northern boundary of the airport's Land Use Compatibility Area extends approximately one-quarter mile north of Avenue 52 in the Coachella city limits. Of the various Project components, only Well 16 occurs within two miles of the airport (1.33± miles) and is also the only Project component located within the Airport Land Use Compatibility Plan area, occurring in a designated Zone C and abuts Zone D on the west. Zone C is compatible with areas designated as Heavy Industrial and Light Industrial/

Warehousing north and south of airport, including the Well 16 site. Adjacent Zone D also allows heavy and light industrial uses. The proposed Well 16 upgrades are consistent with these permitted land uses. The Project involves the installation of Cr-6 treatment equipment and facilities with a maximum height of 10 feet, backwash tanks one of which will be 20 feet high while the others will be 12 to 16 feet high, and small equipment buildings up to 14 feet in height. All well sites are (or will) be enclosed with fencing and/or masonry walls. Discharge lines and sewer line upgrades will all be underground. None of the Project improvements, including those associated with Well 16, will not result in a safety hazard or excessive noise for people residing or working in the Project area. Impacts will be less than significant.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. Planning area evacuation routes include but are not limited to Interstate 10, State Route 86, State Route 111, Dillon Road, Van Buren Street, Jackson Street and others. As planned, the Project will not introduce any new impediments to the implementation of an emergency or evacuation plan. Nonetheless, some Project construction will take place in public streets and street rights of way to extend discharge lines and upgrade existing sewer lines.
Therefore, Project construction may have a temporary impact at Project area intersections and along travel lanes during construction activities in these areas. However, Project construction will be conducted incrementally to limit impacts on travel lanes and at intersections. Through the contractor's preparation and implementation of traffic control plans, the proposed Project is not expected to significantly conflict with or interfere with emergency evacuation of the Project area.

The Project in-street components will be constructed in discrete segments limiting the length of roadway affected at any given time; at least one lane will be maintained during construction of each pipeline segment with flag persons where needed to ensure traffic safety. Therefore, it is not anticipated that construction of the proposed Project would substantially interfere with traffic circulation such that it would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

The Project will be required to obtain Encroachment Permits through the City Public Works Department, and construction activities will be subject to ongoing inspection. The roadways in the Project area would continue to function as emergency access routes as necessary, and no revisions to an adopted emergency response plan would be required. Upon completion of construction, the Project pipeline alignment will be returned to preexisting conditions as road grading to restored dirt roads and repaving for disturbed asphalt paved streets. The Project will not interfere with the existing or future circulation patterns. Compliance with standard requirements will ensure that the Project will have less than significant impacts on emergency response and evacuation plans.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

No Impact. Wildland fires occur in undeveloped areas but can spread to urban areas where the landscape and structures are not designed and maintained to be ignition resistant. A wildland-urban interface is an area where urban development is located in proximity to open space or "wildland" areas. Large areas of California are susceptible to wildfire due to weather, topography, and vegetation. Wildfire is a natural process and necessary part of the natural ecosystem; however, California continues to experience longer wildfire seasons as a result of climate change.

The California Department of Forestry and Fire Protection (CAL FIRE) has mapped areas of significant fire hazards through its Fire and Resources Assessment Program (FRAP; State Responsibilities Area Fire Hazard Severity Zone (CAL FIRE 2023). According to FRAP maps of Fire Hazard Severity Zones (FHSZ), the Project area is not located in a moderate, high, or very high fire hazard area.

The Project site is not within or near a wildland fire hazard zone. There are no SRA, VHFHSZ, or any other designated fire hazard zones in the City. There is limited vegetation within the City to generate a high wildfire risk, and the Project area is not near wildlands. The Project will not expose people or structures to a significant risk associated with wildfire hazards. No impact will occur. The nearest area of significant hazard, designated a moderate hazard area according to California Department of Forestry and Fire Protection (CAL FIRE), is within the foothills of the Santa Rosa Mountains, approximately 4.6 miles southwest of the Project planning area. The Project vicinity is covered by a mix of Local Responsibility Area (LRA) and Federal Responsibility Areas (FRA). Therefore, the Project will not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

3.9.3 Mitigation Measures

None required.

3.10 HYDROLOGY AND WATER QUALITY

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
	(i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
	(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐
	(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
	(iv) impede or redirect flood flows?	☐	☐	☒	☐
d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Sources: Coachella General Plan, 2015; Flood Insurance Rate Map Nos. 06065C227OH, 06065C226OH, 06065C2262H, Federal Emergency Management Agency, 2018; 2020 Coachella Valley Regional Urban Water Management Plan, June 2021; Indio Subbasin Annual Report for Water Year 2020-2021, February 2022; Water Quality Control Plan for the Colorado River Basin Region, California Regional Water Quality Control Board, Colorado River Basin Region, 2024; Eastern Coachella Valley Stormwater Master Plan, Coachella Valley Water District. 2015; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.10.1 Setting

Domestic Water

CWA provides domestic water to residences and business and institutions throughout the City. Its primary source of water is groundwater extracted from deep wells within the Whitewater River Subbasin. In addition to natural replenishment from storm runoff, the subbasin is also artificially recharged through imported State Water Project Exchange and Colorado River water. CVWD recharge facilities in the east

valley include spreading ponds located at the Thomas Levy Recharge Facility located south of Lake Cahuilla in La Quinta. The total storage capacity of the Whitewater River Subbasin is approximately 29.8 million-acre feet. With its substantial water storage and management program, ongoing conservation efforts and diverse sources of additional supply, the basin is capable of meeting the water demands of the Coachella Valley, including the community of Coachella, for the long term and during periods of extended drought, including during normal years, single dry years, and multiple dry years. (CVWD 2024).

Wastewater

The City's wastewater conveyance and treatment services are operated by the Coachella Sanitary District (CSD) which was established in 1936 and maintains approximately 90 miles of wastewater conveyance pipeline, two pump stations, and a wastewater treatment plant. The diameters of the wastewater conveyance pipelines range from 4 to 54 inches. The two pump stations are Coachella Valley High School Pump Station (CVHS PS) and Polk Street Pump Station (City of Coachella 2015 Sewer System Master Plan; Figure 2-1). The City's wastewater treatment plant is located at Avenue 54 and Polk Street with a capacity of 4.5 million gallon per day (MGD) and a current (2025) demand of 3.12± MGD. Wastewater is treated to standards required under its wastewater discharge permit and treated water is discharged into the CVSC. The need for a new or revised discharge permit is not anticipated. The City also receives wastewater conveyance and treatment services through the Valley Sanitary District (VSD) for some flows generated within the City's corporate limits; however, CSD is the primary service provider.

Flood Control

CVWD is the agency responsible for the management of regional drainage within most of the Coachella Valley, including the Project planning area. The Project area is situated in the west basin of the Colorado River, which drains primarily into the Salton Sea. It has an average rainfall of 3± inches per year. Several watersheds drain the adjoining elevated terrain of nearby Santa Rosa Mountains to the valley floor. The Project area is subject to short duration but occasionally intense rainfall events which can generate significant amounts of runoff.

According to the California Governor's Office of Emergency Services MyHazards tool, the Project sites are not located in a 100-year floodplain.[16] The only mapped flood plain in the City is the Coachella Valley Stormwater Channel, an improved and partially lined regional drainage facility that discharges into the Salton Sea. According to the Federal Emergency Management Agency (FEMA) Flood Map Service Center, the majority of the Project sites are in areas designated "Area of Minimal Flood Hazard" (0.2% Annual Chance Flood Hazard, Areas of 1% annual change flood with average depth less than one foot or with drainage areas of less than one square mile).[17] The Project sites are subject to the requirements of the NPDES to protect waters from pollution.

Surface Water Quality

Land uses such as agriculture, urban development, and industry impact surface water quality. The Coachella Valley Stormwater Channel (CVSC), which passes through the City, receives runoff from stormwater and agricultural irrigation and discharges into the Salton Sea. Therefore, the quality of surface water depends on its origin and the nature of the lands that runoff traverses and from which it can acquire contaminants. In the Project area, stormwater runoff is limited by the expanse of undeveloped lands and those in agriculture. Tailwater from crop irrigation can contain carry a substantial nutrient load, as well as chemical residues from herbicide and pesticide use.

16 CalOES MyHazards. Accessed August 2026.

17 FEMA Flood Map Service Center. Accessed August 2026. FIRM Panels: 06065C227OH, 06065C226OH, 06065C2262H

The reach of the CVSC south of the Valley Sanitary District discharge into the CVSC has been identified as impaired for pathogens, and for toxaphene from Lincoln Street to the Salton Sea. It is listed as being impaired for DDT (dichlorodiphenyltrichloroethane), Dieldrin, Nitrogen, ammonia (Total Ammonia), PCBs (Polychlorinated biphenyls), Toxaphene, Toxicity, and Indicator Bacteria under Section 303(d) of the Clean Water Act.[18, 19]

The CVSC is listed as impaired for the pathogens because surface waters in this reach violate water quality standards established by the Colorado River Basin Regional Water Quality Control Board (Regional Board) to protect the water contact recreation (REC I) and water non-contact recreation (REC II) beneficial uses (BUs).[20] The CVSC not only serves as a stormwater conveyance, but it also conveys agricultural irrigation return water, reclaimed municipal wastewater from three permitted municipal wastewater treatment plants, wastewater discharge from one permitted fish farm, and urban runoff.

3.10.2 Discussion of Impacts

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less Than Significant Impact. The proposed Project has been designed explicitly to address an environmental hazard the State of California has identified for levels of Hexavalent Chromium in the state's drinking water. The Project area is in the Whitewater River watershed. All water providers in the watershed are required to comply with the Colorado River Basin Regional Water Quality Control Board standards for the protection of water quality, including in many cases the preparation of site-specific Water Quality Management Plans for surface waters. The Project will comply with discharge standards set under its wastewater discharge permit issued by the Regional Board.

Excepting Well 19, all Project wells have or will have direct sewer connections to the Coachella Sanitary District (CSD) collection system, which is owned and operated by the City of Coachella. Well discharge lines discussed throughout this IS provide for this method of wastewater discharge. While the CSD does not currently have sanitary sewer discharge requirements, the water must be acceptable for receipt and treatment through the CSD wastewater treatment plant (WWTP) to meet its permitted discharge limits.

The construction phase of the Project will require nominal use of water to facilitate soil consolidation and compaction and to minimize fugitive dust emissions. This will be done using best management practices (BMPs) to protect surface and groundwater. The Project contractor will ensure that adequate construction BMPs are implemented and satisfy local, state, and federal standards. Temporary construction BMPs considered and incorporated into the Project, as appropriate, would include:

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18 Total Maximum Daily Load (TMDL) and the 303(d) List of Impaired Water Bodies-2012 303(d) List, Attachment 1 (The 2010 303(d) List for the Colorado River Basin Region) issued by Colorado River Basin Regional Water Quality Control Board; https://www.waterboards.ca.gov/coloradoriver/water_issues/programs/tmdl/rb7_303d_list.shtml; Accessed December 2017.

19 Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer System (Ms4) Within the Whitewater River Watershed (Order No: R7-2008-0001) prepared by California Regional Water Quality Control Board, Colorado River Basin Region (Regional Board) in 2008.

20 Total Maximum Daily Load And Implementation Plan For Bacterial Indicators Coachella Valley Stormwater Channel by California Regional Water Quality Control Board Colorado River Basin Region (2007).

- Soil stabilization (erosion control) techniques such as on-going site watering, soil binders, etc.;
- Sediment control methods such as detention basins, silt fences, and dust control;
- Contractor training programs;
- Material transfer practices;
- Waste management practices such as providing designated storage areas and containers for specific waste for regular collection;
- Concrete washout slurry shall be discharged and disposed of in an approved manner;
- Trackout control practices;
- Vehicle and equipment cleaning and maintenance practices; and
- Fueling practices.

During operation, the Project will treat and convey domestic water but will not in itself be a significant source of new water demand. The Cr-6 treatment system generates a waste stream comprised of backwash waters and/or solids. For most Project wells, the backwash water will be discharged directly into the City sewer system and conveyed to the wastewater treatment plant for treatment. For Well 19, settled backwash will be periodically hauled from the well site to an approved connection to the City collection system or directly to the treatment plant. De-watered solids will be hauled to a licensed, approved landfill, and will be required to pass a paint filter test and be considered "solid waste" for disposed of at a landfill.

While not quantified, well and discharge water management will require nominal additional water; however, planned dewatering of Cr-6 treatment waste product will further reduce the Project's net water demand. No other new sources of waste or wastewater will be generated by the Project. The Project will not violate any water quality standards or waste discharge requirements. The Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Implementation of standard BMPs would ensure impacts are less than significant. Therefore, the Project will not substantially degrade surface or ground water quality or violate any water quality standards or waste discharge requirements. Impacts will be less than significant.

Neither will the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge. The Project will not impede sustainable groundwater management of the basin. Rather, existing and future development in the Project area is under the City's jurisdiction, and water demand is accounted for in the City's General Plan and long-range water planning efforts and those of regional water managers (CVWD et al). Impacts in this regard will be less than significant.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

c.i result in substantial erosion or siltation on- or off-site?

c.ii substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

c.iii create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

c.iv impede or redirect flood flows?

Less Than Significant Impact. The Project includes the construction of domestic water Chromium-6 treatment facilities at each of seven existing municipal wells, on-site catch basins, backwash wastewater discharge lines and three sewer line upgrades. On-site catch basins and percolation areas will be created at each well site on an as-needed basis with 100 percent of new site runoff to be retained on each well site. All proposed improvements will take place in locations already disturbed sites and roadway alignments. The construction of Project facilities is not expected to increase wind or water erosion, or siltation of adjoining or nearby waters.

Project improvements will be constructed incrementally and will create limited opportunities for soil erosion from wind and/or water, which can be adequately controlled and managed through the thoughtful application of BMPs. With the application of standard dust control and other BMPs, the Project is expected to have a less than significant impact and will not result in substantial erosion or siltation on- or off-site.

The Project will not contribute to or substantially increase on-site or off-site storm water runoff or have a significant adverse effect on local or regional flood control capabilities, or regional ground water quality or quantity. The Project involves the construction of additional water treatment facilities at seven municipal wells and the extension of discharge lines and three sewer line segments upgrades within existing rights of way. The Project well sites and line alignments will be returned to preexisting conditions upon completion of construction and will not significantly increase local run-off or impact flood flows. Any construction related impacts will be limited and temporary and considered less than significant.

According to the Federal Emergency Management Agency (FEMA) Flood Map Service Center, the majority of the Project site is in area of "Area of Minimal Flood Hazard" (0.2% Annual Chance Flood Hazard, Areas of 1% annual change flood with average depth less than one foot or with drainage areas of less than one square mile).[21] The Project sites are subject to the requirements of the NPDES to protect waters from pollution.

The Project would not place housing within a 100-year floodplain or construct other structures that would impede or redirect flood waters. The potential for release of pollutants due to Project inundation will be less than significant.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less Than Significant Impact. The Project site is located inland and will not be subject to tsunami inundation. The Project site is not located in the immediate vicinity of any large water body. The Salton Sea is located approximately 12.5 miles to the southeast. According to the Riverside County General Plan EIR (2015), there is no documented significant seiche potential for any of the waterbodies within Riverside County.

With several lakes, ponds, and reservoirs in and around Coachella, seiches resulting from ground shaking can be expected to occur in the study area. The amplitude of the seiche waves that could occur in these water bodies cannot be predicted given that several parameters combine to form these waves, although, given the relatively shallow depth of these bodies of water, the seiches are anticipated to be relatively minor. Damage to water reservoirs can occur as a result of ground motion-induced sloshing of water inside water reservoirs. Site-specific design elements to reduce the potential for seiches, such as baffles, are

[21] FEMA Flood Map Service Center. Accessed August 2026. FIRM Panels: 06065C227OH, 06065C226OH, 06065C2262H

widely used in the valley and are planned in Project backwash tanks where warranted. Therefore, less than significant impacts would occur in a seiche event due reservoir design and engineering and to the proximity to the Salton Sea. Impacts will be less than significant.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less Than Significant Impact. The purpose of the subject Chromium-6 mitigation Project is to comply with the requirements of the State of California for allowable levels of Cr-6 in drinking water. The Project essentially mitigates for an identified water quality contaminant. Therefore, the Project implements a mandated water quality control regulation.

The Colorado River RWQCB regulates surface and groundwater within the Colorado River Basin, which includes the Indio Subbasin. The RWQCB guides water quality protection with its Water Quality Control Plan for the Colorado River Basin Region (Colorado River RWQCB, amended 2024), in addition to adopting and enforcing waste discharge and surface water discharge permits. Each water agency in the Indio Subbasin complies with RWQCB regulations in implementation of its projects and programs.

As discussed in the Project Design Report, the process wastewater produced during backwash can be managed in a variety of ways. Backwash wastewater may be discharged directly to sewer collection system. The City wastewater treatment plant (WWTP) can effectively treat the additional backwash contaminant loadings to achieve their permitted discharge limits.

The method of removal and disposal of Cr-6 waste product from drinking water will ensure that the Project is part of the City's and RWQMD's sustainable management plan, including the Indio SGMA Plan, as amended. The City shall notify the CRWQCB of any significant change in treatment process and will, as necessary, secure a revised discharge permit basin on calculated Cr-6 concentrations. Whether discharged directly into the City's sewage collection lines or trucked to the City's treatment plant, as would be the case for Well 19, discharge water must be acceptable for receipt and treatment through the Coachella Sanitary District's (CSD) wastewater treatment plant (WWTP) to meet its permitted discharge limits set by the Colorado River Basin office of the CRWQCB. Potential impacts will be less than significant.

3.10.3 Mitigation Measures

As noted in this discussion, the proposed Project is not expected to have a significant impact on drainage or flood control facilities, or on local surface or groundwater quality. Standard construction management practices will be imposed and are expected to ensure that impacts from construction and operation of these facilities will be less than significant. Nonetheless, to further ensure that impacts are less than significant, the following mitigation measures are recommended for implementation.

HYD-1 Prior to initiation of work on each Project well retrofit, the CWA shall ensure that each well site captures and retains on-site any addition in stormwater runoff associated with the Project.

HYD-2 Prior to initiation of work on the Well 17 retrofit, plans shall be prepared and approved by the City Parks and Recreation Department that ensure adequate replacement capacity of the existing stormwater retention basin that will be impacted by the expansion of the Well 17 site.

3.11 LAND USE AND PLANNING

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Sources: Coachella General Plan, 2015; Riverside County Airport Land Use Compatibility Plan Policy Document - Jacqueline Cochran Regional Airport (Amended 2006); Coachella Valley Multiple Species Habitat Conservation Plan, 2008, as amended; Google Earth, 2026; Field Survey, Terra Nova Planning & Research, Inc., June 2026; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.11.1 Setting

Land use on the Project and surrounding area is governed by the policies and land use designations of the Coachella General Plan and City Zoning Ordinance. The Project well sites are located across the City and in both relatively undeveloped agricultural areas and fully urbanized neighborhoods. The subject well sites are all existing facilities and are generally located on major arterial roadways and are all undergoing various levels of ongoing urbanization. As noted, General Plan land use and Zoning designations on these lands range from industrial to low density residential.

Well 11 is located in an industrial area,
Well 12 is located within Bagdouma Park,
Well 16 is located on designated and partially developed industrial land,
Well 17 is located adjacent to Rancho Los Flores Park and a developing residential neighborhood,
Well 18 is in an agricultural area with General Plan designations for residential development,
Well 19 is located on a residential lot within the Tierra Del Sol subdivision, and
Well 20 is located on a residential lot within the Pyramid Rancho subdivision

According to the California Important Farmland Finder by the California Department of Conservation, lands in the vicinity of the subject well sites is designated as Urban and Built-Up Land (California Important Farmland Finder 2026), while some areas still reflect the Prime Farmland, Farmland of Local Importance designations. The proposed Project will not impact lands in or planned for agricultural uses.

The Project wells and pipeline alignments occur within the boundaries of the *Coachella Valley Multiple Species Habitat Conservation Plan and Natural Community Conservation Plan* (CVMSHCP). The CVMSHCP is a comprehensive multiple species habitat conservation planning program that addresses multiple species needs, including habitat and the preservation of natural communities in the Coachella Valley area of Riverside County. Also see Section 3.4: Biological Resources.

None of the Project components occur on Native American lands. However, local Tribes are being conferred with through cultural resources assessment process, consultations with the Native American Heritage Commission (NAHC) and through the AB-52 consultation process. Also see Section 3.5: Cultural Resources and Section 3.18: Tribal Cultural Resources.

The Jacqueline Cochran Regional Airport is located south of the Project planning area. The northern boundary of the airport's Land Use Compatibility Area extends approximately one-quarter mile north of Avenue 52 in the Coachella city limits. Of the various Project components, only Well 16 occurs within two miles of the airport (1.33± miles) and is also the only Project component located within the Airport Land Use Compatibility Plan area, occurring in a designated Zone C and abuts Zone D on the west. Zone C is compatible with areas designated as Heavy Industrial and Light Industrial/Warehousing north and south of airport, including the Well 16 site. Adjacent Zone D also allows heavy and light industrial uses.

3.11.2 Discussion of Impacts

a) Physically divide an established community?

No Impact. The proposed Project and its components occur on already developed well and associated sites, and along existing and largely paved street rights of way. The Project will retrofit existing municipal wells and associated facilities, provide connections to the City sanitary sewer system and upgrade three sewer mains. There will be no new impacts to residential neighborhoods nor will the Project divide and existing community or neighborhood. No impact will occur.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The proposed Project implements a state-mandated domestic water treatment (environmental mitigation) program that addresses and reduces potentially harmful levels of Hexavalent Chromium (Cr-6) to meet new California standards. The subject project wells and pipeline alignments occur across a variety of land uses and land use adjacencies, including residential and industrial neighborhoods, as well as public parks and open space. The CWA wells are not a significant source of community noise.

The proposed Well 16 upgrades are consistent with these permitted land uses. The Project involves the installation of Cr-6 treatment equipment and facilities with a maximum height of 10 feet, backwash tanks one of which will be 20 feet high while one (Well 16) will be 16 feet high the others 12 feet. Planned small equipment buildings will be up to up to 14 feet in height. All well sites are (or will) be enclosed with fencing and/or masonry walls. Discharge lines and sewer line upgrades will all be underground. None of the Project improvements, including those associated with Well 16, will not result in a safety hazard or excessive noise for people residing or working in the Project area. Impacts will be less than significant.

The Project involves retrofitting seven municipal wells with additional equipment including filtration and reduction vessels and, in some cases, backwash tanks. The Project also includes underground installation of wastewater discharge lines to the nearest connecting points to the CWA sewage collection system and the upgrading of three existing segments of sewer lines. While water handling and treatment at the well sites will increase somewhat, the retrofitted wells will operate at essentially the same level of mechanical operations as they do today.

As discussed in Section 3.4: Biological Resources, the Project is consistent with the Coachella Valley MSHCP. The Project is consistent with the land use guidelines for the Jackqualine Cochran Regional Airport, and will not violate any provisions or regulations of the City General Plan or Zoning Ordinance. No part of the Project will occur on Native American lands. No adverse impacts to land use are anticipated.

3.11.3 Mitigation Measures
None required.

3.12 MINERAL RESOURCES

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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: City of Coachella General Plan Update, Environmental Impact Report, SCH #: 2009021007. July 2014; Mineral Land Classifications: Aggregate Materials in the Palm Springs Production-consumption Region, Riverside County, California. Special Report 159 (SR 159) by California Department of Conservation Division of Mines and Geology; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.12.1 Setting

Mineral resource extraction in the Coachella Valley is limited to sand and gravel, which the Project site cannot supply. No sand or gravel operations occur in the general Project area. Much of the Eastern Coachella Valley, including the Project area, is in an Unstudied (No MRZ designation issued) area. The California Mineral Land Classification System, developed by the State Geologist, identifies Mineral Resources Zones (MRZs) for mapping and reporting purposes under the Surface Mining and Reclamation Act (SMARA).

The western portion of the City is classified as MRZ-1, where available geological information indicates that little likelihood exists for presence of significant mineral resources. The northeastern portion of the City is classified as MRZ-3, which indicates the area has known mineral deposits that may qualify as mineral resources (MRZ-3a), or the area may have inferred deposits which may qualify as mineral resources (MRZ-3b). Two permitted mining operations occur in the MRZ-3 area in the City's Sphere of Influence (SOI), but none occur in the City.

It should be noted that mineral extraction operations can pose a variety of land use compatibility issues and is generally considered to be incompatible with residence uses and other potentially sensitive receptors. With the exception of Well 18, all Project components are located within an urbanizing or fully urbanized neighborhood, making mineral extraction at these locations unrealistic.

3.12.2 Discussion of Impacts

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?

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?

No Impact. The Project components are located in an area designated for a range of urban uses, including industrial, residential and commercial uses on the City's General Plan Land Use Map. As noted above, with the exception of Well 18, all Project components are located within or adjacent to existing residential, commercial and industrial neighborhoods, where the introduction of mineral extraction would be clearly an incompatible land use.

The Project area is not mapped for and is not known to contain important mineral resources, nor is it designated any Mineral Resource Zone by the state. There are no proposed, existing, or abandoned quarries or mines in the Project area, and no impacts will result regarding hazards to people or property. No Project-related impacts to mineral resources are anticipated.

3.12.3 Mitigation Measures

None required.

3.13 NOISE

Would the project result in:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Generation of substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b)	Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c)	For a project located within the vicinity of a private airstrip or 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: Coachella General Plan Update, Noise Element, 2015; Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual (September 2018); Caltrans Technical Noise Supplement to the Traffic Noise Analysis Protocol (September 2013).

3.13.1 Setting

Coachella General Plan and Municipal Code

The Noise Element of the Coachella General Plan establishes goals, policies, and programs intended to protect sensitive land uses from exposure to excessive noise levels within its jurisdictions. It includes a Land Use/Noise Compatibility matric that defines "normally acceptable," "conditionally acceptable," and clearly "unacceptable" noise limits based on the California Department of Health Services "*Guidelines for the Preparation and Content of the Noise Element of the General Plan*" (1990). "Normally acceptable" noise limits for residential land uses (single- and multi-family, duplex, and mobile homes) are up to 60 dBA CNEL. "Normally acceptable" noise limits for commercial land uses (office building, research and development, utilities, and City office building) are up to 70 dBA CNEL.[22] Each of these land uses occurs in the Project area.

The City's Municipal Code Title 7 establishes noise control standards for sensitive and non-residential structures. Construction activities are exempt from the noise standards, if they comply with permitted days and hours of construction described in Section 7.04.070 of the Municipal Code. Between October 1st and April 30th, construction is permitted Monday through Friday from 6:00 am to 5:30 pm, and Saturday, Sunday, and Holidays from 8:00 am to 5:00 pm. Between May 1st and September 30th, construction is permitted Monday through Friday from 5:00 am to 7:00 pm, and Saturday, Sunday, and Holidays from 8:00 am to 5:00 pm.

[22] Coachella General Plan 2015, Figure 10-1.

Local jurisdictions also apply restrictions to construction hours, which have a direct relationship to the noise generation of construction activities. Coachella's construction hour restrictions are shown in Table 11 below.

Table 11
Noise Significance Criteria Summary

Analysis	Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Offsite Noise	Noise-Sensitive	if ambient is < 60 dBA Leq[1]	≥ 5 dBA Leq Project increase	
		if ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA Leq Project increase	
		if ambient is > 65 dBA Leq[1]	≥ 1.5 dBA Leq Project increase	
Aircraft	All	Exterior Noise Level Standards[2]	See Exhibit 3-C	
Operational Noise	Noise-Sensitive	Exterior Noise Level Standards[3]	55 dBA Leq	45 dBA Leq
		if ambient is < 60 dBA Leq[1]	≥ 5 dBA Leq Project increase	
		if ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA Leq Project increase	
		if ambient is > 65 dBA Leq[1]	≥ 1.5 dBA Leq Project increase	
Construction Noise & Vibration	Permitted Construction Hours[4]	**October 1st to April 30th** 6:00 a.m. to 5:30 p.m. Mondays to Fridays	**May 1st to September 30th** 5:00 a.m. to 7:00 p.m. Mondays to Fridays	
		All Year: 8:00 a.m. to 5:00 p.m. Saturdays, Sundays, and holidays		
	Noise-Sensitive	Noise Level Threshold[5]	80 dBA Leq	n/a
		Vibration Level Threshold[6]	0.30 PPV (in/sec)	n/a

[1] Source: FICON, 1992.
[2] Source: Riverside County ALUCP, 2004
[3] Source: City of Coachella Municipal Code, Section 7.04.030 (A).
[4] Source: City of Coachella Municipal Code, Section 7.04.070.
[5] Source: Federal Transit Administration, Transit Noise Vibration Impact Assessment Manual.
[6] Source: U.S. Department of Transportation Federal Transit Administration, Transit Noise and Vibration Impact Assessment, 2006.
"Daytime" = 6:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 6:00 a.m.; "n/a" = No nighttime operation is anticipated at the Project site and no nighttime construction activity is permitted, and therefore, no nighttime noise level thresholds are identified.

Traffic is the predominant source of noise in the City of Coachella, with major noise sources including Highway 111 (Grapefruit Blvd) and other arterial roadways, and the Union Pacific Railroad lines in the northeast portion of the City. Other sources include manufacturing, processing and distribution facilities located on lands designated for Industrial use in the eastern part of the City. Other, less significant noise sources in Coachella include aircraft overflights associated with operations at the Jacqueline Cochran Regional Airport located south of the Project area. Other sources of community noise include air conditioning units and other mechanical equipment on buildings, and landscaping equipment.

The Project well sites and pipeline alignments are bounded by fully or partially improved street with the exception of Wells 16, which is reached via a private easement from Tyler Lane. Existing traffic noise conditions along Project streets indicate the unmitigated (without consideration for walls and other noise barriers) 60 dB CNEL noise contour falls an average of 100± feet from the roadway centerline. For instance, along Van Buren Street north of Avenue 49 the 60 dB CNEL contour falls at 135 feet from the centerline. The State Highway 111/UPRR transportation corridor currently generates a 60 dB CNEL contour 477± feet from the Highway 111 centerline.

All the various Project components lie well outside of the ultimate airport-generated 55 CNEL noise contour the airport (Exhibit JC-6, Jacqueline Cochran Regional Airport Master Plan, 2004).

Vibration

In addition to elevated noise levels, construction activities can also result in higher levels of ground vibration. Vibration is defined as the periodic movement of mass over time and is described in units of velocity (inches or millimeters per second). It is discussed in decibel (dB) units in order to compress the range of numbers required to describe vibration. The human threshold of perception for vibration is 65 Vdb, or 0.0018 inches/second, and is not usually significant until 70 Vdb, or 0.0031 inches/second. Typical levels of ground vibration range between 50 Vdb and 100 Vdb. Vibration caused by heavy truck traffic is generally around 65 Vdb. In comparison, construction related vibration can range between 90 Vdb and 100 Vdb.

The effects of ground-borne vibration generally include movement of building floors, rattling of windows, and rumbling sounds. Ground-borne vibrations associated with construction attenuate rapidly with distance from the source. According to Caltrans, vibration caused by truck traffic attenuates to below perception levels at distances greater than 130 feet. Table 12 provides a summary of these standards.

Table 12
Construction Vibration Standards

Jurisdiction	**Municipal Code Section(s)**	**Construction Vibration Standards**
Caltrans	Transportation- and Construction-Induced Vibration Guidance Manual	**Building but may be a source of short-term annoyance during certain times of construction.:** 0.12 in/sec PPV* **Human Annoyance:** 0.01 in/sec PPV
County of Riverside	County of Riverside General Plan Noise Element, Policy 16.3	0.01 in/sec RMS (0.254 mm/sec RMS)
Coachella	n/a*	n/a

***Notes:** "PPV" = Peak Particle Velocity; "RMS" = Root-Mean-Square;
"n/a" = Coachella does not specify specific construction noise level standards.

Vibratory equipment planned for use in this Project is expected to be limited to vibrator plate compactors, which can generate noise levels as high as 104 dBA and vibratory impulses of 25 to 31 mm/second at the source.[23] Ground bourn vibration can fall off quickly with distance, dropping to about 6 mm/second (0.23 inch/sec) at 15 meters (49.2 feet) from the source and can also be further reduced by "soft site" conditions as is the case with Project soils. Therefore, the soils being compacted will act to absorb some of the vibratory energy of the compactor. This type of noise source is considered to be "continuous/frequent" as opposed to transient.

[23] Hoe, H., Curtin University, "Measurement of plate compaction-induced ground vibrations". Southern Cross University. 2014.

3.13.2 Discussion of Impacts

The following discussion analyzes whether the proposed Project will result in substantial increases in ambient noise level in the vicinity of planning area. This assessment utilizes local noise standards and applicable daytime exceptions as the significance thresholds for noise impacts. The assessment of vibration impacts was conducted using information on anticipated vibration during construction and operation of the Project planning area. For analysis purposes, periodic is defined as intermittent or short-term and only construction activities are consistent with this definition.

Potential impacts related to construction noise were analyzed using a variety of factors, including the distance between project-related noise sources and noise-sensitive land uses, typical noise levels associated with construction equipment, the potential for construction noise levels associated with construction equipment, the potential for construction time limits or noise limits established in local ordinance. No meaningful noise impacts are associated with the operation and maintenance of the retrofitted wells.

a) Generation of substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than Significant Impact With Mitigation. The Project area is in proximity to several major transportation corridors, including Highway 111, Highway 86/86s, and Union Pacific Railroad lines, with railroad lines and a variety of arterial and other streets passing through the Project area. The Project planning area is exposed to substantial temporary and periodic increase in ambient noise levels without the proposed improvements. Portions (Well 16) of the planning area are also within the area of influence of the Jacqueline Cochran Regional Airport, operations at which may occasionally generate intrusive noise levels in the Project vicinity. However, as noted above, the Project components are located well outside the long-term airport 55 CNEL contour and are not and will not be significantly impacted by current or future airport operations.

Construction Noise

Project construction will temporarily increase ambient noise levels in the vicinity of each well and along the Project pipeline alignments due to the presence and operation of a wide variety of construction equipment and construction traffic. Noise generating construction activities will include construction staging, incremental grading, site watering, excavation, soil compaction, placement of reinforcing steel, pouring of concrete, building construction, equipment installation and final grading and paving.

These construction operations will result in occasional high, intrusive noise levels at nearby sensitive receiver receptors, such as nearby residences and parkland users. However, construction activity will progress from well site to well site and along pipeline alignments, will be of relatively short duration, and will fall below acceptable levels as construction is completed. Noise levels decrease at a rate of 6± to 7.5 dBA for each doubling of distance from construction equipment (Caltrans 2013, sec. 2). Therefore, the noise levels of 89.7 dBA generated during the grading phase and measured at 50 feet would be reduced to 83.7 dBA or lower at 100 feet, and 77.7 dBA or lower at 200 feet from the source to the receiver. Again, these construction impacts will be short-term and will not represent a long-term perceptible increase in noise levels surrounding the Project area. Increases to the noise environment as a result of short-term construction are determined to be less than significant with mitigation measures set forth below.

Operational Impacts

Noise impacts may occur from operations of the Project wells once retrofitted with requisite water treatment and management facilities. No new groundwater wells would be constructed under this Project that could increase ambient noise levels in the immediate vicinity of the well sites. Measured noise levels of existing groundwater wells and estimated operational noise levels at retrofitted wells will be 69.8 dBA Leq for well pumps. Noise levels associated with only occasionally operated on-site backup power generators will be 51.2± dBA Leq (CVWD 2016, 4.13-15).[24] [25] In addition, various well sites in sensitive areas, including at Wells 17, 19 and 20, will be entirely or partially surrounded by 6 to 8-foot masonry walls that provide substantial noise attenuation and further ensure that operational noise from all Project wells is less than significant.

The California Office of Planning & Research (OPR) recommends that local noise elements consider a CNEL greater than 65 dBA to be unacceptable to sensitive receptors. For projects involving the installation of treatment at an existing well site, there may be minimal changes to noise. The CVWD found that "*the noise levels at the existing SBA well sites after project equipment is installed would be the same as those associated with the existing CVWD well sites and would result in minimal changes to the operational noise environment of each existing facility"* (*Id*). Based on the integral nature of the CWA's proposed Cr-6 treatment technology and maintaining essentially the same level of mechanical operation, operational impacts are expected to be less than significant.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant Impact. Groundborne vibration and/or groundborne noise will be produced by heavy equipment during the grading, excavation and construction phase of the Project. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Representative ground vibration levels associated with various types of construction equipment including bulldozers, jackhammers, loaded trucks and vibratory rollers range from 0.003 to 0.210 PPV (in/sec) at a distance of 25 feet.

Table 13
Representative Vibration Levels for Construction Equipment

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089
Vibratory Roller	0.210
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual	

The nearest sensitive noise and vibration receivers (structures) are located as close as 50 feet from well site and pipeline construction. Surrounding development potentially sensitive to construction noise, including ground vibration, is summarized by well site as follows:

[24] Hexavalent Chromium Rulemaking Draft EIR, prepared by the California Water Resources Control Board, 2023. The SWRCB relied in part on the analysis conducted by CVWD for its Cr-6 mitigation program.

[25] Draft/Final EIR for the Chromium-6 Water Treatment Facilities Project – Coachella Valley Water District, 2016.

Well 11: located next to elevated Dillon Road, Union Pacific rail lines and industrial uses. There are no sensitive receptors in the area.
Well 12: located within Bagdouma Park, sensitive receptors include parkland and apartments 260± feet to the south and 160± feet to the east.
Well 16: located on designated and partially developed industrial land. There are no sensitive receptors.
Well 17: located adjacent to Rancho Las Flores Park and an unoccupied residential neighborhood temporary construction noise may impact parkland users.
Well 18: located in an agricultural area with no sensitive receptors nearby.
Well 19: located on a residential lot within the Tierra Del Sol subdivision with sensitive receptors immediate top the east and south.
Well 20: located on a dedicated well lot in a residential subdivision within the Pyramid Rancho subdivision with sensitive receptors to the immediate west.

At these distances, construction vibration velocity levels are estimated to range from less than 0.01 up to 0.03 (in/sec). Based on the maximum acceptable continuous vibration threshold of 0.30 PPV (in/sec), the typical Project construction vibration levels will fall below the building damage thresholds at all noise sensitive receiver locations. Construction-related ground vibration may be a source of short-term annoyance during certain times of construction. Nonetheless, given the intermittent and short-term nature of Project construction, ground vibration impacts are considered less than significant.

c) For a project located within the vicinity of a private airstrip or 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?

Less than Significant Impact. Of the various Project components, only Well 16 occurs within two miles of the airport (1.33± miles) of the Jacqueline Cochran Regional Airport and is also the only Project component located within two miles of the airport; Well 16 is located within the Airport Land Use Compatibility Plan area, occurring in a designated Zone C and abuts Zone D on the west. Zone C is compatible with areas designated as Heavy Industrial and Light Industrial/Warehousing north and south of airport, including the Well 16 site. Adjacent Zone D also allows heavy and light industrial uses. The Project sites, including Well 16, are located well outside the current and projected future 55 dBA CNEL noise contour generated by the airport. Therefore, impacts due to aircraft noise will be less than significant.

3.13.3 Mitigation Measures

None required.

3.14 POPULATION AND HOUSING

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Sources: Coachella General Plan Noise Element (last amended in 2014); Coachella Zoning Ordinance 348, as amended; CA Department of Finance Demographic Research Unit, Report E-5: Population and Housing Estimates for Cities, Counties, and the State, January 1, 2026; Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.14.1 Setting

According to the California Department of Finance, the population of the City of Coachella was estimated to be 43,173 (2024). The City housing stock is composed of a mix of single-family and multi-family development, but the majority (70.8 percent) of housing units are single-family detached homes. The east Coachella Valley has undergone rapid population growth in recent decades, with the east Coachella Valley population increasing from 74,954 residents in 2010, to a forecasted 341,313 residents by 2035 (Restricted Custody General Population (RCGP 2015) Population and Employment Forecasts 2021).

The Project will retrofit City domestic water wells to reduce the levels of Chromium-6 to new state maximum concentrations. The project will not increase well or pumping capacity to the CWA system but will bring it into compliance with the new California Cr-6 standards.

3.14.2 Discussion of Impacts

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

No Impact. The City General Plan and Zoning Ordinance establish land use and development standards for the Project area that include and support continued and ongoing urbanization in the City. The Project will construct essential domestic water treatment facilities to serve existing wells. The Project does not involve changes in either land use of zoning designations nor will it facilitate unplanned development of population growth. Rather, the Project will ensure that CWA drinking water complies with state Cr-6 standards. The Project will not directly or indirectly induce unplanned housing development or area population growth. Future buildout of the Project area will occur in accordance with the City General Plan and Zoning Ordinance. No significant growth-inducing impacts are anticipated.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed Project will not displace existing people or housing. All Project lands are already developed to some extent, and pipeline alignments are graded and in most cases paved streets. The Project will not induce or require construction of replacement housing. Rather, the Project will ensure homeowners are provided with safe drinking water. No impact is anticipated.

3.14.3 Mitigation Measures

None required.

3.15 PUBLIC SERVICES

a)	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:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
i)	Fire protection?	☐	☐	☐	☒
ii)	Police protection?	☐	☐	☐	☒
iii)	Schools?	☐	☐	☐	☒
iv)	Parks?	☐	☐	☒	☐
v)	Other public facilities?	☐	☐	☐	☒

Sources: Coachella General Plan Update EIR, October 2014; Coachella Website; Fee Justification Report ("Report") for Residential and Commercial/Industrial Development, prepared by the Coachella Valley Unified School District. 2022; Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.15.1 Setting

Fire Protection

Fire protection services are provided in the City by contract services with the Riverside County Fire Department and CalFire. The principal station serving the City and planning area is centrally located Fire Station 79 at 1377 6th Street, Coachella. Station 79 is as close as 0.25 miles (Well 12) and as far as Well19) from the Project well sites. In the unlikely event of a fire at one of the well sites, the station would be able to respond within approximately a five-minute response time. The Riverside County Fire Department Station 79 is staffed by 18 full-time personnel (with a minimum of six firefighters on duty at all times), 10 volunteer firefighters, and 10 explorer cadets. The department is a full-service public safety department which has provided fire suppression and emergency medical services to Coachella residents, businesses and visitors since 1990. A second fire station able to respond is Indio Fire Department Station 88 located at 46951 Dr Carreon Boulevard in Indio. The cities have a mutual aid agreement. Coachella's fire codes and measures follow the California Fire Code (Title 24, Part 9) establishing practices for safeguarding life and property from fire related disasters.

Police Protection

The Riverside County Sheriff's Department is contracted to provide comprehensive law enforcement services through the City of Coachella Police Department. The Riverside County Sherriff Thermal Station is located at 86625 Airport Boulevard in Thermal, approximately 1.25 miles south of Well 16 and approximately 5.3 miles southeast of Well 19. The City Police Department is comprised of the Investigations, Patrol, Traffic, and Forensics Divisions with overlapping personnel.

The Department consists of 32 sworn officer positions, 19 of which are dedicated to the Patrol Division with the remaining officers dedicated to special assignments such as the Community Action Team (C.A.T.), School Resource Officers, along with Gang and Narcotics Enforcement. The Patrol Division for the Coachella Police Department covers an area of over thirty (30) square miles and serves a population of over 40,000 residents. The Coachella Police Department responds to over 24,000 calls for service annually or approximately 79 calls for service daily.

Schools

There are two school districts providing public education to students in kindergarten through 12th grade in Coachella: Desert Sands Unified School District (DSUSD) and Coachella Valley Unified School District (CVUSD). The majority of the City, including the Project planning area, occurs within CVUSD's service area. CVUSD receives funding from state funds and local property taxes. The CVUSD has 14 elementary schools, 3 middle schools and 4 high schools, plus one adult school. The nearest schools to the Project site include Martin Van Buren Elementary school located approximately 0.53 miles north of the Project site and Cesar Chavez Elementary School located 0.65± miles east of the subject property.

Parks

The City of Coachella currently operates ten parks and recreational facilities that support uses such as sports, community activities and playgrounds. Pursuant to the Quimby Act, the City's Municipal Code Section 16.36.060 provides for the dedication of land or the payment of fees in lieu thereof for park and recreational facilities as a condition of approval of a subdivision map. All residential developments and subdivisions containing five or more parcels are required to dedicate land, pay a fee, or both. Parks and open-space facilities are important resources for maintaining and improving health. Coachella has 65± acres of developed parkland spread across seven different parks, including Rancho Las Flores Park (17± acres) located adjacent to Well 17. Another City park potentially affected by the Project is Bagdouma Park (34 acres) adjacent to Well 12.

Other Public Facilities

Libraries

The Coachella Public Library is part of the Riverside County Library System, which includes 333,884 square feet of facilities distributed across 35 libraries. The system includes a catalogue of 1.5 million items. In 2010, the library system reported 681,117 registered borrowers.[26] The Coachella Library is located at 1500 Sixth Street in Coachella. The Coachella Library provides such services and resources to the local community as lending books and DVDs, internet access, and community events.

Health Services

Local and regional medical facilities in the Project area include the John F. Kennedy (JFK) Memorial Hospital in Indio, Eisenhower Medical Center (EMC) in Rancho Mirage, and Desert Regional Medical Center in Palm Springs. JFK is located nearest to the subject property, at 47-111 Monroe Street, approximately three miles northwest of the Project planning area. This facility contains 158 beds, offers a variety of inpatient and outpatient services, and includes a 24-hour emergency room. JFK provides a full range of medical services, including surgical, cardiology, gastrointestinal, diagnostic imaging, and outpatient rehabilitation. The hospital also provides obstetrics and an orthopedic/bone/joint institute.

[26] GPA EIR No. 521 prepared by the County of Riverside, February 2015.

3.14.2 Discussion of Impacts

a.i) Fire Protection

No Impact. The Project will not increase the demand for fire protection services in the City because it will not result in substantial adverse environmental impacts to these services nor will it substantially induce population growth in the region that could require expansion of fire protection capabilities beyond those already built and planned. Rather, the Project will provide state-mandated domestic water treatment infrastructure at existing City facilities. No adverse impacts to fire protection services are anticipated.

a.ii) Police Protection

No Impact. The proposed Project has a limited potential to attract theft of construction materials or installed equipment or facilities. However, standard site security and the fact that residents will remain in the Project area during the construction period will ensure that any additional calls for police protection services will be minimal. No impact is anticipated.

a.iii) Schools

No Impact. The Project does not involve the construction of any residential or habitable structures that would generate new student population, increase the demand for school services or require the construction of a new school. No impact is anticipated.

a.iv) Parks

Less Than Significant Impact. The proposed Project is not expected to result in any substantial adverse physical impacts to City parklands, including at Rancho Las Flores Park located adjacent to Well 17 or Bagdouma Park adjacent to Well 12. Proposed Well 12 improvements (see Figure I-4 Well 12 Layout Plan) will all take place within the existing enclosed well site. Planned improvements will take place in the northwest corner of the site, which already benefits from landscape buffers between the well site and park parking and soccer fields. While vertical vessels to be used may be up to 10 feet high, they will be backdropped by the substantially larger and higher on-site storage reservoir. The Project will not have a significant or substantial adverse physical impact on Bagdouma Park o or its facilities. Impacts will be less than significant.

At Rancho Las Flores Park proposed Well 17 improvements will encroach approximately 30 feet northward into the park which will remove and require the relocation of portions of a landscape planter and a stormwater retention basin, as well as a bus stop and trash receptacle. New well facilities will include an 8’x23’ horizontal reduction vessel, and an array of 10’ tall by 4’ wide vertical filtration vessels on a concrete pad. A 47,700-gallon (26’ diameter x12’ tall) backwash tank will be constructed on the northwest corner of the expanded site and a perimeter decorative block wall and new landscaping will be installed (see Figure 1-6 Well 17 Layout Plan). None of the athletic or recreational facilities will be significantly impacted by the Well 17 retrofit. There will be no substantial adverse physical impacts associated with the Well 17 retrofit. Necessary physically alterations to adjacent park lands will be managed in coordination with the City Parks and Recreation Department. Impacts will be less than significant.

The Project involves the installation of state-mandated domestic water treatment infrastructure. The Project does not include any residential or habitable structures and will not induce population growth or affect demand for parks and recreational facilities. Therefore, no significant adverse changes to parks and related facilities that could cause significant environmental impacts. Impacts will be less than significant.

a.v) Other public facilities?

No Impact.

Libraries
The proposed project will have no direct or indirect impact on the Coachella Public Library, its facilities or programs. There will be no impacts.

Health Services
Construction and operation of Project facilities could conceivably result in a call for emergency medical or less urgent medical treatment. The Project will not create a significant or substantial adverse physical impact on the provision of medical services and no new or physically altered medical facilities would be required. There will be no impacts.

3.14.3 Mitigation Measures

As discussed in Section 3.16, a mitigation measure is set forth to ensure that potential impacts to park lands and facilities at the Las Flores Park will be less than significant.

REC-1 Prior to the initiation of demolition and construction work at the Well 17 site, the CWA shall coordinate with the City Parks and Recreation Department on the redistribution of stormwater retention landscaping and the relocation of the bus stop into the Well 17 improvement plans.

No other mitigation required.

3.16 RECREATION

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Would the project 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?	☐	☐	☐	☒
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Sources: City of Coachella Parks and Recreation. https://www.coachella.org/residents/parks-and-recreation. Accessed August 2026; Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.16.1 Setting

The City currently operates ten parks and recreational facilities that support uses such as sports, community activities and playgrounds. The City's Municipal Code Section 16.36.060 provides for the dedication of land or the payment of fees in lieu thereof for park and recreational facilities as a condition of approval of a tentative map or parcel map. Coachella has 65± acres of developed parkland spread across seven different parks, including Rancho Las Flores Park (17± acres) located 850± feet north of the Project site. Other City parks include Bagdouma Park (34 acres) and Dateland Park (5 acres).

The Desert Recreation District (DRD) also provides recreational services throughout the Coachella Valley. DRD manages, maintains and assists in maintaining over 30 parks and recreation facilities in the valley. DRD also offers a variety of programs, services and classes on physical fitness, mental wellness and arts and crafts. No DRD programs or facilities will be affected by the proposed Project.

3.16.2 Discussion of Impacts

a) Would the project 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?

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less Than Significant Impact. The proposed Project will retrofit seven municipal water wells and upgrade three segments of sewer mains. The Project will not increase water pumping or production. It will have no effect on or impacts to existing neighborhood and regional parks or other recreational facilities and will not contribute to the physical deterioration of parklands. There will be no impacts in this regard.

As noted in the Public Services discussion above, the retrofitting of Well 17 will have an effect on the Rancho Las Flores Park site, encroaching approximately 30 feet northward into the park which will remove portions of a landscape planter and a stormwater retention basin. New well facilities to be expanded into existing parkland will include an 8'x23' horizontal reduction vessel, and an array of 10' tall by 4' wide vertical filtration vessels on a concrete pad. A 47,700-gallon (26' diameter x12' tall) backwash tank will be constructed on the northwest corner of the expanded site and a perimeter decorative block wall and new landscaping will be installed.

None of the athletic or recreational facilities will be significantly impacted by the Well 17 retrofit. Project impacts will include loss of a small stormwater retention basin, approximately two palm trees and landscape planters. The Project may also require the relocation of an existing bus stop a short distance farther north. Access to the park and its facilities will not be significantly impacted, There will be no substantial adverse physical impacts such as deterioration of park facilities associated with the Well 17 retrofit nor will the provision of new or physically altered parklands or facilities be required. Impacts will be less than significant with implementation of mitigation set forth below.

3.16.3 Mitigation Measures

REC-1 Prior to the initiation of demolition and construction work at the Well 17 site, the CWA shall coordinate with the City Parks and Recreation Department on the redistribution of stormwater retention landscaping and the relocation of the bus stop into the Well 17 improvement plans.

3.17 TRANSPORTATION

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b)	Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☐	☒
c)	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d)	Result in inadequate emergency access?	☐	☐	☒	☐

Sources: Coachella 2035 General Plan, Mobility Element, 2014; SunLine Transit Agency web site (https://www.sunline.org) accessed 8.19.26; Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.17.1 Setting

The Project is limited to the retrofit of seven municipal wells with water treatment equipment, structures and facilities designed to meet the California drinking water standards for Hexavalent Chromium (Cr-6). While the Project will include the installation of underground discharge lines and the upgrading of three segments of sewer main, the Project will not create any new impacts to local or regional streets, or multi-modal facilities (bus stops, sidewalks, paths, bike lanes). Project area roadways are in various states of improvement, ranging from full buildout and fully paved to sections of dirt roads.

Transportation facilities in the vicinity of the Project planning area include the Union Pacific Railroad lines, Cabazon Road and Dillon Road (Well 11), Mecca Street (Well 12), Van Buren Street (Well 17 and 20), and Jackson Street (Well 19). Bus service in proximity of Project sites includes a bus stop and trash reception just north of Well 17.

The Project also will not create any new households or businesses, will not generate any meaningful increase in traffic on City or regional streets, and will have no meaningful effect on the number of vehicle miles traveled in the community.

The Project contractor will be required to obtain an Encroachment Permit (or equivalent) through the CWA and/or City Public Works Department, and a traffic control plan will be required before construction can commence on Project components impacting or encroaching into public streets and rights of way.

Roadways where backwash water discharge lies will be installed and where three sewer main segments will be upgraded would be used during construction for site access, staging, materials transport/short-term storage, and other activities that could directly slow or delay local traffic during construction. However, none of the planned construction activities is expected to have a significant effect on access to or use of surrounding public roads by emergency management agencies (fire, police, medical).

The encroachment permit process will enable the CWA to evaluate traffic control plans and coordinate with emergency response personnel so that responders are aware of any change to traffic patterns due to Project construction. Upon completion of construction, the Project sites within public rights of way will be returned to preexisting conditions through regrading of dirt streets and repaving of asphalt paved streets. The Project will not interfere with the existing circulation pattern or emergency access routes. Compliance with standard requirements will ensure that the Project will have less than significant impacts on emergency access.

Once constructed, the Project will not generate any new traffic. Project construction traffic will be limited to construction crew, trucks and construction equipment, and material hauling. These activities will be most intensive during initial staging and site decommissioning following completion of construction. The Project contractor will be required to provide and implement a traffic control plan, which will direct traffic in construction zones, minimize access issues and ensure emergency access.

3.17.2 Discussion of Impacts

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less Than Significant Impact. According to the City General Plan EIR (2014), none of the Project area roadways were operating or are projected to operate at unacceptable levels of service with the exception of Van Buren Street intersections with Avenues 48 and 50, where existing PM peak hour traffic Levels of Service (LOS) conditions are "E" and "F", respectively. LOS operations on all potentially affected roadway segments are at LOS C or better (Coachella General Plan Draft EIR, 2014). Project construction may affect LOS and circulation along and adjacent to major streets in the short-term but will also benefit from implementation of requisite traffic management plans.

As noted above, the one area of potentially significant impact is to a bus stop and shelter located adjacent to the north end of the Well 17 site. Construction of proposed Well 17 improvements will require the northward relocation of the bus stop a short distance of its current location. No significant constraints to this relocation have been identified and impacts would therefore be less than significant.

In-street Project construction may cause temporary impacts to local traffic flow. However, Project construction will not require blocking off entire streets given the size of proposed lines and the required trench dimensions (maximum trench width is 48-56"). The in-street portions of the Project will be constructed in discrete segments limiting the length of roadway affected at any given time; at least one lane (with flagger if needed) will be maintained during construction of each pipeline segment. Therefore, it is not anticipated that construction of the proposed Project would substantially interfere with traffic circulation. Impacts will be less than significant.

Project operation is expected to generate an addition 62 well maintenance trips per year. Project facilities would not require routine staffing and thus are expected to generate minimal new traffic in the Project area. Overall, due to the nature of the Project and required standard traffic control plan, potential impacts will be temporary and less than significant regarding conflict with an applicable transportation plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities in the Project area.

b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

No Impact: SB 743 required amendments to the CEQA Guidelines to provide an alternative to Level of Service (LOS) for evaluating transportation impacts.[27] Particularly within areas served by transit, those alternative criteria must "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (Public Resources Code Section 21099(b)(1)) Measurements of transportation impacts may include "vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated."

The Project will not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b) because the Project is neither a land development project nor a transportation project. The Project is considered an infrastructure improvement project that will not directly increase vehicle miles traveled in the area. Therefore, the Project is consistent and will not conflict with CEQA Guidelines section 15064.3, subdivision (b).

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

No Impact: Construction and operation of the proposed facilities would not introduce any permanent roadway design features or incompatible uses that would increase or create traffic hazards. The proposed Project is being designed and will be installed in accordance with CWA and City design standards and guidelines, and the affected Project streets will be returned to preexisting conditions upon completion of construction. Therefore, the Project will not create a substantial increase in hazards due to a design feature, nor cause an effect upon, or a need for new or altered maintenance of roads. No impact is anticipated.

d) Result in inadequate emergency access?

Less Than Significant Impact. As noted, Project construction is not expected to block off any Project area roadway such that emergency access becomes inadequate in the area and to nearby uses. The roadways in the Project area would continue to function as emergency access routes as necessary. The Project will be required to obtain an Encroachment Permit (or equivalent) through the City Public Works Department, and a traffic control plan will be required before construction in public rights of way can commence. This permit process will enable the City to evaluate traffic control plans and coordinate with emergency response personnel so that responders are aware of any change to traffic patterns due to Project construction. Upon completion of construction, the Project streets will be returned to preexisting conditions, and the Project will not interfere with the existing circulation pattern or emergency access routes. Compliance with standard requirements will ensure that the Project will have less than significant impacts on emergency access.

3.17.3 Mitigation Measures

None required.

[27] Transportation Impacts (SB 743) by Governor's Office of Planning and Research (OPR), http://opr.ca.gov/ceqa/sb-743/, accessed May 2022.

3.18 TRIBAL CULTURAL RESOURCES

a)	Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
i)	Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
ii)	A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Sources: Torres Martinez Desert Cahuilla Indian Land Status Map, 2002; Native American Heritage Commission Guidelines for Native American Monitors/Consultants, 2005; Office of Planning and Research (OPR) Tribal Consultation Guidelines, 2005; Identification and Evaluation of Chromium 6 Well Retrofit Project, prepared by CRM TECH. August 21, 2026; Torres Martinez Tribe Land Status Map accessed June 2026; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.18.1 Setting

As discussed in Section 3.5: Cultural Resources, the Coachella Valley is the traditional home of the Cahuilla Indians. The Cahuilla were Takic-speaking peoples and are generally divided by anthropologists into three groups: the Pass Cahuilla of the San Gorgonio Pass-Palm Springs area, the Mountain Cahuilla of the San Jacinto and Santa Rosa Mountains and the Coachella Valley, and the Desert Cahuilla of the eastern Coachella Valley (CRM TECH 2024). Archaeological resources from these inhabitants are distributed within the Coachella Valley. Today, Native Americans of Pass or Desert Cahuilla heritage are mostly affiliated with one or more of the Indian reservations in and near the Coachella Valley, including Cabazon, Augustine, Torres Martinez, Agua Caliente, and Morongo. The Coachella Valley has long been occupied by the Cahuilla people. There is little population data for the Cahuilla prior to European contact is available but estimates range from 3,600 to 10,00 persons. The Cahuilla population was decimated as a result of the introduction of European diseases in the 19th century.

No portions of the Project Area of Potential Effects (APE) occur within the reservation lands of the Torres Martinez Desert Cahuilla or any other tribe. The cultural resources assessment prepared for the Project comply with Section 106 of the NHPA. The purpose of these studies was to provide CWA, the SWB and other responsible and cooperating agencies with the necessary information and analysis to determine the whether the Project could adversely impact significant tribal cultural resources as defined in Public

Resources Code section 21074 or properties listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k) and section 5024.1©.

Resource Setting

As discussed in greater detail in Section 3.5, Native Americans in the region were greatly influenced by the periods of inundation and subsequent desiccation of Holocene Lake Cahuilla, an ancient freshwater lake that repeatedly filled the Salton Basin over a period of at least 2,300 years before the 1730s A.D. (Rockwell et al. 2022). The shoreline of the lake during its last high stand around 1731-1733 coincided roughly with the present-day 42-foot AMS contour (*ibid.*; Wilke 1978; Waters 1983). The former lakeshore was a favored setting for aboriginal settlement and is highly sensitive for prehistoric archaeological remains today. In contrast, locations at the bottom of the lake during its high stands are generally considered to be of lesser archaeological sensitivity. Located roughly 60-130 feet below the shoreline in elevation, the Project APE would be fully submerged by Holocene Lake Cahuilla during the last high stand.

The CWA Cr6 Project includes the equipping and retrofitting of seven (7) existing municipal wells with water treatment and management facilities to comply with the State of California's new Chromium-6 drinking water standard. All areas potentially impacted by the Project have been previously disturbed as part of past well construction, graded and paved public streets and otherwise disturbed lands.

Records and Literature Research

In June of 2026, an historical/archaeological resources records search was conducted at the South Coastal Information Center (SCIC) of the California Historical Resources Information System. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Riverside County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

Historical background research included published literature in local and regional history, U.S. General Land Office (GLO) land survey plat maps dated 1856, USGS topographic maps dated 1904-1979, and aerial/satellite photographs taken in 1953-2026. Project archaeologists also conducted geoarchaeological analysis to assess the Project APE's potential for the deposition and preservation of subsurface cultural deposits from the prehistoric period. Sources consulted for this purpose included primarily topographic and geologic maps pertaining to the project vicinity. Findings from these sources were used to develop a geomorphologic history of the Project APE and address geoarchaeological sensitivity of the vertical APE. The Project APE is situated upon sediments identified as *Qa*, or Quaternary alluvial sand and clay of valley areas, and *Qc*, or clay of playa lakes. The abundance of the *Qc* sediments confirms that the APE was a part of the lakebed for Holocene Lake Cahuilla during the last high stand in the 1730s.

Before the final desiccation of Lake Cahuilla, long-term habitation by the Native population concentrated along the lakeshore, some 60-130 feet higher in elevation than the APE. After Lake Cahuilla vanished, the focal points of habitation shifted to the remaining water sources, including the Whitewater River (Coachella Valley Stormwater Channel) and the occasional walk-in wells known as "Indian wells." Importantly, since extensive ground disturbances in the past have left little vestige of the native landscape within the APE boundaries, the likelihood of encountering any intact subsurface tribal cultural resources of prehistoric origin within the vertical extent of the APE is considered to be relatively low. Therefore, the vertical APE is assigned a generally low archaeological sensitivity.

Tribal Consultations

Native American Consultations

As discussed in Section 3.5, Project archaeologists conferred with the State of California's Native American Heritage Commission (NAHC) for a records search in the commission's sacred lands file and notified the nearby Torres Martinez Desert Cahuilla Indians of the upcoming archaeological fieldwork which they participated in. Per NAHC's recommendations, Project archaeologists further contacted 12 Native American tribes in the region, both in writing and by telephone, between June 25 and July 20, 2026, to solicit local Native American input regarding any potential cultural resources concerns over the proposed undertaking. Responses from the Native American representatives are in Appendix 2 of the Project cultural resources report and summarized below and in Section 3.5.

The NAHC stated that the requested sacred lands record search yielded negative results regarding Native American cultural resources within the APE but recommended that local Native American groups be contacted for further information. For that purpose, the commission provided a list of potential contacts in the region. Project archaeologists contacted all 12 tribes on the NAHC referral list and follow-up telephone solicitations were carried out in July 2026.

As of late August 2026, five tribes responded in writing, and one provided comments via telephone. Among them, the Soboba Band of Luiseño Indians deferred to other tribes in closer proximity to the APE. The Augustine Band of Cahuilla Indians stated that the Tribe was not aware of any specific cultural resources within the APE but asked that if any cultural resources were discovered during the project, the NAHC be contacted immediately.

The Torres Martinez Desert Cahuilla Indians stated that the APE was a part of the Tribe's prehistoric settlement pattern, Desert Cahuilla traditional Land Use, and Ancient Lake Cahuilla Receding Shoreline areas of concern. The Torres Martinez requested that Phase I survey and Phase II testing be implemented prior to the undertaking, archaeological and Native American monitoring be required during ground-disturbing activities, and that all cultural resources documentation for the undertaking be reviewed by the Tribe. In addition, the tribe requested further consultation during the rest of the Project planning process.

The Agua Caliente Band of Cahuilla Indians identified the APE as a part of the Tribe's Traditional Use Area and indicated that there were Tribal Cultural Resources and village sites within a one-mile radius of each Project location. The Tribe requested to review all cultural resource documentation generated in connection with the undertaking, including a copy of the records search results.

The Twenty-Nine Palms Band of Mission Indians determined that the APE was within the Chemehuevi Traditional Use Area but that there were no known cultural resources within the APE. He requested that the lead agencies follow specific conditions for all cultural resources on any development plans or entitlement applications.

Assembly Bill 52 Tribal Consultations

The CWA provided "Notification of Tribal Consultation Opportunity" on September 10, 2026, pursuant to Assembly Bill (AB) 52 to Tribes that have previously requested such a notice from the City of Coachella. Notification was sent to the Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Cabazon Band of Mission Indians, Torres-Martinez Desert Cahuilla and the Twenty-nine Palms Band of Mission Indians. The Final IS/MND will summarize the results of these AB-52 consultations.

3.18.2 Discussion of Impacts

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a.i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k),

Less Than Significant. As noted above and as discussed in detail in Section 3.5, the Project historical and cultural resources surveys and report, identified no sites, buildings, or other structures of tribal cultural significance and determined that no such resources are expected to be encountered within the Project APE. The cultural resources study concluded that no "historic properties" or "historical resources" are present within the APE and that the extensively disturbed subsurface sediments in the various APE components appear to be relatively low in sensitivity for potentially significant archaeological remains. Accordingly, the Project archaeologists conclude that "No "historic properties" or "historical resources" will be affected by the proposed undertaking" (CRM TECH 2026), inclusive of tribal cultural resources as defined in Public Resources Code section 5020.1(k). Therefore, the Project will have a less then significant impact on such resources.

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

Less Than Significant Impact with Mitigation. As noted above, the Project APE encompasses lands that are within the existing well sites and paved and otherwise disturbed road rights-of-way. The seven existing domestic water wells, associated pipes and valves, supporting structures, water tanks, and/or retention basin, and the ground at all seven well locations is highly disturbed, typically with imported gravel on the surface. No buildings, structures, objects, sites, features, artifact deposits or other resources determined by the lead agency (City) to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1 were found within or adjacent to the APE boundary at any of the seven locations.

Based on the extensive number and breadth of previous historical and archaeological resources studies conducted in the Project area, the well-documented geoarchaeological constraints to locating sensitive tribal cultural resources in the Project APE, the potential for sensitive resources is well understood. Furthermore, Native American input, including participation in Project site surveys, did not identify any tribal cultural resources in the immediate vicinity of the Project APE, and no notable tribal cultural features were known to be present within the Project APE boundaries. Based on these findings, and in light of the significance criteria listed in the Project cultural resources report, the study concludes that no archaeological resource pursuant to Public Resources Code Section 5024.1 are present within the APE. Nonetheless, and in an abundance of caution, mitigation measure CUL-1 will further ensure that potential impacts are less than significant.

As discussed in Section 3.5, evidence of human remains, including cremations or skeletal remains were not encountered anywhere within or near the Project APRE during resource surveys. Evidence of archaeologically sensitive burials or cremations, which are considered important tribal cultural resources, have been identified elsewhere in the Coachella Valley and have frequently been associated with the shoreline of ancient Lake Cahuilla, village sites, the mouth of canyons and on alluvial fans. The subject ancient lake bottom underlying the Project APE is not a typical locality for Native American cremation sites. Nonetheless, the potential, although considered to be very low, of encountering human remains cannot be ruled out and mitigation measure CUL-2 will further ensure that potential impacts are less than significant.

3.18.3 Mitigation Measures

CUL-1 If buried cultural materials are inadvertently discovered during the undertaking, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the find.

CUL-2 Pursuant to State of California Health and Safety Code Section 7050.5, if human remains are encountered during the undertaking, no further disturbance should occur in the area until the Riverside County Coroner has made the necessary findings as to origin. If the Coroner determines the remains to be Native American, further consultation should be undertaken with the "Most Likely Descendant" identified by the Native American Heritage Commission (NAHC) to formulate the proper treatment of the remains under the provisions of PRC §5097.98.

3.19 UTILITIES AND SERVICE SYSTEMS

Would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c)	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?	☐	☐	☒	☐
d)	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Sources: 2020 Coachella Valley Regional Urban Water Management Plan, June 2021; Program Environmental Impact Report; Department of Environmental Health Review; CalRecycle Solid Waste Information System Facility/Site Activity Details, https://www2.calrecycle.ca.gov/SolidWaste/Site/Search, accessed June 2026; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.19.1 Setting

Domestic Water

The Coachella Water Authority (CWA) provides domestic water to the Project area. CWA participated in the 2020 Coachella Valley Regional Urban Water Management Plan (RUWMP) to ensure a sufficient and reliable water supply for development projects within the. CWA's primary source of fresh water is groundwater extracted from deep wells in the Indio Subbasin of the Coachella Valley Groundwater Basin. The City lies within the Whitewater River Watershed, which also supplies water to neighboring Coachella Valley cities. The Coachella Valley Groundwater Basin includes natural supplies; additional water sources include recycled water and imported supplies that are recharged to the Basin.

The City of Coachella currently uses approximately three to five percent of the total volume of water withdrawn from the Coachella Valley Groundwater Basin each year. The City supplies 100 percent of its potable water from City owned and operated wells. There are currently six operational wells within the City's distribution system and a seventh that has been drilled and is under development. The total pumping capacity of active wells is approximately 11,400 gallons per minute (gpm) or 16.5 million gallons per day (MGD). CWA has three water storage reservoirs within the City, with a total reservoir storage capacity of approximately 10.5 million gallons (MG). In addition, CWA operates two booster pumping stations. CWA's distribution system network consists of approximately 120 miles of pipeline, which range from 4-inches to 36-inches in diameter (2015 Urban Water Management Plan).

The City currently does not have infrastructure in place to recycle wastewater. However, it is in the process of updating its sewer master plan, which will include a feasibility study for implementing a recycled water program. If the treatment system upgrade feasibility study produces a favorable result, recycled water could be used for various purposes, including non-potable irrigation systems for larger developments. Currently, the City is participating in a Coachella Valley-wide recycled water feasibility study spearheaded by the CVRWMG as part of the Coachella Valley IRWM Plan.

Colorado River water is transported to the Coachella Valley via the Coachella Branch of the All-American Canal and used by the agricultural community for farming purposes; however, it is not a part of the CWA system. Per CVWD Ordinance No. 1428, CWA has the opportunity to receive canal water for additional potable water supply when available. The City continues to look at the use of canal water for both domestic water and irrigation.

Wastewater Treatment

The City's wastewater conveyance and treatment services are operated by the Coachella Sanitary District (CSD) which was established in 1936 and maintains approximately 90 miles of wastewater conveyance pipeline, two pump stations, and a wastewater treatment plant. The diameter of the wastewater conveyance pipelines range from 4 to 54 inches. The two pump stations are: Coachella Valley High School Pump Station (CVHS PS); and Polk Street Pump Station (City of Coachella 2015 Sewer System Master Plan; Figure 2-1). The City's wastewater treatment plant is located at Avenue 54 and Polk Street, and its capacity is 4.5 million gallon per day (MGD). The City also receives wastewater conveyance and treatment services through the Valley Sanitary District (VSD) for flows generated within the incorporated boundary; however, CSD is the primary service provider. In the April-June 2025 period the plant treated an average of 3.12 million gallons per day (Coachella Utilities Department Memorandum, July 16, 2025).

Stormwater Management

Stormwater drainage infrastructure in the eastern Coachella Valley consists of a network of regional and local drainage systems. Surface and agricultural runoff in the Project area is conveyed to the CVSC, which discharges into the Salton Sea. The Project wells and pipeline alignments are located outside 100-year flood zones. While the CWA is the Project proponent, it is understood that the Project sites and surrounding lands are subject to City requirements relating to flood control. The City implements standard requirements for the retention of storm flows and participates in the National Pollution Discharge Elimination System (NPDES) to protect surface waters from pollution. Development projects must retain the incremental 100-year storm volume onsite.

Solid Waste

The California Integrated Waste Management Act of 1989, Chapter 1095 (Assembly Bill 939) requires jurisdictions throughout the state to divert a minimum of 25% by 1995 and 50% of the solid waste landfilled by the year 2000. To attain these reduction goals, AB 939 established a planning hierarchy utilizing new integrated solid waste management practices. The Countywide Integrated Waste Management Plan (CIWMP) was prepared in accordance with AB 939. Burrtec provides solid waste disposal services to the City. Trash and recycled materials are collected from customers in the City and transported to the Coachella Valley Transfer Station located on Landfill Road east of Dillon Road and north of Interstate 10. The Coachella Valley Transfer Station currently receives an average of 328 tons of waste per day and has a capacity of 1,100 tons of waste per day. Once sorted, solid waste is transported to regional landfills, including Lamb Canyon and Badlands, which are operated by the County of Riverside**.**

Electric Power

Imperial Irrigation District (IID) is the City's sole electricity provider and serves over 145,000 customers with a distribution system that contains 112 substations, 3,402 miles of overhead distribution lines, 675 miles of underground distribution lines, and 125,616 active meters. Electricity is delivered to the City of Coachella via a 230-kilovolt (KV) transmission line located in the Indio Hills east of the Project site. Electricity is transferred from this transmission line to one of the four substations in the city maintained by IID, which include the Coachella Valley Substation, Coachella City Substation, 52nd Avenue Substation, and Thermal Substation.

Other Utilities

In Coachella, Southern California Gas (SoCalGas) provides natural gas, and Frontier and Spectrum provide telecommunications services.

3.19.2 Discussion of Impacts

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

No Impact. The state-mandated Project will result in the retrofitting of seven municipal wells to treat and reduce levels of Chromium-6 to permitted regulatory levels. The Project will include the construction of filtration and reduction vessels, backwash tanks, and equipment buildings. The Project will also include the construction of wastewater discharge lines connecting wells to the City sewer system. Finally, the Project includes upgrading three segments of existing sewer lines to accommodate anticipated increases in flow. The Project will require limited additional electric power, with most of pumps and other equipment replacing existing facilities. No natural gas demand will be generated by the Project. Existing telecommunications facilities are expected to continue to serve the seven well sites. No other potential conflicts have been identified. There will be no adverse impacts to the local water system or other local infrastructure. The Project will be beneficial to the community and the environment, further reducing levels of a regulated, potentially hazardous naturally occurring chemical in local drinking water to safe levels.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less Than Significant Impact. The Project will not in and of itself have a significant adversely impact on any existing or long-term water supplies and will directly generate very limited new water demand in the form of backwash wastewater, which will be treated at the CWA WWRP. The Project will not require additional water supplies. During construction, the Project will require the application of water for soil compaction and fugitive dust control. Construction-related water demand will be limited and temporary, and will end once construction is complete. The Project will serve deliver potable domestic water to the community that meets California requirements for Chromium-6, but will not in and of itself generate significant additional water demand. Although Well 20 has not yet been put into service, neither are all City well operated at full capacity (typically 2,000 gpm). Demand for domestic water is a function of changes in land use, and long-term land use plans (General Plans) have been used to project domestic water demand, including demand that will be met by Well 20.

Groundwater is the principal source of domestic water supply in the Coachella Valley. It is currently replenished via natural recharge and with Colorado River water conveyed to the valley via the Coachella Branch of the All-American Canal and the Colorado River Aqueduct. Local water resources are further supplemented with recycled/reclaimed water. The Project area is located within the East Whitewater River Subbasin AOB of the Whitewater River (Indio) Subbasin. The East Whitewater River Subbasin AOB had an annual production of approximately 117,925 acre-feet in 2020[28].

The 2020 Coachella Valley Regional Urban Water Management Plan (UWMP) indicates that CVWD, CWA and other plan agencies will have sufficient water supplies to serve users within its service area through year 2045 including during normal years, single dry years, and multiple dry years. The region's water supplies are protected by a variety of water delivery entitlements and contracts. The local agencies have committed sufficient capital resources and planned investments in various water programs and facilities to serve existing and future customers.

The Regional UWMP and annual Engineer's Reports detail water supply and demand, and provide information on groundwater recharge and replenishment activities, conservation, and water quality. Existing and future development in the Project area is under the City's jurisdiction, and water demand is accounted for in the long-range water planning efforts of the City and CWA. The basin is capable of meeting the water demands of the Coachella Valley, including the Coachella area, for the long term and during periods of extended drought, including during normal years, single dry years, and multiple dry years. Therefore, the Project will have a less than significant impact on groundwater supplies.

c) 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?

Less Than Significant Impact. As discussed above, The City's wastewater treatment plant has a current capacity of 4.5 million gallon per day (MGD). The City also receives wastewater conveyance and treatment services through the Valley Sanitary District (VSD) for flows generated within the incorporated boundary; however, CSD is the primary service provider. In the April-June 2025 period the plant treated an average of 3.12 million gallons per day (Coachella Utilities Department Memorandum, July 16, 2025).

[28] 2021-2022 Engineer's Report on Water Supply and Replenishment Assessment, prepared for Coachella Valley Water District, April 2021.

Furthermore, backwash water will be conveyed to the treatment plant, solids will be concentrated and disposed on in an approved manner. Impacts to existing wastewater treatment facilities will be less than significant.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant Impact. The subject state-mandated infrastructure Project is expected to generate a very limited amount of solid waste that will mainly consist of asphalt, pipe, equipment packaging and associated materials during construction only. Much of this material will be recyclable and will be captured in the waste hauler's waste stream diversion program. Burrtec provides solid waste services to the City. The Coachella Valley Transfer Station has a permitted throughput of 1,100 tons of waste per day and is inspected monthly. Impacts to landfills will be limited as a one-time occurrence and thus will result in de minimis impacts to local landfill capacity. (CalRecycle 2023). Project construction will not generate waste in excess of local standards, will not significantly impact the capacity of the landfill, and will not otherwise impair the attainment of solid waste reduction goals. Impacts will be less than significant.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact. Burrtec is a licensed waste hauler responsible for maintaining standards that ensure that all waste is handled in a manner that complies with local, state and federal reduction statutes and regulations including the CIWMP. The Project will not conflict with the applicable standards and regulations. No impact is anticipated.

3.19.3 Mitigation Measures

None required.

3.20 WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b)	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Source: Coachella General Plan, 2014; FRAP maps, California Department of Forestry and Fire Protection; CalFire Fire Hazard Severity Zones. https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones. Accessed August 2026; CWA Hexavalent Chromium Compliance Study prepared by Corona Environmental Consulting, LLC and Water Works Engineers, LLC, March 2026.

3.20.1 Setting

Wildfires occur in undeveloped areas and can spread to urban areas where the landscape and structures are not designed and maintained to be ignition resistant. A wildland-urban interface is an area where urban development is located in proximity to open space or "wildland" areas. Large areas of California are susceptible to wildfire due to weather, topography, and vegetation. Wildfire is a natural process and necessary part of the natural ecosystem; however, California continues to experience longer wildfire seasons as a result of climate change.

The California Department of Forestry and Fire Protection (CalFire) ranks fire hazards of wildland areas in the state using four main criteria: fuels, weather, assets at risk, and level of service. There are no state responsibility areas (SRA) or Very High Fire Hazard Severity Zones (VHFHSZ) in or near the City. CalFire has mapped areas of significant fire hazards through its FRAP. According to FRAP maps of FHSZ, the Project is not located in a moderate, high, or very high fire hazard area. The nearest area of significant hazard, designated a moderate hazard area according to CalFire, is associated with the foothills of the Santa Rosa Mountains, approximately 3.25 to 6 miles west of the Project planning area. The Project vicinity is designated as being a mix of LRA and FRAs.

3.20.2 Discussion of Impacts

a–d) No Impact

According to the FRAP maps by the CalFire, the Project area is not located within or near any fire hazard zone including Very High Fire Hazard Severity Zones (VHFHSZs) or SRAs. The Project planning area is located approximately 3.25 miles east of the nearest fire hazard zone near the Santa Rosa Mountains foothills, which are classified as Moderate Fire Hazard Severity Zone in SRA. Given the distance from the nearest fire hazard zones and the Project essential nature of domestic water infrastructure, the Project will have no impact associated with wildfires.

3.20.3 Mitigation Measures

None required.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

NOTE: If there are significant environmental impacts which cannot be mitigated and no feasible project alternatives are available, then complete the mandatory findings of significance and attach to this initial study as an appendix. This is the first step for starting the EIR process.

Does the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☒	☐	☐
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 projects, and the effects of probable future projects)?	☐	☐	☒	☐
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

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?

Less Than Significant Impact with Mitigation: With mitigation, implementation of the proposed Project would not substantially degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. See mitigation set forth in Section 3.4: Biological Resources, Section 3.5: Cultural Resources and Section 3.18: Tribal Cultural Resources.

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 projects, and the effects of probable future projects)?

Less Than Significant Impact. The Project is a state-mandated infrastructure project to ensure safe and healthy drinking water and support existing development consistent with the City General Plan. Its impacts are individually limited and not cumulatively considerable. The Project involves retrofitting of seven City municipal wells with treatment facilities to reduce levels of Chromium-6 in the City's drinking water. It also involves installation of wastewater discharge lines and upgrading of three sewer main segments, all within existing road rights of way. The Project will not intensify land use in the area beyond what would be expected to be served by the subject utility installations. The Project would not result in any significant unmitigated environmental impacts, and when viewed in conjunction with other closely related past, present or reasonably foreseeable future projects, would not result in cumulatively significant or considerable impacts.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant Impact. As discussed throughout this Initial Study, the Project will not have unmitigated environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly, with the implementation of the City Municipal Code, construction BMPs and other standard requirements. All potential impacts are expected to remain less than significant.

CHAPTER 4. CEQA-PLUS FEDERAL CROSS-CUTTING ENVIRONMENTAL REGULATIONS EVALUATION

The proposed Project may receive funding under a State Water Resources Control Board program that also has a federal funding component and/or from a federal program. Therefore, to assist in compliance with the federal environmental requirements, for the funding programs, this document includes analysis pertinent to several federal cross-cutting regulations (also referred to as federal cross-cutters or CEQA-Plus). The basic rules for complying with cross-cutting federal authorities are set-out in the DWSRF regulations at 40 CFR §35.3575 and the USDA Environmental Policies and Procedures at 7 CFR §1970.

This section describes the status of compliance with relevant federal laws, executive orders, and policies, and the consultation that has occurred or will occur in the near future. The topics are based on the USDA environmental policies and procedures and the SWRCB's DWSRF Program Federal Cross-cutting Environmental Regulations Evaluation Form for Environmental Review and Federal Coordination. The DWSRF Program is partially funded by the USEPA. Therefore, the State Water Resources Control Board must document that projects meet the federal cross-cutters requirements.

4.1 FARMLAND PROTECTION POLICY ACT (FPPA)

The FPPA requires a federal agency to consider the effects of its actions and programs on the nation's farmlands. The FPPA is intended to minimize the impact of federal programs with respect to the conversion of farmland to nonagricultural uses. It assures that, to the extent possible, federal programs are administered to be compatible with State, local, and private programs and policies to protect farmland. (See FPPA Section 1540(b) of the Act, 7 U.S.C. 4201(b))

Is any portion of the project located on prime, unique, or important farmland?

No. According to the California Important Farmland Finder by the California Department of Conservation, lands in the vicinity of the subject well sites are designated as Urban and Built-Up Land (California Important Farmland Finder 2026), while some areas still reflect the Prime Farmland, Farmland of Local Importance designations. The proposed Project will not impact lands in or planned for agricultural uses. Also see response 3.2.a-e, above.

4.2 CLEAN AIR ACT

General conformity requirements are part of the CAA Amendments in 1990 and the USEPA implemented those requirements in 1993 (Sec. 176 of the Federal Clean Air Act, 42 U.S.C. § 7506, and 40 CFR Part 93, Subpart B). General conformity requires that all federal actions in nonattainment and maintenance areas conform to the applicable State Implementation Plan (SIP) or Federal Implementation Plan (FIP) as approved or promulgated by USEPA. The purpose of the general conformity program is to ensure that actions taken by the federal government do not undermine State or local efforts to achieve and maintain the national ambient air quality standards.

Before a federal action is taken, it must be evaluated for conformity with the applicable implementation plan. All reasonably foreseeable direct and indirect emissions predicted to result from the action are taken into consideration and must be identified as to location and quantity. If it is found that the action would create emissions above de minimis threshold levels specified in USEPA regulations (40 CFR § 93.153(b)), the action cannot proceed unless mitigation measures are specified that would bring the proposed project

into conformance (See USEPA's regulations at 40 C.F.R. section 93.158 et seq. Determining Conformity of General Federal Actions to State or Federal Implementation Plans govern its implementation of Section 176(c) of the CAA.).

Identify the air basin and local air district for the project area. Provide the estimated project construction and operational air emissions (in tons per year) in the table, and attach supporting calculations, regardless of attainment status [emissions can be estimated by using the California Emissions Estimator Model (CalEEMod)

The Project is located in the Coachella Valley Planning Area of the SSAB and is under the jurisdiction of the South Coast AQMD. Estimated Project construction and operational air emissions (in tons per year) are presented in the table below, which compares those emissions against the applicable Federal De Minimis Thresholds.

Table 14: Federal De Minimis Thresholds (tons per year)

	O_3 Extreme Nonattainment		**PM_{10} Serious Maintenance**
Annual Maximum Emissions	**NO_x**	**ROG**	
Construction	0.78	0.09	0.06
Operation	0.001	0.007	0.0004
De Minimis Thresholds	**10**		**70**
Exceeds?	**No**		**No**

Emission Source: CalEEMod Version 2022.1. (Appendix A)
De Minimis Threshold Source: EPA website accessed August 2026. https://www.epa.gov/general-conformity/de-minimis-tables

As discussed in chapter 3.3 of this Initial Study, the two primary pollutants of concern in the Coachella Valley are O_3 and particulate matter (PM_{10}). The Coachella Valley is designated Extreme nonattainment for the 2008 8-hour ozone NAAQS, Severe-15 nonattainment for the 2015 8-hour ozone NAAQS, and Serious nonattainment for the PM_{10} NAAQS under Clean Air Act Section 107.

Under the federal General Conformity Rule, the applicable de minimis thresholds for the Coachella Valley are 10 tons per year for ozone precursors (VOC/ROG or NO_x) because the area is classified Extreme for the 2008 ozone standard, and 70 tons per year for PM_{10}. As shown in the table above, the Project would not exceed these federal de minimis thresholds for construction or operation. Therefore, the Project will not exceed the applicable annual Federal General Conformity Rule de minimis thresholds and is in compliance with the Clean Air Act.

4.3 FEDERAL ENDANGERED SPECIES ACT

Section 7 of the federal ESA requires federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of these species. Under Section 7, a project that could result in incidental take of a listed threatened or endangered species must consult with the USFWS to obtain a Biological Opinion (BO). If the BO finds that the project could jeopardize the existence of a listed species ("jeopardy opinion"), the agency cannot authorize the project until it is modified to obtain a "nonjeopardy" opinion. For the purpose of the proposed Project, the SWRCB and/or

USDA would act as the federal lead or responsible agency. The information contained within the IS/MND and the Biological Resources Technical Study (WSP 2026, Appendix B) may be used to support project compliance with ESA and MBTA.

Does the project involve any direct or indirect impacts from construction or operation activities that may affect federally listed threatened or endangered species, or their critical habitat, that are known or have a potential to occur on the project site, in the surrounding area, or in the service area?

(Also see: 16 U.S.C. Section 1532(19); 50 C.F.R. section 17.3; 50 C.F.R. Section 402.02; 16 U.S.C. Section 1532(19); 50 C.F.R. Section 402.12(f))

4.3.1 Federally Listed, Endangered, or Threatened Species

As described in a chapter 3.4 above, biological resources surveys were conducted on the Project sites in the spring of 2026 following a detailed literature and database search. The biological resource assessment conducted for this Project has determined that, with mitigation included in this CEQA-Plus document, no adverse effects will occur to federally listed Endangered or Threatened species, proposed Endangered or Threatened species, or to state-designated listed or sensitive species.

4.3.2 Federally Designated Critical Habitat

The Project site does not contain any federally designated critical habitat and, therefore, the subject project will not result in impacts to critical habitat. The Project will not affect waters of the United States (i.e., Coachella Valley Stormwater Channel) and will not need to secure permits or clearances in conformance with the federal Clean Water Act.

4.4 PROTECTION OF WETLANDS

Explain if there is any area within the project boundaries that should be evaluated for wetland delineation and/or that requires a permit certification from the USACE, RWQCB(s), and/or CDFW.

(Also see: Protection of Wetlands – Executive Order No. 11990, as amended by Executive Order No. 12608; Federal CWA Sections 401 and 404.)

As described in Sections 3.4 and 3.10 above, the Project will not impact wetlands or riparian habitat, and the Project will not affect Waters of the United States or Waters of the State (i.e., CVSC). Therefore, no permit or certification is required of the USACE, RWQCB or CDFW to implement the Project.

4.5 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) of 1976 as amended (16 U.S.C. § 1801 et seq.), is the primary act governing federal management of fisheries in federal waters, from the 3- nautical-mile state territorial sea limit to the outer limit of the U.S. Exclusive Economic Zone. It establishes exclusive U.S. management authority over all fishing within the Exclusive Economic Zone, all anadromous fish throughout their migratory range except when in a foreign nation's waters, and all fish on the continental shelf. The Act also requires federal agencies to consult with National Marine Fisheries Service on actions that could damage Essential Fish Habitat (EFH), as defined in the 1996 Sustainable Fisheries Act (Public Law 104-297). (Also see: 50 C.F.R. Section 600.920(c))

Does the project involve any direct or indirect impacts from construction or operational activities or changes in water quality/quantity that may impact Essential Fish Habitat (EFH)?

The Project site does not contain, and is not located in proximity to, U.S. federal waters where marine fishery management is occurring. No impacts will occur.

4.6 WILD AND SCENIC RIVERS ACT

The Wild and Scenic Rivers Act was passed in 1968 to preserve and protect designated rivers for their natural, cultural, and recreational value.

Does the proposed project adverse effect designated rivers for their natural, cultural, and recreational value?

The Project is not located near any designated wild and scenic rivers, the closes such water feature being a segment of Palm Canyon Creek in south Palm Springs, approximately 27 miles to the northwest. Therefore, the Project will not violate the Wild and Scenic Rivers Act.

4.7 WILDERNESS ACT

Except as specifically provided for in the Wilderness Act (Act), and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment, or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such areas.

Explain if a segment of the project is located within a designated Wilderness or indicate where this information can be found (e.g., biological report/assessment, CEQA document, etc.).

The Project is not located within a designated Wilderness (see Appendix B, WSP 2024). There are two federally designated wilderness areas in the Coachella Valley, the Mecca Hill Wilderness located 3± miles east of the Project site, and the Santa Rosa and San Jacinto Mountains National Monument located 5.25 miles to the west.

4.8 FEDERAL MIGRATORY BIRD TREATY ACT, BALD AND GOLDEN EAGLE PROTECTION ACT AND EXECUTIVE ORDER 13168

The MBTA and the Bald and Golden Eagle Protection Act prohibit the take of migratory birds (or any part, nest, or eggs of any such bird) and the take and commerce of eagles. Executive Order (EO) 13168 (Sep 22, 2000) requires that any project with federal involvement address impacts of federal actions on migratory birds.

Explain if the project has the potential to violate the MBTA, adversely affect Bald or Golden Eagles or not comply with EC 13168. Please indicate where the impact assessment specific to Bald or Golden Eagles can be found [e.g., page number(s) of the biological report/assessment, CEQA document, etc.].

Habitat for the Bald or Golden Eagle species does not occur in the Project area (Appendix B). The nearest Bald Eagle habitat is its winter range around and south of the Salton Sea and in the Santa Rosa Mountains to the west and southwest. Wildlife surveys (WSP 2026) indicated that the Project sites provided some nesting opportunities and nests, but very low foraging habitat value. As described in Section 3.4 Biological

Resources, the proposed Project would have less than significant impact on nesting birds with implementation of Mitigation Measures BIO-1, 2 and 3. Thus, the lead agency would be in compliance with this EO. There will be no impact with mitigation.

4.9 NATIONAL HISTORIC PRESERVATION ACT/HISTORIC SITES ACT

The purpose of the NHPA is to protect, preserve, rehabilitate, or restore significant historical, archaeological, and cultural resources. Section 106 requires federal agencies to take into account effects on historic properties. Section 106 review involves a step-by-step procedure described in detail in the implementing regulations (36 CFR Part 800) conducted, is provided in Appendix C. The analysis includes a Section 106 evaluation for the proposed Project and can be submitted as part of the consultation process with the State Historic Preservation Officer (SHPO). Concurrence by SHPO would ensure compliance with the NHPA. As described in *Section 3.5 Cultural Resources*, a cultural resource assessment for the proposed Project was conducted, and is provided in Appendix C. The analysis includes a Section 106 evaluation for the proposed Project and can be submitted as part of the consultation process with the State Historic Preservation Officer (SHPO). Concurrence by SHPO would ensure compliance with the NHPA.

The Project *Historic Properties Identification Reports (HPIR)* have been prepared by a cultural resources professional who meets the Secretary of the Interior's Professional Qualification Standards in Archaeology or Architectural History. The reports prepared for this Project provide a current records search from the *California Historical Resources Information System (CHRIS*) that extends to a half-mile or more beyond the Project's APE, maps showing all recorded resources and surveys in relation to the APE, records of Native American outreach, and resource records from the CHRIS search and newly identified resources.

Section 106 of the NHPA mandates that federal agencies take into account the effects of their undertakings on historic properties and seek ways to avoid, minimize, or mitigate any adverse effects on such properties (36 CFR 800.1(a)). Similarly, CEQA establishes that a project that may cause a substantial adverse change in the significance of a "historical resource" is a project that may have a significant effect on the environment (PRC §21084.1-2). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired."

(Also see: National Historic Preservation Act, as amended, Public Law 89-665; 80 STAT.915; 16 U.S.C. 470)

In summary of the research results discussed above, no "historic properties" or "historical resources" were identified within or adjacent to the Project APE, and the subsurface sediments within the vertical extent of the APE appear to be relatively low in archaeological sensitivity.

4.10 FLOODPLAIN MANAGEMENT: EXECUTIVE ORDERS 11988, 12148 AND 13690

EO 11988 requires federal agencies to recognize the values of floodplains and to consider the public benefits from restoring and preserving floodplains.

Is any portion of the project located within a 100-year floodplain as depicted on a floodplain map or otherwise designated by the FEMA?

No. As described in Section 3.10 above, the Project area is located in the FEMA Zone X, an area of 1% annual chance flood with average depth less than one foot (FEMA Flood Map Service Center. Accessed August 2026. FIRM Panels: 06065C227OH, 06065C226OH, 06065C2262H). FEMA) Flood Map Service Center, the majority of the Project site is in area of "Area of Minimal Flood Hazard" (0.2% Annual Chance Flood Hazard, Areas of 1% annual change flood with average depth less than one foot or with drainage areas of less than one square mile).[29] Construction and operation of the Project sites are or may be subject to the requirements of the NPDES[30], intended to regulate discharges and protect surface waters from pollution. The subject Project does not propose any direct discharge into Waters of the US or any other surface waters.

No adverse flooding effects are expected to result from the installation of the subject water and sewer pipeline, and lift station.

4.11 SAFE DRINKING WATER ACT/SOLE SOURCE AQUIFER PROTECTION

Section 1424(e) of the Safe Drinking Water Act established the USEPA's Sole Source Aquifer Program. This program protects communities from groundwater contamination from federally funded projects.

Explain if the project is located in an area designated by the USEPA, Region 9, as a sole source aquifer, and identify the sole source aquifer.

The Project is not located within the boundaries of a Sole Source Aquifer (SSA). The closest SSA is the Campo/Cottonwood Creek Aquifer SSA, located approximately 46 miles to the southwest.
(Also see: Federal Safe Drinking Water Act, 42 U.S.C. 300f et seq.; 42 U.S.C. Section 300h-3(e))

4.12 FORMALLY CLASSIFIED LANDS

Is any portion of the proposed project located on United States Forest Service (USFS), Bureau of Land Management (BLM), or any other federally managed land?

The Project will occur within urban and urbanizing areas of the City of Coachella within seven existing well sites and along street rights of way. Surrounding lands in the Project area are designated for residential, commercial industrial and parkland uses. None of the lands in the immediate Project vicinity are located on lands managed by United States Forest Service (USFS) or Bureau of Land Management (BLM). No portions of the Project will occur within Torres-Martinez Tribal or allottee lands.

According to the California Important Farmland Finder by the California Department of Conservation, lands in the vicinity of the subject well sites is designated as Urban and Built-Up Land (California Important Farmland Finder 2026), while some areas still reflect the Prime Farmland, Farmland of Local Importance designations although they are undergoing urbanization. The proposed Project will not impact lands in or planned for agricultural uses.

[29] FEMA Flood Map Service Center. Accessed August 2026. FIRM Panels: 06065C227OH, 06065C226OH, 06065C2262H

[30] National Pollution Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated With Construction and Land Disturbances Activities (General Permit) Order WO 2022-0057-DWO NPDES No. CAS000002.

4.13 COASTAL ZONE MANAGEMENT ACT/COASTAL BARRIERS RESOURCES ACT

Explain if any portion of the project is located within the coastal zone, or if the project will impact, or be located within or near, the Coastal Barrier Resources System or its adjacent wetlands, marshes, estuaries, inlets, and near- shore waters. If applicable, describe the project location with respect to the Coastal Barrier Resources System, or indicate where this information can be found (e.g., biological report/assessment, CEQA document, etc.).

The Coachella Valley, in which the Project is located, is an inland low-elevation desert region and is not in a Coastal Management Zone. The project will not result in environmental consequences to a Coastal Management Zone.

4.14 SOCIO-ECONOMIC/ENVIRONMENTAL JUSTICE IMPACTS TO MINORITY OR LOW-INCOME AREAS

4.15 ENVIRONMENTAL JUSTICE

The following describes the existing socioeconomic resources in the proposed Project area and the regulatory setting pertaining to environmental justice-related issues and evaluates the potential for the proposed Project to disproportionately and adversely affect minority or low-income groups.

4.15.1 Disadvantaged Communities

CalEnviroScreen 5.0 is a science-based tool created by CalEPA and the State's Office of Environmental Health Hazard Assessment (OEHHA) to identify communities in California that are disproportionately affected by sources of pollution, and that are often especially vulnerable to pollution's effects due to socioeconomic conditions. The tool uses environmental, health and socioeconomic information to identify areas at higher risk of exposure to environmental burdens which serves to provide context for the assessment of issues of equity and social justice.



CalEnviroScreen 5.0 (CES) measures 14 environmental factors to gauge "Pollution Burden" and nine socioeconomic factors to assess "Population Characteristics" for each state census tract. Pollution Burden and Population Characteristics are assigned percentile scores according to how each census tract ranks among all the state census tracts. Higher percentile scores indicate higher levels of vulnerability. Census tracts with scores of 75% or higher (meaning 75th percentile among all state census tracts) are among the highest burdened census tracts and are designated as "disadvantaged communities" by CalEPA. Disadvantaged communities receive funding from the State's Cap-and-Trade Program aimed as improving public health and economic opportunities.

Does the project involve an activity that is likely to be of particular interest to or have particular impact upon minority, low-income, or indigenous populations?

The Project involves upgrades to seven potable water well sites owned and operated by the Coachella Water Authority. The seven well sites occur across six different census tracts in the City of Coachella. According to the CES tool, the census tracts in the City have overall percentiles scores ranging from 29

(least burdened or vulnerable) to 90 (most burdened). The well sites are located either in or on the borders of census tracts with CES scores of 29, 32, 63, 72, 81, and 86. Exhibit 1-12 provides a map of the City with numbered census tracts and the overall CES percentile score for each tract. The Project planning area includes extensive areas where the minority Hispanic population comprises over 95% percent of area residents.

The following discussion focuses on the census tracts in the City with CES scores over 75. A percentile score of 75 or higher indicates that the census tract is considered to be a disadvantaged community by CalEPA.

- 6065045706 – CES score 90
- 6065940400 – CES score of 86
- 6065045707 – CES score of 81

4.15.2 Census Tract 6065945706

- Overall CalEnviroScreen percentile score is 90
- Overall Population Characteristics percentile score is 88
- Overall Pollution Burden percentile score is 83

None of the well sites occur within this census tract. According to the most recent CalEnviroScreen 5.0 database update (July 2026), the census tract is considered to be a disadvantaged community.

Population Indicators (Data is derived from 2024 American Community Survey):

- Unemployment: 15.14% of working age adults in the census tract are unemployed, ranking the census tract in the 96th percentile statewide.
- Poverty: 56% of the people living in the census tract are living below twice the federal poverty level, ranking the census tract in the 93rd percentile statewide.
- Linguistic Isolation: 54% of households in the census tract do not speak English well. The census tract as a percentile score of 99.
- Housing Burden: Housing burdened households refer to those that are low income and paying more than 50% of their income to housing costs. 15.64% of people in the census tract are in low income, housing burdened households, ranking in the 45th percentile statewide.
- Education Attainment: 62% of adults in the census tracts have less than a high school education, ranking the census tract in the 99th percentile.
- Low Birth Weight: This indicates the percentage of babies born who weigh less than 5.5 pounds (2500 grams) out of the total number of live births between 2018 to 2024. In this census tract, 4.98% of the infants born weigh less than 5.5 pounds and the percentile score is 36.
- Cardiovascular Disease: Represents the hospital visitation rate for heart attack. Between 2021 and 2023, 16.95 people out of 10,000 visited the emergency room for heart attack health issue. The census tract percentile score is 70.

- Asthma: Represent the age-adjusted rate of emergency department (ED) visits for asthmas per 10,000 people between 2022 and 2023. 38.02 people per 10,000 people visited a hospital emergency room for asthma ranking the census tract in the 55th percentile.

Pollution Burden (Data is from the year 2014 to 2024 depending on the factor):

- Air Quality, Ozone Concentration: The indicator measures the mean of the daily maximum 8-hour ozone concentration during the summer months of May through October. The summed concentration for the census tract is 0.05 ppm. The census tract ranks in the 70th percentile statewide. Data from 2022 to 2024.
- Air Quality, PM 2.5 Concentration: The indicator represents the annual average concentration of fine particulate matter (PM 2.5) in the air between 2022 and 2024. The days when wildfire smoke was detected by satellite anywhere in the state were excluded from the data. The concentration of PM 2.5 is 9.4 and the census tract ranks in the 62nd percentile.
- Diesel Particulate Matter: The indicator represents the amount of diesel particulate matter (PM) is emitted in the air from on-road, stationary and area sources. The data is from 2021 to 2022. Diesel sources emit 0.21 tons of diesel PM per year in this census tract. The census track ranks in the 90th percentile.
- Drinking Water Contaminants: This indicator is an index for a certain number of contaminants present in the drinking water between 2014 to 2022. The drinking water contaminant score for the census tract is 61.47. The census tract ranks in the 74th percentile.
- Pesticide Use: Represents the reported use of 124 hazardous and volatile agricultural pesticides between 2022 and 2024. Within the census tract, 529.7 pounds of active ingredients were used per square mile. The census tract ranks in the 88th percentile.
- Cleanup Sites: The indicator represents the number and type of cleanup sites in the census tracts. The data was analyzed in March 2026. There are no cleanup sites in the census tract. Due to its proximity to a cleanup to the west, the census tracts ranks in the 45th percentile.
- Groundwater Threats: The indicator represents the combined burden of groundwater threat sites occurring in or near the census tract. Site are given weighted scores based on the type of threat, the cleanup status and proximity to populated census blocks. There are not sites in the census tracts, but there are three nearby. The percentile score is 77.
- Impaired Waters: The indicator represents the number of individual pollutants affecting nearby bodies of water. Data are from 2024. The census tract is nearby or contains water bodies with 9 reported pollutants and ranks 73rd percentile.
- Small Air Toxic Sites: This indicator represents the combined presence of small air toxic sites such as has stations, autobody shops, food processing plants, and active or idle oil and gas wells. occurring in or near the census tract. The data were retrieved in May 2026. The census tract contains eight three sites, and three others are nearby. The tract ranks in the 60th percentile.
- Solid Waste: There are no solid waste facilities in the census tract, but one is nearby. The census tract ranks in the 53rd percentile.

4.15.3Census Tract 6065940400

- Overall CalEnviroScreen percentile score is 86
- Overall Population Characteristics percentile score is 75
- Overall Pollution Burden percentile score is 88

Two well sites, Well 11 and Well 17, occur within the census tract. According to the most recent CalEnviroScreen 5.0 database update (July 2026), the census tract is considered to be a disadvantaged community.

Population Indicators (Data is derived from 2024 American Community Survey):

- Unemployment: 6.86% of working age adults in the census tract are unemployed, ranking the census tract in the 59th percentile statewide.
- Poverty: 37% of the people living in the census tract are living below twice the federal poverty level, ranking the census tract in the 73rd percentile statewide.
- Linguistic Isolation: 42% of households in the census tract do not speak English well. The census tract as a percentile score of 99.
- Housing Burden: Housing burdened households refer to those that are low income and paying more than 50% of their income to housing costs. 12% of people in the census tract are in low income, housing burdened households, ranking in the 28th percentile statewide.
- Education Attainment: 48% of adults in the census tracts have less than a high school education, ranking the census tract in the 97th percentile.
- Low Birth Weight: this indicates the percentage of babies born who weigh less than 5.5 pounds (2500 grams) out of the total number of live births between 2018 to 2024. In this census tract, 5% of the infants born weigh less than 5.5 pounds and the percentile score is 37.
- Cardiovascular Disease: Represents the hospital visitation rate for heart attack. Between 2021 and 2023, 16.55 people out of 10,000 visited the emergency room for heart attack health issue. The census tract percentile score is 68.
- Asthma: Represent the age-adjusted rate of emergency department (ED) visits for asthmas per 10,000 people between 2022 and 2023. 38.45 people per 10,000 people visited a hospital emergency room for asthma ranking the census tract in the 56th percentile.

Pollution Burden (Data is from the year 2014 to 2024 depending on the factor):

- Air Quality, Ozone Concentration: The indicator measures the mean of the daily maximum 8-hour ozone concentration during the summer months of May through October. The summed concentration for the census tract is 0.05 ppm. The census tract ranks in the 71st percentile statewide. Data from 2022 to 2024.
- Air Quality, PM 2.5 Concentration: The indicator represents the annual average concentration of fine particulate matter (PM 2.5) in the air between 2022 and 2024. The days when wildfire smoke

was detected by satellite anywhere in the state were excluded from the data. The concentration of PM 2.5 is 9.63 and the census tract ranks in the 65th percentile.

- Diesel Particulate Matter: The indicator represents the amount of diesel particulate matter (PM) is emitted in the air from on-road, stationary and area sources. The data is from 2021 to 2022. Diesel sources emit 0.23 tons of diesel PM per year in this census tract. The census track ranks in the 91st percentile.
- Drinking Water Contaminants: This indicator is an index for a certain number of contaminants present in the drinking water between 2014 to 2022. The drinking water contaminant score for the census tract is 68.96. The census tract ranks in the 81st percentile.
- Pesticide Use: Represents the reported use of 124 hazardous and volatile agricultural pesticides between 2022 and 2024. Within the census tract, 11.96 pounds of active ingredients were used per square mile. The census tract ranks in the 61st percentile.
- Cleanup Sites: The indicator represents the number and type of cleanup sites in the census tracts. The data was analyzed in March 2026. One active cleanup site occurs in the census tract, U.S. Auto Salvage (U.S. Metals). The census tracts ranks in the 73rd percentile.
- Impaired Waters: The indicator represents the number of individual pollutants affecting nearby bodies of water. Data are from 2024. The census tract is nearby or contains water bodies with 9 reported pollutants and ranks 73rd percentile.
- Small Air Toxic Sites: This indicator represents the combined presence of small air toxic sites such as has stations, autobody shops, food processing plants, and active or idle oil and gas wells. occurring in or near the census tract. The data were retrieved in May 2026. The census tract contains eight sites and ranks in the 84th percentile.
- Solid Waste: The indicator represents the number of solid waste sites and facilities occurring near or within the census tract. Each site is given a weighted score based on the type of facility, regulatory tier and recorded violations (if any). Data is from April 2026. There are two sites in the census tracts. The census tract ranks in the 90th percentile.

4.15.4 Census Tract 6065045707

- Overall CalEnviroScreen percentile score is 81
- Overall Population Characteristics percentile score is 74
- Overall Pollution Burden percentile score is 79

Well 20 occurs on the west boundary of the census tract. Well 12 occurs nearby in the tract to the south. According to the most recent CalEnviroScreen 5.0 database update (July 2026), the census tract is considered to be a disadvantaged community.

Population Indicators (Data is derived from 2024 American Community Survey):

- Unemployment: 7.61% of working age adults in the census tract are unemployed, ranking the census tract in the 66th percentile statewide.

- Poverty: 36% of the people living in the census tract are living below twice the federal poverty level, ranking the census tract in the 72nd percentile statewide.
- Linguistic Isolation: 29% of households in the census tract do not speak English well. The census tract as a percentile score of 95.
- Housing Burden: Housing burdened households refer to those that are low income and paying more than 50% of their income to housing costs. 20% of people in the census tract are in low income, housing burdened households, ranking in the 65th percentile statewide.
- Education Attainment: 39% of adults in the census tracts have less than a high school education, ranking the census tract in the 92nd percentile.
- Low Birth Weight: this indicates the percentage of babies born who weigh less than 5.5 pounds (2500 grams) out of the total number of live births between 2018 to 2024. In this census tract, 4% of the infants born weigh less than 5.5 pounds and the percentile score is 16.
- Cardiovascular Disease: Represents the hospital visitation rate for heart attack. Between 2021 and 2023, 16.55 people out of 10,000 visited the emergency room for heart attack health issue. The census tract percentile score is 68.
- Asthma: Represent the age-adjusted rate of emergency department (ED) visits for asthmas per 10,000 people between 2022 and 2023. 16.95 people per 10,000 people visited a hospital emergency room for asthma ranking the census tract in the 70th percentile.

Pollution Burden (Data is from the year 2014 to 2024 depending on the factor):

- Air Quality, Ozone Concentration: The indicator measures the mean of the daily maximum 8-hour ozone concentration during the summer months of May through October. The summed concentration for the census tract is 0.05 ppm. The census tract ranks in the 71st percentile statewide. Data from 2022 to 2024.
- Air Quality, PM 2.5 Concentration: The indicator represents the annual average concentration of fine particulate matter (PM 2.5) in the air between 2022 and 2024. The days when wildfire smoke was detected by satellite anywhere in the state were excluded from the data. The concentration of PM 2.5 is 9.55 and the census tract ranks in the 64th percentile.
- Diesel Particulate Matter: The indicator represents the amount of diesel particulate matter (PM) is emitted in the air from on-road, stationary and area sources. The data is from 2021 to 2022. Diesel sources emit 0.14 tons of diesel PM per year in this census tract. The census track ranks in the 80th percentile.
- Drinking Water Contaminants: This indicator is an index for a certain number of contaminants present in the drinking water between 2014 to 2022. The drinking water contaminant score for the census tract is 69.42. The census tract ranks in the 82nd percentile.
- Pesticide Use: Represents the reported use of 124 hazardous and volatile agricultural pesticides between 2022 and 2024. Within the census tract, 251.8 pounds of active ingredients were used per square mile. The census tract ranks in the 83rd percentile.

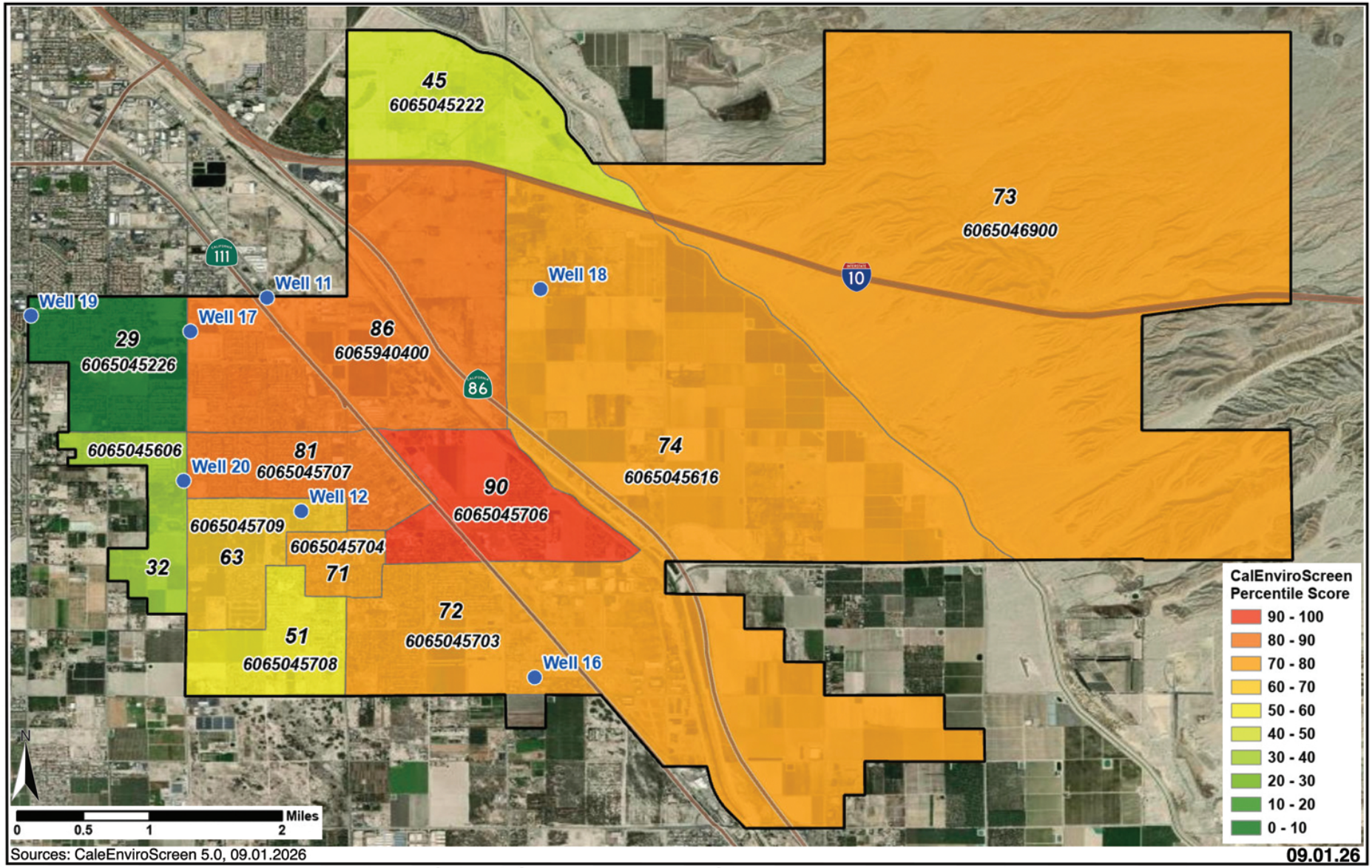
- Cleanup Sites: The indicator represents the number and type of cleanup sites in the census tracts. The data was analyzed in March 2026. One active cleanup site occurs in the census tract, U.S. Foster-Gardener. The census tracts ranks in the 66th percentile.
- Impaired Waters: The indicator represents the number of individual pollutants affecting nearby bodies of water. Data are from 2024. The census tract is nearby or contains water bodies with 9 reported pollutants and ranks 73rd percentile.
- Small Air Toxic Sites: This indicator represents the combined presence of small air toxic sites such as has stations, autobody shops, food processing plants, and active or idle oil and gas wells. occurring in or near the census tract. The data were retrieved in May 2026. The census tract contains three sites and ranks and two others in nearby. The tract ranks in the 82nd percentile.
- Solid Waste: There are not solid waste sites in the census tract.

Summary of Impacts

The Project will not result in disproportionate adverse environmental justice, socio-economic, or safety impacts to a minority or low-income population. The construction phase of the proposed Project may result in temporary and short-lived inconveniences for residents, including disruptions due to construction diversions. Construction noise and other temporary impacts will be less than significant and are directed to substantial long-term improvements in the quality of life for current and future residents in the City.

This socio-economic segment of the population occupying the Project area is generally low-income and under-served in the eastern Coachella Valley, and the proposed infrastructure will provide those working and residing in the community with safe and reliable water service. The Project, therefore, is expected to result in substantial direct long-term benefit to the local population.

(Also see: Environmental Justice – Executive Order No. 12898)



Sources: CaleEnviroScreen 5.0, 09.01.2026

09.01.26

TERRA NOVA®
PLANNING & RESEARCH, INC.

CalEnviroScreen Overall Percential Score by Census Tract
Coachella Water Authority
Chromium-6 Mitigation Project
Coachella, California

COACHELLA WATER AUTHORITY & SANITARY DISTRICT
SERVICE. VALUE. QUALITY.

Figure
1-12

CHAPTER 5. ENVIRONMENTAL ALTERNATIVES ANALYSIS

As set forth in the Environmental Package for the California Drinking Water SRF Program[31], analysis of an appropriate range of feasible project alternatives that meet the Project's needs and objectives, including an "no project/no action" alternative, should address areas of potentially significant environmental impacts. This assessment includes discussions of beneficial and adverse environmental impacts on the existing environment, future environment, and identified individual sensitive environmental issues. It also analyses the potential direct, indirect and cumulative impacts on sensitive environmental resources, as applicable. Any additional mitigation measures are discussed where applicable. The alternatives analysis also provides the basis for the selection of the chosen alternative.

Water treatment alternatives were evaluated by the CWA and its engineers, and it was determined that of the three primary feasible methods of Cr-6 treatment are limited to (1) Stannous Chloride Reduction Treatment, and (2) selection of alternative MCL Values of 1-9 and 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 25, 30, 35, 40, and 45 micrograms per liter. Under the second alternative, an alternative to the proposed MCL of 10 ug/L would be analysed. This second alternative was evaluated by the State Water Resources Control Board and determine to be illegal.[32] The State Water Resources Control Board determined that unresolved uncertainties exist regarding the use of stannous chloride treatment, stating *"To the extent that stannous chloride reduction is shown to be ineffective or poses a risk to public health, its use will not be permitted by the State Water Board's Division of Drinking Water."* And furthermore, *"Because there are some concerns with safety and efficacy with the use of stannous chloride reduction treatment, it cannot be identified as a best available technology under the California Safe Drinking Water Act.*[33]

It should be noted that the proposed Project is the implementation of a state-mandated environmental remediation for groundwater with elevated levels of Hexavalent Chromium that exceed State of California drinking water standards. The Project sites are geographically fixed and cannot be altered without the additional construction of new wells and associated discharge and sewer lines, which is not proposed. Six of the seven Project wells are fully developed and the seventh well (Well 20) has been drilled, masonry wall and off-site improvements completed, and is being built out. Beyond the complexities in applying a higher (or lower Cr-6 threshold, this alternative was ultimately rejected by the State Water Board because they are not legally feasible.

5.1 ALTERNATIVES EVALUATED

The purpose of the alternatives analysis in an EIR is to describe a range of reasonable alternatives to the proposed Project that could feasibly attain the objectives of the Project but would avoid or substantially lessen significant effects of the project and evaluate the comparative merits of the alternatives. (Cal. Code Regs., tit. 14, § 15126.6, subd. (a).) The range of alternatives considered must include those that offer substantial environmental advantages over the proposed project and may be feasibly accomplished in a successful manner considering economic, environmental, social, technological, and legal factors.

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31 Drinking Water State Revolving Fund Environmental Package, accessed March 5, 2025; https://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/forms/application_environmental_package.pdf

32 Draft Environmental Impact Report for Adoption of Regulation of the Hexavalent Chromium Maximum Contaminant Level, SCH 2021110099, prepared by the California Water Resources Control Board, 2023.

33 Ibid.

Although CEQA requires consideration of a "no project" alternative, such an alternative is not an option to the Proposed Regulations because the California Legislature has required the State Water Board to adopt a drinking water standard for hexavalent chromium. (Health & Saf. Code, § 116365.5.). Instead, the analysis of the "no project" alternative is essentially presented in the baseline because here the baseline would be identical to the existing environment. (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(1).)

Based upon the analysis in this IS/MND the proposed Project will not result in any unmitigated or unavoidable significant adverse effects. Furthermore, given the Project's nature as essentially a retrofit of existing municipal well facilities, further limits the range of reasonable alternative methods of remediation. Due to the firmness of the Cr-6 standard adopted by the California, the existing conditions and facilities available to CWA to implement a viable treatment program, and the demonstrated effectiveness and validation of the proposed method of treatment, additional treatment alternatives do not represent meaningfully viable or reasonable alternatives. Therefore, only a No Project/No Action Alternative is herein considered and is compared to the proposed Project.

5.1.1 No Project/No Action Alternative

Under the No Project/No Action Alternative none of the planned domestic water improvements to treat for Hexavalent Chromium would be constructed. The homes and businesses that would be served by the Project water quality improvements would continue to rely on current City wells and treatment (disinfecting) facilities and distribution systems. In cases where the 10 ug/l cannot or is not met, some or most users may rely on bottled drinking water due to contaminated wells. The No Project/No Action Alternative would not provide a safer water supply that meets the state's 10 ug/l standard to existing or future development in the Project planning area.

5.2 SELECTED ALTERNATIVE

The No Project/No Action Alternative would not achieve the project objectives or facilitate the CWA's compliance with state water quality standards for Cr-6. No improvements to provide a municipal water supply that meets the State of California 10 ug/l Chromium-6 standard would be constructed. The No Project/No Action Alternative is also not consistent with the 2017 Climate Change Scoping Plan, which calls for improved coordination and management of various water supplies. The proposed Project would accomplish the Project Objectives and would not conflict with the Section 1.3: Purpose and Need Statement. The proposed Project is the recommended and only reasonably available and implementable alternative because it is comprehensive in scope, relies on proven technology and can be constructed in a timely manner.

The proposed Project is cost-effective due to existing, improved facilities, economies of scale, technological feasibility, service to the greatest demand/need, and achieves other project objectives for drinking water compliance, safety and reliability.

5.2.1 Comparison of Alternatives: Summary of Environmental Consequences

The environmental consequences of implementing the proposed Project, as well as the existing, baseline conditions associated with each category of analysis, are set forth in detail in Chapters 1, 2 and 3 of this CEQA-Plus document. In all but a few categories, the No Project alternative, while arguably environmentally superior to the proposed Project, fails to address the state-mandated reduction in Chromium-6 in its drinking water. A comparative summary of Project and No Project alternatives is provided below.

Aesthetic Resources: The proposed Project would result in a variety of limited but less than significant effects on scenic resources described and analysed in Section 3.1. The No Project alternative would result in no changes in existing conditions and no new impacts to aesthetic resources. The No Project alternative is therefore the environmentally superior alternative. Nonetheless, under the proposed Project scenario adverse effects would be less than significant.

Agricultural and Forestry Resources: The proposed Project would not directly impact agricultural or forestry resources described and analysed in Section 3.2. The No Project alternative would also result in no changes in existing conditions and no new impacts to agricultural or forestry resources. Therefore, neither the proposed project nor the No Project alternative is environmentally superior.

Air Quality: The proposed Project would result in a variety of limited and less than significant adverse effects on local or regional air resources described and analysed in Section 3.3. The No Project alternative would result in no changes in existing conditions and no new impacts from construction and/or operation to air quality or air resources. The No Project alternative is therefore the environmentally superior alternative. Nonetheless, under the proposed Project's scenario adverse effects air quality would be less than significant.

Biological Resources: The proposed Project would result in a variety of potential impacts to biological resources, which can be avoided, minimized and mitigated to less than significant levels with implementation of mitigation measures set forth in Section 3.4. The No Project alternative would result in no changes in existing conditions and no new impacts from construction and/or operation to biological resources. The No Project alternative is therefore the environmentally superior alternative. Nonetheless, under the proposed Project scenario adverse effects to biological resources would be less than significant.

Cultural Resources: The proposed Project will have no or less than significant impacts on cultural resources, including historical and archaeological resources. Nonetheless, mitigation measures set forth in Section 3.5 will further ensure that impacts from the proposed Project would be less than significant. The No Project alternative would result in no changes in existing conditions and no new impacts from construction and/or operation to cultural resources. The No Project alternative is therefore the environmentally superior alternative. Nonetheless, under the proposed Project scenario adverse effects to cultural resources would be less than significant.

Energy Resources: The proposed Project would result in an increase in electric power demand on the order of 605,466 kwh compared to current levels of power demand. New, replacement electric motors will increase operational efficiency of existing well operations. As discussed in Section 3.6, the proposed Project will have a limited, less than significant impact on the availability of electrical power or other energy resources. The No Project alternative would result in no changes in existing conditions or energy use at the seven CWA wells. The No Project alternative is therefore the environmentally superior alternative. Nonetheless, under the proposed Project scenario adverse effects to energy resources would be less than significant.

Geology and Soils: As discussed in Section 3.7 the proposed Project would result in limited impacts associated with accommodating geological and soils constraints found at each well site, which will be accomplished through application of the California Building Code and associated seismic code. Impacts will be less than significant. These conditions are already addressed in the design and construction of the subject well sites and facilities. The No Project alternative would result in no changes in existing

conditions and no new impacts from geological and soils conditions. The No Project alternative is arguably the environmentally superior alternative. Nonetheless, under the proposed Project scenario adverse effects from geological or soils conditions would be less than significant.

Greenhouse Gas (GHG) Emissions: The proposed Project would result in a variety of limited and less than significant adverse effects on atmospheric greenhouse gasses with emissions primarily associated with project construction and amortized over a 30-year period. As discussed in detail in Section 3.8, GHG emissions associated with the construction and operation of the Project facilities would be less than significant. The No Project alternative would result in no changes in existing conditions and no new GHG emissions from construction and/or operation. The No Project alternative is therefore the environmentally superior alternative. Nonetheless, under the proposed Project's scenario adverse effects associated with GHG emissions would be less than significant.

Hazards and Hazardous Materials: The purpose of the proposed project is to reduce the level of Chromium-6 in CWA drinking water to safe levels. Therefore, the Project directly addresses an existing hazardous condition. As discussed and analysed in Section 3.9, the construction and operation of the proposed Project will generate few and low-level hazards that are managed through the application of standard programmatic avoidance and minimization measures that will ensure that impacts are less than significant. The No Project alternative would result in no changes in existing conditions and no new facilities or water treatment chemicals from construction and/or operation. The No Project alternative is therefore the environmentally superior alternative. Nonetheless, under the proposed Project's scenario adverse effects associated with hazards and hazardous materials would be less than significant.

Hydrology and Water Quality: The purpose of the proposed Project is to comply with state's standard for levels of Chromium-6 in drinking water. The proposed project will have a limited and less than significant impact on water supplies, will not affect local or area drainages, will not be subject to a flood hazard and does not conflict with, but rather implements a state-mandated water quality plan. Impacts under the proposed project would be less than significant. The No Project alternative would result in no changes in existing conditions and no new impacts to water quality or from flooding would occur. While the No Project alternative precluded certain potentially adverse effects, the proposed Project is the environmentally superior alternative because it mitigates a significant health hazard, i.e. drinking water with Cr-6 levels in excess of 10ug/l.

Land Use and Planning: As discussed in detail in Section 3.11, the proposed Project occurs in a variety of neighborhoods with a diverse mix of land uses. The proposed Project will not divide an existing neighborhood or community, nor does the proposed Project conflict with the City's land use plan or policies. The proposed Project will generate no impacts in this regard. The No Project scenario would also generate no new potential land use or planning conflicts. In both instances, impacts would be less than significant and there is no clearly superior alternative.

Mineral Resources: As discussed in Section 3.12, the proposed Project will have a limited and less than significant impact on local or regional mineral resources. The region is a major supplier of sand and gravel used in a wide range of construction. Very limited (de minimis) amounts of these materials will be needed by the proposed Project and impacts will be less than significant. Since the Project occurs on already disturbed lands and in urban and urbanizing areas of the city, mineral extraction in these areas is substantially constrained. Neither have important mineral resources been identified in the Project planning area. The No Project alternative would not generate a demand for mineral resources and, to this extent, is the environmentally superior alternative.

Noise: As discussed in detail in Section 3.13, the proposed Project will have a limited and less than significant impact on local noise levels. Six of the seven Project wells are in operation and successfully operate without creating significant adverse noise levels. While the construction of the proposed Project may create periodic short-term increases in noise levels, these impacts will be limited, will occur during the least sensitive time of the day, and will cease once construction is completed. Post-construction, the subject Project facilities are expected to generate the same level of noise as do the existing wells. Impacts will be less than significant under the proposed Project scenario. Under the No Project alternative, there would be no new construction noise and operational noise would remain at current levels. The No Project alternative would not generate new noise impacts and, to this extent, is the environmentally superior alternative.

Population and Housing: As discussed in Section 3.14, the proposed Project will not induce unplanned population growth, or demand for new housing or businesses. The capacity of the CWA domestic water system will not be affected by the proposed Project and there will be not extension of public roads or other facilities that could induce unplanned population growth Therefore, the proposed project would generate no impacts on population or housing. Neither will the No Project alternative have any effect on the community's population or housing. The two alternatives are environmentally equivalent.

Public Services: As discussed in Section 3.15, the proposed Project will ensure safe and healthy drinking water in the City of Coachella. It will not result in any substantial adverse physical impacts generate any other need for new or physically altered governmental facilities. There will be no impact on service ratios, response times, or other performance objectives for any public service. There will be less than significant impacts on City parklands, with a limited encroachment into Rancho Las Flores Park by the expansion of Well 17. Impacts associated with the proposed Project on public services will be less than significant. There would be no new impacts to public services under the No Project alternative, which would be the environmentally superior alternative.

Recreation: As discussed in Section 3.16, the proposed Project will increase or otherwise affect the use of local or regional parks or other recreation facilities. The proposed Project will have a limited and less than significant impact on recreation facilities at Rancho Las Flores Park, which will require the relocation of a bus shelter and trash receptacle. Recreation facilities at the park will not be impacted. Under the No Project alternative, there would be no change in conditions either at the subject well sites or adjacent and nearby recreation facilities. Therefore, the No Project alternative would be the environmentally superior scenario.

Transportation: As discussed in detail in Section 3.17, the proposed Project would have a less than significant impact on transportation facilities, including transit and other multi-modal facilities, which would not be affected by the proposed Project. The proposed Project would not result in any change in the vehicle miles traveled in the community, would not substantially increase transportation-related hazards and would not significantly impact emergency access. Impacts under the proposed Project would be less than significant. Under the No Project alternative, there would be no new construction or operations activities that would affect the local transportation system and there would be no impacts. In this regard, the No Project alternative is the environmentally superior alternative.

Tribal Cultural Resources: The proposed Project will have no or less than significant impacts on tribal cultural resources, including historical and archaeological resources. Nonetheless, mitigation measures set forth in Section 3.18 and 3.5 will further ensure that impacts from the proposed Project would be less than

significant. The No Project alternative would result in no changes in existing conditions and no new impacts from construction and/or operation to tribal cultural resources. The No Project alternative is therefore the environmentally superior alternative. Nonetheless, under the proposed Project scenario adverse effects to tribal cultural resources would be less than significant.

Utilities: As discussed in detail in Sections 3.10 and 3.19, the proposed project will have a less than significant impact on local and regional water resources, quality and supply. Proposed new facilities will have a less than significant impact on other utility services that could cause significant environmental impacts. The proposed Project will also have a less than significant impact on wastewater treatment capacity at the City's treatment plant. Neiter will the proposed Project have a significant adverse impact on materials recycling and landfill capacity. The No Project alternative would result in no changes in existing conditions and no new impacts from construction and/or operation to utility services or facilities. The No Project alternative is therefore the environmentally superior alternative. Nonetheless, under the proposed Project scenario adverse effects to utility services and facilities would be less than significant.

Wildfire: As discussed in Section 3.20, the Project sites are comprised of seven existing wells and pipeline alignments in existing public rights of way. Contractors working in the right of way will be required to provide traffic control plans prior to starting work. Planned, incremental construction at the well sites and pipeline alignments will ensure that the proposed Project does not impair emergency responses or evacuations. According to the FRAP maps by the CalFire, the Project area is not located within or near any fire hazard zone including Very High Fire Hazard Severity Zones (VHFHSZs) or SRAs. The Project will have no impact associated with wildfires, which is also true for the No Project alternative. There is no environmentally superior alternative in this regard.

CHAPTER 6. COMMENTS AND RESPONSES

CHAPTER 7. REPORT PREPARATION

7.1 REPORT AUTHORS

This report was prepared by the Coachella Water Authority and Terra Nova Planning & Research, Inc. Staff from the CWA and Terra Nova that were involved include:

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APPENDIX A.
CalEEMod Air Quality and Greenhouse Gas Modeling
August 2026

Prepared by
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CWA CR6 Mitigation Project Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	CWA CR6 Mitigation Project
Construction Start Date	1/1/2027
Operational Year	2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.00000
Precipitation (days)	7.60000
Location	33.680368090517206, -116.17858173967585
County	Riverside-Salton Sea
City	Coachella
Air District	South Coast AQMD
Air Basin	Salton Sea
TAZ	5666
EDFZ	19
Electric Utility	Imperial Irrigation District
Gas Utility	Southern California Gas

Data Field	Value
App Version	2022.1.1.45

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	1,584.00	User Defined Unit	0.31000	1,584.00	0.00000	0.00000	—	—
User Defined Linear	2.07000	Mile	1.000000	0.00000	0.00000	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Unmit.	2.17935	19.7994	24.8195	0.04066	2.96529	1.87566	4,419.53
Daily, Winter (Max)	—	—	—	—	—	—	—
Unmit.	2.17339	19.8033	24.5283	0.04198	2.96529	1.87566	4,810.51
Average Daily (Max)	—	—	—	—	—	—	—

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Unmit.	0.51098	4.31320	6.07513	0.01067	0.33855	0.23090	1,184.88
Annual (Max)	—	—	—	—	—	—	—
Unmit.	0.09325	0.78716	1.10871	0.00195	0.06178	0.04214	196.170
Exceeds (Daily Max)	—	—	—	—	—	—	—
Threshold	75.0000	100.0000	550.000	150.000	150.000	55.0000	—
Unmit.	No	No	No	No	No	No	—
Exceeds (Average Daily)	—	—	—	—	—	—	—
Threshold	75.0000	100.0000	550.000	150.000	150.000	55.0000	—
Unmit.	No	No	No	No	No	No	—

2.2. Construction Emissions by Year

2.2.1. Total Construction Emissions by Year, Unmitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—
2027	2.17935	19.7994	24.8195	0.04066	2.96529	1.87566	4,419.53
Daily - Winter (Max)	—	—	—	—	—	—	—
2027	2.17339	19.8033	24.5283	0.04198	2.96529	1.87566	4,810.51
Average Daily	—	—	—	—	—	—	—

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
2027	0.51098	4.31320	6.07513	0.01067	0.33855	0.23090	1,184.88
Annual	—	—	—	—	—	—	—
2027	0.09325	0.78716	1.10871	0.00195	0.06178	0.04214	196.170

2.2.2. Onsite Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—
2027	2.14395	19.7561	24.1430	0.04060	2.85622	1.84992	4,293.43
Daily - Winter (Max)	—	—	—	—	—	—	—
2027	2.14395	19.7561	24.1430	0.04105	2.85622	1.84992	4,459.23
Average Daily	—	—	—	—	—	—	—
2027	0.49660	4.27001	5.85308	0.01050	0.28366	0.21738	1,111.68
Annual	—	—	—	—	—	—	—
2027	0.09063	0.77928	1.06819	0.00192	0.05177	0.03967	184.051

2.2.3. Offsite Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—
2027	0.04322	0.04942	0.82698	0.00006	0.13251	0.03120	150.699
Daily - Winter (Max)	—	—	—	—	—	—	—

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
2027	0.06506	0.31397	0.85349	0.00152	0.26759	0.06641	384.626
Average Daily	—	—	—	—	—	—	—
2027	0.01438	0.04320	0.22205	0.00017	0.05488	0.01353	73.1991
Annual	—	—	—	—	—	—	—
2027	0.00262	0.00788	0.04052	0.00003	0.01002	0.00247	12.1189

2.3. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Unmit.	0.03792	0.00000	0.00000	0.00000	0.00000	0.00000	444.799
Daily, Winter (Max)	—	—	—	—	—	—	—
Unmit.	0.03792	0.00000	0.00000	0.00000	0.00000	0.00000	444.799
Average Daily (Max)	—	—	—	—	—	—	—
Unmit.	0.03814	0.00983	0.00275	0.00007	0.00230	0.00073	453.008
Annual (Max)	—	—	—	—	—	—	—
Unmit.	0.00696	0.00179	0.00050	0.00001	0.00042	0.00013	75.0006
Exceeds (Daily Max)	—	—	—	—	—	—	—
Threshold	55.0000	55.0000	550.000	150.000	150.000	55.0000	—
Unmit.	No	No	No	No	No	No	—
Exceeds (Average Daily)	—	—	—	—	—	—	—

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Threshold	55.0000	55.0000	550.000	150.000	150.000	55.0000	—
Unmit.	No	No	No	No	No	No	—
Exceeds (Annual)	—	—	—	—	—	—	—
Threshold	—	—	—	—	—	—	3,000.00
Unmit.	—	—	—	—	—	—	No

2.4. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.03792	—	—	—	—	—	—
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	444.799
Water	—	—	—	—	—	—	0.00000
Waste	—	—	—	—	—	—	0.00000
Total	0.03792	0.00000	0.00000	0.00000	0.00000	0.00000	444.799
Daily, Winter (Max)	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.03792	—	—	—	—	—	—
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	444.799
Water	—	—	—	—	—	—	0.00000
Waste	—	—	—	—	—	—	0.00000

Sector	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Total	0.03792	0.00000	0.00000	0.00000	0.00000	0.00000	444.799
Average Daily	—	—	—	—	—	—	—
Mobile	0.00022	0.00983	0.00275	0.00007	0.00230	0.00073	8.20842
Area	0.03792	—	—	—	—	—	—
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	444.799
Water	—	—	—	—	—	—	0.00000
Waste	—	—	—	—	—	—	0.00000
Total	0.03814	0.00983	0.00275	0.00007	0.00230	0.00073	453.008
Annual	—	—	—	—	—	—	—
Mobile	0.00004	0.00179	0.00050	0.00001	0.00042	0.00013	1.35900
Area	0.00692	—	—	—	—	—	—
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	73.6416
Water	—	—	—	—	—	—	0.00000
Waste	—	—	—	—	—	—	0.00000
Total	0.00696	0.00179	0.00050	0.00001	0.00042	0.00013	75.0006

3. Construction Emissions Details

3.1. Sewer Imprv. (2027)

3.1.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.73055	6.05467	8.57922	0.01252	0.22766	0.20945	1,274.93
Dust From Material Movement	—	—	—	—	0.02133	0.00233	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.04003	0.33176	0.47009	0.00069	0.01247	0.01148	69.8594
Dust From Material Movement	—	—	—	—	0.00117	0.00013	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.00731	0.06055	0.08579	0.00013	0.00228	0.00209	11.5660
Dust From Material Movement	—	—	—	—	0.00021	0.00002	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.04464	0.05925	0.58450	0.00000	0.16339	0.03830	153.537

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00403	0.24306	0.05542	0.00146	0.06118	0.02016	214.708
Average Daily	—	—	—	—	—	—	—
Worker	0.00258	0.00294	0.04014	0.00000	0.00891	0.00209	8.99454
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00023	0.01304	0.00299	0.00008	0.00334	0.00110	11.7679
Annual	—	—	—	—	—	—	—
Worker	0.00047	0.00054	0.00732	0.00000	0.00163	0.00038	1.48915
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00004	0.00238	0.00055	0.00001	0.00061	0.00020	1.94831

3.2. Sewer Impr. (2027)

3.2.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.91424	8.58034	9.00553	0.01546	0.35197	0.32381	1,680.59
Dust From Material Movement	—	—	—	—	2.07572	1.13185	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Off-Road Equipment	0.91424	8.58034	9.00553	0.01546	0.35197	0.32381	1,680.59
Dust From Material Movement	—	—	—	—	2.07572	1.13185	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.05010	0.47016	0.49345	0.00085	0.01929	0.01774	92.0872
Dust From Material Movement	—	—	—	—	0.11374	0.06202	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.00914	0.08580	0.09006	0.00015	0.00352	0.00324	15.2461
Dust From Material Movement	—	—	—	—	0.02076	0.01132	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.03224	0.03249	0.61823	0.00000	0.09803	0.02298	108.275
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Worker	0.02679	0.03555	0.35070	0.00000	0.09803	0.02298	92.1221
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—
Worker	0.00155	0.00176	0.02408	0.00000	0.00535	0.00125	5.39672
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Worker	0.00028	0.00032	0.00439	0.00000	0.00098	0.00023	0.89349
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3. Sewer Imp. (2027)

3.3.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.35055	3.18282	4.55584	0.00625	0.14115	0.12986	679.517
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Off-Road Equipment	0.01921	0.17440	0.24963	0.00034	0.00773	0.00712	37.2338
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.00351	0.03183	0.04556	0.00006	0.00141	0.00130	6.16448
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.03224	0.03249	0.61823	0.00000	0.09803	0.02298	108.275
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Worker	0.00155	0.00176	0.02408	0.00000	0.00535	0.00125	5.39672
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Worker	0.00028	0.00032	0.00439	0.00000	0.00098	0.00023	0.89349
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4. Site Preparation (2027)

3.4.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.64210	4.99656	7.93169	0.01895	0.20276	0.18654	2,058.02
Dust From Material Movement	—	—	—	—	0.00000	0.00000	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.05278	0.41068	0.65192	0.00156	0.01667	0.01533	169.152
Dust From Material Movement	—	—	—	—	0.00000	0.00000	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.00963	0.07495	0.11898	0.00028	0.00304	0.00280	28.0051
Dust From Material Movement	—	—	—	—	0.00000	0.00000	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.02679	0.03555	0.35070	0.00000	0.09803	0.02298	92.1221
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—
Worker	0.00232	0.00264	0.03612	0.00000	0.00802	0.00188	8.09509
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Worker	0.00042	0.00048	0.00659	0.00000	0.00146	0.00034	1.34023
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5. Grading (2027)

3.5.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.83998	6.38012	9.47863	0.02210	0.25211	0.23194	2,401.21

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Dust From Material Movement	—	—	—	—	0.00041	0.00006	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.06904	0.52439	0.77907	0.00182	0.02072	0.01906	197.360
Dust From Material Movement	—	—	—	—	0.00003	0.00001	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.01260	0.09570	0.14218	0.00033	0.00378	0.00348	32.6752
Dust From Material Movement	—	—	—	—	0.00001	< 0.000005	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.03571	0.04740	0.46760	0.00000	0.13071	0.03064	122.829
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00256	0.15432	0.03519	0.00093	0.03884	0.01280	136.323
Average Daily	—	—	—	—	—	—	—

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Worker	0.00310	0.00352	0.04816	0.00000	0.01069	0.00251	10.7934
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00022	0.01242	0.00285	0.00008	0.00318	0.00105	11.2076
Annual	—	—	—	—	—	—	—
Worker	0.00057	0.00064	0.00879	0.00000	0.00195	0.00046	1.78698
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00004	0.00227	0.00052	0.00001	0.00058	0.00019	1.85554

3.6. Building Construction (2027)

3.6.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.22971	11.1758	15.1375	0.02514	0.42854	0.39426	2,612.84
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.22971	11.1758	15.1375	0.02514	0.42854	0.39426	2,612.84
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.23583	2.14330	2.90308	0.00482	0.08219	0.07561	501.093
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.04304	0.39115	0.52981	0.00088	0.01500	0.01380	82.9616
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.6.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.00286	0.00288	0.05484	0.00000	0.00870	0.00204	9.60439
Vendor	0.00030	0.00792	0.00346	0.00006	0.00234	0.00073	8.22035
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.00238	0.00315	0.03111	0.00000	0.00870	0.00204	8.17160
Vendor	0.00027	0.00851	0.00353	0.00006	0.00234	0.00073	8.20957
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—
Worker	0.00048	0.00055	0.00748	0.00000	0.00166	0.00039	1.67549
Vendor	0.00006	0.00159	0.00066	0.00001	0.00045	0.00014	1.57503
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Worker	0.00009	0.00010	0.00136	0.00000	0.00030	0.00007	0.27740
Vendor	0.00001	0.00029	0.00012	< 0.000005	0.00008	0.00003	0.26076

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.7. Paving (2027)

3.7.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.39615	3.57238	5.07409	0.00704	0.16015	0.14734	744.803
Paving	0.09527	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.02388	0.21532	0.30584	0.00042	0.00965	0.00888	44.8922
Paving	0.00574	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.00436	0.03930	0.05581	0.00008	0.00176	0.00162	7.43242
Paving	0.00105	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.7.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.04299	0.04332	0.82431	0.00000	0.13071	0.03064	144.366
Vendor	0.00023	0.00610	0.00267	0.00004	0.00180	0.00056	6.33266
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Worker	0.00227	0.00258	0.03532	0.00000	0.00784	0.00184	7.91519
Vendor	0.00001	0.00038	0.00016	< 0.000005	0.00011	0.00003	0.38134
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
Worker	0.00041	0.00047	0.00645	0.00000	0.00143	0.00034	1.31045
Vendor	< 0.000005	0.00007	0.00003	< 0.000005	0.00002	0.00001	0.06313
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	444.799
Total	—	—	—	—	—	—	444.799
Daily, Winter (Max)	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	444.799
Total	—	—	—	—	—	—	444.799
Annual	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	73.6416
Total	—	—	—	—	—	—	73.6416

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
User Defined Industrial	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Winter (Max)	—	—	—	—	—	—	—
User Defined Industrial	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—
User Defined Industrial	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Consumer Products	0.03390	—	—	—	—	—	—
Architectural Coatings	0.00402	—	—	—	—	—	—
Total	0.03792	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Consumer Products	0.03390	—	—	—	—	—	—
Architectural Coatings	0.00402	—	—	—	—	—	—
Total	0.03792	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—

Source	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Consumer Products	0.00619	—	—	—	—	—	—
Architectural Coatings	0.00073	—	—	—	—	—	—
Total	0.00692	—	—	—	—	—	—

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	0.00000
Total	—	—	—	—	—	—	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	0.00000
Total	—	—	—	—	—	—	0.00000
Annual	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	0.00000
Total	—	—	—	—	—	—	0.00000

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	0.00000
Total	—	—	—	—	—	—	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	0.00000
Total	—	—	—	—	—	—	0.00000
Annual	—	—	—	—	—	—	—
User Defined Industrial	—	—	—	—	—	—	0.00000
Total	—	—	—	—	—	—	0.00000

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—

Species	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—

Species	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Sewer Imprv.	Linear, Grading & Excavation	3/1/2027	3/26/2027	5.00000	20.0000	—
Sewer Impr.	Linear, Drainage, Utilities, & Sub-Grade	3/27/2027	4/23/2027	5.00000	20.0000	—
Sewer Imp.	Linear, Paving	4/24/2027	5/21/2027	5.00000	20.0000	—
Site Preparation	Site Preparation	1/1/2027	2/11/2027	5.00000	30.0000	—
Grading	Grading	1/12/2027	2/22/2027	5.00000	30.0000	—
Building Construction	Building Construction	2/23/2027	5/31/2027	5.00000	70.0000	—
Paving	Paving	6/1/2027	6/30/2027	5.00000	22.0000	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Sewer Imprv.	Graders	Diesel	Average	1.000000	7.00000	148.000	0.41000

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Sewer Imprv.	Concrete/Industrial Saws	Diesel	Average	1.000000	7.00000	33.0000	0.73000
Sewer Imprv.	Excavators	Diesel	Average	1.000000	7.00000	36.0000	0.38000
Sewer Imprv.	Trenchers	Diesel	Average	1.000000	7.00000	40.0000	0.50000
Sewer Imprv.	Tractors/Loaders/ Backhoes	Diesel	Average	1.000000	7.00000	84.0000	0.37000
Sewer Impr.	Tractors/Loaders/ Backhoes	Diesel	Average	1.000000	7.00000	84.0000	0.37000
Sewer Impr.	Rubber Tired Dozers	Diesel	Average	1.000000	7.00000	367.000	0.40000
Sewer Impr.	Skid Steer Loaders	Diesel	Average	1.000000	7.00000	71.0000	0.37000
Sewer Imp.	Rollers	Diesel	Average	1.000000	7.00000	36.0000	0.38000
Sewer Imp.	Sweepers/Scrubbers	Diesel	Average	1.000000	7.00000	81.0000	0.42000
Sewer Imp.	Pavers	Diesel	Average	1.000000	7.00000	81.0000	0.42000
Site Preparation	Other Construction Equipment	Diesel	Average	1.000000	8.00000	148.000	0.41000
Site Preparation	Other Material Handling Equipment	Diesel	Average	1.000000	7.00000	367.000	0.40000
Site Preparation	Tractors/Loaders/ Backhoes	Diesel	Average	1.000000	8.00000	84.0000	0.37000
Grading	Other Construction Equipment	Diesel	Average	1.000000	8.00000	148.000	0.41000
Grading	Other Material Handling Equipment	Diesel	Average	1.000000	8.00000	367.000	0.40000
Grading	Tractors/Loaders/ Backhoes	Diesel	Average	1.000000	7.00000	84.0000	0.37000
Grading	Trenchers	Diesel	Average	1.000000	8.00000	40.0000	0.50000

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Building Construction	Cranes	Diesel	Average	1.000000	6.00000	367.000	0.29000
Building Construction	Forklifts	Diesel	Average	1.000000	6.00000	82.0000	0.20000
Building Construction	Tractors/Loaders/ Backhoes	Diesel	Average	1.000000	6.00000	84.0000	0.37000
Building Construction	Welders	Diesel	Average	1.000000	8.00000	46.0000	0.45000
Building Construction	Aerial Lifts	Diesel	Average	1.000000	4.00000	46.0000	0.31000
Building Construction	Sweepers/Scrubbers	Diesel	Average	1.000000	8.00000	36.0000	0.46000
Building Construction	Air Compressors	Diesel	Average	1.000000	4.00000	37.0000	0.48000
Building Construction	Other Construction Equipment	Diesel	Average	2.00000	8.00000	82.0000	0.42000
Building Construction	Other Material Handling Equipment	Diesel	Average	1.000000	8.00000	93.0000	0.40000
Paving	Paving Equipment	Diesel	Average	1.000000	8.00000	89.0000	0.36000
Paving	Other Material Handling Equipment	Diesel	Average	1.000000	7.00000	36.0000	0.38000
Paving	Other Construction Equipment	Diesel	Average	1.000000	8.00000	84.0000	0.37000
Paving	Plate Compactors	Diesel	Average	1.000000	7.00000	8.00000	0.43000

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Sewer Imprv.	Worker	12.5000	18.5000	LDA,LDT1,LDT2

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Sewer Imprv.	Vendor	0.00000	10.2000	HHDT,MHDT
Sewer Imprv.	Hauling	3.15000	20.0000	HHDT
Sewer Imprv.	Onsite truck	—	—	HHDT
Sewer Impr.	Worker	7.50000	18.5000	LDA,LDT1,LDT2
Sewer Impr.	Vendor	0.00000	10.2000	HHDT,MHDT
Sewer Impr.	Hauling	0.00000	20.0000	HHDT
Sewer Impr.	Onsite truck	—	—	HHDT
Sewer Imp.	Worker	7.50000	18.5000	LDA,LDT1,LDT2
Sewer Imp.	Vendor	0.00000	10.2000	HHDT,MHDT
Sewer Imp.	Hauling	0.00000	20.0000	HHDT
Sewer Imp.	Onsite truck	—	—	HHDT
Site Preparation	Worker	7.50000	18.5000	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2000	HHDT,MHDT
Site Preparation	Hauling	0.00000	20.0000	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	Worker	10.00000	18.5000	LDA,LDT1,LDT2
Grading	Vendor	—	10.2000	HHDT,MHDT
Grading	Hauling	2.00000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	0.66528	18.5000	LDA,LDT1,LDT2
Building Construction	Vendor	0.25962	10.2000	HHDT,MHDT

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	Worker	10.00000	18.5000	LDA,LDT1,LDT2
Paving	Vendor	0.20000	10.2000	HHDT,MHDT
Paving	Hauling	0.00000	20.0000	HHDT
Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Sewer Imprv.	—	500.000	1.000000	0.00000	0.00000
Sewer Impr.	—	—	1.000000	0.00000	0.00000
Site Preparation	—	—	0.00000	0.00000	0.00000
Grading	—	475.000	0.00000	0.00000	0.00000

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Paving	0.00000	0.00000	0.00000	0.00000	2.05000

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Phase Name	Land Use	Area Paved (acres)	% Asphalt
Paving	User Defined Industrial	1.05000	0%
Paving	User Defined Linear	1.000000	80%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00000	266.126	0.03300	0.00400

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	0.00000	0.00000	0.00000	62.0000	0.00000	0.00000	0.00000	868.000

5.10. Operational Area Sources

5.10.1. Hearths

Land Use	Hearth Type	Unmitigated (number)	Mitigated (number)
User Defined Industrial	Wood Fireplaces	0	0
User Defined Industrial	Gas Fireplaces	0	0
User Defined Industrial	Propane Fireplaces	0	0
User Defined Industrial	Electric Fireplaces	0	0
User Defined Industrial	No Fireplaces	0	0
User Defined Industrial	Conventional Wood Stoves	0	0
User Defined Industrial	Catalytic Wood Stoves	0	0
User Defined Industrial	Non-Catalytic Wood Stoves	0	0
User Defined Industrial	Pellet Wood Stoves	0	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0.00000	0.00000	2,376.00	792.000	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00000
Summer Days	day/yr	0.00000

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
User Defined Industrial	605,466	266.126	0.0330	0.0040	0.00000

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
User Defined Industrial	0.00000	0.00000

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
User Defined Industrial	0.00000	0.00000

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	23.1900	annual days of extreme heat
Extreme Precipitation	0.40000	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.06000	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	1	1	1	2

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	88.6994
AQ-PM	9.20971
AQ-DPM	37.5109
Drinking Water	18.0967
Lead Risk Housing	30.2331
Pesticides	81.3103

Indicator	Result for Project Census Tract
Toxic Releases	3.82596
Traffic	21.4875
Effect Indicators	—
CleanUp Sites	61.3848
Groundwater	37.6058
Haz Waste Facilities/Generators	24.7121
Impaired Water Bodies	77.2995
Solid Waste	0.00000
Sensitive Population	—
Asthma	63.4845
Cardio-vascular	84.8953
Low Birth Weights	40.6595
Socioeconomic Factor Indicators	—
Education	89.5216
Housing	94.6388
Linguistic	99.9594
Poverty	87.5000
Unemployment	97.8527

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	15.95021173
Employed	74.38727063
Median HI	21.81444886
Education	—
Bachelor's or higher	7.442576671
High school enrollment	100
Preschool enrollment	7.814705505
Transportation	—
Auto Access	30.77120493
Active commuting	16.1170281
Social	—
2-parent households	21.54497626
Voting	9.264724753
Neighborhood	—
Alcohol availability	42.51251123
Park access	56.19145387
Retail density	61.32426537
Supermarket access	70.90979084
Tree canopy	6.621326832
Housing	—

Indicator	Result for Project Census Tract
Homeownership	61.5167458
Housing habitability	33.50442705
Low-inc homeowner severe housing cost burden	37.99563711
Low-inc renter severe housing cost burden	5.710252791
Uncrowded housing	32.04157577
Health Outcomes	—
Insured adults	7.647889131
Arthritis	0.0
Asthma ER Admissions	41.6
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	43.1
Cognitively Disabled	78.9
Physically Disabled	34.8
Heart Attack ER Admissions	36.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0

Indicator	Result for Project Census Tract
Obesity	0.0
Pedestrian Injuries	19.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	51.6
Elderly	81.9
English Speaking	3.8
Foreign-born	78.9
Outdoor Workers	6.6
Climate Change Adaptive Capacity	—
Impervious Surface Cover	42.8
Traffic Density	13.2
Traffic Access	23.0
Other Indices	—

Indicator	Result for Project Census Tract
Hardship	82.0
Other Decision Support	—
2016 Voting	20.8

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	71.0000
Healthy Places Index Score for Project Location (b)	19.0000
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	EasternCoachellaValley

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Upgrades to 7 CWA water wells, improvements are limited to pouring new concrete equipment pads, construction of minor ancillary structures, well discharge lines and sewer line upgrades.
Construction: Construction Phases	Assumes a 6-month project buildout from January 2027 through June 2027.
Construction: Off-Road Equipment	Linear improvements are for sewer line upgrades and installation of well discharge lines.
Construction: Paving	Assumes 80% asphalt for repaving roadways after sewer improvements.
Operations: Fleet Mix	Assumes heavy duty vehicles will be used for sludge disposal.
Operations: Landscape Equipment	no landscaping.
Operations: Energy Use	Represents net increase in energy demand from new well equipment. No natural gas usage.

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	0.00000	0.31000
Building Area	sq. ft	0.00000	1,584.00
Landscape Area	sq. ft	—	0.00000
Special Landscape Area	sq. ft	—	0.00000

8.4. Construction

8.4.1. Construction Phases

Phase Type	Phase Name	Model Parameter	Default Value	New Value
Site Preparation	Site Preparation	Start Date	1/16/2027	1/1/2027
Site Preparation	Site Preparation	End Date	1/17/2027	2/11/2027
Site Preparation	Site Preparation	Work Days per Phase	1.000000	30.0000
Grading	Grading	Start Date	1/18/2027	1/12/2027
Grading	Grading	End Date	1/20/2027	2/22/2027
Grading	Grading	Work Days per Phase	2.00000	30.0000
Building Construction	Building Construction	Start Date	1/21/2027	2/23/2027
Building Construction	Building Construction	End Date	6/10/2027	5/31/2027
Building Construction	Building Construction	Work Days per Phase	100.0000	70.0000
Paving	Paving	Start Date	6/11/2027	6/1/2027
Paving	Paving	End Date	6/18/2027	6/30/2027
Paving	Paving	Work Days per Phase	5.00000	22.0000

8.4.2. Off-Road Equipment

Phase Name	Equipment Type	Model Parameter	Default Value	New Value
Grading	Tractors/Loaders/Backhoes	Number per Day	2.00000	1.000000
Building Construction	Welders	Number per Day	3.00000	1.000000

8.4.9. Paving

Phase Name	Land Use	Model Parameter	Units	Default Value	New Value
Paving	User Defined Industrial	Area Paved	acres	0.00000	1.05000

Phase Name	Land Use	Model Parameter	Units	Default Value	New Value
Paving	User Defined Linear	% Asphalt	%	100.0000	80.0000

8.5. Operations

8.5.2. Area Sources

8.5.2.4. Landscape Equipment

Model Parameter	Units	Default Value	New Value
Summer Days	day/yr	180.000	0.00000

8.5.3. Energy Usage

Land Use	Model Parameter	Units	Default Value	New Value
User Defined Industrial	Electricity	kWh/yr	0.00000	605,466
User Defined Industrial	Electricity (Not Subject to Title 24)	kWh/yr	0.00000	605,466

APPENDIX B.
Biological Resources Assessment Report
Coachella Water Authority Chromium-6 (Cr6) Well Sites Project August, 2026

Prepared by

WSP USA, Inc
1845 Chicago Avenue, Ste D
Riverside, CA 92507

BIOLOGICAL RESOURCES ASSESSMENT REPORT FOR THE COACHELLA WATER AUTHORITY'S CHROMIUM-6 (Cr6) WELL SITES PROJECT COACHELLA RIVERSIDE COUNTY, CALIFORNIA

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August 2026

WSP Project No. US0041854.2881

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1.0 INTRODUCTION

At the request of Terra Nova Planning and Research Inc. (Terra Nova), this biological resources assessment report (BRAR) was prepared by WSP USA Inc. (WSP) for the Coachella Water Authority's (CWA's) proposed Chromium-6 (Cr6) Well Sites Project located in the City of Coachella (City), Riverside County, California (Appendix A, Figure 1). The CWA proposes the retrofitting of a total of seven (7) existing wells with facilities to remove Chromium-6 (Cr6) from drinking water in the City.

This action would be considered a "Covered Activity" under the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) and this report and the information contained herein are intended to be used for compliance with Federal, State and local environmental laws and regulations (i.e., the CVMSHCP).

2.0 PROJECT BACKGROUND

The State of California (State) has determined that the chemical compound Hexavalent Chromium-6 (Cr6), which originates in nature and as an industrial pollutant, is hazardous to human health at very low levels, being considered a carcinogen and reproductive toxicant. The state officially adopted a Maximum Contaminant Level (MCL) of 10 parts per billion (ppb) for Cr6 in drinking water, effective October 1, 2024. This regulation made California the first state to set a specific limit for Cr6 and is much stricter than the current 100-ppb federal standard. Until the readoption of the 10-ppb threshold, Cr6 was regulated at a 50-ppb threshold in California. To comply with State requirements, the CWA is now required to lower Cr6 levels in drinking water by October 2027 (Corona Environmental Consulting 2026).

The CWA's existing water system consists of different pressure zones, groundwater wells, storage reservoirs, booster pumping stations and distribution facilities. CWA relies on local groundwater pumped from CWA-owned and operated wells. There are currently six (6) operational wells within the CWA's water distribution system. Facility numbers include the existing Wells 11, 12, 16, 17, 18, and 19. A seventh site, Well 20, has been cleared, rough graded, drilled, the well casing installed and is awaiting future equipment installation and facility construction. The total pumping capacity of the active wells is approximately 11,400 gallons per minute (gpm) or 16.5 million gallons per day (MGD). The CWA also has three (3) storage reservoirs within the City, with a total reservoir storage capacity of approximately 10.5 million gallons (MG). The current system serves approximately 9,000 customers (Corona Environmental Consulting 2026).

The CWA's Cr6 Mitigation Project (project) involves the retrofitting of six (6) existing wells and one (1) additional well that is currently under construction (Corona Environmental Consulting 2026). For the purposes of this BRAR, these seven (7) facilities, and their respective buffer zone study areas are collectively and/or individually referred to as the "study area(s)" in the context of this BRAR.

3.0 PROJECT SUMMARY

In March 2026, the CWA completed a Cr6 compliance study which identified six (6) of the existing groundwater wells and one future well, which is currently under construction, that will be equipped with treatment facilities to reduce Cr6 levels below the new 10-ppb threshold. The existing facilities (Wells 11, 12, 16, 17, 18 and 19) and the future new facility (Well 20) will be equipped to provide treatment allowing CWA to comply with the MCL of 10 µg/L (eq. 10-ppb) (Corona Environmental Consulting 2026).

Corona Environmental Consulting, LLC (Corona) and Water Works Engineers, LLC (WWE), under contract with CWA, have completed the preliminary design of each of the facilities' treatment measures using reduction/coagulation/filtration (RCF) treatment technology. The RCF treatment process includes ferrous iron chemical injections to reduce Cr6 to less soluble trivalent chromium (Cr3) through reduction contact vessels. The water is then injected with sodium hypochlorite (SHC) to oxidize residual ferrous iron to ferric iron in the solid form of ferric hydroxide. Water is then sent to filtration vessels to remove the Cr3 and ferric hydroxide particles (Corona Environmental Consulting 2026).

Project design includes the release of backwash water into the municipal sewer system. Backwash water management alternatives were evaluated and potential system deficiencies addressed with the use of backwash equalization tanks at some of the facilities. Based on the analysis, three sewer line segments will exceed capacity based on the sewer pipeline depth-to-diameter ratios, which will require sewer pipeline upsizing. Onsite backwash recycling with approximately weekly solids off-hauling to a licensed landfill is anticipated for at least one of the project facilities. New facility equipment would include reduction vessels, filter vessels, associated pumps and motors, chemical feed system, and backwash tanks (Corona Environmental Consulting 2026).

3.1 Well Site Locations and Facility Descriptions

Well 11

Well 11, which is included on Assessor's Parcel Numbers (APNs) 603-232-019 and 603-232-030, is located at the northwest corner of Dillon Road and Cabazon Road (Appendix A, Figure 2a). This existing facility is located in Section 31, Township 5 South, Range 8 East of the USGS 7.5' *Indio, California* quadrangle (Appendix A, Figure 3a). Elevations on the study area for Well 11 are approximately -7 to -45 ft below mean sea level (BMSL). Following project implementation, Well 11 will operate with a design flow of 2,000 gpm. New facilities will include an eight-foot (ft) by 21-ft horizontal reduction vessel and an array of up to thirty-two (32) five-ft tall by four-ft wide vertical filtration vessels on a concrete pad. Additional new facilities will include a ferrous chloride storage building (12-ft by 12-ft), chemical feed pump, 500-gallon (gal) sodium hypochlorite storage tank (replaces existing) and miscellaneous pumps and pipes. Improvements to this facility will also include the removal of the existing chain link fencing and the construction of a six-ft masonry wall topped with barbed wire. A 6-inch (in) wastewater discharge line will be constructed and run 450± linear ft to connect with the local sewer line. Engineering design plans for Well 11 propose an expansion of the existing footprint, to the east and south, of the current chain link and barbed wire fenced facility (Appendix A, Figure 2a) (Corona Environmental Consulting 2026). Existing adjacent land uses within the study area of this facility include industrial development to the north; the Dillon Road Bridge over the Union

Pacific Railroad (UPRR), at least one utility line (Kinder Morgan Energy Partners [KMEP]) easement and Grapefruit Boulevard/State Route 111 (SR-111) as well as disturbed, largely barren and undeveloped open space to the south; disturbed, largely barren and undeveloped open space to the east; and the SPRR, KMEP utility line easement and Grapefruit Boulevard/SR-111 to the west (Appendix A, Figure 2a).

Well 12

Well 12, which is included on APN 768-210-014, is generally located immediately west of Mecca Street, south of Avenue 51 and adjacent to portions of Bagdouma Park (Appendix A, Figure 2b). This existing chain link and barbed wire fenced, gated and locked facility is located in the northern 1/2, southeastern ¼ of Section 6, Township 6 South, Range 8 East of the USGS *Indio, California* quadrangle (Appendix A, Figure 3a). The elevational range of the study area for Well 12 is approximately -55 to -66 ft BMSL. Post-retrofit, Well 12 will have a design flow of 2,000 gpm. New facilities will include an eight-ft by 21-ft horizontal reduction vessel, and an array of up to thirty-two (32) five-ft tall by four-ft wide vertical filtration vessels on a concrete pad. A 28,200-gal (20-ft by 12-ft tall) backwash tank will be constructed on the site. Additional new facilities will include a ferrous chloride storage building (12-ft by 12-ft), chemical feed pump, additional sodium hypochlorite storage feed pump and miscellaneous pumps and pipes. A four-in. wastewater discharge line will be constructed and run 240± linear ft to connection with a local 8-in sewer line. Existing adjacent land uses within the study area of this facility include Bagdouma Park to the north and west and multiple family residential dwellings (i.e., apartments and/or condominiums) to the south and east (Appendix A, Figure 2b).

Well 16

Well 16, which is included on APNs 763-141-019 and 763-141-020, is located approximately 1,234-ft± north of Ave 54 and 264± feet south of the cul-de-sac at the eastern end of Tyler Lane (Appendix A, Figure 2c). This existing facility is located in Section 9, Township 6 South, Range 8 East of the USGS 7.5' *Indio, California* quadrangle (Appendix A, Figure 3b). Elevations on the study area for Well 16 are approximately -86 to -106 ft BMSL. Well 16 is accessed via an unimproved (dirt) road from the end of the Tyler Lane cul-de-sac. Engineering design plans for Well 16 propose an expansion of the existing footprint, to the east and northeast, of the currently fenced (chain link/barbed wire), gated and locked facility (Appendix A, Figure 2b). After project completion, Well 16 will have a design flow of 2,000 gpm. New facilities will include an eight-ft by 21-ft horizontal reduction vessel, and an array of up to thirty-two (32) five-ft tall by four-ft wide vertical filtration vessels on a concrete pad. A 56,900-gal (22-ft by 20-ft tall) backwash tank will be constructed on the site. Additional new facilities will include a ferrous chloride storage building (12-ft by 12-ft), chemical feed pump, replaced and enlarged (to 500 gal) sodium hypochlorite storage feed pump and miscellaneous pumps and pipes. Existing (chain link/barbed wire) fencing and a locked gate on the east side of the site will be replaced with a six-ft masonry wall topped with barbed wire and a new locking gate. A four-inch wastewater discharge line will be constructed and run 300 linear ft± north to connection with a local 10-inch sewer line in the Tyler Lane cul-de-sac (Corona Environmental Consulting 2026). Existing adjacent land uses within the study area of this facility include industrial developments to the south and west and semi-natural, undeveloped open space to the east and north (Appendix A, Figure 2c).

Well 17

Well 17 is included on APNs 603-220-035 and 603-220-051 and located immediately east of Van Buren Street and 1,177 ft± north of Avenue 49 (Avenida Guitron) (Appendix A, Figure 2d).

This existing facility is located in the northern ½ of Section 31, Township 5 South, Range 8 East of the USGS 7.5' *Indio, California* quadrangle (Appendix A, Figure 3a). Elevations on the study area for Well 17 are from approximately -33 to -44 ft BMSL. Well 17 is accessed from Van Buren Street. It is immediately south and west of Ranchos Los Flores Park and event venue and will incorporate approximately 3,000 square feet of park land. Once the project is complete, Well 17 will have a design flow of 2,200 gpm. New facilities will include an eight-ft by 23-ft horizontal reduction vessel, and an array of up to thirty-two (32) five-ft tall by four-ft wide vertical filtration vessels on a concrete pad. A 47,700-gal (20-ft by 12-ft tall) backwash tank will be constructed on the site. Additional new facilities will include a ferrous chloride storage building (12-ft by 12-ft), chemical feed pump, and miscellaneous pumps and pipes. Existing fencing on the north side of the site will be replaced with a six-ft masonry wall topped with barbed wire. A four-in. wastewater discharge line will be constructed and run 55 linear ft± west to connection with a local eight-in sewer line in Van Buren Street. Engineering design plans for Well 17 propose an expansion of the existing footprint, to the north, of the currently fenced (masonry wall/wrought iron crested), gated and locked facility (Corona Environmental Consulting 2026). Existing adjacent land uses within the study area of this facility include Rancho Las Flores Park to the north and east; heavily disturbed, graded and largely barren, vacant but improved single-family subdivisions to the south; and disturbed, intermittently barren, disced, undeveloped open space to the west, across Van Buren Street (Appendix A, Figure 2d).

Well 18

Well 18 is included on APN 603-150-017 and located immediately north of the unimproved Avenue 48, approximately 960 ft± east of Tyler Street (Appendix A, Figure 2e). This existing fenced (chain link/barbed wire), gated and locked facility is located in Section 28, Township 5 South, Range 8 East of the USGS 7.5' *Indio, California* quadrangle (Appendix A, Figure 3b). The elevational ranges of the study area for Well 18 are from approximately -55 to -63 ft BMSL. Surrounding lands are agriculture to the south, disturbed semi-natural open space to the east and west and a windrow (thicket) of saltcedar (*Tamarisk ramossissima*) to the north. Once the retrofit is complete, Well 18 will have a design flow of 2,000 gpm. New facilities will include an eight-ft by 21-ft horizontal reduction vessel, and an array of up to thirty-two (32) five-ft tall by four-ft wide vertical filtration vessels on a concrete pad. Additional new facilities will also include a ferrous chloride storage building (12-ft by 12-ft), chemical feed pump, and miscellaneous pumps and pipes The existing storage tank will also facilitate backwash operation. Additional backwash equipment will include a four-ft by four-ft catch basin and six-inch wastewater discharge pipe that will run 600 ft± in the Avenue 48 right-of-way (ROW) and connect to an existing 24-inch sewer main in the Tyler Street ROW (Corona Environmental Consulting 2026). Existing adjacent land uses within the study area of this facility include semi-natural, undeveloped open space to the north and east; an active agricultural (crops) field to the south and disturbed, semi-natural, undeveloped open space to the west (Appendix A, Figure 2e).

Well 19

Well 19 is included on APN 612-540-008 and located at the northwest corner of Playa Del Amor Street and El Greco Avenue, immediately east of Jackson Street within a single-family residential subdivision (Appendix A, Figure 2f). This existing facility is located in the northwestern ¼ of Section 36, Township 5 South, Range 7 East of the USGS 7.5' *Indio, California* quadrangle (Appendix A, Figure 3a). Elevations on the study area for Well 19 are approximately -18 to -25 BMSL. The existing facility is bounded by Jackson Street on the west, a shopping center on the north, and single-family homes to the south and east. Access is provided from the junction of Playa Del Armor and El Greco Avenue. Well 19 is surrounded by a

six-ft masonry wall with wrought iron cresting and accessed via locked gates accessed from the subdivision. Post-retrofit, Well 19 will have a design flow of 2,000 gpm. New facilities will include an eight-ft by 21-ft horizontal reduction vessel, and an array of up to thirty-two (32) five-ft tall by four-ft wide vertical filtration vessels on a concrete pad. A maximum 90,000-gal (30.9-ft by 16-ft tall) backwash tank will be constructed on the site. Additional new facilities will include a ferrous chloride storage building (12-ft by 12-ft), chemical feed pump, replaced and sodium hypochlorite feed pump and miscellaneous pumps and pipes. Wastewater bypass blending to reduce Cr6 levels below thresholds is planned for Well 19 (Corona Environmental Consulting 2026). Existing adjacent land uses within the study area of this facility include commercial development (i.e., shopping center) to the north, single-family residential dwellings (i.e., tract homes) to the south and east and multiple-family residential dwellings (i.e., apartments or condominiums) to the west (Appendix A, Figure 2f).

Well 20

Well 20 is included on APN 779-620-041 and will be located immediately west of Van Buren Street (Appendix A, Figure 2g). This future facility is proposed to be located in the northeastern ¼ of Section 1, Township 6 South, Range 7 East of the USGS 7.5' *Indio, California* quadrangle (Appendix A, Figure 3a). The elevational ranges on the study area for the future Well 20 are approximately -40 to -53 ft BMSL. Well 20 is currently under construction and fenced (6 ft masonry wall) with only a portion of the metal well casing exposed in the center of the site. It is surrounded by a subdivision retention basin on the north, active agriculture (date orchard) on the south and single-family residences on the east. The site will be accessible from a cul-de-sac within the adjacent residential subdivision or directly off of Van Buren Street. Once complete, facilities at Well 20 would include a 2,000 gpm well pump, an eight-ft by 21-ft horizontal reduction vessel, and an array of up to thirty-two (32) five-ft tall by four-ft wide vertical filtration vessels (10-ft by four-ft) on a concrete pad and a 34,000 gal 22-ft by 12-ft high backwash tank. Additional facilities would include a ferrous chloride storage building (12-ft by 12-ft), a sodium hypochlorite storage building (12-ft by 12-ft), chemical feed pump, and miscellaneous pumps and pipes. An 18-ft by 12-ft electrical control room and an 18-ft by 12-ft well pump room will also be constructed. An 18-ft by 12-ft unlined infiltration basin is also planned for the northwest corner of this site. A pad-mounted power transformer and the addition of either barbed wire or wrought iron cresting to the top of the existing masonry wall is also proposed. A 4-ft wastewater discharge line will extend east and connect to an existing 12-ft sewer line located in the Van Buren Street ROW (Corona Environmental Consulting 2026). Existing adjacent land uses within the study area of this facility include a landscaped flood control/detention basin to the north, single-family residential dwellings (tract homes) to the west and east and an active agricultural orchard (date farm) to the south (Appendix A, Figure 2g).

4.0 REGULATORY FRAMEWORK

4.1 Federal

***Endangered Species Act* (FESA)** – The United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service are the designated federal agencies accountable for administering the FESA. The FESA defines species as "Endangered" or "Threatened" and provides regulatory protection at the Federal level.

- Section 9 of the FESA prohibits the "take" of listed (i.e., endangered or threatened) species. The FESA definition of take is "to harass, harm, pursue, hunt, shoot, wound,

kill, trap, capture, collect, or attempt to engage in such conduct." Recognizing that take cannot always be avoided, Section 10(a) includes provisions for take that is incidental to, but not the purpose of, otherwise lawful activities. Specifically, Section 10(a)(1)(A) permits (authorized take permits) are issued for scientific purposes. Section 10(a)(1)(B) permits (Incidental Take Permits [ITPs]) are issued for the incidental take of listed species that does not jeopardize the species.

- Section 7 (a)(2) requires Federal agencies to evaluate the proposed project with respect to listed, or proposed listed, species and their respective critical habitat (if applicable). Federal agencies must employ programs for the conservation of listed species and are prohibited from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its "critical habitat."

As defined by the FESA, "individuals, organizations, states, local governments, and other non-Federal entities are affected by the designation of critical habitat only if their actions occur on Federal lands, require a Federal permit, license, or other authorization, or involve Federal funding.

Section 10(a) of the FESA authorizes the issuance of ITPs and establishes standards for the content of habitat conservation plans, such as the CVMSHCP. The Federal ITP issued by the USFWS for the Coachella Valley Association of Government (CVAG) and other parties to the CVMSHCP is specifically ITP 104604-0 and was issued on 01 October 2008.

Migratory Bird Treaty Act **(MBTA)** – Treaties signed by the U.S., Great Britain, Mexico, Japan, and the countries of the former Soviet Union make it unlawful to pursue, capture, kill, and/or possess, or attempt to engage in any such conduct to any migratory bird, nest, egg or parts thereof listed in this document. The Secretary of the Interior can issue permits for incidental take of migratory bird species. As with the FESA, the MBTA also allows the Secretary of the Interior to grant permits for the incidental take of these protected migratory bird species.

National Environmental Policy Act **(NEPA)** – If portions of a proposed project could fall under the jurisdiction of a Federal agency (i.e., U.S. Army Corps of Engineers [USACE]). NEPA establishes certain criteria that must be adhered to for any project that is "financed, assisted, conducted or approved by a Federal agency. The Federal lead agency is required to "determine whether the proposed action will significantly affect the quality of the human environment."

Section 404 of the Clean Water Act – This section of the Clean Water Act (CWA), administered by the USACE, regulates the discharge of dredged and fill material into "waters of the United States (WUS)." The USACE has created a series of nationwide permits that authorize certain activities within WUS provided that the proposed activity does not exceed the impact threshold for nationwide permits, takes steps to avoid impacts to wetlands where practicable, minimize potential impacts to wetlands, and provide compensation for any remaining, unavoidable impacts through activities to restore or create wetlands. For projects that exceed the threshold for nationwide permits, individual permits under Section 404 can be issued.

4.2 State

California Endangered Species Act **(CESA)** – This legislation is similar to the FESA; however it is administered by the CDFW. The CDFW is authorized to enter into "memoranda of understanding (MOU)" with individuals, public agencies, and other institutions to import, export,

take, or possess State-listed species for scientific, educational, or management purposes. The CESA prohibits the take of State-listed species except as otherwise provided in State law. Unlike the FESA, the CESA applies the take prohibitions to species currently petitioned for State-listing status (Candidate species). State lead agencies are required to consult with the CDFW to ensure that actions are not likely to jeopardize the continued existence of any State-listed or Candidate species or result in the destruction or degradation of occupied habitat.

California Environmental Quality Act **(CEQA)** – The basic goal of the CEQA is to maintain a high-quality environment now and in the future and the specific goals are for California's public agencies to:

1. Identify the significant environmental effects of their actions; and, either
2. Avoid those significant environmental effects, where feasible; or
3. Mitigate those significant environmental effects, where feasible.

The CEQA applies to "projects" proposed to be undertaken or requiring approval by State and local government agencies. Projects are activities which have the potential to have a physical impact on the environment and may include the enactment of zoning ordinances, the issuance of conditional use permits and the approval of tentative subdivision maps. Where a project requires approval from more than one public agency, the CEQA requires one of these public agencies to serve as the "lead agency."

A "lead agency" must complete the environmental review process required by the CEQA. The most basic steps of the environmental review process are:

1. Determine if the activity is a "project" subject to the CEQA;
2. Determine if the "project" is exempt from the CEQA;
3. Perform an Initial Study to identify the environmental impacts of the project and determine whether the identified impacts are "significant". Based on its findings of "significance", the lead agency prepares one of the following environmental review documents:
    a. Negative Declaration if it finds no "significant" impacts;
    b. Mitigated Negative Declaration if it finds "significant" impacts but revises the project to avoid or mitigate those significant impacts;
    c. Environmental Impact Report (EIR) if it finds "significant" impacts.

While there is no ironclad definition of "significance", Article 5 of the State CEQA Guidelines provides criteria to lead agencies in determining whether a project may have significant effects.

The purpose of an EIR is to provide State and local agencies and the general public with detailed information on the potentially significant environmental effects which a proposed project is likely to have and to list ways in which the significant environmental effects may be minimized and indicate alternatives to the project.

The Native Plant Protection Act **(NPPA)** – The NPPA includes measures to preserve, protect, and enhance rare and endangered native plant species. Definitions for “rare and Endangered” are different from those contained in the CESA. However, the list of species afforded protection

in accordance with the NPPA includes those listed as rare and Endangered under the CESA. NPPA provides limitations on take as follows: “no person will import into this State, or take, possess, or sell within this State” any rare or Endangered native plants, except in accordance with the provisions outlined in the NPPA. If a landowner is notified by CDFW, pursuant to section 1903.5 that a rare or endangered plant is growing on their property, the landowner shall notify CDFW at least 10 days prior to the changing of land uses to allow CDFW to salvage the plants.

Natural Community Conservation Planning (NCCP) Program – The NCCP, which is managed by the CDFW, is intended to conserve multiple species and their associated habitats, while also providing for compatible use of private lands. Through local planning, the NCCP planning process is designed to provide protection for wildlife and natural habitats before the environment becomes so fragmented or degraded by development that species listing are required under the CESA. Instead of conserving small, often isolated “islands” of habitat for just one listed species, agencies, local jurisdictions, and/or other interested parties have an opportunity through the NCCP to work cooperatively to develop plans that consider broad areas of land for conservation that would provide habitat for many species. Partners enroll in the programs and, by mutual consent, areas considered to have high conservation priorities or values are set aside and protected from development. Partners may also agree to study, monitor, and develop management plans for these high value “reserve” areas. The NCCP provides an avenue for fostering economic growth by allowing approved development in areas with lower conservation value. The NCCP is included as a part of the CVMSHCP and is discussed further below in Section 2081 of the State Fish and Game Code (FGC).

Sections 1600-1603 of the State Fish and Game Code – Pursuant to Sections 1600-1603, the FGC regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife resources. Under the FGC, CDFW jurisdiction is assessed in the field based on one, or a combination, of the following criteria (CDFG 1984):

1. At minimum, intermittent and seasonal flow through a bed or channel with banks and that also supports fish or other aquatic life.
2. A watercourse having a surface or subsurface flow regime that supports or that has supported riparian vegetation.
3. Hydrogeomorphically distinct top-of-embankment to top-of-embankment limits.
4. Outer ground cover and canopy extents of, typically, riparian associated vegetation species that would be sustained by surface and/or subsurface waters of the watercourse.

The CDFW requires that public and private interests apply for a “Streambed Alteration Agreement” for any project that may impact a streambed or wetland. The CDFW has maintained a “no net loss” policy regarding impacts to streams and waterways and requires replacement of lost habitats on at least a 1:1 ratio.

Section 2081 of the State Fish and Game Code – Under Section 2081 of the FGC, the CDFW authorizes individuals or public agencies to import, export, take, or possess State Endangered, Threatened or Candidate species in California through permits or MOUs. These acts, which are otherwise prohibited, may be authorized through permits or MOUs if: (1) the take is incidental to

otherwise lawful activities, (2) impacts of the take are minimized and fully mitigated, (3) the permit is consistent with regulations adopted in accordance with any recovery plan for the species in question and (4) the applicant ensures suitable funding to implement the measures required by the CDFW. The CDFW shall make this determination based on the best scientific information reasonably available and shall include consideration of the species' capability to survive and reproduce. The MOU is covered under the Implementing Agreement (IA) between the USFWS, CDFW, BLM and the CVAG and other covered permittees of the CVMSHCP.

California Fish and Game Code – Section 3505.5 of the FGC makes it unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds-of-prey [owls, eagles, falcons, hawks, etc.]) or to take, possess, or destroy the nest or eggs of any bird-of-prey. Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3513 makes it unlawful to take or possess any migratory nongame bird as designated in the MBTA.

4.3 Regional

Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) – Finalized in October 2008, the CVMSHCP is a comprehensive regional plan that addresses the conservation needs of 27 species of native flora and fauna (5 plants, 2 insects, 1 amphibian, 3 reptiles, 11 birds, and 5 mammals) and 24 natural vegetation communities occurring throughout the Coachella Valley region of western Riverside County, California. These include federal and state-listed species, federal and California Species of Special Concern (SSCs), and species on the CNPS sensitive species lists. Also included are species that are designated as sensitive by the Bureau of Land Management (BLM) regardless of their other Federal, State, or regional conservation status. Conservation for the Federally listed as Threatened and State-listed as Endangered Coachella Valley Fringe-toed Lizard (*Uma inornata*), was formerly covered by the Coachella Valley Fringe-toed Lizard Habitat Conservation Plan finalized in 1985 but is now covered under the CVMSHCP.

ITPs for the CVMSHCP were issued by the California Department of Fish and Game (CDFG) on 9 September 2008 and the USFWS on 1 October 2008 (TE104604-0). The CVMSHCP serves two primary purposes: balancing environmental protection and economic development objectives in the CVMSHCP area and simplifying compliance with endangered species related laws. The CVMSHCP accomplishes this by conserving unfragmented habitat to permanently protect and secure viable populations of the covered species. The covered species include those plants and animals that are either currently listed as Threatened or Endangered, are proposed for listing, or are believed by an appointed Scientific Advisory Committee, USFWS and CDFW, to have a high probability of being proposed for listing in the future if not provided protection by the CVMSHCP. The goal of the CVMSHCP is to meet the requirements of the CESA and FESA, while at the same time allowing for economic growth (land development) within the plan area without significant delay or hidden costs. Under the CVMSHCP, land development/mitigation fees are collected from all new development projects occurring in the plan area. The purpose of this fee is to support the assembly of a preserve system for the covered species and natural vegetation communities within areas identified as having high conservation value.

As previously mentioned, the Federal ITP issued by the USFWS for the CVAG and other covered parties under the CVMSHCP is ITP 104604-0. An MOU, often referred to as the

"Planning Agreement" was initially signed in 1995 and 1996 with other subsequent MOUs enacted later under the umbrella of the CVMSHCP. The current MOU for the CVMSHCP is referred to as the IA, which is a comprehensive, legally binding document that governs operation and implementation mechanisms of the CVMSHCP.

5.0 METHODS

5.1 Literature Review

Prior to conducting the fieldwork for the assessment, a review of existing literature and online databases was performed on 8 June 2026 by WSP to identify special status biological resources that have been documented on and/or in the vicinity of the existing facilities. For the purpose of the BRAR, vicinity is defined as areas within an approximate 8-kilometer (km) (5-mile [mi]) radius of the facilities including portions of the following USGS 7.5 California Quadrangles: *Indio, La Quinta, Martinez Mtn., Mecca, Myoma, Rockhouse Canyon, Thermal, Valerie* and *West Berdoo Canyon Calif*.

The literature search included a review of the following documents:

- Aerial Imagery (Google Earth 2026)
- California Natural Diversity Data Base (CNDDB) RareFind 5 Application (CDFW 2026a)
- California Department of Fish and Wildlife (CDFW) *Special Animals List* (CDFW 2026b)
- California Native Plant Society's (CNPS) *Online Rare and Endangered Vascular Plants of California* (CNPS 2026a)
- Information for Planning and Consultation (IPaC) Resources List (USFWS 2026a)
- Coachella Valley Multiple Species Habitat Conservation Plan/Natural Community Conservation Plan (CVMSHCP) (CVAG 2007)
- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). Web Soil Survey (2026a)
- USGS 7.5' *Indio, La Quinta, Martinez Mtn., Mecca, Myoma, Rockhouse Canyon, Thermal, Valerie* and *West Berdoo Canyon Calif*. Quadrangles (USGS 2021a-i). Accessed June 2026 online at: https://www.pickatrail.com/

The review also included an overview of other BRARs from the general vicinity. Additionally, WSP senior biologists with experience in the Coachella Valley were consulted regarding reliable sightings and/or the potential for occurrence of special status species from the area.

Scientific nomenclature for this document follows standard reference sources: For plant communities, CVMSHCP (CVCC 2007); for flora, Jepson eFlora (2026) and the USDA NRCS PLANTS Database (2026b); for amphibians, reptiles, and mammals, CDFW (2016a); and for birds, California Bird Records Committee (2026).

5.2 Biological Resources Assessment

The biological resources assessment at the subject well sites and their respective 152-meter (m) (~500 ft) study areas was conducted between the hours of 0700 and 1300 on 09 June 2026,

by WSP senior biologist Michael D. Wilcox. Onsite, suitable habitat was assessed based on the presence of constituent habitat elements (e.g., soils, vegetation and topography) characteristic of the potentially occurring special status biological resources identified as occurring in the vicinity by the literature review. The existing facilities and adjacent properties (i.e., study area) were assessed on foot, where accessible, through the execution of meandering pedestrian transects over the accessible areas to record pertinent field data, identify plant and vertebrate species (and their sign) detected, document current site conditions and inspect the respective well sites and the adjacent study areas for the presence of vegetation communities, favorable soils and suitable habitats for the special status species identified by the literature review, suitable nesting bird and potentially suitable roosting bat habitats.

Potentially suitable microhabitats onsite and within the study area, where accessible (i.e., unfenced, and not posted with "No Trespassing" and/or "Private Property" signs), were visually assessed and investigated for the presence of existing suitable conditions and requisite constituent elements appropriate for the occurrence or potential occurrence of CVMSHCP-covered species; Threatened, Endangered and Candidate species for listing (including but not limited to: desert tortoise [*gopherus agassizii*], Coachella Valley fringe-toed lizard [*Uma notata*] and burrowing owl [*Athene cunicularia*]); SSC's, nesting birds protected by the MBTA and FGC and special status mammals including roosting bat species.

Inaccessible areas were visually scanned with 10 by 42 binoculars from the edges or boundaries of the adjacent accessible areas, for the presence of suitable habitats for the special status species identified by the literature review; bird nests and/or habitats suitable for nesting; burrowing owls and their sign (i.e., burrows with whitewash, pellets, bones, feathers, adornments, etc.); suitable or potentially suitable burrowing owl habitat (i.e., burrows and/or manmade pipes of appropriate size, rubble piles, possible perches, etc.) and suitable bat roosting habitats (e.g., palm trees with untrimmed aprons or skirts; trees with hollow cavities, exfoliating bark, cracked trunks or branches; abandoned buildings; structures with cracks, seems and/or holes; swallow nests; etc.).

All onsite flora and fauna observed or otherwise detected (e.g., vocalizations, presence of scat, tracks, and/or bones or remains) during the assessment were recorded in field notes that were used in the compilation of this report. General weather and site conditions were also recorded at the beginning and end of the assessment. Temperatures and wind speeds were recorded with a handheld Kestrel 3500 anemometer. Percent cloud cover was visually estimated. Where detected, pertinent data (i.e., locations of special status biological resources, bird nests, burrows suitable for burrowing owl, etc.) was recorded in the field utilizing ArcGIS™ Field Maps application (app.) on a mobile device (iPhone 12 Mini) enabled with Global Positioning Systems (GPS) software and entered in a field notebook. Representative photographs were also taken with the surveyor's mobile device using Solocator (i.e., a GPS field camera app.) to provide photo documentation of current conditions at the existing facilities and visual representation of some of the special status biological resources detected within the study areas (Appendix D, Photos 1-32).

6.0 RESULTS

6.1 Literature Review

The review of the CNDDB, CNPS Online Inventory of Rare Plants, IPaC Resources List, other biological reports from the area and consultation with other experienced WSP biologists resulted in the identification of ninety-six (96) special status biological resources known to occur in the vicinity (within an approximate 8-km [5-mi] radius) of the study area (Appendices E-H). These include forty-two (42) special status plants, one (1) special status vegetation community, seven (7) special status invertebrates, two (2) special status fishes, two (2) special status amphibians, four (4) special status reptiles, twenty-three (23) special status birds and fifteen (15) special status mammals were reported occurring within the vicinity of the study area. Tables 1-3 in Appendix E provide a complete list of these special status biological resources, their respective conservation/legal status, a summary of their habitat associations and their individual occurrence potentials at the seven (7) subject well sites and/or within their respective adjacent study areas.

Of the ninety-six (96) special status biological resources reported from the vicinity, eighty-two (82) are considered to be either be absent from the study area due to a lack of suitable habitats, unsuitable elevational parameters (i.e., study area lower in elevation than the lowest known elevational range of species) and/or the location of the study area is outside of the known geographic range of these species and/or because the proposed project activities are anticipated to occur in areas (i.e., mostly within the fenced facilities) and/or are adjacent to areas that do not provide potentially suitable habitat for those species. These include all forty-two (42) special status plant species, the one (1) special status vegetation community, all seven (7) of the special status invertebrates, the two (2) special status fishes, the two (2) special status amphibians, all four (4) of the special status reptiles, sixteen (16) of the special status birds and eight (8) of the special status mammals (Appendix E).

6.2 Biological Resources Assessment

Weather conditions during the 09 June 2026 biological resources assessment consisted of sunny conditions with 0% cloud cover and clear skies. Temperatures ranged from 79 to 98 degrees Fahrenheit (°F) (26.1 to 36.6 degrees Celsius [°C]). Winds were calm with speeds measured between 0 to 3 miles per hour (mph).

The study area generally occurs within the largely developed City of Coachella. All of the fenced facilities are entirely developed or cleared, graded and awaiting future development (Well 20). Adjacent lands within the study area are also largely developed with existing commercial, industrial and residential developments surrounding most of the facilities. Two City parks (i.e., Bagdouma Park and Rancho Las Flores Park) are also present adjacent to Wells 12 and 17 respectively (Appendix A, Figures 2a & 2d). Undeveloped, natural, semi-natural and heavily disturbed, vacant areas are intermittently present adjacent to some of the fenced facilities (Wells 11, 16, 17 and 18). Representative photos of all of the project facilities are provided in Appendix D.

6.3 Topography and Soils

The existing topography at each of the fenced, gated and entirely developed (with the exception of Well 20) facilities is generally flat (Appendix A, Figures 3a-b; Appendix D, Photos 1-32). Well 20 has also been graded flat, drilled and the well casing installed in the recent past; the remaining associated infrastructure, unlike the other existing facilities, has not yet been constructed or installed (Appendix D, Photos 30-32). The topography of the study areas surrounding each of the existing facilities is also relatively flat as most of the study area around each of the existing facilities have also largely been developed (i.e., commercial, industrial, residential, agricultural, City parks, paved roadways, railroad easement, etc.) or graded and disturbed in preparation for future development (i.e., south and west of Well 17). The most significant relief within the study area is at Well 11 where a fill slope supporting the west-bound approach of the Dillon Road Bridge over the existing UPRR easement, at least one utility (gas) line easement (i.e., Kinder Morgan underground pipeline) and Grapefruit Boulevard/SR-111 is present to the southeast of Well 11 (Appendix A, Figure 2a; Appendix D, Photo 2). An elevational range of approximately -8 to -106 feet below mean sea level (BMSL) is mapped throughout the overall study area encompassed by the existing facilities.

The review of the onsite soils (based on the Riverside County, Coachella Valley Area, California Soil Survey [USDA, NRCS 2026a]) resulted in the following soil types mapped throughout the various facilities:

- **Gilman Fine Sandy Loam (GbA), 0-2% slopes.** A nearly level, very deep and well-drained soil found on flood plains and alluvial fans. This soil is ideal for agriculture, landscaping and urban development (USDA, NRCS 2026a).
- **Gilman Fine Sandy Loam, wet (GdA), 0-2% slopes.** A nearly level, very deep and moderately well to somewhat poorly drained soil found on alluvial fans, stream terraces and flood plains. This soil is highly prized as agriculture and farmland when adequately drained and irrigated (USDA, NRCS 2026a).
- **Gilman Silt Loam (GeA), 0-2% slopes**. This soil is a nearly level, very deep and moderately well to well-drained soil found on flood plains and alluvial fans**.** It is highly valued for its agricultural and landscaping potential as it consists of a balanced mix of sand, silt and clay, offering excellent fertility and moisture retention. This soil has also been historically used for agriculture including vegetables, leafy greens and root crops that require consistent soil moisture (USDA, NRCS 2026a).
- **Gilman Silt Loam, wet (GfA), 0-2% slopes.** This soil is a nearly level, deep, fertile and somewhat poorly drained soil that is commonly found on flood plains and alluvial valleys. It exhibits a smooth, fine-grained silt loam texture. Classified as "wet," this soil has a high water-holding capacity however natural drainage is somewhat impeded due to a shallow water table. It has also been historically used for a variety of agricultural crops including vegetables and dates (USDA, NRCS 2026a).
- **Indio Very Fine Sandy Loam (Is).** A deep, well-drained soil found primarily in the alluvial fans, lacustrine basins and floodplains of the Coachella and Imperial Valleys. It is known for its excellent water-holding capacity but requires careful management due to restrictive drainage and compaction risks. This soil is moderate to strongly alkaline and heavily calcareous (calcium carbonate). It has been historically used for irrigated

croplands (i.e., barley, citrus, cotton, dates, grapes and other crops) and for livestock grazing (USDA, NRCS 2026a).

- **Indio Fine Sandy Loam, Wet (Ir).** This soil is a very deep, moderately well-drained soil found in alluvial fans, flood plains and lacustrine basins and often used in agricultural settings like the Coachella Valley. It is composed of stratified layers of loamy fine sand and very fine sandy loam (USDA, NRCS 2026a).

The distribution of these soils within the study area is illustrated on Figures 4a-g in Appendix A. While native soils were once present at all of these facilities, past grading, compaction, paving, the application of gravel and the entire or nearly entire development of all of the existing facilities has resulted in substrates that currently exhibit relatively smooth, flat surfaces largely devoid of any natural contours or significant variation in topography (with the exception of the few existing small, concrete and/or soft-bottomed overflow, beneficial reuse ponds/retention basins present at some of the facilities [i.e., Wells 17, 18 & 19]). The existing surfaces at all of the facilities consisted of a combination of paved asphalt, concrete, cement, applied gravel, sand and/or barren and compacted dirt. A superficial, light surface layer of aeolian sands are present at Well 18 and semi-natural sandy areas are present in the adjacent study area around this facility but are not present within the fenced perimeter of any of the existing facilities. Soils located in the undeveloped areas within the study areas adjacent to Wells 11, 16, 17 and 18 varied from areas of highly compacted heavy disturbance, alkaline/silty areas and somewhat sandy areas supporting semi-natural vegetation communities.

Historically, the study area and adjacent lands were largely covered with aeolian (wind-deposited) sands and hummocks. Past development and the ongoing urban conversion of the Coachella Valley have interrupted the natural distribution and deposition of aeolian sands from the west and north and this has resulted in the gradual isolation, stabilization and consolidation of the former dunes, hummocks and sandy areas that once formed a continuous, loose and dynamic environment.

Additionally, all (100%) of the soils within the existing fenced, cleared and developed facilities and the proposed new facility (Well 20) have been heavily altered (graded, paved and/or developed). Most of the soils within the study areas adjacent to nearly all of the existing facilities have also been similarly developed, heavily disturbed and/or altered. Some of the undeveloped areas adjacent to Wells 16 and 18 exhibit the least amount of disturbance (where quailbush scrub and the mesquite and saltcedar thickets are present). Other site disturbances observed within the study areas of the existing facilities included unimproved (dirt) roads and trails, evidence of off-road vehicular use, vegetation clearance and discing of the soils (weed control/fire breaks), agricultural practices, the presence of stray domestic cats and dogs, illegal dumping and the accumulation of trash. All of the onsite and adjacent anthropomorphic disturbances have had adverse impacts to the natural environment, including the formerly native soils, in the immediate vicinity of all of the existing facilities and have very likely affected the distribution, diversity and abundance of native flora and fauna in negative and detrimental ways.

6.4 Vegetation Communities / Land Cover Types

The existing facilities have been entirely cleared of nearly all vegetation and it was evident that the facilities are routinely maintained to keep the sites clear of any vegetative growth. As a result, only very sparse, young (sapling) and low-profile living plants (mostly annuals) were observed within the fenced facilities. Some of the facilities were entirely barren with no living

plants detected while very sparse vegetation was detected at others. Plant species detected within the fenced facilities included but were not limited to: narrow-leaf johnstonella (*Johnstonella angustifolia*), smallseed sandmat (*Euphorbia polycarpa*), Bermuda grass (*Cynodon dactylon*) and Mediterranean grass (*Schismus barbatus*).

Vegetation observed within the study areas adjacent to each of the facilities largely consisted of non-native, exotic species commonly used for landscaping in the Coachella Valley as most of the adjacent areas have also been entirely developed and/or landscaped. Common landscaping plants observed within the developed study areas of the facilities included many different plants, including but not limited to: Mexican holdback (*Erythrostemon mexicanus*), gum trees (*Eucalyptus* spp.), bougainvillea (*Bougainvillea* spp.), Mexican fan palm (*Washingtonia robusta*) and various drought-tolerant, ornamental trees, shrubs, cactus, agave and/or other succulent species. Areas of undeveloped open space were, however, observed intermittently adjacent to a few of the facilities (i.e., Wells 11, 16, 17 & 18). Natural, or semi-natural vegetation communities present at these locations included: *Atriplex lentiformis* Shrubland Alliance (quailbush scrub), *Neltuma odorata (formerly Prosopis glandulosa) – Neltuma (formerly Prosopis) velutina – Strombocarpa (formerly Prosopis) pubescens* Woodland Alliance (mesquite thicket), *Tamarix* spp. Shrubland Semi-Natural Alliance (tamarisk thicket) and *Bromus rubens-Schismus* (*arabicus*, *barbatus*) Herbaceous Semi-Natural Alliance (Red Brome or Mediterranean Grass Grassland) as described by *A Manual of California Vegetation* (Sawyer et. al. 2009) (Appendix A, Figures 5 a-g). Heavily disturbed and/or largely barren areas were also present adjacent to some of the facilities. These vegetation communities are described separately below.

Atriplex lentiformis Shrubland Alliance (quailbush scrub) is present within the study areas adjacent to portions of Wells 16 and 18. Quailbush scrub occurs to the east of Well 16 and east and west of Well 18 (Appendix A, Figure 5c & Figure 5e). Co-dominant plant species observed within this vegetation community include: quailbush (*Atriplex lentiformis*), alkali goldenbush (*Isocoma acradenia*) and arrowweed (*Pluchea sericea*). Other, less abundant plants detected within this community adjacent to these facilities included: four-wing saltbush (*Atriplex canescens*), allscale (*Atriplex polycarpa*), alkali heliotrope (*Heliotropium curassavicum*), sacred datura (*Datura wrightii*), narrow-leaved johnstonella, annual sunflower (*Helianthus annuus*), prickly lettuce (*Lactuca serriola*), Bermuda grass and saltcedar (*Tamarix ramosissima*).

Neltuma odorata (formerly *Prosopis glandulosa*) Woodland Alliance (mesquite thicket) is present adjacent to (north of) a portion of Well 16 (Appendix A, Figure 5c). This plant community may have been planted/landscaped outside the fenceline of an adjacent property. It is also possible that it is the remnant of what may have been a naturally occurring, more widespread vegetation community in the area. Dominant plant species observed within this community primarily included honey mesquite (*Neltuma odorata*). Other, less abundant plants detected at this location within this community also included shoestring acacia (*Acacia stenophylla*), California fan palm (*Washingtonia filifera*) and saltcedar.

Tamarix spp. Shrubland Semi-Natural Alliance (tamarisk thicket) is present adjacent to a portion of Well 18 (Appendix A, Figure 5e). This vegetation community is present adjacent to (north of) Well 18. It would appear that it was planted years ago as a windbreak as it is not a natural vegetation community in the United States. Dominant plant species observed within this community primarily included saltcedar. Other, less abundant species detected at this location within this community also included but were not limited to alkali goldenbush and arrowweed.

Bromus rubens-*Schismus* (*arabicus*, *barbatus*) Herbaceous Semi-Natural Alliance (Red Brome or Mediterranean Grass Grassland) is present adjacent to portions of Wells 11 and 17 (Appendix A, Figure 5a & Figure 5d). This vegetation community is present on largely undeveloped, highly disturbed and routinely disced or cleared vacant areas that are south and east of Well 11 and west of and (across Van Buren Street) from Well 17. Vegetation was very sparse, as a result of the weed abatement and discing and consisted of: Mediterranean grass (*Schismus barbatus*), red brome (*Bromus rubens*), rabbitfoot grass (*Polypogon monspeliensis*), cheeseweed mallow (*Malva parviflora*), amaranth (*Amaranthus* sp.), London rocket (*Sisymbrium irio*), narrow-leaf johnstonella, four-wing saltbush, puncture vine (*Tribulus terrestris*), Bermuda grass and planted/landscaped Mexican palo verde. This community also includes significantly disturbed (i.e., formerly graded, leveled, compacted, etc.) areas at and adjacent to these existing facilities. Although highly disturbed and largely barren, these areas provide suitable habitat for burrowing owls and other native nesting bird species protected by the MBTA and FGC.

No special status vegetation communities (i.e., California Fan Palm Oasis or Desert Microphyll Woodlands) were detected anywhere on the existing facilities or within the adjacent study areas. Although not reported as occurring in the area by the literature review, mesquite bosques and/or hummocks are designated as a sensitive biological resource under the CVMSHCP. Although a mesquite thicket is present within the study area adjacent to Well 16, this vegetation community does not represent a “bosque” or “hummock”. It appears to have been planted along the existing fenceline of the adjacent private property to the west.

6.5 Plants

No special status plant species were observed or are anticipated to occur within the study area as suitable habitats for these species are not present anywhere within the study area where project activities are proposed. A total of forty-five (45) plant species were identified within the study areas during the assessment. Because the existing facilities are developed and are routinely maintained to remove any and all vegetation, the vast majority of the plants observed were located outside of the existing facilities but within the adjacent study areas. Many of these were ornamental species, planted as landscaping along the various roadways, in City parks and/or around residential or commercial developments. Many of the ornamental plant species were not identified. The identified plant species, including their common and scientific names, are listed in Appendix B of this report.

6.6 State or Federally Protected Wetlands and Waters of the U.S.

No drainages that would likely be considered jurisdictional by the USACE and/or CDFW were detected at or adjacent to the existing facilities. No canals, creeks, lakes, marshes, ponds, seeps, springs, streams or washes were observed anywhere within the study area. At least two manmade flood control detention basins were observed within the study areas adjacent to two of the existing facilities, one was east of Well 12 and one was north of Well 20. A shallow manmade drainage feature that directs surface flows into the nearby detention basin mentioned above is also present adjacent to and south of Well 12. A manmade agricultural pond also occurs within the study area, southeast of Well 18. Existing manmade beneficial reuse ponds/overflow areas were also present in some of the facilities (Wells 17, 18 & 19). Some of these were cement or concrete lined while others appeared to be soft-bottomed. These onsite beneficial reuse ponds/overflow areas are closed systems within any visible connections to any

drainages (natural or manmade). For these reasons, no impacts to jurisdictional waters of any kind are anticipated to occur as a result of project implementation.

6.7 Wildlife

Vertebrate wildlife directly observed and/or otherwise detected through presence of sign (e.g., scat, bones, prints, feathers, burrows, etc.) during the assessment was not notably diverse or abundant. Vertebrates recorded within the study area during the assessment included 29, mostly common species. These included: one (1) reptile, twenty-two (22) birds and six (6) mammals. Appendix C provides a complete list of vertebrate species detected during the assessment.

The only reptile species detected during the assessment was the ubiquitous and very common side-blotched lizard (*Uta stansburinana*). Although not detected, other common, introduced and/or disturbance-tolerant species such Mediterranean gecko (*Hemidactylus turcicus*), western whiptail (*Aspidoscelis tigris*) and coachwhip (*Masticophis flagellum*) may also occur within the study area.

Representative bird species observed onsite included but were not limited to red-tailed hawk (*Buteo jamaicensis*), Gambel's quail (*Callipepla gambelii*), mourning dove (*Zenaida macroura*), Say's phoebe (*Sayornis saya*), common raven (*Corvus corax*), verdin (*Auriparus flaviceps*), cliff swallow (*Petrochelidon pyrrhonota*), northern mockingbird (*Mimus polyglottos*) and Abert's towhee (*Pipilo aberti*). Other common resident and/or migrant bird species are also expected to occur and possibly nest mostly within the study areas adjacent to the existing facilities. A complete list of the bird species detected during the assessment is included in Appendix C.

Mammals detected within the study area during the assessment included only common species. These included Botta's pocket gopher (*Thomomys bottae*), Audubon's cottontail (*Sylvilagus audubonii*), California ground squirrel (*Otospermophilus beecheyi*) and coyote (*Canis latrans*). Domestic (stray) dogs and cats were also observed. Other common mammal species, particularly common rodents, have some potential to occur within the study area. Representative examples include but are not limited to: deer mouse (*Peromyscus maniculatus*), exotic rats (*Rattus* spp.) and Virginia opossum (*Didelphis virginiana*).

Several active and inactive bird nests were detected within the study areas at two of the existing facilities (Appendix A, Figure 7a & 7d; Appendix D, Photos 6 & 18; Appendix I). Live burrowing owls were observed within the study area adjacent to Well 11 (Appendix A, Figure 7a & Figure 7d; Appendix D, Photos 4-5; Appendix I). Other burrows suitable for burrowing owls (i.e., California ground squirrel burrows) but lacking sign (i.e., whitewash, pellets, feathers, tracks, prints and/or adornments) were also observed adjacent to Wells 11 and 17 (Appendix A, Figure 7a & Figure 7d; Appendix D, Photo 19). Lastly, several inactive bird (stick) nests were also observed within the study area adjacent to Well 17 (Appendix A, Figure 7d; Appendix D, Photo 18). Burrowing owls and nesting birds protected by the MBTA and FGC and are discussed further in the sections below.

6.8 Coachella Valley Multiple Species Habitat Conservation Plan

The study area is not located within or immediately adjacent to any of the CVMSHCP conservation areas. The nearest conservation area, the East Indio Hills Conservation Area, is located north of the intervening US-Interstate 10 (I-10) approximately 1.4 km (0.9 mi) northeast

of the study area for Well 18 at its closest point (Appendix A, Figure 6). No wildlife corridors or biological linkages are mapped on or adjacent to the study area.

6.9 Special Status Biological Resources

Some plant and/or animal taxa are designated as having special status due to declining populations, limited geographic distributions and/or vulnerability to climate change, habitat loss and/or fragmentation. Some have been listed as Threatened or Endangered by the USFWS or by the CDFW and are protected by the FESA, the CESA and the CNPPA. Others have been identified, and are managed as sensitive by the USFWS, CDFW, United States Forest Service (USFS), Bureau of Land Management (BLM) or by private conservation organizations, including the CNPS, but have not been formally listed as Threatened or Endangered. Impacts to such species can still be considered significant under the CEQA, if not avoided, minimized and/or mitigated by specific project design and implementation.

Special Status Plants

No special status plants were detected within the study area during the assessment. Forty-two (42) special status plant species were reported from the vicinity of the study area (Appendix E, Table 1). Suitable habitat for all but four of these is absent from the fenced facilities, where the majority of the proposed improvements and construction is expected to occur as well as the adjacent study areas. These areas generally lack suitable, natural vegetation communities, native or natural soils and the location of the study areas are largely outside the geographic and/or elevational ranges (too low) of these species. The four species for which marginally suitable habitat may be present within portions of the adjacent buffer zone study areas of some of the facilities (i.e., Wells 11, 16 & 18) include: Abram's spurge (*Euphorbia abramsiana*), ribbed cryptantha (*Johnstonella costata*), Torrey's box thorn (*Lycium torreyi*) and slender cottonheads (*Nemacaulis denudata* var*. gracilis*). Although marginally suitable habitat may be present for these four special status plant species in portions of the study areas outside of the fenced facilities, none were detected and the likelihood of these species occurring in the areas where project disturbance is proposed to occur outside of the fenced facilities (i.e., paved roads, road shoulders, unimproved [dirt] access roads, highly compacted and significantly disturbed areas) is considered to be extremely low. No project-related impacts are proposed or anticipated to the portions of the study areas adjacent to these facilities where the most suitable habitat within the study area is located as again, project-related construction activities are largely confined to existing developed, heavily disturbed, barren and/or compacted areas. For these reasons, although there may be a very low potential for these four special status plant species to occur within portions of the study areas adjacent to these three facilities, project-related impacts to these species are not anticipated and thus focused surveys for these species are thus not considered to be warranted and are not recommended at this time. Should project designs change and unforeseen project disturbance be proposed outside of these currently proposed areas of disturbance and/or within the less disturbed, semi-natural vegetation communities within the study areas adjacent to these three well sites, a survey for these special status plant species may need to be reconsidered at that time. But as currently proposed, no focused surveys for special status plants is recommended within any of the study areas adjacent to any of the seven fenced facilities. Table 1 in Appendix E provides a summary of the legal status, habitat requirements and occurrence potentials for all of the special status plant species reported from the vicinity of the project facilities.

Special Status Vegetation Communities

No special status vegetation communities were detected within the study area during the assessment. The only special status vegetation community reported in the vicinity was desert fan palm oasis woodland (Appendix E, Table 2). Although various palms, including California fan palms, are intermittently present throughout the study area, the vast majority of these are either planted as landscaping around the other developed areas (i.e., commercial, residential dwellings and City parks) or for agricultural (date palm farms) purposes. A few natural, escaped or potentially planted recruits were observed growing in some of the less-developed or less-disturbed areas, but these were individual occurrences and not oases or woodlands. Desert fan palm oasis woodland is not present within the study area.

Similarly, although not reported as occurring in the vicinity of the study area by the literature review, mesquite bosques and hummocks are nevertheless managed as a sensitive resource by the CVMSHCP. This vegetation community is currently State ranked as a 3.2 community, meaning that it is considered to have 21-80 viable occurrences, 3,000-10,000 individuals or 10,000-50,000 acres in California and that its existence is considered to be Threatened. While a single, small mesquite thicket was observed adjacent to, north of, the existing fenced facility at Well 16, this thicket is not considered to be a “mesquite bosque” or “hummock” as it appears to have been planted at this location. This thicket only occurs along the existing perimeter fence line of an adjacent, developed, private property. The straight-line growth pattern of the thicket and the presence of other non-native, landscaping tree species (i.e., shoestring acacia) commonly used as a landscape plant in the region suggests that it was likely planted as a windbreak sometime in the past. It is possible, however, that this thicket is a naturally occurring remnant of a vegetation community that was once more common and widely distributed in the region. Even if a natural occurrence and not planted, this mesquite thicket would not likely qualify as a mesquite bosque or hummock.

Special Status Invertebrates

No special status invertebrates were detected within the study area during the assessment. Seven (7) special status invertebrates have been reported from the vicinity (Appendix E, Table 3). These include monarch butterfly (*Danius plexippus*), Casey’s June beetle (*Dinacoma caseyi*), Algondones euparagia (*Euparagia unindentata*), Juniper metallic wood-boring beetle (*Juniperella mirabilis*), Coachella giant sand treader cricket (*Macrobeantes valgum*), cheeseweed owlfly (*Oliarces clara*) and Knull’s metallic wood-boring beetle (*Trichinorhipus knulli*). Monarch butterfly is currently proposed as Federally listed as Threatened and Casey’s June beetle is Federally listed as Endangered by the USFWS. The remaining special status invertebrates have no Federal or State status but have been ranked S1-S2 by the State meaning that they are considered to be “critically imperiled” to “imperiled”. All seven (7) are considered to be absent from the fenced facilities, where the majority of the proposed improvements and construction is expected to occur, and the adjacent study areas as a result of a combination of a lack of suitable habitat, the absence of larval host plants (i.e., milkweeds for the monarch butterfly, juniper for the juniper metallic wood-boring beetle and jojoba for Knull’s metallic wood-boring beetle) and/or microhabitats (i.e., sand dunes or hummocks for Coachella giant sand treader cricket and Algodones euparagia; rocky canyons for cheeseweed owl fly) and/or are outside of the known geographic range (i.e., Casey’s June beetle). It should be noted, however, that although not detected, milkweed is commonly planted as landscaping in the region and it is possible that they occur within the various existing commercial and/or residential developments within the study area. Impacts to milkweed (and monarch butterfly), if present, are not anticipated to occur as a result of project implementation. For these reasons,

impacts to special status invertebrates are not expected, and impact avoidance, minimization or mitigation measures are not recommended or anticipated to be required for this project. As a result, special status invertebrates will not be discussed further in this report.

Special Status Fishes

No special status fish species, or any fish species, were observed within the study area during the assessment. Two (2) special status fish species have been reported from the vicinity of the study area (Appendix E, Table 3). These include desert pupfish (*Cyprinodon macularius macularius*) and razorback sucker (*Xyrauchen texanus*). Both of these are listed as Endangered by the USFWS and the CDFW. Due to a lack of suitable aquatic habitats entirely within the study area, both of the special status fish species are considered to be absent. Impacts to these Federally and State Endangered fishes are not anticipated. No impact avoidance, minimization and/or mitigation measures are recommended or anticipated to be required for this project.

Special Status Amphibians

No special status amphibians were detected within the study area during the assessment. Two (2) special status amphibian species have been reported from the vicinity of the study area (Appendix E, Table 3). These include desert slender salamander (*Batrachoseps major aridus*) and Couch's spadefoot (*Scaphiopus couchii*). The desert slender salamander is Federally and State listed as Endangered by the USFWS and CDFW while Couch's spadefoot is managed as "sensitive" by the BLM and designated as a Species of Special Concern (SSC) by the CDFW. No suitable habitat for either of these special status amphibians is present within the study area for the project. The desert slender salamander is also only known from Hidden Palm and Guadalupe Canyons on the eastern slopes of the Santa Rosa Mountains, while the study area is located on the floor of the Coachella Valley. As a result, impacts to desert slender salamander and Couch's spadefoot are not anticipated to occur as a result of project implementation. For these reasons, no impact avoidance, minimization and/or mitigation measures are recommended or anticipated to be required for this project and special status amphibians will not be discussed further in this report.

Special Status Reptiles

No special status reptiles were observed within the study area during the assessment. Four (4) special status reptiles have been reported from the vicinity (Appendix E, Table 3). These include northern red diamond rattlesnake (*Crotalus ruber*), Mojave desert tortoise (*Gopherus agassizi*), flat-tailed horned lizard (*Phrynosoma mcallii*) and Coachella Valley fringe-toed lizard. Of these, only Mojave desert tortoise and Coachella Valley fringe-toed lizard are listed by the USFWS and CDFW. Both are listed as Threatened by the USFWS and listed as Endangered by the CDFW. Northern red diamond rattlesnake and flat-tailed horned lizard are designated as SSC's by the CDFW. Flat-tailed horned lizard is also managed as "sensitive" by the BLM. Red diamond rattlesnake is primarily associated with rocky hillsides, outcrops, washes and mesas and not typically found far from rocky areas. Desert tortoises are largely associated with a variety of desert habitats but is largely absent from the centrally located, low elevation, desert floor of the Coachella Valley. In the Coachella Valley and the northern extent of its historic range, as a result of on-going development, the flat-tailed horned lizard is now restricted to one, relatively small area of active aeolian sand dunes. Throughout its range in California, however, this species occurs in areas of sparse, low vegetation on fine-textured soils, sandy flats, and stabilized sand dunes throughout the Colorado Desert (CVCC 2024). The location of the larger study area is firmly on the desert floor of the Coachella Valley and lacks suitable habitat for the red diamond rattlesnake, desert tortoise and flat-tailed horned lizard. The study area does not

contain rocky hills, outcrops, washes or aeolian sand dunes or flats. Where vegetation is sparse or largely absent, soils are highly disturbed. The sandiest areas of the study area are also disturbed and exhibit dense vegetation (i.e., quailbush scrub and tamarisk thickets) and are not sparsely vegetated. As a result, project-related impacts to special status reptiles are not expected to occur as a result of project implementation and no impact avoidance, minimization or mitigation measures are recommended or anticipated to be required for this project. For these reasons, special status reptiles will not be discussed further in this report.

Special Status Birds

Twenty-three (23) special status bird species are known from the vicinity. These include golden eagle (*Aquila chrysaetos*), great egret (*Ardea alba*), great blue heron (*Ardea herodias*), burrowing owl, ferruginous hawk (*Buteo regalis*), Costa's hummingbird (*Calypte costae*), snowy egret (*Egretta thula*), southwestern willow flycatcher (*Empidonax traillii extimus*), prairie falcon (*Falco mexicanus*), gull-billed tern (*Gelochelidon nilotica*), bald eagle (*Haliaeetus leucocephalus*), yellow-breasted chat (*Icteria virens*), loggerhead shrike (*Lanius ludovicianus*), black-crowned night heron (*Nycticorax nycticorax*), white-faced ibis (*Plegadis chihi*), black-tailed gnatcatcher (*Polioptila melanura*), vermilion flycatcher (*Pyrocephalus obscurus*), Yuma Ridgeway's rail (*Rallus obsoletus yumanesis*), American avocet (*Recurvirostra americana*), black skimmer (*Rynchops niger*), crissal thrasher (*Toxostoma crissale*), LeConte's thrasher (*Toxostoma lecontei*) and least Bell's vireo (*Vireo bellii pusillus*).

Although not observed within the existing fenced facilities, four (4) special status bird species were observed within the study areas adjacent to four of the facilities (i.e., Well 11, 12, 16 & 17) and during the assessment. These included: burrowing owl, Costa's hummingbird, willow flycatcher (*Empidonax traillii* ssp.) and vermilion flycatcher. These observations are summarized separately below.

Two (2) live burrowing owls were observed within the study area adjacent to Well 11. These owls were occupying at least two (2) different burrows located on the north-facing slope of the manufactured approach to the west-bound lane of the Dillion Road Bridge spanning the adjacent UPRR easement, at least one utility line easement (i.e., Kinder Morgan pipeline) and Grapefruit Boulevard (State Route 111 [SR-111]) (Appendix A, Figure 7a; Appendix D, Photos 2, 4 & 5; Appendix I). These burrows are approximately 12.8 m (42 ft) southeast of the existing fenced facility at the closest point and approximately 7.9 m (26 ft) at the closest point to the proposed expansion of this facility (Appendix A, Figure 7a; Appendix D, Photos 2, 4 & 5; Appendix I). Burrowing owls are currently a Candidate for State listing as Endangered. This species is also managed as a Bird of Conservation Concern (BCC) by the USFWS, managed as "sensitive" by the BLM and designated as a SSC by the CDFW. Burrowing owls, like nearly all other non-game native birds, are also afforded additional protections by the MBTA and FGC. Although the burrowing owl is one of the twenty-seven (27) species covered under the CVMSHCP, additional actions for full compliance with the CVMSHCP, CESA, MBTA and FGC are required. Suitable nesting and foraging habitat for burrowing owl is present within the study areas adjacent to Well 11, 17 and 18. Live burrowing owls were only observed adjacent to Well 11. And while California ground squirrel burrows suitable for burrowing owl and suitable habitat was observed adjacent to Wells 17 and 18, respectively, no live burrowing owls, or sign thereof, were observed at either of these two well sites. No suitable nesting or foraging habitat is present within the study areas adjacent to Well 12, 16, 19 and 20. Impact avoidance, minimization and mitigation measures for burrowing owl at the wells where suitable habitat is present are discussed further below.

One male Costa's hummingbird was detected perching, calling and displaying within the study area adjacent to Well 12 (Appendix A, Figure 7b; Appendix I). Suitable nesting and foraging habitat is also present within the study areas of all the existing facilities. Costa's hummingbird is not listed or a Candidate for listing as Threatened or Endangered. This species is, however, designated as a BCC by the USFWS and like all other native, non-game bird species protected by the MBTA and FGC. While Costa's hummingbird typically nests in native desert trees along washes, alluvial fans and bajadas in the region, this species has also readily adapted to nest in trees and vegetation commonly used in landscaping in the Coachella Valley. For these reasons impacts to nesting Costa's hummingbirds resulting from project implementation are possible. Impact avoidance measures for nesting Costa's hummingbird (and other native bird species) are discussed further below.

A single willow flycatcher (*E. t.* ssp.) was observed perching and calling from the dense mesquite thicket immediately adjacent to Well 16 (Appendix A, Figure 7c; Appendix I). Although the species was present and calling at this location, mesquite thickets generally do not provide suitable nesting habitat for this riparian-obligate species. In Southern California, willow flycatchers breed and nest in mature riparian woodlands and forests in proximity to flowing water, neither of which is present at, nor adjacent to, any of the existing facilities. Mesquite thickets are rarely used by willow flycatchers for nesting and only when those thickets are located immediately adjacent to mature riparian woodlands or forests such as in the Lower Colorado River Basin in Arizona and southeastern California. The mesquite thicket located within the buffer zone area of Well 16 is not located adjacent to riparian vegetation of any kind. The individual detected adjacent to the existing facility is suspected to either be a very late migrant moving through the area or perhaps temporarily disoriented or lost individual. Willow flycatchers are not anticipated to nest or even regularly occur at this location. Due to a lack of suitable nesting habitat within the study area, impacts to nesting willow flycatcher are not expected or anticipated to be required, despite the unexpected observation. This species will not be discussed further in this document.

A pair of vermilion flycatchers were observed perching, calling and foraging within the 500-ft buffer zone adjacent to Well 17 (Appendix A, Figure 7d; Appendix I). An adult male and an adult female were observed foraging within the trees and perching on the chain link fences at the Rancho Las Flores Park which is located immediately adjacent to the fenced facility. Additionally, several inactive stick nests (species undetermined) were observed in several of the trees adjacent to this facility (Appendix A, Figure 7d; Appendix D, Photo 18). It is possible that one or more of the observed nests belong to this species. Vermilion flycatchers nest in semi-open desert woodlands, desert riparian strips (near mesquite, willow, and cottonwood) and man-made irrigated environments like City parks, golf courses and the tree-planted margins of agricultural areas. The trees and shrubs at Rancho Las Flores Park adjacent to Well 17 and Bagdouma Park adjacent to Well 12 provide suitable nesting habitat for this species. For these reasons, impact avoidance for nesting vermilion flycatchers (and other native bird species) are discussed further below.

Although not observed, potentially suitable nesting and foraging habitat for loggerhead shrike, black-tailed gnatcatcher, crissal thrasher and LeConte's thrasher is also intermittently present within the study areas adjacent to some of the existing facilities (i.e., Wells 16 & 18). For these reasons, impact avoidance measures for these species (and other nesting birds) are discussed further below.

Special Status Mammals

No special status mammals were observed or detected in the study area during the assessment. Fifteen (15) special status mammals are known from the vicinity. These include pallid bat (*Antrozous pallidus*), pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), earthquake Merriam's kangaroo rat (*Dipodomys merriami collinus*), spotted bat (*Euderma maculatum*), western mastiff bat (*Eumops perotis californicus*), western yellow bat (*Lasiurus xanthinus*), Colorado Valley woodrat (*Neotoma albigula venusta*), San Diego desert woodrat (*Neotoma lepida intermedia*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), desert bighorn sheep (*Ovis canadensis nelsoni*), Peninsular bighorn sheep distinct population segment (DPS) (*Ovis canadensis nelsoni* [Pop. 2]), Palm Springs pocket mouse (*Perognathus longimembris bangsi*), American badger (*Taxidea taxus*) and Palm Springs round-tailed ground squirrel (*Xerospermophilus tereticaudus chlorus*). Of these, only Peninsular bighorn sheep is Federally listed as Endangered and State listed as Threatened. Although not listed by the USFWS or CDFW, the desert bighorn sheep is managed as "fully protected" by the CDFW. The remaining species are either managed as "sensitive" by the BLM and/or designated as SSC's by the CDFW. Townsend's big-eared bat, spotted bat, western mastiff bat and western yellow bat are ranked as "High Risk" by the Western Bat Working Group (WBWG) in Region 8, where the study area is located. Most of these special status mammals are considered to be absent from the study area due to a lack of suitable habitats. The special status mammals generally considered to be absent from the study area include pallid San Diego pocket mouse, roosting Townsend's big-eared bat, earthquake Merriam's kangaroo rat, roosting spotted bat, Colorado Valley woodrat, San Diego desert woodrat, desert bighorn sheep, Peninsular bighorn sheep DPS and Palm Springs pocket mouse. For these reasons, these species will not be discussed further in this report.

While any of the special status bat species may forage at or in the immediate vicinity of the existing facilities, particularly over water (which is rarely present onsite within the overflow/beneficial reuse ponds or detention basins located at some of the existing facilities) and/or around the existing (or future) artificial lighting, suitable roosting habitat for some of these species (see above) is not present at any of the existing facilities. The overflow/beneficial reuse ponds or detention basins only contain water during and/or immediately following necessary service and/or maintenance activities and are completely dry most of the time. There is, however, at least a low potential for several of the bat species (i.e., pallid bat, western mastiff bat, western yellow bat and pocketed free-tailed bat) to roost within the 500-ft buffer zone areas adjacent to all of the existing facilities as these species have been known to roost in trees, including trees used as landscaping, man-made structures such as buildings and bridges and/or beneath roof tiles. Additionally, there is also a very low potential for American badger and Palm Springs round-tailed ground squirrel to occur within the undeveloped open space present within the buffer zone study areas adjacent to Wells 16 and 18. For these reasons, impact avoidance measures for these species are discussed further below.

6.10 Bird Species Protected by the Migratory Bird Treaty Act and Bat Roosts

Excluded from coverage under the CVMSHCP are a variety of common bird species that are protected by the MBTA and FGC. This includes virtually all native migratory and resident bird species, including birds already known to occur in the vicinity. Active and inactive bird nests were observed within the buffer zone study areas adjacent to Wells 11 and 17. Many active cliff swallow nests were observed on the side of the approach to and beneath the existing Dillon Road Bridge over the UPRR easement and Grapefruit Boulevard/SR-111 (Appendix A, Figure 7a; Appendix D, Photo 6). The closest of these was approximately 33.5 m (110 ft) south of the

existing fenced Well 11 and 22.5 m (74 ft) from the proposed expansion area of this facility. Several inactive bird (stick) nests were also observed within some of the existing trees within the buffer zone study area of Well 17 (Appendix A, Figure 18; Appendix D, Photo 18). One of these inactive stick nests was immediately adjacent to (within an approximate 1 m [3.3 ft]), just outside of, the existing masonry wall at this facility and within the proposed northern expansion of this facility. The bird species that these inactive nests belong to is currently not known, but one or more could belong to the vermilion flycatcher as this species was observed within the study area adjacent to this facility.

Regardless of what species built and/or recently used the nests located within the buffer zone area of this facility, or any of the other facilities, active bird nests for all native, non-game bird species, and the birds that occupy them are protected by the MBTA and FGC. Due to the presence of active bird nests (i.e., cliff swallows adjacent to Well 11), inactive bird nests (i.e., stick nests adjacent to Well 17) and suitable nesting habitat (in the buffer zones adjacent to all facilities), native resident and migratory songbirds, including some raptors, could potentially nest in and/or on the fenced facilities (i.e., killdeer [*Charadrius vociferus*], mourning dove, cliff swallow, black phoebe [*Sayornis nigricans*], Say's phoebe, etc.) and within the buffer zone areas adjacent to all of the facilities. Avoidance of impacts to all native, nesting migratory and resident birds is a requirement of the Federal permit issued for the CVMSHCP. In order to avoid impacts to nesting birds, nesting bird clearance surveys conducted by a qualified biologist immediately prior to (within 3 days) initial project-related disturbance (i.e., vegetation removal or trimming, site grading, structural demolition, excavation, blading, operation of heavy equipment, etc.). Impact avoidance and minimization measures are discussed further below.

Although the habitat suitability was assessed, no sign of roosting bats was detected during the assessment; however suitable habitat for some roosting bats occurs within the buffer zone areas adjacent to many, if not all, of the existing facilities. Some bat species are known to roost in trees, some are known to roost on or within manmade structures and at least one species (pallid bat) is known to roost in cliff swallow nests, which were detected in the buffer zone adjacent to Well 11 (Appendix A, Figure 7a; Appendix D, Photo 6). Impact avoidance and minimization measures for these special status mammals are discussed further below.

Although foraging birds and bats can occur just about anywhere, especially during migration, suitable nesting (birds) and/or roosting (bats) habitat is not present within the existing fenced facilities and their adjacent buffer zone study areas for golden eagle, great egret, great blue heron, ferruginous hawk, snowy egret, prairie falcon, gull-billed tern, bald eagle, yellow-breasted chat, black-crowned night heron, white-faced ibis, Yuma Ridgeway's rail, American avocet, black skimmer, least Bell's vireo and Townsend's big-eared bat. Due to the lack of suitable nesting habitat for these birds and/or roosting habitat for Townsend's big-eared bat within the study area, these species will not be discussed further in this report. Impact avoidance and minimization measures for the nesting birds and bats that have at least some (low) potential to nest or roost within the study area are discussed further below.

Tables 1-3 in Appendix E provide a summary for the status of all of the special status biological resources reported from the vicinity (8-km [5-mi] radius). These tables provide the common and scientific names, their respective conservation/legal status, general habitat associations and the probability of occurrence for each of these species within the study area.

7.0 IMPACTS ANALYSIS

The literature review (CNDDB, CNPS and IPaC resource reports) resulted in ninety-six (96) special status biological resources that are known from the vicinity of the project site (Appendices F-H). Of these, eighty-two (82) are considered to be absent from the site due to a combination of a lack of suitable habitats, unsuitable elevational parameters (i.e., study area lower in elevation than the lowest known elevational range of species), the location of the study area is outside of the known geographic range of these species and/or because the proposed project activities are anticipated to occur in areas (i.e., mostly within the fenced facilities) and/or are adjacent to areas that do not provide potentially suitable habitat for those species.

Most of the proposed project development occurs within existing, fenced, gated and locked facilities that are entirely developed and routinely maintained to prevent vegetative growth. Additionally, most of the surrounding areas within the buffer zone study areas adjacent to each of the facilities are also largely developed with only a few undeveloped open space areas present. Nevertheless, direct and indirect impacts to some of the special status biological resources known to occur in the vicinity are possible. Construction activities proposed for locations adjacent to but outside the existing fenced facilities (i.e., facility expansions, utility line connections, access, parking, staging, etc.) have the potential to affect burrowing owls (Wells 11 & 17), nesting birds (all facilities), a few species of roosting bats (all facilities), American badger (Wells 16 & 18) and Palm Springs round-tailed ground squirrel, if present (Wells 11, 16 & 18). Potential direct and indirect impacts are discussed separately below.

Burrowing Owl

Two (2) live burrowing owls were observed approximately 12.8 m (42 ft) southeast of the existing fenced facility at Well 11 at the closest point (Appendix A, Figure 7a; Appendix D, Photos 2, 4 & 5; Appendix I). It is possible that additional live burrowing owls also occur here. The proposed expansion of the existing facility to the south and east encroaches even closer (approximately 7.9 m (26 ft) to the two (2) occupied burrowing owl burrows, as well as other suitable burrows in the same area. California ground squirrel burrows suitable for burrowing owl but lacking sign (i.e., whitewash, pellets, feathers, eggshell fragments, prints, tracks, burrow adornments, etc.) were also detected within 13.4 m (44 ft) of Well 17 and suitable burrowing owl habitat is present immediately adjacent to the southeast of this facility. As a result of the presence of burrowing owls immediately adjacent to Well 11 and the potential for burrowing owls to occur in the suitable open space areas adjacent to Well 16, Well 17 and Well 18,., protocol-level presence/absence surveys and take avoidance (pre-construction) surveys in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012), and coordination with the regulatory agencies to determine additional requirements such as Burrowing Owl Management Plan, will also likely be required.

Other Special Status Bird Species

Willow flycatcher, Costa's hummingbird and vermilion flycatcher were observed within the buffer zone study areas adjacent to some of the facilities. A single willow flycatcher was observed perching and calling from the existing mesquite thicket adjacent to Well 16. This individual is considered to either be a late migrant, temporarily moving through the area, or perhaps a lost and/or disoriented individual as no suitable breeding or nesting habitat for willow flycatcher, including the mesquite thicket, is present anywhere within any of the study areas adjacent to any of the facilities. For these reasons, potential impacts to willow flycatcher are not anticipated

to occur as a result of project implementation and no further actions for willow flycatcher are recommended or anticipated to be required for this project.

A single Costa's hummingbird and an adult pair of vermilion flycatchers were observed adjacent to Wells 12 and 17 respectively. Although no suitable nesting habitat for either of these species was observed within any of the existing facilities, suitable nesting habitat for Costa's hummingbird is present within the buffer zone study areas adjacent to all of the facilities and suitable nesting habitat for vermilion flycatcher was observed within the buffer zone study areas of Wells 12 and 17 (i.e., Bagdouma Park and Rancho Las Flores Park).

Furthermore, several inactive stick nests were detected within the buffer zone study area adjacent to Well 17. Although the species that built and recently used these inactive nests could not be determined, it is possible that one or more could belong to the vermilion flycatcher. One of these nests was observed immediately adjacent to (within approximately 1 m [3.3 ft]) of Well 17, in a row of ornamental trees planted just outside of the existing masonry wall that serves as the current northern boundary of the existing facility). The location of this nest is within an area that is proposed to be redeveloped for the northern expansion of this facility.

Additionally, potentially suitable nesting habitat for a variety of other special status bird species including loggerhead shrike, black-tailed gnatcatcher, crissal thrasher and LeConte's thrasher, is also intermittently present within the existing vegetation communities (i.e., quailbush scrub, mesquite thicket and saltcedar thicket) within the buffer zone study area adjacent to some of the facilities (i.e., Wells 11, 16 & 18). For these reasons, direct and indirect impacts to these species while nesting are possible. Although the nesting season was generally and formerly considered to be 15 January-31 August in the Coachella Valley, this previously recognized former nesting season has been expanding in recent years, as a result of climate change and shifting weather patterns. The USFWS and/or CDFW now consider the nesting season for birds in the Coachella Valley to be year-round (January-December). Some species have been documented nesting as early as January, while others have been documented nesting as late as December. For these reasons, the formerly recognized nesting season is no longer considered adequate to detect and avoid potential impacts to nesting birds. Surveys are now recommended year-round to ensure that project activities do not impact nesting bird species, both within the existing facilities and within the buffer zone study areas adjacent to all of the existing facilities.

Other Nesting Birds

Active and inactive bird nests were observed adjacent to some of the facilities during the field assessment. Many active cliff swallow nests were observed on and beneath the Dillon Road Bridge over the existing UPPR easement, gas line Right-of-Way and Grapefruit Boulevard/SR-111 present to the southeast of Well 11 (Appendix A, Figure 2a; Appendix D, Photo 2). Several inactive stick nests in good condition were observed within the buffer zone adjacent to Well 17 (Appendix A, Figure 7d; Appendix D, Photo 18). One of these nests was located immediately outside but immediately adjacent to the existing masonry wall on the north side of Well 17 where the proposed expansion of this facility is located. Although no bird nests were observed on any of the existing structures within the existing facilities, some of the structures and even the highly disturbed and barren areas within all of the facilities could be used for nesting by a variety of common birds that are protected while nesting by the MBTA and FGC. Representative examples of birds that could nest within the existing fenced facilities include, but are not limited to killdeer, cliff swallows, black phoebe and Say's phoebe. Suitable nesting habitat for a variety of other bird species is intermittently present throughout the buffer zone study areas adjacent to

all of the existing facilities. Representative examples of bird species that have the potential to nest within the buffer zone study areas adjacent to all facilities include but are not limited to mourning dove (*Zenaida macroura*), northern mockingbird and house finch (*Carpodacus mexicanus*). For these reasons, clearance surveys for nesting common bird species are recommended at all existing facilities and within the adjacent buffer zone study areas of all of the existing facilities prior to the commencement of project activities that could potentially impact nesting birds (i.e., operation of heavy equipment, structural demolition, vegetation clearance, grading, excavation, construction, etc.).

Roosting Bats

Although no bats or sign of bats (i.e., guano, staining) were detected anywhere within the study area, potentially suitable roosting habitat for some special status bat species is present adjacent to all of the existing facilities. Pallid bats are known to roost in a variety of habitats including trees, on buildings and other man-made structures such as the underside of bridges and beneath roof tiles. Pallid bats are also known to roost in cliff swallow nests (Carpenter et. al. 2022), which were detected adjacent to Well 11 and have the potential to occur on structures within and adjacent to all of the existing facilities. Western mastiff bats are known to roost in trees and tall structures which are intermittently present within the study area. Western yellow bats are known to roost in trees and are particularly fond of mature palm trees retaining their aprons of dead palm fronds which are intermittently present throughout the study area. Pocketed free-tailed bats are known to roost in/on buildings and underneath roof tiles, which are intermittently present throughout the study area. Because trees, buildings with roof tiles, tall structures (i.e., Dillon Road Bridge) and cliff swallow nests are present within the buffer zone areas adjacent to all of the facilities, roosting and foraging habitat for pallid bat, western mastiff bat, western yellow bat and pocketed free-tailed bats is present within the buffer zone areas of all the existing facilities. Buildings with roof tiles were observed on Wells 17, 18 and 19. Gaps between the roof tiles that appeared to be large enough for roosting pocketed free-tailed bats, and possibly other bats, were not observed, however, beneath any of the tiled roofs located on these facilities. For these reasons, pre-construction clearance surveys for roosting bats are recommended at and within the buffer zone study areas at all of the existing facilities prior to the commencement of project activities that could potentially impact roosting bats (i.e., operation of heavy equipment, structural demolition, vegetation clearance, grading, excavation, construction, etc.).

Other Special Status Species

Undeveloped, vacant open space exhibiting natural and semi-natural vegetation communities that provide potentially suitable habitat for American badger and Palm Springs round-tailed ground squirrel are present within the buffer zone areas adjacent to some of the existing facilities (i.e., Wells 11, 16 & 18). For these reasons, WSP considers there to be a very low potential for these species to occur in the buffer zone areas adjacent to these facilities. Because American badgers have a very large geographic range throughout much of North America, project-related impacts (if any) to American badger would not likely meet the threshold of significance under the CEQA. Although Palm Springs round-tailed ground squirrel, unlike the American badger, has a very restricted range and is endemic to the Coachella Valley, this species is a covered species under the CVMSHCP. As a result, no further actions for potential impacts to American badger and Palm Springs round-tailed ground squirrel are recommended or anticipated to be required for project implementation.

Coachella Valley Multiple Species Habitat Conservation Plan

The City of Coachella is a signatory to and a primary local permittee for the CVMSHCP. As a result, impacts (if any) to CVMSHCP-covered species would be permitted and covered through participation in the plan. Although suitable habitat for most of the CVMSHCP-covered species is not present within the existing fenced and developed facilities, potentially suitable (mostly marginal) habitat for a few covered species is present within the buffer zone areas adjacent to some of the facilities (i.e., Wells 11, 16, 17 & 18). CVMSHCP-covered species that have at least some (mostly very low to low) potential of occurrence within the existing habitats and open spaces adjacent to some of these facilities include burrowing owl, crissal thrasher, LeConte's thrasher, western yellow bat and Palm Springs round-tailed ground squirrel. Participants generally pay a standard development fee prior to receiving requisite grading and/or development permits, with some exceptions, under the plan. Although these species are among the twenty-seven (27) covered under the CVMSHCP, additional actions are likely going to be required (i.e., Burrowing Owl Management Plan, protocol presence/absence surveys and take avoidance [pre-construction] surveys for burrowing owl; and pre-construction clearance surveys for western yellow bat) for full compliance with the CVMSHCP (Section 9 below).

Because two live burrowing owls were observed additional actions are recommended and anticipated to be required. These include: 1) contacting and notifying the CDFW immediately or soon as possible regarding the observation of burrowing owls immediately adjacent to Well 11 (and the suitable burrows and habitat adjacent to Wells 16, 17 and 18) for species, project and site-specific notification and guidance pertaining to avoidance, minimization and mitigation of impacts; 2) preparing and submitting a Burrowing Owl Management Plan to CDFW (and CVCC) as soon as possible; and 3) conducting pre-construction (take avoidance) surveys where suitable habitat is present (again, Wells 11, 16, 17 and 18) prior to site disturbance. More details for these recommended mitigation measures are included in Section 9.0 below. Protocol focused surveys for burrowing owl may also be required by the CDFW and for CVMSHCP compliance in the areas where suitable habitat occurs but would likely be a part of the Burrowing Owl Management Plan and thus are not specifically recommended or included here.

For nesting birds, including the CVMSHCP-covered LeConte's thrasher and crissal thrasher, a nesting bird clearance survey conducted prior to activities that have the potential to impact all nesting birds on- and adjacent to the study area is recommended and anticipated to be required for avoidance of impacts to nesting bird species that are not covered by the CVMSHCP but are protected by the MBTA and FGC.

For roosting bats, a pre-construction clearance survey in and adjacent to areas where disturbance has the potential to impact roosting bats within the study area are recommended and anticipated to be required.

All of the existing facilities and their respective adjacent buffer zone study areas are located outside of and are not adjacent to any designated CVMSHCP conservation areas. No known wildlife corridors, biological linkages, sand transport areas, core or modeled habitats are mapped on or adjacent to the study area (Appendix A, Figure 6). For these reasons, impacts to CVMSHCP conservation areas, known wildlife corridors, biological linkages, sand transport areas, core or modeled habitats are not anticipated and thus no impact avoidance, minimization or mitigation measures pertaining to the protection of biological resources in or adjacent to conservation areas, known wildlife corridors, biological linkages, sand transport areas, core of modeled habitats are recommended or expected to be required for the implementation of this project.

Jurisdictional Waters
No impacts to jurisdictional waters of any kind are anticipated to occur as a result of project implementation. Therefore, no impact avoidance, minimization and/or mitigation is recommended or expected to be required for jurisdictional areas.

8.0 DISCUSSION

Implementation of the proposed project is expected to have little to no effect on most of the special status biological resources known from the vicinity as the site lacks suitable habitat for many of these special status biological resources. The facilities have been entirely developed, as has much of the land located in the buffer zone study areas adjacent to the facilities. Furthermore, project activities proposed to occur outside of the existing fenced facilities (i.e., facility expansion, utility line tie-in's, access, parking and staging of equipment, etc.) would largely be limited to the existing paved, graded and/or adjacent barren and/or highly disturbed areas adjacent to the existing facilities.

The special status biological resources that are considered to be absent from the existing facilities and the buffer zone study areas adjacent to the facilities include: all of the special status plant species; all special status vegetation communities, all of the special status invertebrates (including monarch butterfly and Casey's June beetle); both of the special status fishes; both of the special status amphibians; all of the special status reptiles (including desert tortoise, Coachella Valley fringe-toed lizard and flat-tailed horned lizard); many of the special status bird species (including both eagles, southwestern willow flycatcher, Yuma Ridgeway's rail and least Bell's vireo) and most of the special status mammals (including desert bighorn sheep, Peninsular bighorn sheep and Palm Springs pocket mouse).

Although undeveloped open space supporting remnant quailbush scrub, a mesquite thicket and tamarisk thickets were observed within the study area, no sand dunes, sand fields, drainages, aquatic habitats, rocky outcrops or mountains of any kind were observed. For these reasons, the majority of the special status biological resources known from the vicinity are considered to be absent from the existing facilities and the immediately adjacent buffer zone study areas. Therefore, additional actions (i.e. pre-construction clearance surveys) are considered to be unwarranted, are not recommended and not anticipated to be required for these special status biological resources.

Two (2) live burrowing owls, two (2) occupied burrowing owl burrows, suitable habitat and other burrows suitable for burrowing owl were observed within the buffer zone study area immediately adjacent to Well 11. Additionally, suitable habitat and burrows suitable for burrowing owl were observed within the buffer zone study area adjacent to Well 17 and suitable habitat for burrowing owl was observed adjacent to Wells 16 and 18. Because project activities include the expansion of Wells 11, 16 and 17 and other work outside of the existing fenced developed areas at these facilities and a buried discharge pipeline in the existing Avenue 48 outside of Well 18 are proposed, additional actions for unavoidable and potential impacts to burrowing owl are recommended and anticipated to be required for compliance with the CVMSHCP, CESA, MBTA, FGC and the CEQA. The additional actions that are recommended and anticipated to be required include: 1) CDFW notification of the presence of the burrowing owls for further species/project-specific guidance; 2) the preparation of submission of a Burrowing Owl Management Plan to the CDFW (and CVCC); and 3) pre-construction (take avoidance) surveys

prior to project activities that have the potential to impact burrowing owls (see Mitigation Measures 1-3 below).

Several other special status bird species were observed adjacent to several of the facilities. These include willow flycatcher, Costa's hummingbird and vermilion flycatcher. Although suitable nesting habitat for willow flycatcher is not present within or adjacent to any of the facilities, suitable nesting habitat for Costa's hummingbird and vermilion flycatcher is intermittently present adjacent to all or some of the existing facilities. Suitable nesting habitat for Costa's hummingbird is present within the buffer zone study areas adjacent to all of the facilities while suitable nesting habitat for vermilion flycatcher was observed adjacent to Wells 12 and 17 (i.e., landscaped trees and vegetation at Bagdouma Park and Rancho Las Flores Park).

Additionally, potentially suitable nesting habitat for loggerhead shrike, crissal thrasher and LeConte's thrasher is also present in the buffer zone study areas adjacent to some of the other facilities. As a result, pre-construction clearance surveys for these special status bird species would also be conducted within the adjacent buffer zone study areas of all of the facilities (for Costa's hummingbird) and the other facilities where suitable habitat is present (i.e., Wells 16 & 18 for loggerhead shrike, crissal thrasher and LeConte's thrasher). Pre-construction clearance surveys for the potentially special status nesting bird species can be conducted concurrently with recommended pre-construction clearance surveys for some of the other potentially occurring special status biological resources (i.e., burrowing owl, other nesting common birds protected by the MBTA and FGC and roosting bats) (MM 4 below).

Active cliff swallow nests and inactive stick nests were observed adjacent to two of the facilities (i.e., Wells 11 & 17 respectively). Suitable nesting habitat for other common birds protected by the MBTA and FGC is also present on and adjacent to all of the existing facilities. For these reasons, pre-construction clearance surveys for all native bird species is recommended and will likely be required at and adjacent to all facilities. As previously discussed, there is no longer a nesting season for birds in Southern California. Native birds have been observed nesting from January through December in Southern California. For these reasons, pre-construction clearance surveys for nesting birds are now recommended to be conducted year-round. Again, pre-construction clearance surveys for nesting birds can be conducted concurrently with some of the other recommended and/or required surveys (MM 4 below).

Although no bats or sign of bats (i.e., guano, droppings, staining, etc.) were observed during the assessment, potentially suitable roosting habitat for some bat species is present within the existing structures and trees adjacent to all of the facilities. Some species are known to roost on man-made structures like bridges and/or beneath roof tiles on buildings while some species are known to roost in trees, including mature palms with untrimmed aprons, mesquite and trees commonly used in landscaping. For these reasons, focused surveys for roosting bat species (including the CVMSHCP-covered yellow bat and pallid bat, which is not covered under the CVMSHCP) and pre-construction clearance surveys for these roosting bats are recommended and may be required prior to the commencement of project activities. Pre-construction clearance surveys for bats can sometimes be conducted concurrently with pre-construction clearance surveys for nesting birds (MM 5 below).

With the implementation of the recommendations, requirements and guidelines summarized in Section 9.0, including requisite participation in the CVMSHCP, project-related impacts to the CVMSHCP-covered species (including burrowing owl, crissal thrasher, LeConte's thrasher and western yellow bat), special status species not covered by the CVMSHCP (including other

roosting bat species and nesting birds protected under the MBTA and/or FGC) are expected to be avoided and/or mitigated to less than significant levels.

9.0 MITIGATION MEASURES

MM-1 Notification of the Presence of Burrowing Owls. Because burrowing owls were observed immediately adjacent to Well 11 and other suitable burrows and habitat were detected within the buffer zone study areas adjacent to Wells 11, 16, 17 and 18, notification to CDFW is a requirement for CVMSHCP compliance. Communications and coordination with the CDFW (and CVCC) will help ensure that the appropriate actions are implemented for avoidance, minimization and mitigation for potential take of burrowing owls. It is advisable to initiate this notification and dialogue with the CDFW (and the CVCC) as soon as possible to avoid potential delays in the implementation of the required measures and anticipated project schedule.

MM-2 Burrowing Owl Management Plan. Two live burrowing owls were observed adjacent to Well 11 during the biological survey conducted in June 2026. In order to offset potential project-related impacts to burrowing owl and its habitat, a Burrowing Owl Management Plan shall be developed by a qualified biologist who has experience working with and/or managing burrowing owls on project sites. The Burrowing Owl Management Plan shall outline project and/or well site-specific protection measures that are in accordance with CDFW's *Staff Report on Burrowing Owl Mitigation* (Staff Report; CDFG 2012). The Burrowing Owl Management Plan shall also identify protection measures to be implemented should the species be found at the well sites or study areas where they are found to occur at any time of the year (i.e., migration periods, breeding/summer, and wintering). This may include protocol focused surveys for burrowing owl conducted in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012) in the areas containing suitable habitat, The Burrowing Owl Management Plan shall outline specific survey methods and timing in accordance with the Staff Report and shall include instruction on survey requirements should there be a lapse in construction or project activities. Avoidance, minimization and/or mitigation methods outlined in the Burrowing Owl Management Plan shall include, but not be limited to, establishment of no-disturbance buffers around potential or occupied burrowing owl burrows, additional biological monitoring requirements during project activities, and any passive relocation or active translocation. Monitoring of the burrowing owls may also be required. Regular reporting timeframes and requirements for communication with CDFW shall also be clearly outlined in the Burrowing Owl Management Plan. The Burrowing Owl Management Plan shall be submitted to CDFW for review and subject to CDFW approval prior to the start of project ground-disturbing activities.

MM-3 Pre-construction Clearance Surveys for Costa's Hummingbird, Vermilion Flycatcher, Black-tailed Gnatcatcher, Crissal Thrasher, LeConte's Thrasher and Other Nesting Birds Protected under the MBTA and FGC. Pre-construction clearance surveys for Costa's hummingbird, vermilion flycatcher, black-tailed gnatcatcher, crissal thrasher, LeConte's thrasher and other nesting birds protected under the MBTA and FCG shall be conducted by a qualified biologist prior to the commencement of initial project activities (i.e., vegetation removal, grading, structural demolition, operation of heavy equipment, etc.) that are proposed or scheduled to occur. The nesting season for birds in the Coachella Valley is now considered to be year-round (January-December) therefore pre-construction clearance surveys for nesting birds are now required to be conducted prior to site disturbance at all times of the year to ensure that nesting birds protected by the MBTA and FGC are not impacted as a result of project implementation.

The pre-construction surveys for Costa's hummingbird, vermilion flycatcher, black-tailed gnatcatcher, crissal thrasher, LeConte's thrasher and other nesting birds shall include the project site and adjacent areas where project activities have the potential to cause distress to nesting birds and/or potential nest failure. The surveys shall be conducted no more than three (3) days prior to the start of ground-disturbing activities. If no active bird nests are found, vegetation removal, grading, ground disturbance, structural demolition, etc. may commence. If active bird nests are found, disturbance avoidance buffer zones (i.e., Environmentally Sensitive Areas [ESAs]) would need to be established, clearly marked in the field, observed and monitored. No work would be permitted within the ESAs until young have fledged as determined by a qualified biologist. While there is no established protocol for nesting bird ESAs, when consulted, the CDFW generally recommends avoidance buffers of about 30-91 m (100-300 ft) for unlisted songbirds and 152 m (500 ft) for listed songbirds and raptors (i.e., eagles, hawks, owls, and falcons). Once nesting is complete, young have fledged and/or the nests are determined to no longer be active by the monitoring biologist, work may commence within the ESAs.

MM-4 Pre-construction Clearance Surveys for Roosting Bats. Prior to site disturbance, structural demolition, tree trimming or removal and/or ground-disturbing activities that may have the potential to affect roosting bat habitat (e.g., buildings with tile roofs, palm trees with untrimmed aprons, mesquite trees, etc.), a qualified biologist shall conduct a pre-construction clearance survey for special status roosting bat species that are known from the area. The survey should be performed no more than 14 days prior to the start of construction or site disturbance that has the potential to disturb roosting bats. If no active bat roosts or maternity colonies are found, structural demolition, vegetation trimming or removal and ground disturbance may proceed without additional restrictions related to special status roosting bat species.

All potential bat roosting habitat located in areas would have the potential to be affected by the project should be removed in a manner approved by the qualified biologist outside the maternity season (March 15-August 31).

If bat roosts are identified, a no disturbance 100-ft (or as otherwise determined appropriate by the qualified biologist) ESA should be established, clearly marked in the field and observed by project personnel, until the biologist has confirmed that young are volant (able to fly) and the roost is no longer active. Also, if bat roosts are found, a bat avoidance and mitigation plan would likely be required. Removal of the roost(s) shall only occur when the mitigation plan has been approved by the appropriate resource agencies (e.g., City, CDFW, CVCC) and only when bats are not present in the roost.

If avoidance is not feasible, coordination with the appropriate resource agencies should occur to determine appropriate mitigation measures.

10.0 Best Management Practices (BMPs)

Implementation of general BMPs are recommended to the extent practical. Key aspects of the BMPs are to clearly delineate the limits of disturbance, use properly maintained equipment, properly implement and monitor water quality BMPs, avoid use of chemicals near sensitive

areas, develop procedures for minimizing the likelihood of spills and to control sediment, ensure worker safety, and minimize impacts to sensitive biological resources on-site.

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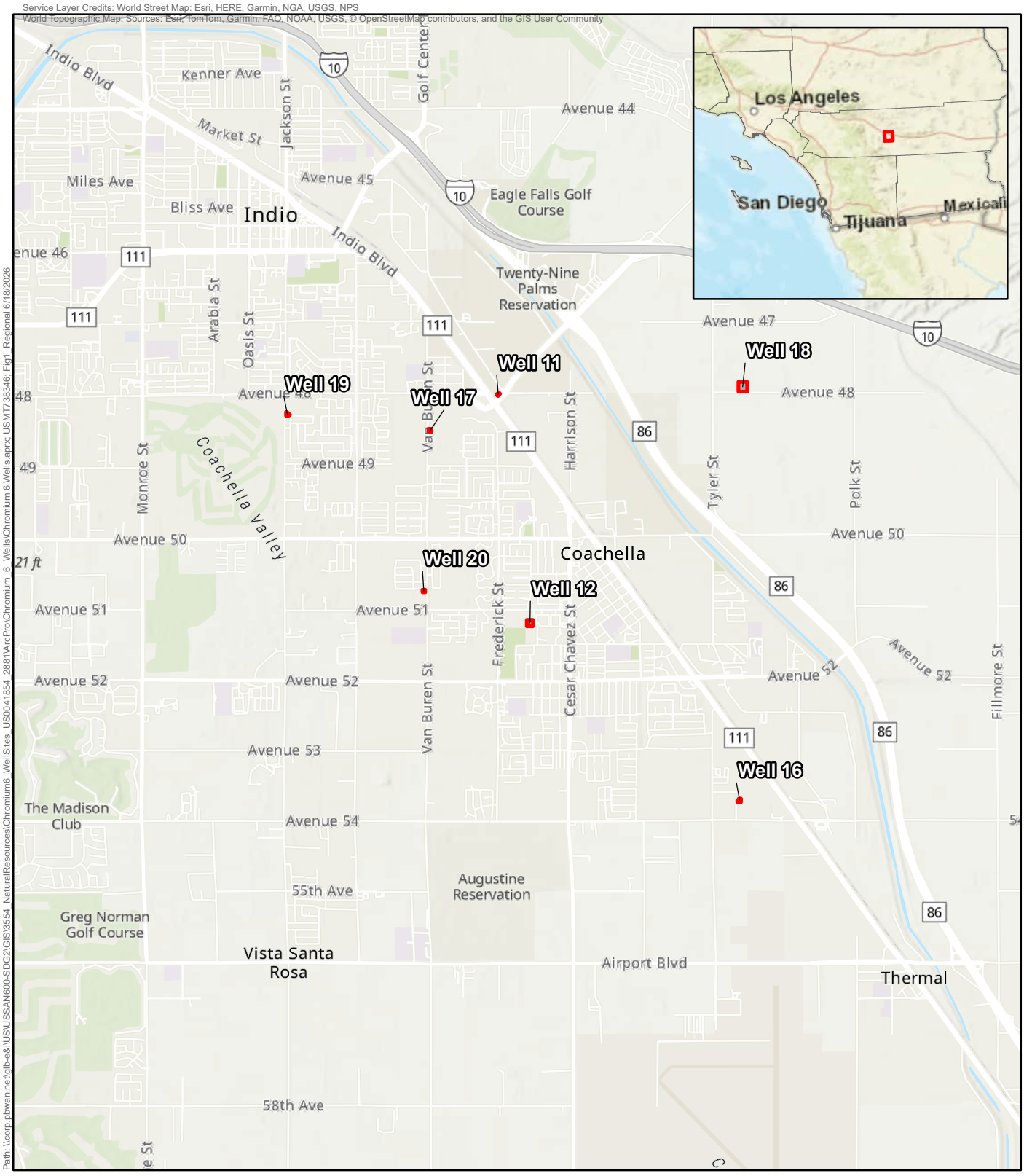
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APPENDIX A

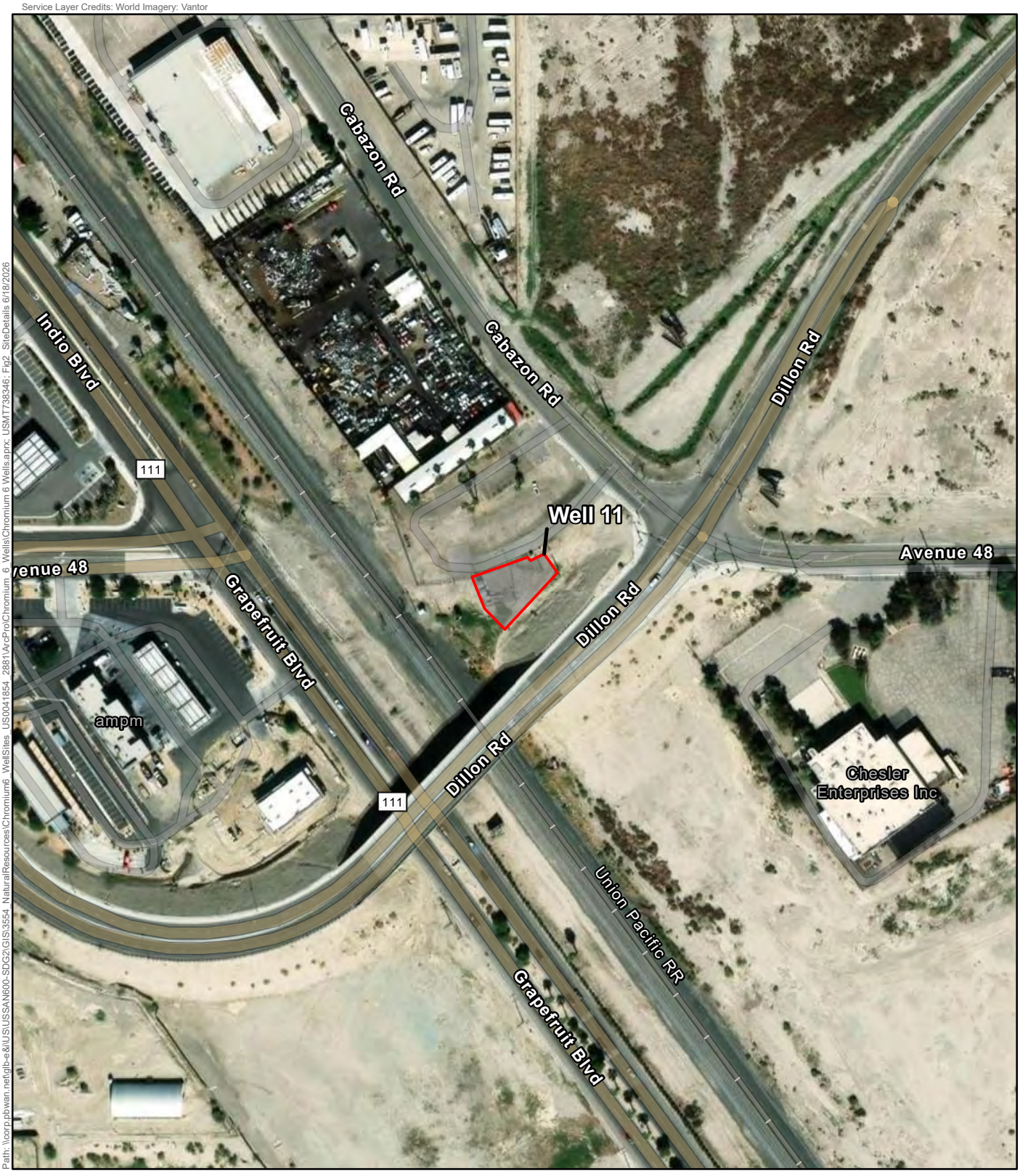
FIGURES



Well Locations

FIGURE 1

Regional Location
CWA Cr6 Well Sites Project
Riverside County, CA





Well Site

1 inch =200 feet
0 100 200 Feet

Figure 2a

Well 11 - Site Details
CWA Cr6 Well Sites Project
Riverside County, CA

Service Layer Credits: World Imagery: Vantor



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Well Site

1 inch =200 feet
0 100 200 Feet

Figure 2b

Well 12 - Site Details
CWA Cr6 Well Sites Project
Riverside County, CA





Well Site

1 inch =200 feet
0 100 200 Feet

Figure 2c

Well 16 - Site Details
CWA Cr6 Well Sites Project
Riverside County, CA

Service Layer Credits: World Imagery: Vantor



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Well Site

1 inch =200 feet
0 100 200 Feet

Figure 2d

Well 17 - Site Details
CWA Cr6 Well Sites Project
Riverside County, CA

Service Layer Credits: World Imagery: Vantor



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Well Site

1 inch =200 feet
0 100 200
Feet

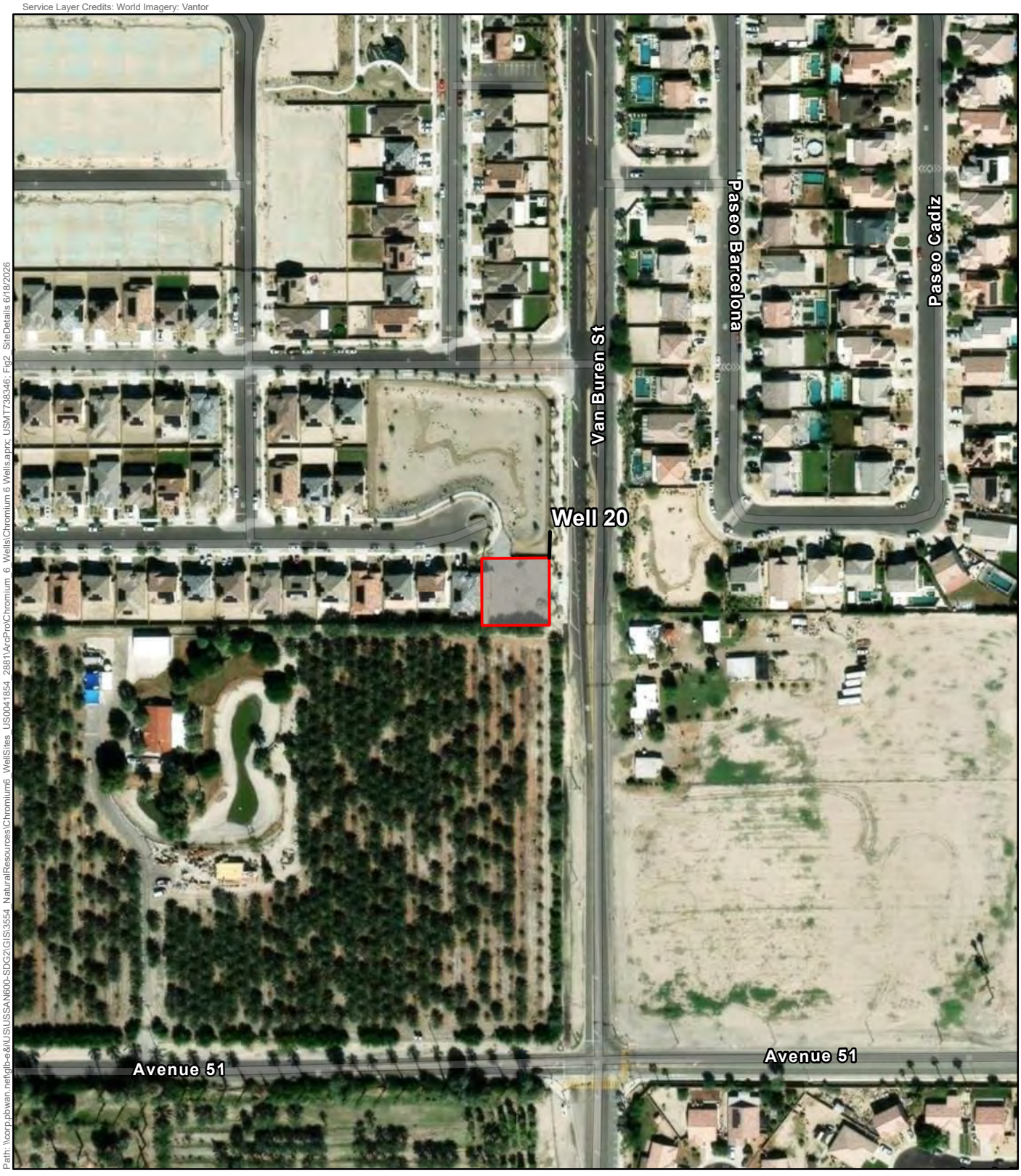
Figure 2e

Well 18 - Site Details
CWA Cr6 Well Sites Project
Riverside County, CA



Figure 2f

Well 19 - Site Details
CWA Cr6 Well Sites Project
Riverside County, CA





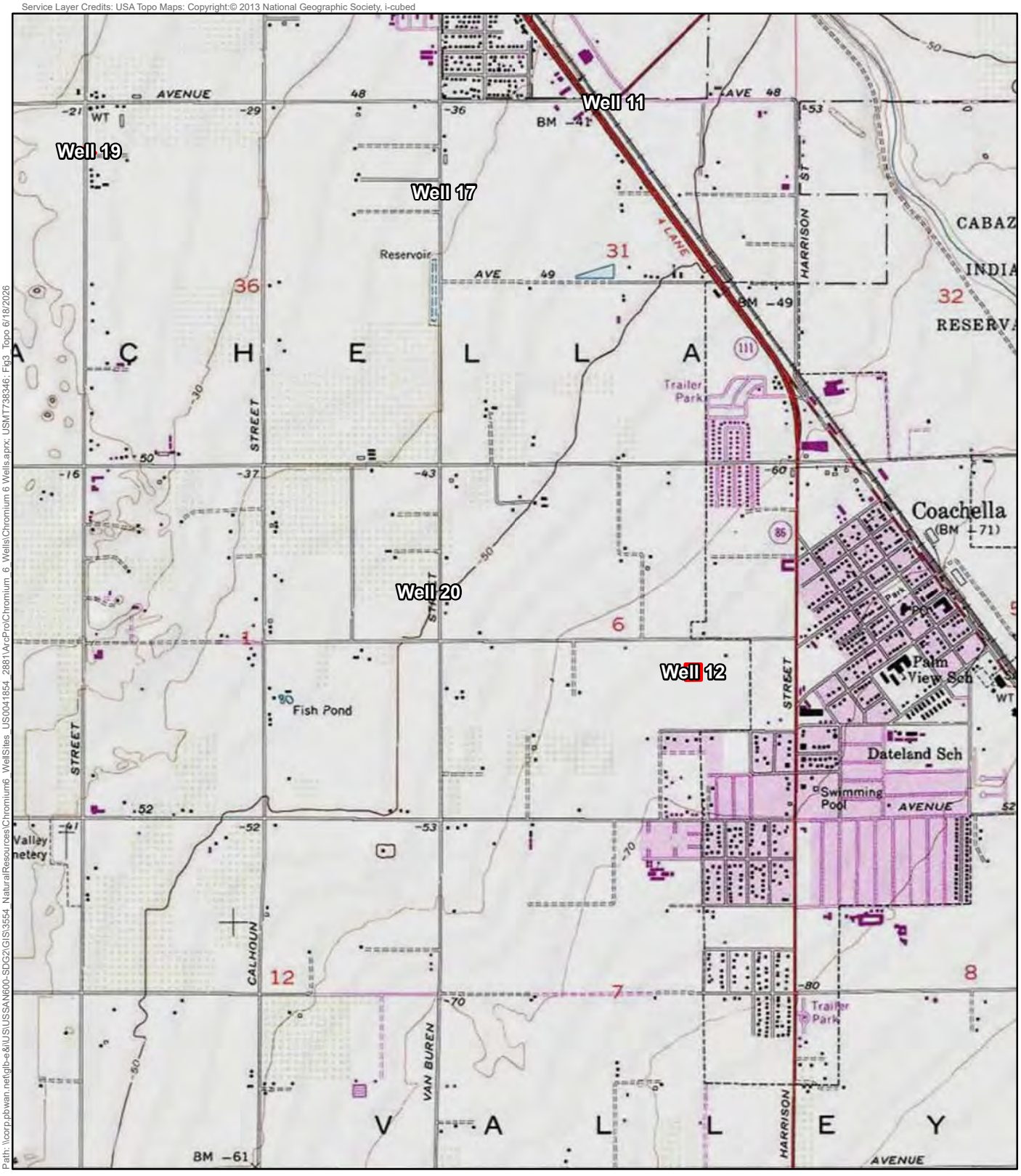
Well Site

1 inch =200 feet
0 100 200 Feet

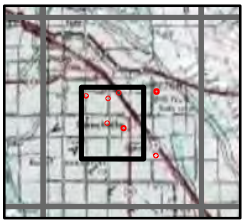
Figure 2g

Well 20 - Site Details
CWA Cr6 Well Sites Project
Riverside County, CA

Service Layer Credits: USA Topo Maps: Copyright:© 2013 National Geographic Society, i-cubed



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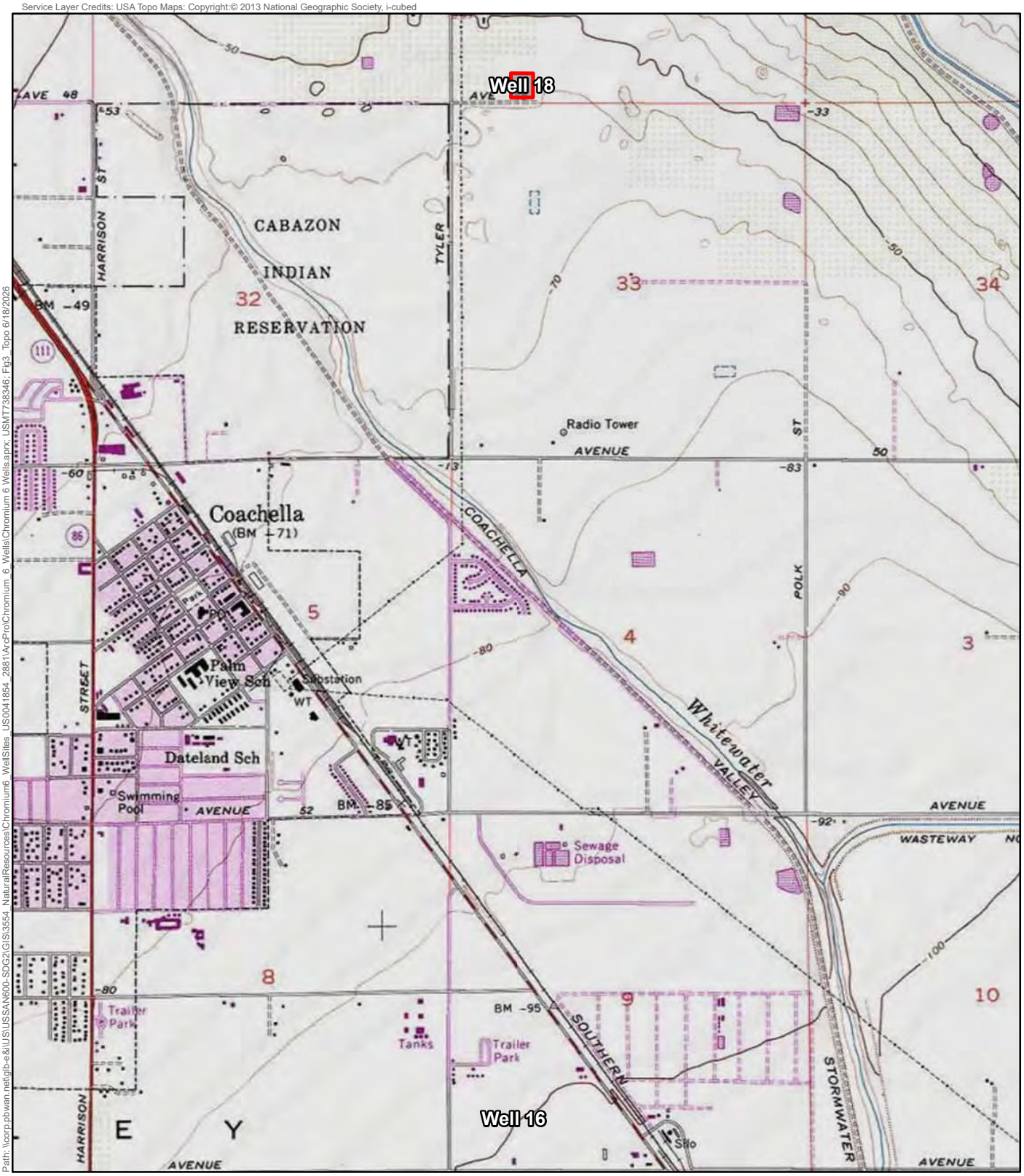
1 inch =2,000 feet
0 1,000 2,000.01 Feet

Well Site
USGS 24k Topo Map Boundaries

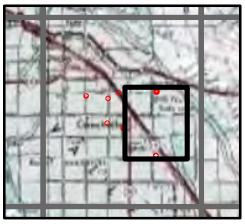
Figure 3a

USGS 7.5' Topo Quad: Indio
CWA Cr6 Well Sites Project
Riverside County, California

Service Layer Credits: USA Topo Maps: Copyright:© 2013 National Geographic Society, i-cubed



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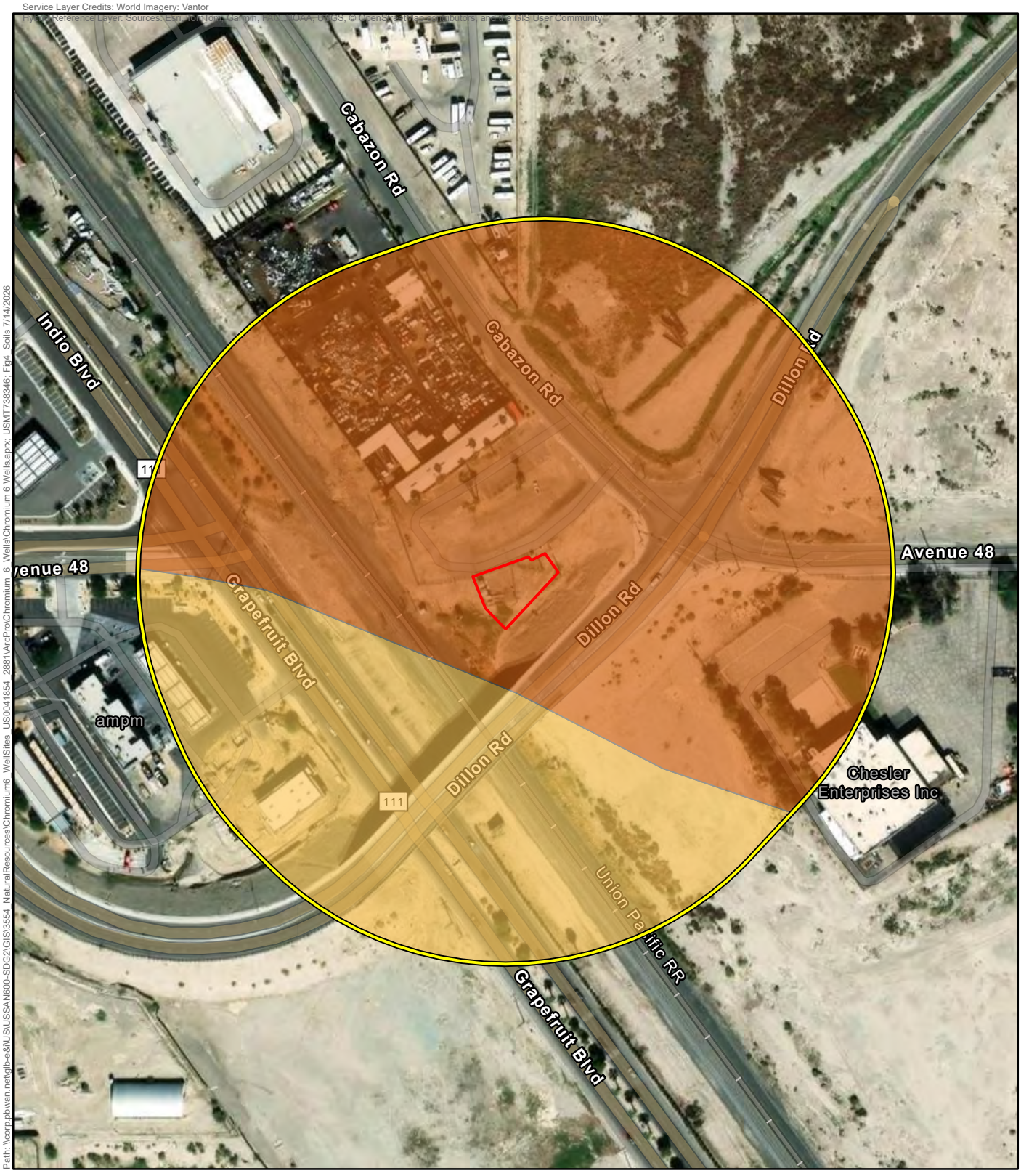


1 inch =2,000 feet
0 1,000 2,000 Feet

Well Site
USGS 24k Topo Map Boundaries

Figure 3b

USGS 7.5' Topo Quad: Indio
CWA Cr6 Well Sites Project
Riverside County, California



Well Site

Survey Area (500 ft)

Soils

Gilman silt loam, 0 to 2 percent slopes

Indio very fine sandy loam

1 inch =200 feet
0 100 200 Feet

Figure 4a

Well 11 - Soils
CWA Cr6 Well Sites Project
Riverside County, CA



Well Site

Survey Area (500 ft)

Soils

Gilman silt loam, wet, 0 to 2 percent slopes

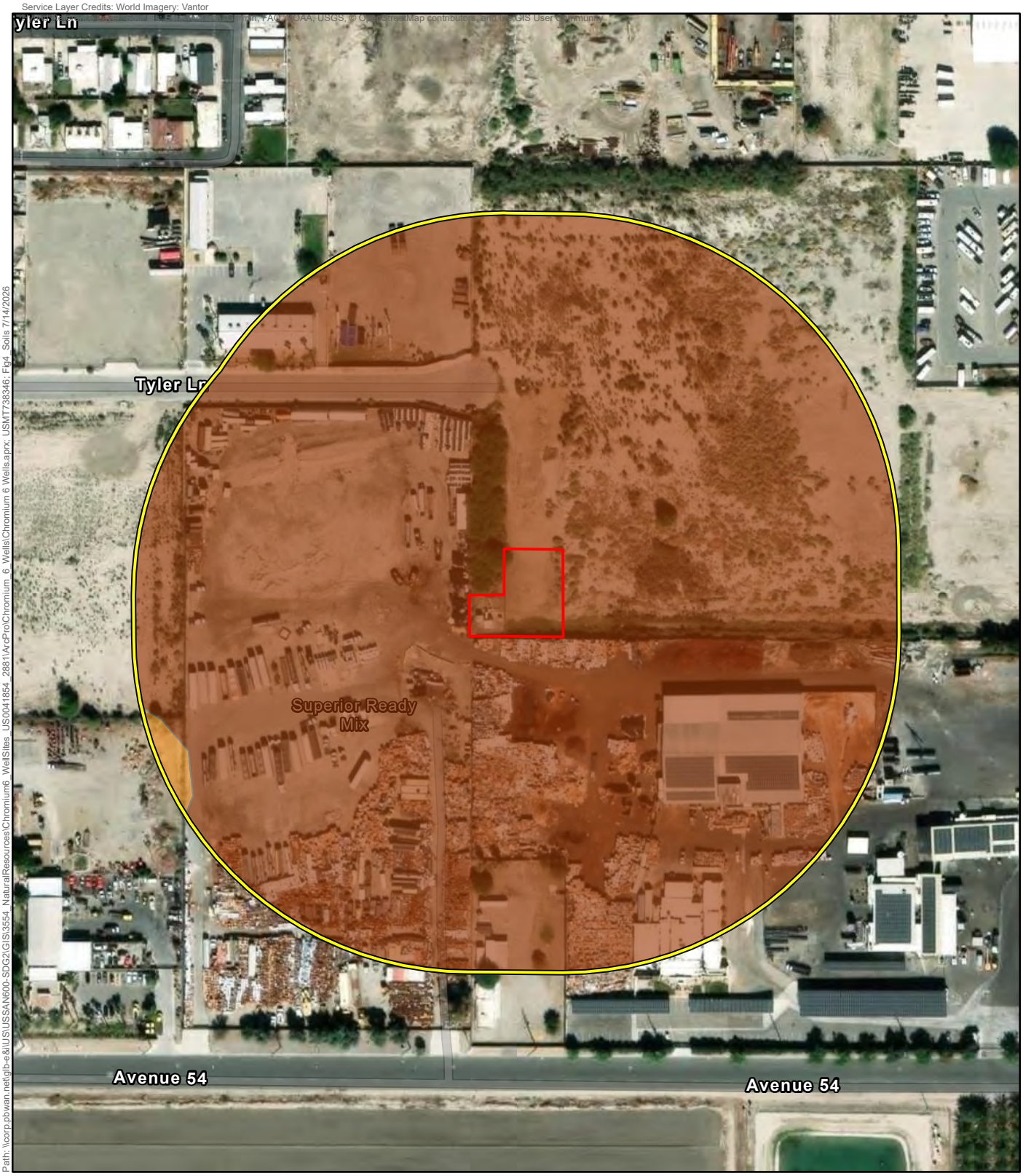
Indio very fine sandy loam, wet

1 inch =200 feet

0 100 200 Feet

Figure 4b

Well 12 - Soils
CWA Cr6 Well Sites Project
Riverside County, CA



Well Site

Survey Area (500 ft)

Soils

Gilman silt loam, wet, 0 to 2 percent slopes

Indio very fine sandy loam, wet

1 inch =200 feet

0 100 200 Feet

Figure 4c

Well 16 - Soils
CWA Cr6 Well Sites Project
Riverside County, CA



Well Site

Survey Area (500 ft)

Soils

Gilman silt loam, 0 to 2 percent slopes

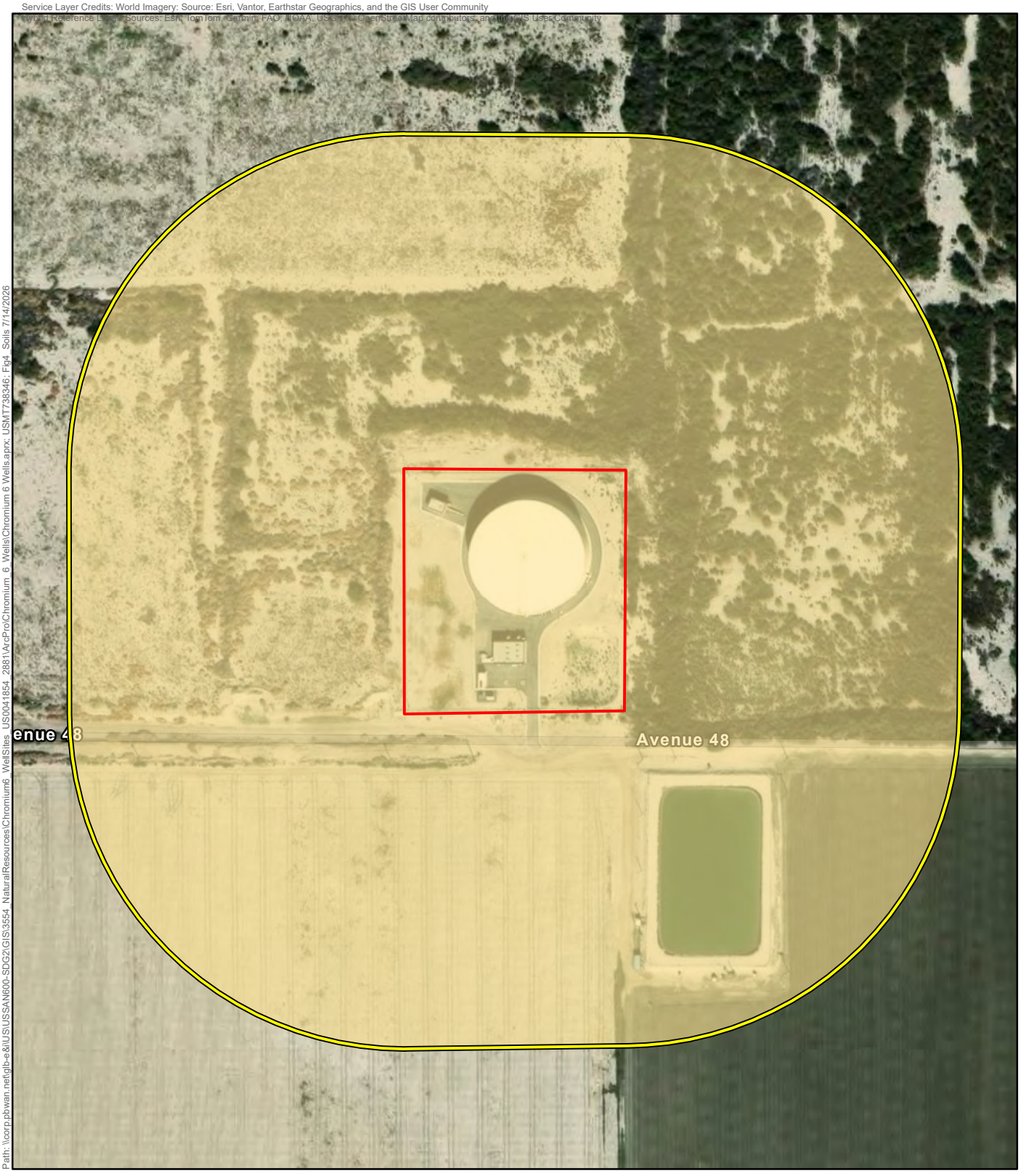
Indio very fine sandy loam

1 inch =200 feet

0 100 200 Feet

Figure 4d

Well 17 - Soils
CWA Cr6 Well Sites Project
Riverside County, CA



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1 inch =200 feet
0 100 200 Feet

Well Site

Survey Area (500 ft)

Soils

Gilman fine sandy loam, wet, 0 to 2 percent slopes

Figure 4e

Well 18 - Soils
CWA Cr6 Well Sites Project
Riverside County, CA



Well Site

Survey Area (500 ft)

Soils

Gilman fine sandy loam, 0 to 2 percent slopes

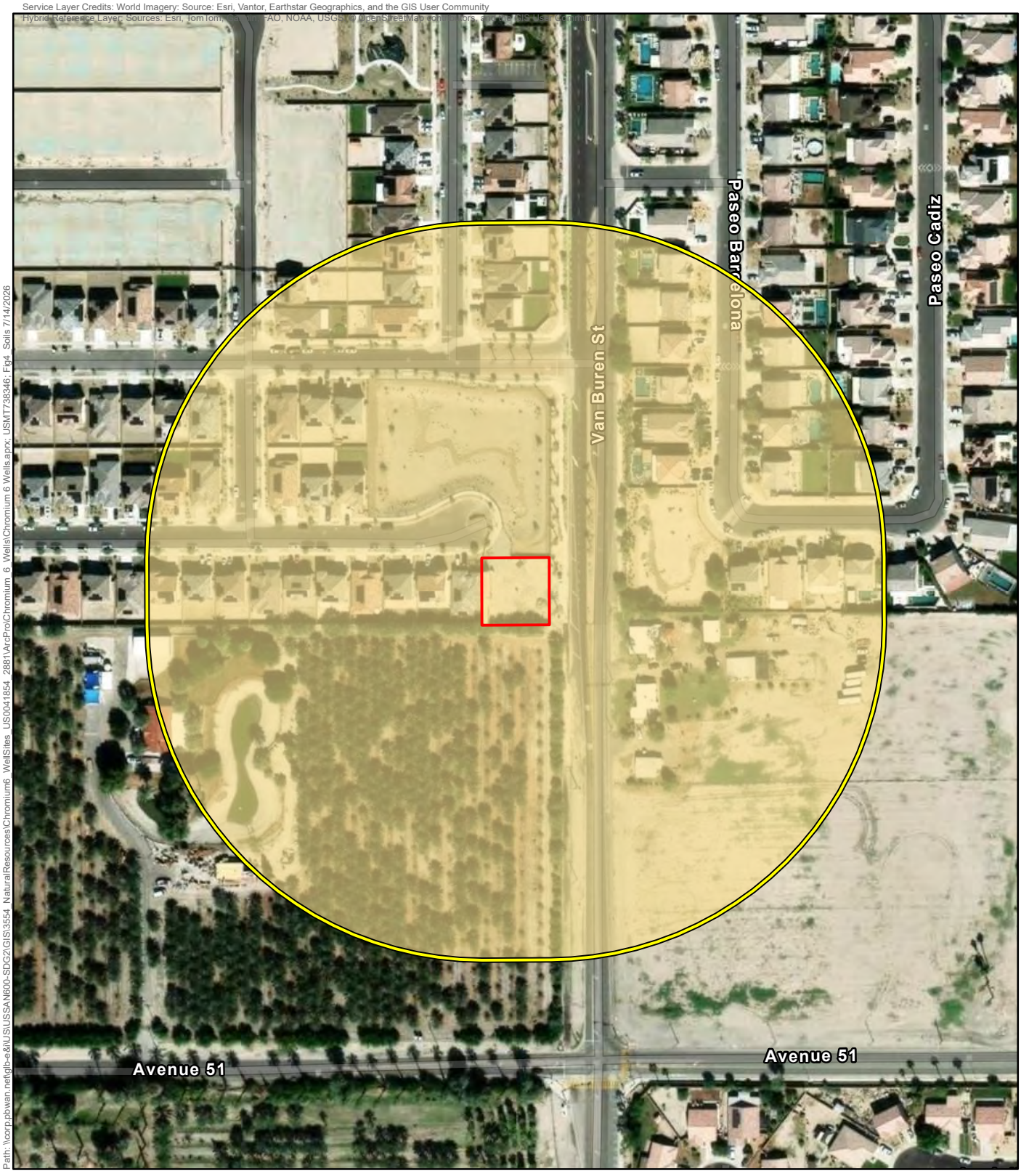
Gilman silt loam, 0 to 2 percent slopes

1 inch =200 feet

0 100 200 Feet

Figure 4f

Well 19 - Soils
CWA Cr6 Well Sites Project
Riverside County, CA



1 inch =200 feet
0 100 200 Feet

Well Site

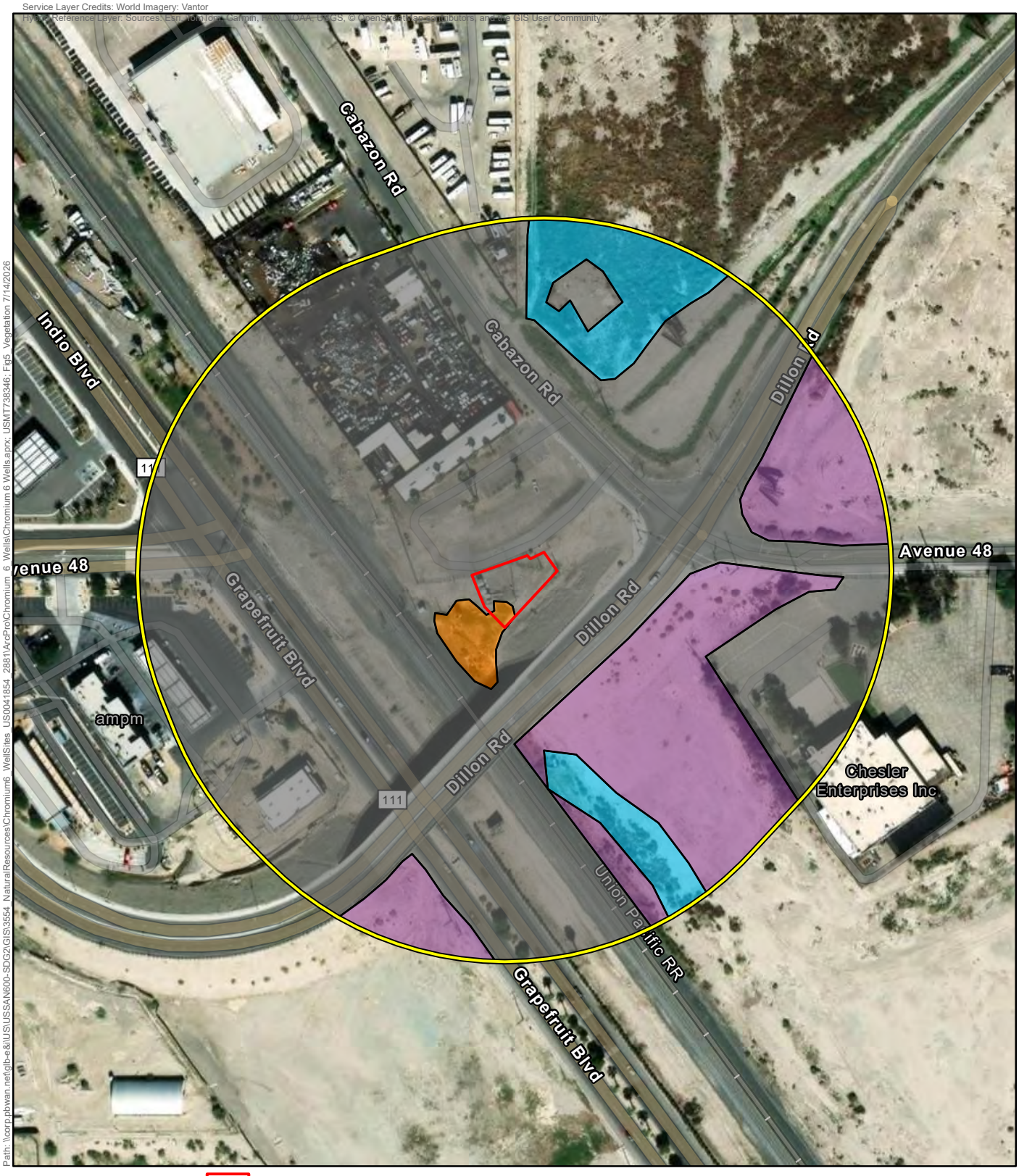
Survey Area (500 ft)

Soils

Gilman fine sandy loam, wet, 0 to 2 percent slopes

Figure 4g

Well 20 - Soils
CWA Cr6 Well Sites Project
Riverside County, CA



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Figure 5a

Well 11 - Vegetation and Land Cover
CWA Cr6 Well Sites Project
Riverside County, CA



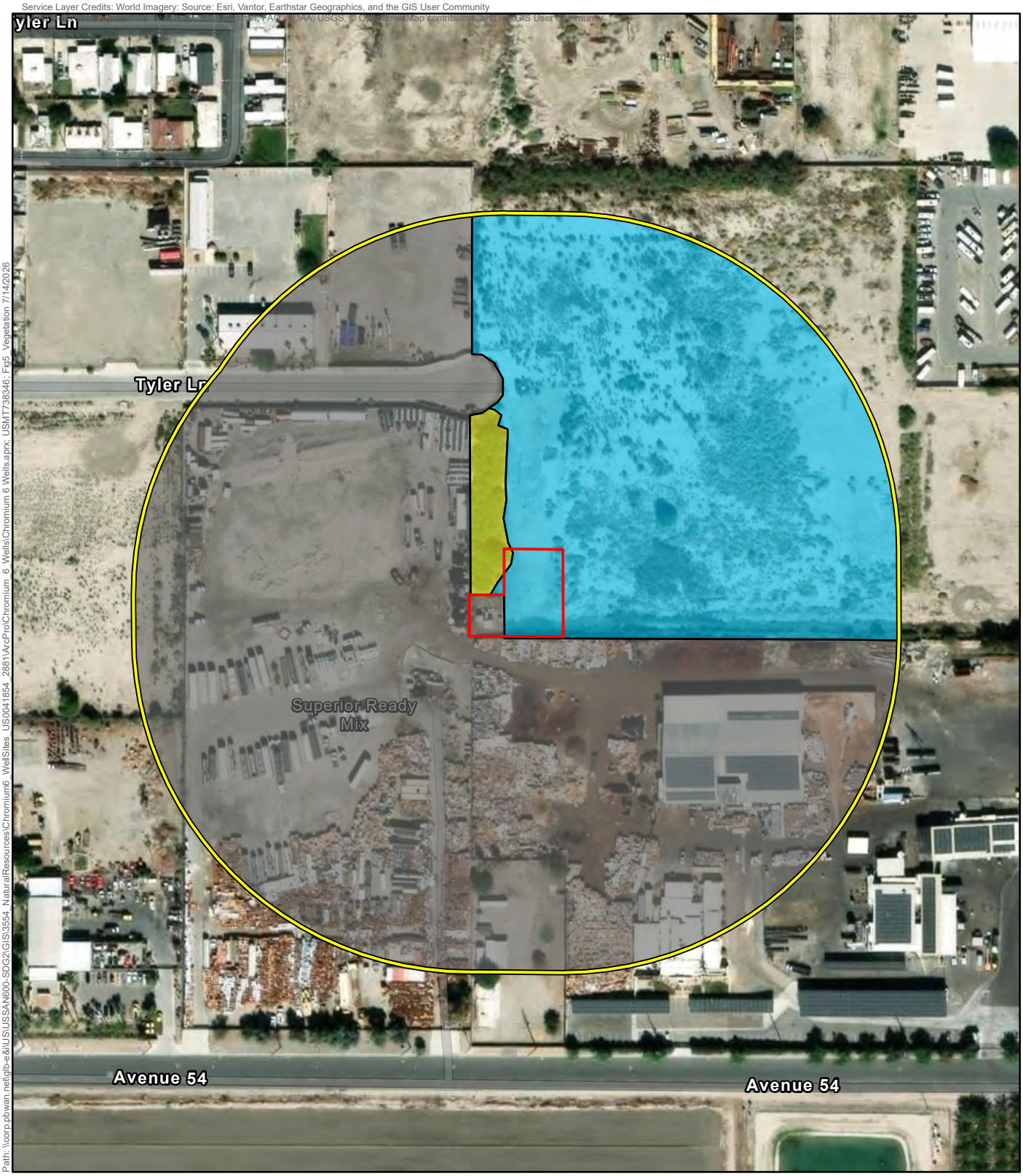
1 inch =200 feet
0 100 200 Feet

Well Site
Survey Area (500 ft)

Vegetation Communities and Land Cover Types
Developed

Figure 5b

Well 12 - Vegetation and Land Cover
CWA Cr6 Well Sites Project
Riverside County, CA



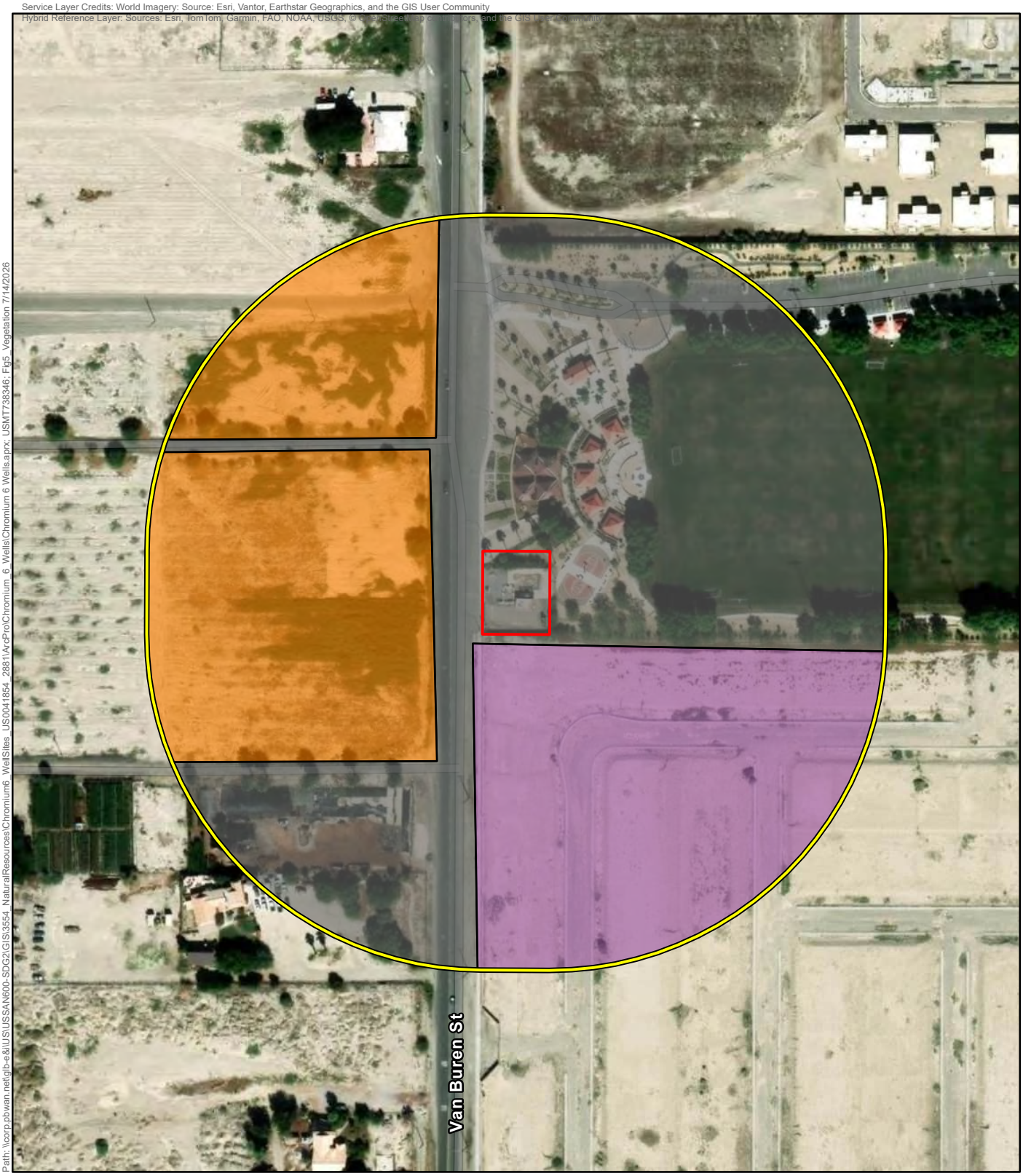
Well Site
Survey Area (500 ft)

Vegetation Communities and Land Cover Types
Developed
Mesquite thicket
Quailbush scrub

1 inch =200 feet
0 100 200 Feet

Figure 5c

Well 16 - Vegetation and Land Cover
CWA Cr6 Well Sites Project
Riverside County, CA



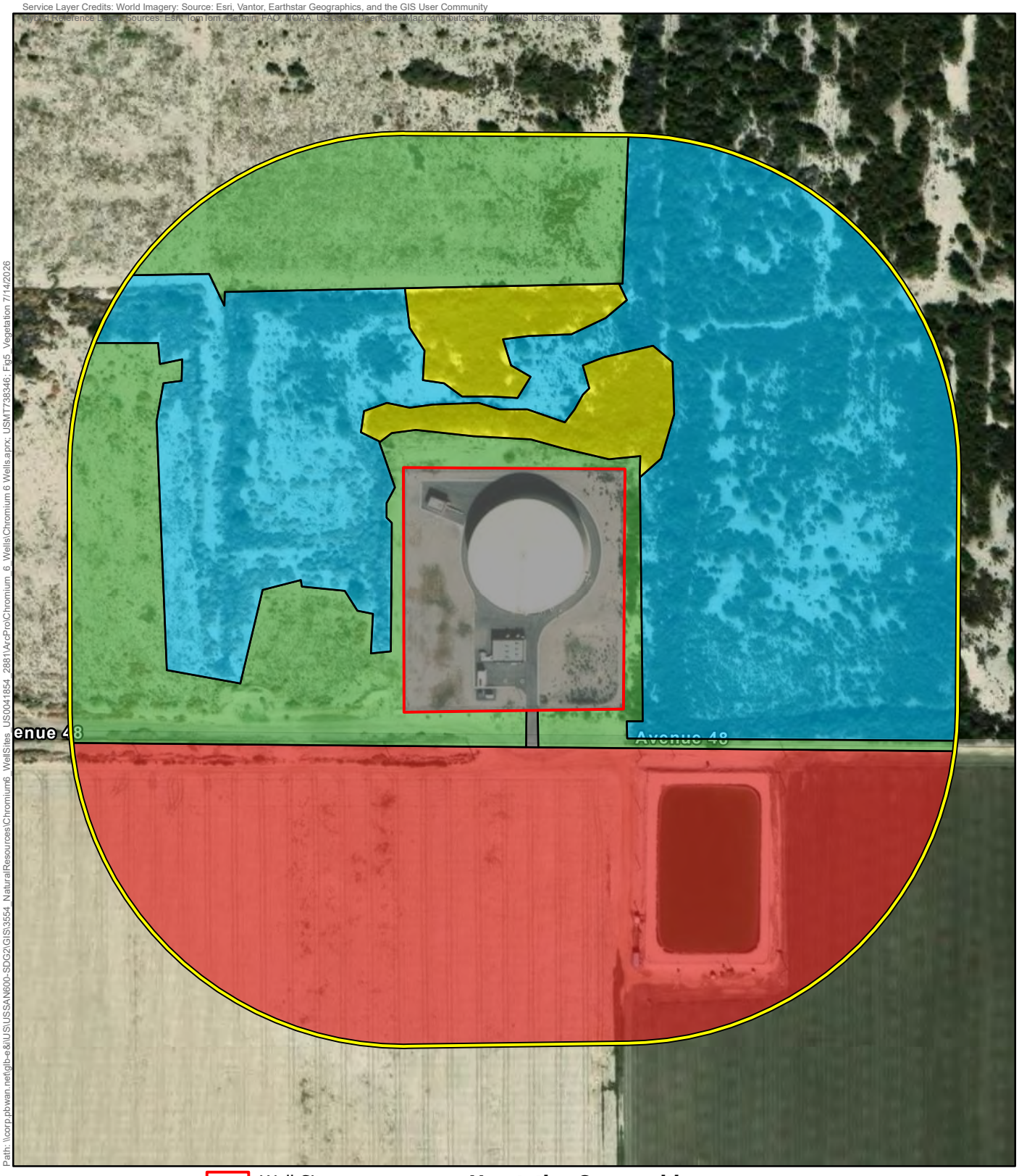
Well Site
Survey Area (500 ft)

Vegetation Communities and Land Cover Types
Developed
Disturbed/Barren
Disturbed non-native grassland

1 inch =200 feet
0 100 200 Feet

Figure 5d

Well 17 - Vegetation and Land Cover
CWA Cr6 Well Sites Project
Riverside County, CA



Well Site
Survey Area (500 ft)

Vegetation Communities and Land Cover Types

- Agriculture
- Developed
- Disturbed
- Quailbush scrub
- Tamarisk thicket

1 inch =200 feet
0 100 200 Feet

Figure 5e

Well 18 - Vegetation and Land Cover
CWA Cr6 Well Sites Project
Riverside County, CA



Well Site

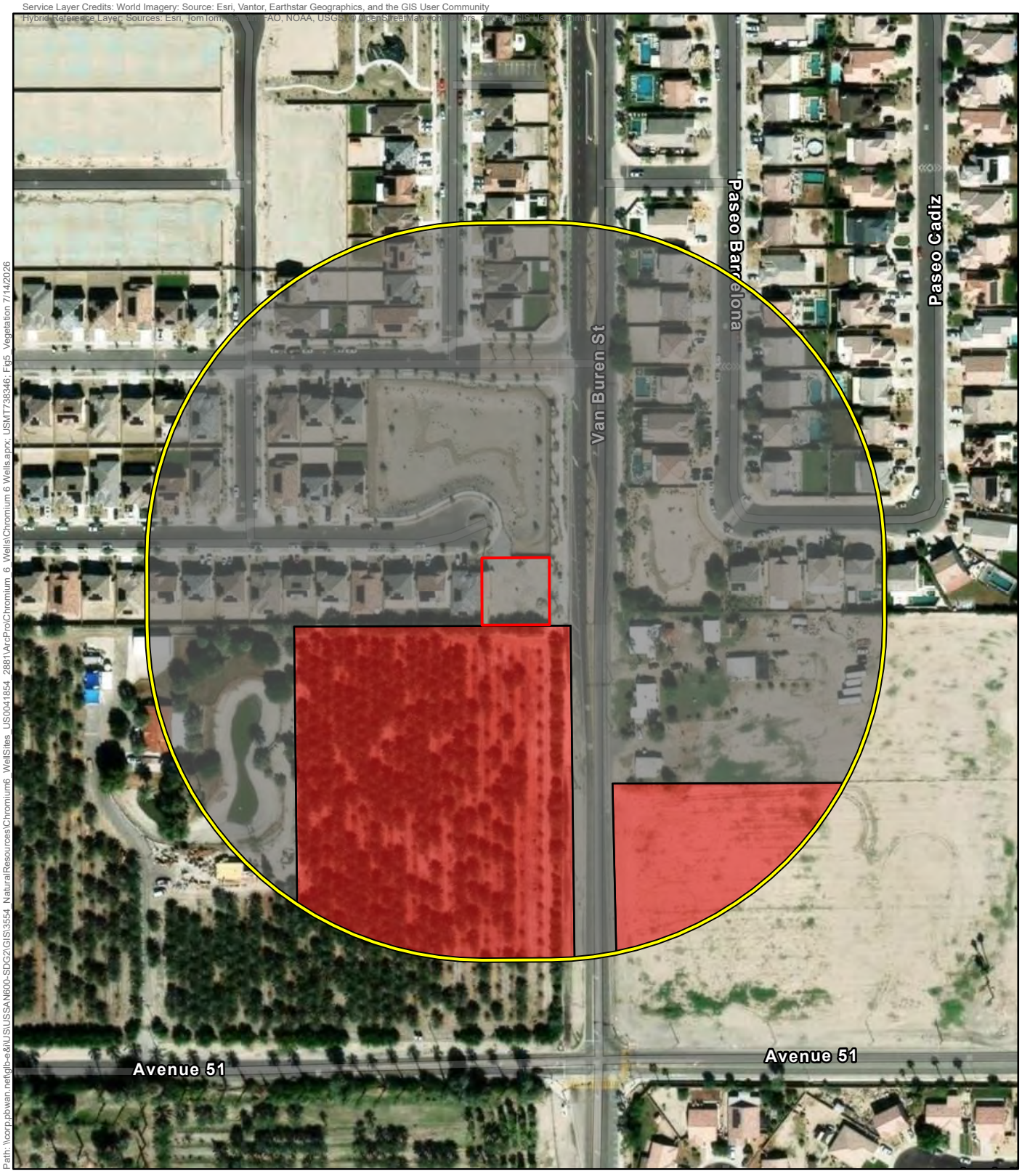
Survey Area (500 ft)

Vegetation Communities and Land Cover Types

Developed

Figure 5f

Well 19 - Vegetation and Land Cover
CWA Cr6 Well Sites Project
Riverside County, CA



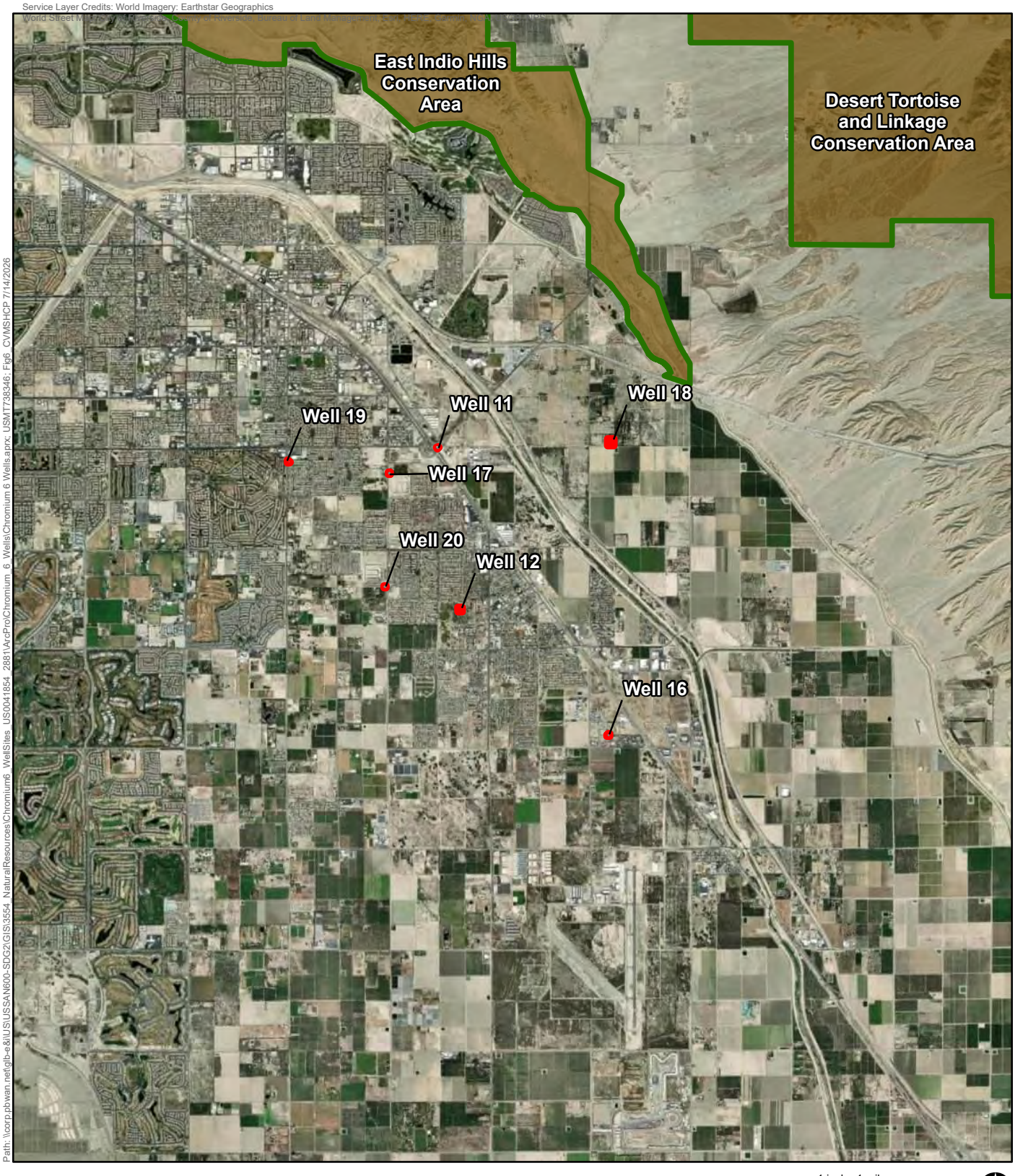
1 inch =200 feet
0 100 200 Feet

Well Site
Survey Area (500 ft)

Vegetation Communities and Land Cover Types
Agriculture
Developed

Figure 5g

Well 20 - Vegetation and Land Cover
CWA Cr6 Well Sites Project
Riverside County, CA

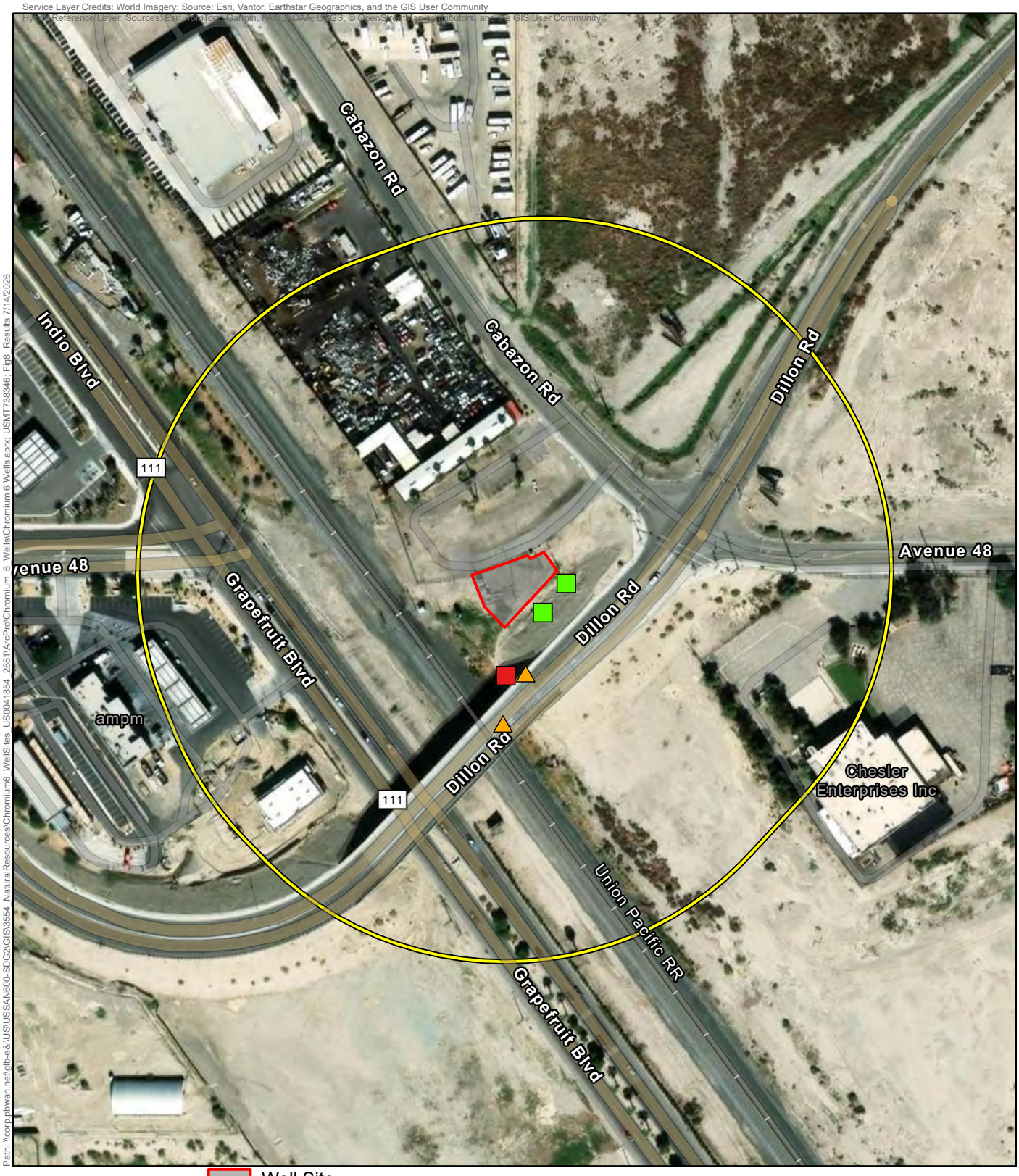


Well Site

Conservation Areas

Figure 6

CVMSHCP
CWA Cr6 Well Sites Project
Riverside County, CA



Well Site

Survey Area (500 ft)

Wildlife Observations

Burrowing Owl - *Athene cunicularia*

California Ground Squirrel Burrows Suitable for Burrowing Owl

Nest Observations

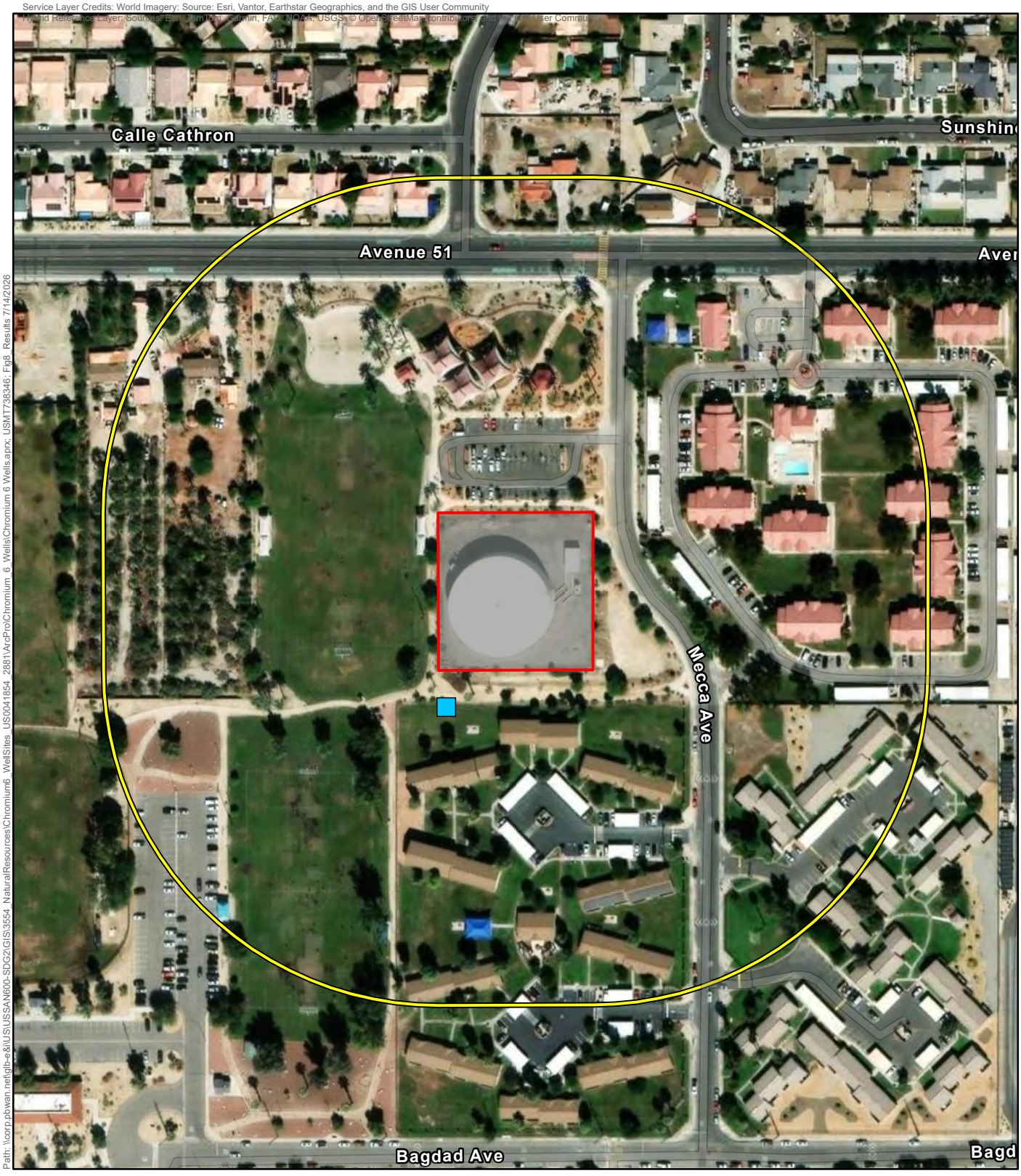
Active Cliff Swallow Nests - *Petrochelidon pyrrhonota*

1 inch =200 feet

0 100 200 US Feet

Figure 7a

Well 11 - Results
CWA Cr6 Well Sites Project
Riverside County, CA



1 inch =200 feet
0 100 200 US Feet

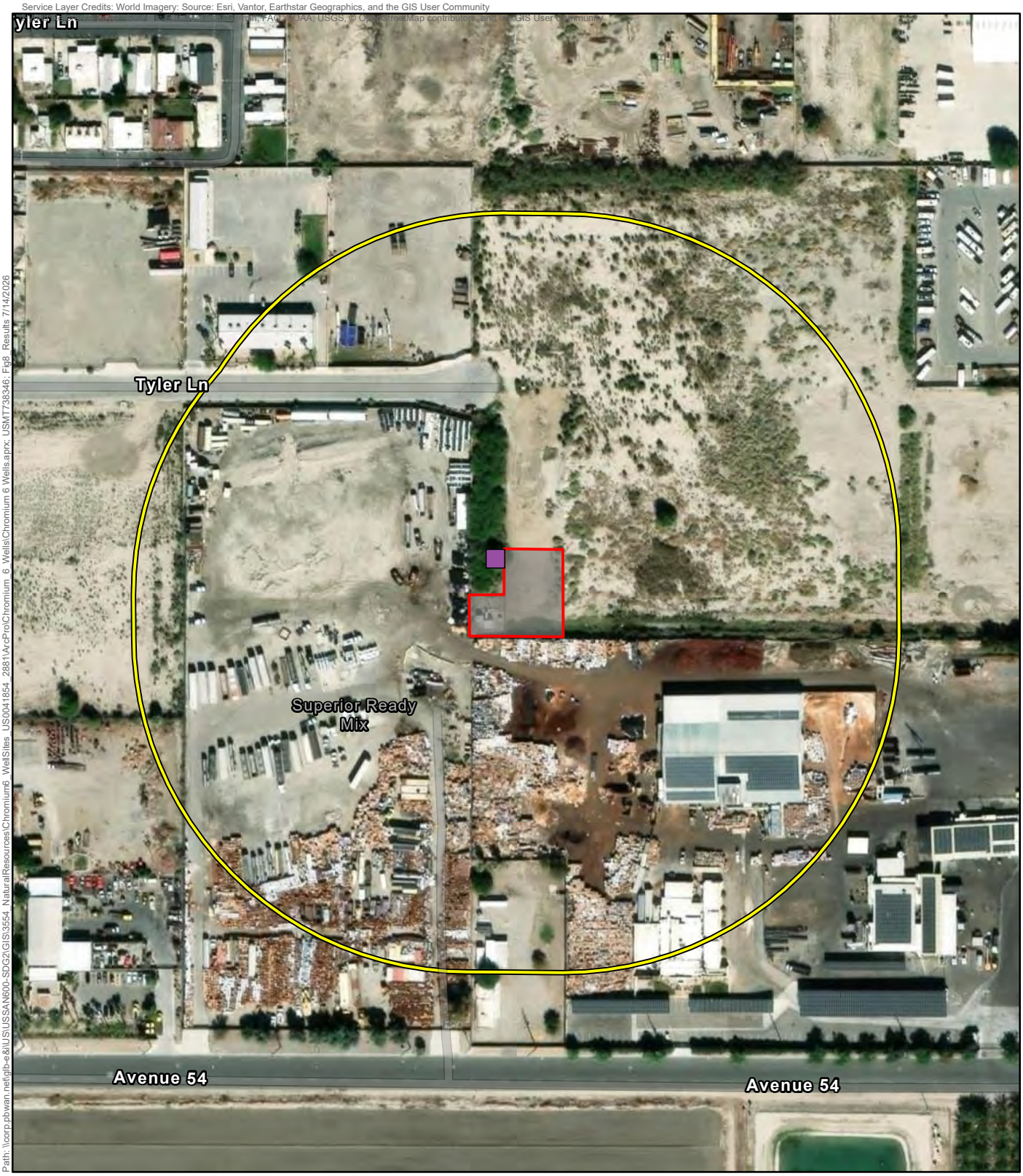
Well Site
Survey Area (500 ft)

Wildlife Observations

Costa's Hummingbird - *Calypte costae*

Figure 7b

Well 12 - Results
CWA Cr6 Well Sites Project
Riverside County, CA



1 inch =200 feet
0 100 200 US Feet

Well Site
Survey Area (500 ft)

Wildlife Observations

Willow Flycatcher - *Empidonax traillii*

Figure 7c

Well 16 - Results
CWA Cr6 Well Sites Project
Riverside County, CA



Well Site

Survey Area (500 ft)

Wildlife Observations

Vermilion Flycatchers - *Pyrocephalus obscurus*

California Ground Squirrel Burrows Suitable for Burrowing Owl

Nest Observations

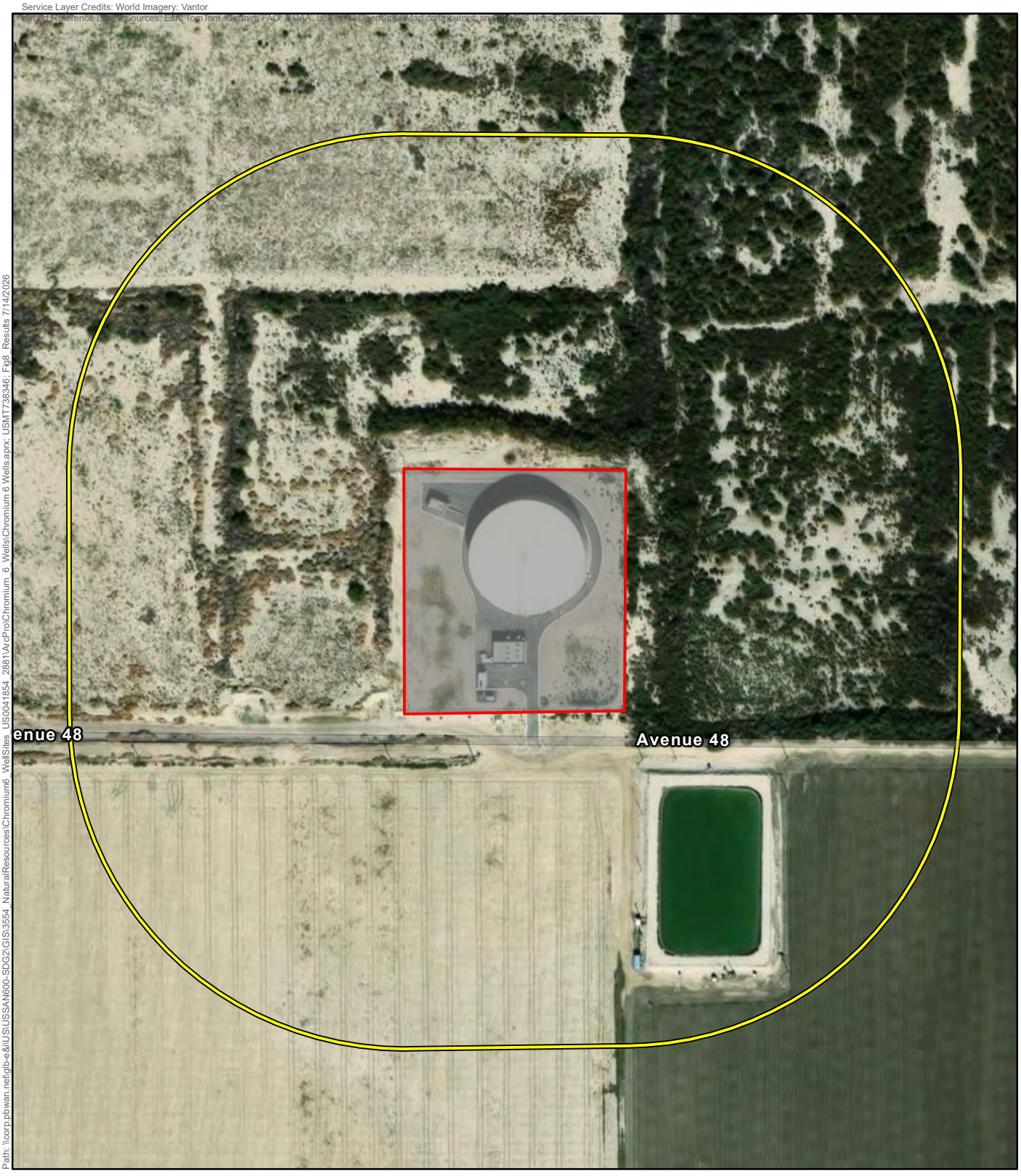
Inactive Stick Nest (Species Undetermined)

1 inch =200 feet

0 100 200 US Feet

Figure 7d

Well 17 - Results
CWA Cr6 Well Sites Project
Riverside County, CA



1 inch =200 feet
0 100 200 US Feet

Well Site
Survey Area (500 ft)

Figure 7e

Well 18 - Results
CWA Cr6 Well Sites Project
Riverside County, CA



Figure 7f

Well 19 - Results
CWA Cr6 Well Sites Project
Riverside County, CA



1 inch =200 feet
0 100 200 US Feet

Well Site
Survey Area (500 ft)

Figure 7g

Well 20 - Results
CWA Cr6 Well Sites Project
Riverside County, CA

APPENDIX B

SPECIES LIST: VASCULAR PLANTS

APPENDIX B
SPECIES LIST: VASCULAR PLANTS

This list reports only plants observed on and/or in the buffer zone study areas adjacent to the facilities by this study. Other species may have been overlooked or undetectable due to their growing season. Unless noted otherwise, nomenclature and systematics follows Jepson Flora Project (2026) * = non-native species, sp. = identified only to genus, *cf*= compares favorably with]. Common names not provided by Jepson Flora Project follows those provided by USDA , NRCS (2026b).

DICOTYLEDONEAE	**DICOT FLOWERING PLANTS**
Anacardiaceae	**Sumac Family**
**Schinus molle*	Peruvian pepper tree (landscaped)
Apocynaceae	**Dogbane Family**
**Nerium oleander*	oleander
Asteraceae	**Sunflower Family**
Erigeron canadensis	horseweed
Isocoma acreadenia	alkali goldenbush
**Lactuca serriola*	prickly wild lettuce
Palafoxia arida	Spanish needle
Pluchea sericea	arrowweed
Stephanomeria sp.	*undetermined* Stephanomeria species
Boraginaceae	**Borage Family**
Amsinckia tessellata	checkered fiddleneck
Cryptantha sp.	undetermined cryptantha species
Tiquilia plicata	fanleaf crinklemat
Brassicaceae	**Mustard Family**
**Brassica tournefortii*	Sahara mustard
**Hirschfeldia incana*	short-pod mustard
**Lepidium* sp.	undetermined peppergrass species
**Sisymbrium irio*	London rocket
Cactaceae	**Cactus Family**
Varius landscaped cacti genera & species	Varius undetermined cacti genera & species
Chenopodiaceae	**Goosefoot Family**
Amaranthus sp.	amaranth
Atriplex canescens	four-wing saltbush
Atriplex lentiformis	quailbush
Atriplex polycarpa	allscale
**Atriplex semibaccata*	Australian saltbush
**Salsola tragus*	Russian thistle

Euphorbiaceae	**Spurge Family**
Euphorbia polycarpa	smallseed sandmat
Fabaceae	**Pea Family**
**Acacia stenophylla*	shoestring acacia
**Acacia* spp.	undetermined acacia species
**Erythrostemon mexicanus*	Mexican holdback
**Parkinsonia aculeata*	Mexican palo verde
Parkinsonia florida	blue palo verde
Neltuma odorata	honey mesquite
Myrtaceae	**Myrtle Family**
**Eucalypus* sp.	gum tree
Nyctaginiaceae	**Bougainvillea Family**
**Bougainvillea glabra* and/or spectabilis	bougainvillea (landscaped)
Solanaceae	**Nightshade Family**
Datura sp.	undetermined datura species
Tamaricaceae	**Tamarisk Family**
**Tamarix ramosissima*	saltcedar
Zygophyllaceae	**Caltrop Family**
**Tribulus terrestris*	puncture vine
MONOCOTYLEDONEAE	**MONOCOT FLOWERING PLANTS**
Arecaceae	**Palm Family**
**Chamearops humilis*	Mediterranean fan palm (landscaped)
Washingtonia filifera	California fan palm (landscaped)
**Washingtonia robusta*	Mexican fan palm (landscaped)
**Phoenix* spp.	date palms (landscaped & agricultural)
Agavaceae	**Agave Family**
**Agave* sp.	undetermined agave species (landscaped)
Poaceae	**Grass Family**
**Avena barbata*	slender wild oat
**Bromus madritensis* ssp. *rubens*	red brome
**Cynodon dactylon*	Bermuda grass
**Pennisetum* spp.	undetermined fountain grass species
*cf. *Polypogon monspeliensis*	rabbitfoot grass
**Schismus barbatus*	Mediterranean schismus

APPENDIX C

SPECIES LIST: VERTEBRATE ANIMALS

APPENDIX C
SPECIES LIST: VERTEBRATE ANIMALS

This list reports only the vertebrate wildlife observed on and/or in the buffer zone study areas adjacent to the facilities by this study. Other species may have been overlooked or undetectable due to their activity patterns or weather conditions. Scientific nomenclature for this document follows standard reference sources: for reptiles, CDFW (2016a); for birds, American Ornithologists Union (2026); and for mammals, CDFW (2016a). [*†= special status species, * =* non-native species, sp. = identified only to genus, *cf* = compares favorably with]

VERTEBRATES

REPTILIA	**REPTILES**
Phrynosomatidae	**Horned Lizards, Spiny Lizards & Relatives**
Uta stansburiana	side-blotched lizard
AVES	**BIRDS**
Cathartidae	**New World Vultures**
Cathartes aura	turkey vulture
Accipitridae	**Kites, Eagles, Hawks, and Allies**
Buteo jamaicensis	red-tailed hawk
Strigidae	**Typical Owls**
†Athene cunicularia	burrowing owl (Figure 8a)
Falconidae	**Caracaras and Falcons**
Falco sparverius	American kestrel
Odontophoridae	**New World Quail**
Callipepla gambelii	Gambel's quail
Columbidae	**Pigeons and Doves**
**Columba livia*	rock dove
**Streptopelia decaocto*	Eurasian collared dove
Zenaida macroura	mourning dove
Trochilidae	**Hummingbirds**
†Calypte costae	Costa's hummingbird (Figure 8b)
Tyrannidae	**Tyrant Flycatchers**
†Empidonax traillii	willow flycatcher (Figure 8c)
Sayornis saya	Say's phoebe
†Pyrocephalus rubinus	vermilion flycatcher (Figure 8d)

Corvidae		**Jays, Crows, Magpies**
	Corvus brachyrhynchos	American crow
	Corvus corax	common raven
Remizidae		**Penduline Tits and Verdins**
	Auriparus flaviceps	verdin
Hirundinidae		**Swallows**
	Petrochelidon pyrrhonota	cliff swallow (nesting, Figure 8a)
Mimidae		**Mockingbirds, Thrashers, and Allies**
	Mimus polyglottos	northern mockingbird
Sturnidae		**Starlings and Allies**
	**Sturnus vulgaris*	European starling
Emberizidae		**Emberizines**
	Pipilo aberti	Abert's towhee
Icteridae		**Blackbirds and Allies**
	Quiscalus mexicanus	great-tailed grackle
Fringillidae		**Fringilline, Cardueline Finches and Allies**
	Carpodacus mexicanus	house finch
Passeridae		**Old World Sparrows**
	**Passer domesticus*	house sparrow

MAMMALIA		**MAMMALS**
Geomyidae		**Pocket Gophers**
	Thomomys bottae	Botta's pocket gopher
Sciuridae		**Squirrels**
	Otospermophilus beecheyi	California ground squirrel
Leporidae		**Rabbits and Hares**
	Sylvilagus audubonii	Audubon's cottontail
Canidae		**Dogs, Wolves & Relatives**
	Canis latrans	coyote
	**Canis lupus familiaris*	domestic dog
Canidae		**Cats**
	**Felis catus*	domestic cat

APPENDIX D

PHOTGRAPHIC EXHIBITS

COACHELLA WATER AUTHORITY Cr6 WELL SITES PROJECT
PHOTOGRAPHIC LOG

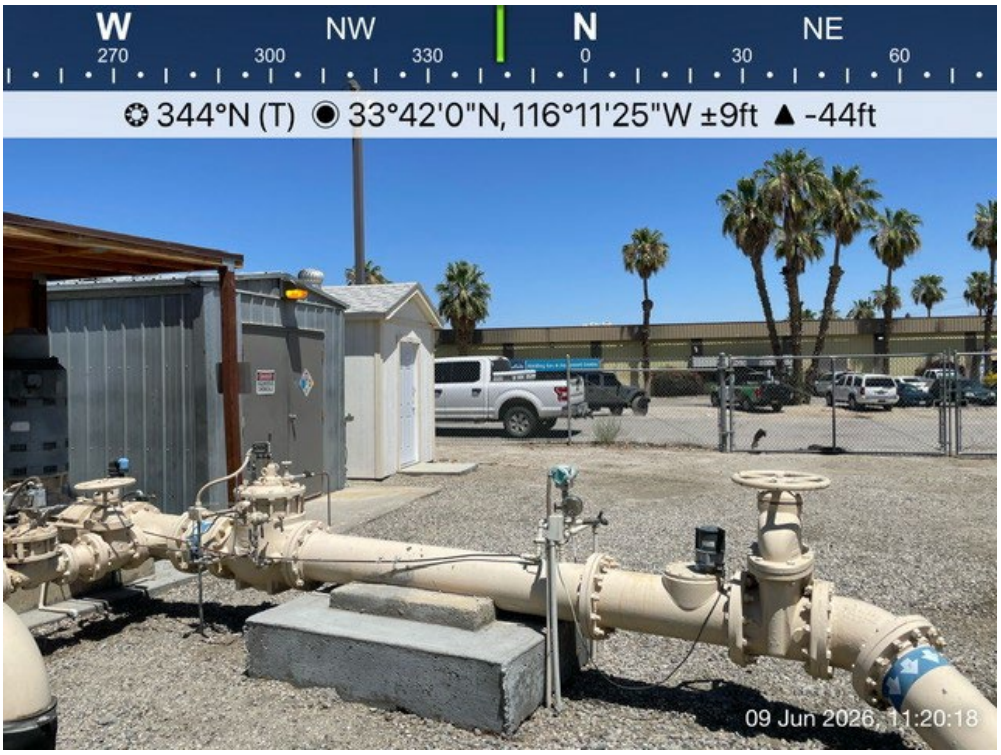


Photo 1: Well 11 from the approximate south-central portion of the fenced facility. Note the existing development, compacted dirt and gravel substrates and lack of vegetation within the existing facility. Existing commercial development within the buffer zone visible in the background to the north.



Photo 2: Well 11 from the approximate north-central portion of the fenced facility. Note the proximity of the fill slope in the background (left) where two (2) live burrowing owls were detected. Many active cliff swallow nests were also observed beneath the bridge in the buffer zone (background center).



Photo 3: Well 11 from the approximate northeastern corner of the fenced facility. Note the developed nature, compacted dirt and gravel substrates and lack of vegetation within the existing facility.



Photo 4: One of the burrowing owls perching at a burrow located on the north-facing fill slope approach to the west-bound Dillion Road Bridge immediately adjacent to (SE of) the existing Well 11 (Figure 7a). Other burrows suitable for burrowing owl were also present in this area.



Photo 5: Another burrowing owl observed at second burrow located on the fill slope approach to the Dillion Road Bridge located immediately adjacent to (SE of) the existing Well 11 (Figure 7a).



Photo 6: Some of the active cliff swallow nests beneath the Dillion Road Bridge over the railroad easement and SR-111 located adjacent to (S of) the existing facility at Well 11 (Figure 7a).



Photo 7: Well 12 from the approximate southeastern corner of the fenced facility. Note the developed nature, compacted dirt and gravel substrates and lack of vegetation within the existing facility. Landscaped vegetation within Bagdouma Park is visible in the background.



Photo 8: Well 12 from the approximate northwestern corner of the fenced facility. Note the developed nature, compacted dirt and gravel substrates and lack of vegetation within the existing facility. Landscaped vegetation within Bagdouma Park is visible outside the fence to the right. Trees along fenceline (background right) is where the Costa's hummingbird was observed perching.



Photo 9: Well 12 from the approximate southwestern corner of the fenced facility. Note the developed nature, compacted dirt and gravel substrates and lack of vegetation within the existing facility. The trees outside the fence (background right) are planted along an existing drainage ditch that flows into an existing debris basin in the distant background.



Photo 10: Well 12 from the approximate northeastern corner of the fenced facility. Note the developed nature, dirt and gravel substrates and lack of vegetation within the existing facility. Athletic (soccer) fields are visible in the adjacent Bagdouma Park in the background. Existing artificial lighting is also visible to right and in the distant background.



Photo 11: Well 16 from the approximate southeastern corner of the fenced facility. Note the existing mesquite (mostly) thicket outside but immediately adjacent to (north of) the existing facility. This mesquite thicket is where the willow flycatcher was detected (Figure 7c).



Photo 12: Well 16 from outside, just north of fenced facility. Note existing mostly barren, compacted and gravelly substrates and the developed nature of the facility. Existing industrial development visible in the background.

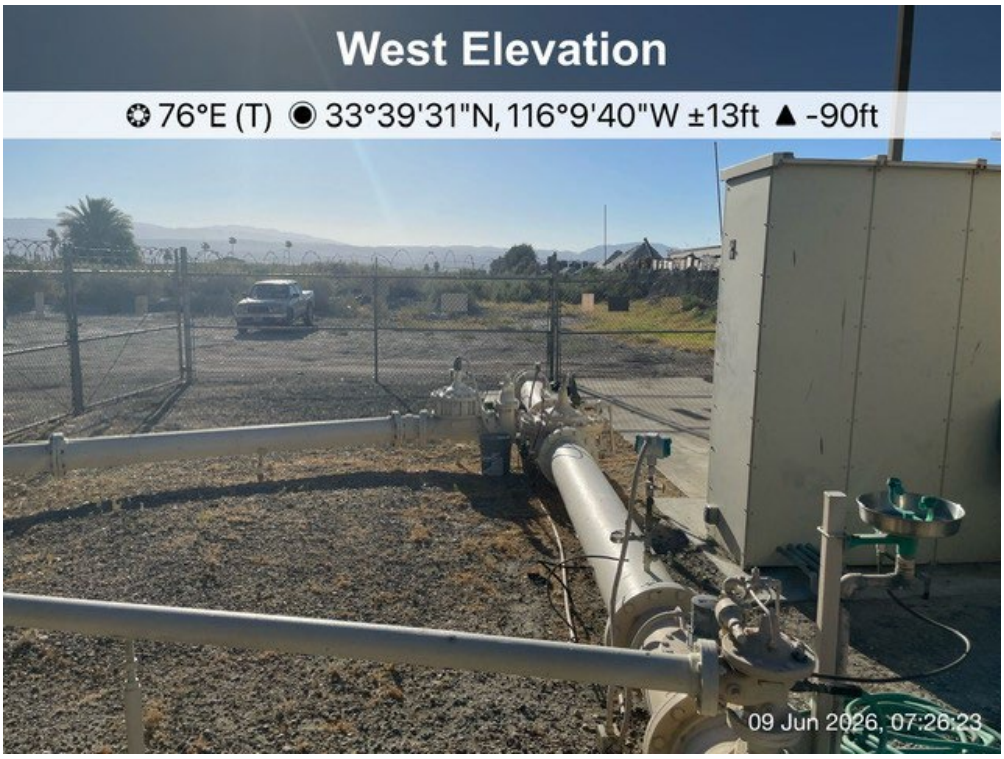


Photo 13: Well 16 from approximate west-central portion of fenced facility. Note existing developed, compacted and gravelly nature of existing facility. Quailbush scrub visible in background, behind the parked vehicle.



Photo 14: Well 16 from outside (east of) the fenced facility. Note the existing, compacted dirt and gravel substrates, the developed nature and the overall lack of vegetation within the existing facility. Mesquite thicket (right) where willow flycatcher was detected (Figure 7c).



Photo 15: Well 17 from approximate south-central portion of fenced facility. Note the existing developed nature of the existing facility. Trees and vegetation (background) are within the adjacent Rancho Las Flores Park.



Photo 16: Well 17 from the approximate northwest corner of fenced facility. Note existing developed nature, compacted dirt and gravelly substrates and lack of vegetation within the existing facility. Undeveloped, highly disturbed, vacant and barren lots are present outside (south of) the facility in the background (not visible).



Photo 17: Well 17 from approximate west-central portion of fenced facility. Note the existing developed nature of the existing facility. Trees and vegetation within the adjacent Rancho Las Flores Park visible in background (east).



Photo 18: Inactive stick nest located immediately adjacent (north of) the fenced facility (Well 17). Nest (species undetermined) built in landscaped tree located immediately adjacent to (north of) the existing facility. Several other stick nests were also observed within the buffer zone of this facility (Figure 7d).



Photo 19: An representative example of a California ground squirrel burrows that are suitable for burrowing owl and located adjacent to (east of) the existing Well 17. Several burrows suitable for burrowing owl were present in the adjacent buffer zone area of Well 17 (Figure 7d).



Photo 20: Well 18 from an approximate south-central portion of facility. Note the developed and largely barren nature of this existing facility.



Photo 21: Well 18 from the approximate northeast corner of fenced facility. Note the developed and barren nature of this fenced facility. Existing artificial lighting is visible in the background. Relatively undisturbed quailbush scrub is visible, outside and adjacent to the fence to the left (Figure 5e).



Photo 22: Well 18 from the approximate northwest corner of the fenced facility. Note the developed and largely barren nature of the existing facility.



Photo 23: Well 18 from the approximate southeast corner of the fenced facility. Note the developed and largely barren nature of the existing facility and the artificial lighting present in background and to the left.



Photo 24: Well 18. Saltcedar thicket adjacent to (north of) the existing fenced Well 18 (Figure 5e).



Photo 25: Quailbush scrub located adjacent to (east of) the existing fenced Well 18 (Figure 5e).



Photo 26: Well 19 from an approximate east-central portion of the fenced facility. Note the developed, largely barren and compacted dirt and gravelly nature of the existing facility. Existing commercial development visible in background (right).



Photo 27: Well 19 from the approximate northwest corner of the fenced facility. Note the developed, largely barren and compacted dirt and gravelly nature of the existing facility. Existing adjacent residential dwellings are visible in the background.



Photo 28: Well 19 from the approximate southwest corner of the fenced facility. Note the developed, largely barren and compacted dirt and gravelly nature of the existing facility. Adjacent existing residential dwellings are visible in the background.



Photo 29: Well 19 from the approximate northeast corner of the fenced facility. Note the developed, largely barren and compacted dirt and gravelly nature of the existing facility. Existing residential dwellings are visible in the background.



Photo 30: Well 20 from the approximate north-central portion of the fenced facility. Note the largely barren, compacted dirt and currently undeveloped nature of the existing facility. Well casing visible in middle ground (center, right) and adjacent residential dwellings (center) and agricultural (date farm) orchard in background (right).



Photo 31: Well 20 from the approximate east-central portion of the fenced facility. Note the largely barren, compacted dirt and currently undeveloped nature of the existing facility. Well casing (center) and adjacent residential dwellings are visible in the background.



Photo 32: Well 20 from the approximate north-central portion of the fenced facility. Note the largely barren, compacted dirt and currently undeveloped nature of the existing facility. Well casing (center) and adjacent agricultural (date farm) orchard are visible in the background.

APPENDIX E

SPECIAL STATUS BIOLOGICAL RESOURCES TABLES

APPENDIX E

Table 1. Special Status Plant Species Reported from the Vicinity

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Abronia villosa var. *aurita* **chaparral sand-verbena**	F: BLM(S) C: ND CNPS: List 1B.1 State Rank: S2 CVMSHCP: No	Chaparral, coastal sage scrub & desert dunes; sandy. 75-1600 m (245-5,250 ft); B: (Jan) Mar-Sept.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Ambrosia monogrya **singlewhorl burrobrush**	F: ND C: ND CNPS: 2B.2 State Rank: S2 CVMSHCP: No	Chaparral, Sonoran Desert scrub. 10-500 m (35-1,640 ft); B: Aug-Nov.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Astragalus bernardinus **San Bernardino milk-vetch**	F: BLM(S) C: ND CNPS: 1B.2 State Rank: S3 CVMSHCP: No	Joshua tree woodland, pinyon & juniper woodland. 900-2,000 m (2,955-6,560 ft); B: Apr–Jun.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Astragalus lentiginosus var. *coachellae* **Coachella Valley milk-vetch**	F: **END** C: ND CNPS: 1B.2 State Rank: S1 CVMSHCP: **Yes**	Sonoran desert scrub; sandy flats, washes, outwash fans, sometimes on dunes. 40-665 m (130-2,150 ft); B: Feb–May.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species. Study area not within designated critical habitat and not CVMSHCP modeled habitat for this species.
Astragalus preussii var. *laxiflorus* **Lancaster milk-vetch**	F: ND C: ND CNPS: 1B.1 State Rank: S1 CVMSHCP: No	Chenopod scrub, alkaline clay flats or gravelly or sandy washes and along draws in gullied badlands. 700 m (2,295 ft); B: Mar–May.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Astragalus sabulonum **gravel milk-vetch**	F: ND C: ND CNPS: 2B.2 State Rank: S2 CVMSHCP: No	Desert dunes, Mojave Desert scrub, Sonoran Desert scrub. -60-930 m (-195-3,050 ft); B: Feb–Jun.	**Absent** Suitable habitat lacking.
Astragalus tricarinatus **triple-ribbed milk-vetch**	F: **END** C: ND CNPS: 1B.2 State Rank: S2 CVMSHCP: **Yes**	Joshua tree woodland & Sonoran desert scrub; hot, rocky slopes in canyons & along edge of boulder-strewn desert washes with *Larrea* and *Encelia*. 450-1,190 m (1,475-3,905 ft); B: Feb–May.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species. Study area not within CVMSHCP modeled habitat for this species.
Ayenia compacta **California ayenia**	F: None C: None CNPS List: 2B.3 State Rank: S3 CVMSHCP: No	Sonoran Desert scrub, Mojave Desert scrub; rocky. 150-1,095 m (492-3593 ft); B: Mar-Apr	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Bursera microphylla **little-leaf elephant tree**	F: ND C: ND CNPS List: 2B.3 State Rank: S2 CVMSHCP: No	Rocky Sonoran desert scrub; 200-700 m (656-2297 ft)	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Chorizanthe leptotheca **Penisular spineflower**	F: BLM(S) C: None CNPS: 4.2 State Rank: S3 CVMSHCP: No	Chaparral, coastal scrub, lower montane coniferous forest; alluvial fans with granitic soils. 300-1,900 m (985-6,235 ft); B: May-Aug.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Ditaxis claryana **glandular ditaxis**	F: ND C: ND CNPS: 2B.2 State Rank: S2 CVMSHCP: No	Mojave Desert scrub, Sonoran Desert scrub; in dry washes & on rocky desert hillsides (sandy soils). 15-465 m (0-1,525 ft); B: Oct-Mar	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Ditaxis serrata var. *californica* **California ditaxis**	F: ND C: ND CNPS: 3.2 State Rank: S2? CVMSHCP: No	Sonoran Desert scrub; on sandy washes & alluvial fans of foothills & lower desert slopes. 30-1,000 m (100-3,280 ft); B: Mar-Dec.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Eremothera boothii ssp. *boothii* **Booth's evening primrose**	F: ND C: ND CNPS: 2B.3 State Rank: S3 CVMSHCP: No	Joshua tree woodland, pinyon & juniper woodland. 815-2,400 m (2,674-7,874 ft)	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Eriastrum harwoodii **Harwood's eriastrum**	F: BLM(S) C: ND CNPS: 1B.2 State Rank: S2 CVMSHCP: No	Desert dunes, sandy. 125-915 m (410-3,000 ft); B: Mar-Jun.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Eschscholzia androuxii **Joshua Tree poppy**	F: ND C: ND CNPS: 4.3 State Rank: S3 CVMSHCP: No	Mojavean desert scrub, Joshua tree woodland; flats, gravelly, rocky, sandy, slopes, washes. 585-1,685 m. (1,920-5,530 ft.); B: Feb-May (Jun).	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Euphorbia abramsiana **Abrams' spurge**	F: ND C: ND CNPS: 2B.2 State Rank: S2 CVMSHCP: No	Sandy sites in Mojave and Sonoran Desert scrubs. -5–1,310 m (-15-4,300 ft)	**Very Low** Suitable habitat lacking from all fenced facilities. Habitat immediately adjacent to Well 18 marginally suitable. Well 18, however, the study area remains below, but close to, the known upper limits of the elevational range of species. This species, even if it were to occur within the buffer zone study area adjacent to this well site, is not anticipated to be affected by project implementation due to the restriction of project activities outside of the fenced facility to existing developed areas (i.e., roads), highly disturbed and/or compacted roadside areas.
Euphorbia arizonica **Arizona spurge**	F: ND C: ND CNPS: 2B.3 State Rank: S3 CVMSHCP: No	Sonoran desert scrub; sandy. 50-300 m. (200-1,000 ft); B: Mar-Apr.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Euphorbia platysperma **flat-seeded spurge**	F: ND C: ND CNPS: 1B.2 State Rank: S1 CVMSHCP: No	Sandy Sonoran desert scrub, shifting dunes. In CA, potentially a waif; more common in AZ and MX. 65-100 m (215-330 ft); B: Feb-Sept.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Funastrum crispum **wavyleaf twinvine**	F: ND C: ND CNPS: 2B.2 State Rank: S1 CVMSHCP: No	Chaparral, pinyon & juniper woodland; sandy. 1,165-1,840 m. (3,820-6,035 ft); B: May-Aug.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Horsfordia alata **pink velvet-mallow**	F: ND C: ND CNPS: List 4.3 State Rank: S4 CVMSHCP: No	Sonoran Desert scrub (rocky). 100-500 m (330-1,640 ft); B: Feb-Dec.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Horsfordia newberryi **Newberry's velvet-mallow**	F: ND C: ND CNPS: List 4.3 State Rank: S4 CVMSHCP: No	Sonoran Desert scrub (rocky). 3-800 m (10-2,625 ft); B: Feb-Dec.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Jaffueliobryum raui **Rau's jaffueliobryum moss**	F: ND C: ND CNPS: 2B.3 State Rank: S2 CVMSHCP: No	Alpine dwarf scrub, chaparral, Mojave Desert scrub, Sonoran Desert scrub; openings in dry, carbonate, soils and in rocky crevices. 490-2,100 m (1,610-6,890 ft); B: N/A	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Johnstonella costata **ribbed cryptantha**	F: ND C: ND CNPS: List 4.3 State Rank: S4 CVMSHCP: No	Desert dunes, Mojavean Desert scrub, Sonoran Desert scrub; sandy; -60-500 m (-195-1,640 ft); B: Feb-May	**Very Low** Suitable habitat lacking from all fenced facilities. Habitat within the buffer zone study areas adjacent to Wells 16, 17 & 18 may be marginally suitable but impacts to this species are not anticipated to occur as a result of project implementation due to the restriction of project disturbance required outside of the fenced facilities to existing developed, highly disturbed and compacted roadside areas. Narrow-leaved johnstonella, a common relative of ribbed cryptantha, was detected within some of the highly disturbed facilities and adjacent buffer zone study areas.
Johnstonella holoptera **winged cryptantha**	F: ND C: ND CNPS: List 4.3 State Rank: S4 CVMSHCP: No	Desert dunes, Mojavean Desert scrub, Sonoran Desert scrub; 100-1,690 m (330-5,545 ft); B: Mar-Apr.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Juncus acutus ssp. *leopoldii* **southwestern spiny rush**	F: ND C: ND CNPS: List 4.2 State Rank: S4 CVMSHCP: No	Coastal dunes (mesic), coastal scrub, meadows & seeps (alkaline), marshes & swamps (coastal salt) Mojavean Desert scrub, Sonoran Desert scrub; -3-900 m (-10-2,955 ft); (Mar) May-Jun.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Juncus cooperi **Cooper's rush**	F: ND C: ND CNPS: 4.3 State Rank: S3 CVMSHCP: No	Meadows & seeps (mesic, alkaline or saline). -260-1,700 m (-853-5,805 ft); B: Apr-May (Jun).	**Absent** Suitable habitat lacking.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Leptosiphon floribundus ssp. *hallii* **Santa Rosa Mountains leptosiphon**	F: BLM(S) C: ND CNPS: 1B.3 State Rank: S1S2 CVMSHCP: No	Pinyon & juniper woodland, Sonoran Desert scrub; desert canyons. 1,000-2,000 m (3,280-6,560 ft); B: May-July (Nov)	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Lycium torreyi **Torrey's box-thorn**	F: ND C: ND CNPS: 4.2 State Rank: S3 CVMSHCP: No	Mojavean desert scrub, Sonoran desert scrub; -50-1,220 m (-165-4,005 ft); B: (Jan-Feb) Mar-Jun (Sep-Nov).	**Very Low** Suitable habitat lacking from all fenced facilities. Marginally suitable habitat may be present in the buffer zone study areas adjacent to Wells 16 & 18. This species is not anticipated to be impacted as a result of project implementation, even if it were to be present as proposed project activities would be restricted to developed and/or highly disturbed areas (i.e., road shoulders).
Marina orcuttii var. *orcuttii* **California marina**	F: ND C: ND CNPS: 1B.3 State Rank: S1 CVMSHCP: No	Pinyon and juniper woodland, Sonoran Desert scrub, chaparral; gravelly hillsides rocky soils; 1,050-1,160 m (3,445-3,805 ft); B: May-Oct.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Matelea parvifolia **spear-leaf matelea**	F: ND C: ND CNPS: 2B.3 State Rank: S2.3 CVMSHCP: No	Mojavean desert scrub, Sonoran desert scrub/rocky; 440-1095 m (1444-3,593 ft); B: Mar-May	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Mirabilis tenuiloba **slender-lobed four o'clock**	F: ND C: ND CNPS: List 4.3 State Rank: S4 CVMSHCP: No	Sonoran Desert scrub. 230-1,095 m (755-3,593 ft); B: (Feb) Mar-May.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Nemacaulis denudata var. *gracilis* **slender cottonheads**	F: ND C: ND CNPS: 2B.2 State Rank: S2 CVMSHCP: No	Sandy places in coastal dunes, desert dunes & Sonoran desert scrub. -50-400 m. (-165-1,310 ft); B: (Mar) Apr–May.	**Very Low** Suitable habitat lacking from all fenced facilities. Marginally suitable habitat may be present in the buffer zone study area adjacent to Well 18. Species not anticipated to be affected by project implementation, even if it were to be present as proposed project activities restricted to developed and/or highly disturbed areas (i.e., roads & road shoulders).
Petalonyx linearis **narrow-leaf sandpaper-plant**	F: ND C: ND CNPS: 2B.3 State Rank: S3? CVMSHCP: No	Sandy or rocky canyons in Mojavean Desert scrub and Sonoran Desert scrub; -25-1,115 m. (-80-3,660 ft.); B: (Jan-Feb) Mar-May (Jun-Dec).	**Absent** Suitable habitat lacking from all fenced facilties.
Phaseolus filiformis **slender-stem bean**	F: None C: None CNPS: List 2B.1 State Rank: S1 CVMSHCP: No	Sonoran Desert scrub; 125 m (410 ft); B: Apr.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Pseudorontium cyathiferum **Deep Canyon snapdragon**	F: ND C: ND CNPS: List 2B.3 State Rank: S1 CVMSHCP: No	Sonoran desert scrub (rocky); 0-800 m (0-2625 ft); B: Feb-Apr.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Saltugilia latimeri **Latimer's woodland-gilia**	F: BLM(S) C: ND CNPS: 1B.2 State Rank: S3 CVMSHCP: No	Chaparral, Mojavean Desert scrub, pinyon and juniper woodland; rocky or sandy substrate; sometimes in washes, sometimes limestone. 400-1,900 m (1,310-6,235 ft); B: Mar–Jun.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Selaginella eremophila **desert spike-moss**	F: ND C: ND CNPS: 2B.2 State Rank: S2S3 CVMSHCP: No	Chaparral, Sonoran Desert scrub; shaded sites, gravelly soils, crevices or among rocks. 200-1,295 m (655-4,250 ft.); B: (Jun) May (Jul).	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Senna covesii **Coves' cassia**	F: None C: None CNPS: List 2B.2 Global Rank: G5 State Rank: S3 CVMSHCP: No	Sonoran desert scrub; dry, sandy desert washes & slopes. 225-1,295 m (740-4,250 ft); B: Mar-Jun (Aug).	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Stemodia durantifolia **purple stemodia**	F: ND C: ND CNPS: 2B.3 State Rank: S2S3 CVMSHCP: No	Sonoran Desert scrub; often mesic, sandy. 180-300 m (590-985 ft.); B: (Jan) Apr-Dec.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Stuckenia striata **broadleaf pondweed**	F: ND C: ND CNPS: 2B.3 State Rank: S2S3 CVMSHCP: No	Marshes and swamps. -70-2,135 m (-230-7,005 ft.); B: (Jun) July-Aug.	**Absent** Suitable habitat lacking.
Wislizenia refracta ssp. refracta **jackass clover**	F: ND C: ND CNPS: 2B.2 State Rank: S1 MSHCP: No	Desert dunes, Mojavean desert scrub, playas, Sonoran desert scrub; 600-800 m (1,969-2,625 ft); B: Apr-Nov.	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.
Xylorhiza cognata **Mecca-aster**	F: BLM(S) C: ND CNPS: List 1B.2 State Rank: S2 CVMSHCP: **Yes**	Sonoran Desert scrub; on steep canyon slopes on sandstone and clay substrates; 20-400 m (65-1,310 ft); B: Jan-Jun	**Absent** Suitable habitat lacking. Study area outside (below) the known elevational range of species.

Table 2. Special Status Vegetation Communities Report from the Vicinity

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Washingtonia filifera oasis woodland **desert fan palm oasis woodland**	F: ND C: ND State rank: S3.2 CVMSHCP: **Yes**	Natural California fan palm oases; usually associated with upwellings of surface waters and often along the San Andreas fault line at the base of the Little San Bernardino Mountains and Indio Hills.	**Absent** Desert fan palm oasis woodland not present within the study area.

Table 3. Special Status Wildlife Species Reported from the Vicinity

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
INVERTEBRATES			
Danaus Plexippus **monarch butterfly**	F: **Proposed THR** C: ND State Rank: S2 CVMSHCP: No	Western winter roost sites primarily occur along the coast from northern Mendocino to Baja California, Mexico, located in wind-protected tree groves (*Eucalyptus* species, Monterey pine (*Pinus radiata*), cypress), with nectar and water sources nearby. During breeding season, adults are widespread but scarce in the desert. Larvae require milkweed	**Absent** Suitable habitat (i.e., larval host plant [milkweeds]) lacking from all facilities and not detected in adjacent buffer zone study areas. Larval host plants may, however, occur/planted on private properties adjacent to the facilities (particularly within landscaped residential areas). Winter roost sites not present on any of the fenced facilities but various kinds of planted/landscaped mature trees are present adjacent to many of the facilities. Winter roost sites for monarch butterfly are extremely rare outside of coastal California. This species has, however, been documented roosting in the Low Desert of California.
Dinacoma caseyi **Casey's June beetle**	F: **END** C: None State Rank: S1 CVMSHCP: No	Appears to be entirely restricted to the mouth and alluvial floodplain of Palm Canyon Wash and Tahquitz Creek in Palm Springs, in association with deposits of fine silts, sands and gravels	**Absent** Suitable habitat lacking. Study area outside of known geographic range of species and not within designated critical habitat or USFWS recommended survey area for this species.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Euparagia unindentata **Algodones euparagia**	F: ND C: ND State Rank: S1S2 CVMSHCP: No	Generally associated with open sand dunes and adjacent desert scrub areas.	**Absent** Suitable habitat lacking from study area.
Juniperella mirabilis **Juniper metallic wood-boring beetle**	F: ND C: ND State Rank: S1 CVMSHCP: No	Larval host plant is California juniper. Known from the Santa Rosa Mountains in Southern California.	**Absent** Suitable habitat (California juniper) lacking from study area. Study area outside (below) of known elevational range of species.
Macrobaenetes valgum **Coachella giant sand treader cricket**	F: ND C: ND State Rank: S2 CVMSHCP: **Yes**	Active sand dune hummocks and ridges, sites favorable to permanent habitation include spring-moistened sand.	**Absent** Suitable habitat (sand dunes and hummocks) lacking from study area. Site is not within CVMSHCP modeled habitat for this species.
Oliarces clara **cheeseweed owlfly (aka moth lacewing)**	F: ND C: ND State: S2 MSHCP: No	Known from lower Colorado River drainage, creosote is suspected larval host. Found under rocks or in flight over streams in canyons	**Absent** Suitable habitat lacking.
Trichinorhipus knulli **Knull's metallic wood-boring beetle**	F: ND C: ND State Rank: S1 CVMSHCP: No	Desert areas with the species only known larval host plant is jojoba (*Simmondsia chinensis*).	**Absent** Suitable habitat (jojoba) lacking.
FISHES			
Cyprinodon macularius macularius **desert pupfish**	F: **END** C: **END** State Rank: S1 CVMSHCP: **Yes**	Desert ponds, springs, marshes and streams in Southern California. Able to adapt tp a variety of aquatic habitats, including those having high temperatures and salinities	**Absent** Suitable habitat lacking.
Xyrauchen texanus **razorback sucker**	F: **END** C: **END** State: S2 CVMSHCP: No	Medium and large streams and rivers with sand, mud, or gravel bottoms.	**Absent** Suitable habitat lacking.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
AMPHIBIANS			
Batrachoseps major aridus **desert slender salamander**	F: **END** C: **END** State Rank: S1 CVMSHCP: No	Known only from rocky seeps, crevices in Hidden Palm Canyon and Guadalupe Canyon on the eastern slope of the Santa Rosa Mountains.	**Absent** Suitable habitat lacking. Study area outside of known geographic and elevational (below) range of species.
Scaphiopus couchii **Couch's spadefoot**	F: BLM(S) C: SSC State: S2 CVMSHCP: No	Arid regions in the southwest, grassland, prairie, mesquite, creosote bush, thorn forest, sandy washes	**Absent** Suitable habitat lacking.
REPTILES			
Crotalus ruber **northern red diamond rattlesnake**	F: ND C: SSC State Rank: S3 CVMSHCP: No	Favors rocky areas and dense vegetation, shelters in rodent burrows, rock cracks, or surface cover. Known from the eastern slopes of the Peninsular Ranges, desert floor up to 5,000 feet	**Absent** Suitable habitat lacking.
Gopherus agassizi **Mojave desert tortoise**	F: **THR** C: **END** State Rank: S2S3 CVMSHCP: **Yes**	Creosote bush scrub, Joshua tree woodland, saltbush scrub; washes, arroyos, bajadas, rocky hillsides, open flat desert.	**Absent** Suitable habitat lacking. Tortoise sign (burrows, scat, remains, etc.) not detected. Study area is not within designated critical habitat and not within CVMSHCP modeled habitat for this species.
Phrynosoma mcallii **flat-tailed horned lizard**	F: BLM(S) C: SSC State Rank: S3 CVMSHCP: **Yes**	Sandy and gravelly areas in desert washes, edges of dunes and desert flats; requires vegetative cover, ants & fine sand.	**Absent** Suitable habitat lacking.
Uma inornata **Coachella Valley fringe-toed lizard**	F: **THR** C: **END** State Rank: S1 CVMSHCP: **Yes**	Requires fine, loose, windblown sand (dunes) interspersed with hardpan & widely spaced desert shrubs. Known only from the Coachella Valley.	**Absent** Suitable habitat lacking. Study area not within designated critical habitat or CVMSHCP modeled habitat for this species.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
BIRDS			
Aquila chrysaetos **golden eagle**	F: BEPA, BLM(S), BCC, MBTA C: FP, WL State Rank: S3 CVMSHCP: No	Forages over rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons used for nesting, sometimes large trees in open areas.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Low** Suitable foraging habitat present adjacent to Wells 11, 16, 17 & 18 but limited. May nest in region and forage over study area as species is known to forage widely.
Ardea alba **great egret**	F: MBTA C: FGC State Rank: S4 CVMSHCP: No	Freshwater, brackish & marine wetlands. During the breeding season they live in colonies in trees or shrubs with other waterbirds. Colonies are located on lakes, ponds, marshes, estuaries, impoundments, and islands. Use similar habitats during migration and while wintering. Forage in marshes, swamps, streams, rivers, ponds, lakes, impoundments, lagoons, tidal flats, canals, ditches, fish-rearing ponds, flooded farm fields, and sometimes upland habitats.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Low** Suitable foraging habitat present adjacent to some of the wells (11, 16, 17 & 18). May nest in region (vic. Salton Sea) and forage within the buffer zone study areas of these facilities. Author has observed great egret foraging in vacant fields and agricultural areas, away from aquatic habitats.
Ardea herodias **great blue heron**	F: MBTA C: FGC State Rank: S4 CVMSHCP: No	Freshwater and saltwater habitats. Also forages in grasslands, agricultural fields, where they stalk frogs and mammals. Most breeding colonies located within 2-4 miles of aquatic feeding areas, often in isolated swamps or on islands, and near lakes and ponds bordered by forests.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Low** Suitable foraging habitat present adjacent to some of the wells (11, 16, 17 & 18). May nest in region (vic. Salton Sea) and forage within the study area adjacent to these facilities. Author has observed great blue heron foraging in vacant fields and agricultural areas, away from aquatic habitats.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Athene cunicularia **burrowing owl**	F: BCC, BLM(S) C: **SC(E)**, SSC (burrows), FGC State Rank: S2 CVMSHCP: **Yes***	Open, dry annual or perennial grassland, deserts & scrublands characterized by low-growing vegetation. Burrow sites essential.	**Nesting: Occurs** Observed immediately adjacent to Well 11 (Figure 8a). Suitable habitat present also present adjacent to Wells 17 & 18. Suitable burrows and habitat also detected at Well 17 (Figure 8d). **Foraging: Occurs** Observed immediately adjacent to Well 11 (Figure 8a). Suitable habitat also present adjacent to Wells 17 & 18. Suitable burrows also detected adjacent to Well 17 (Figure 8d).
Buteo regalis **ferruginous hawk**	F: WL, MBTA C: FGC State Rank: S3S4 CVMSHCP: No	Open grasslands, sagebrush flats, desert scrub, low foothills & edges of pinyon juniper habitats.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Low** Suitable habitat present in buffer zone study areas adjacent to Wells 11, 16, 17 & 18. Potential foraging only anticipated during migration and/ while wintering.
Calypte costae **Costa's hummingbird**	F: BCC, MBTA C: FGC State Rank: S4 CVMSHCP: No	Desert and semi-desert, arid brushy foothills, and chaparral, in migration and winter also in adjacent mountains, in open meadows, residential landscaping and gardens.	**Nesting: High** Suitable nesting habitat lacking from all fenced facilities but present immediately adjacent within the buffer zone study areas of all facilties. **Foraging: Occurs** Observed (Figure 8b)
Egretta thula **snowy egret**	F: MBTA C: FGC State Rank: S4 CVMSHCP: No	Colonial nester in protected areas of dense tules. Colonial rookery sites located in proximity to foraging areas such as marshes, tidal flats, streams, wet meadow and lake margins.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Absent** Suitable foraging habitat lacking.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Empidonax traillii extimus **southwestern willow flycatcher**	F: **END**, MBTA C: **END**, FGC State Rank: S3 CVMSHCP: **Yes***	Breeds in dense riparian areas.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Occurs (full species)** Willow flycatcher (*E. traillii* ssp.) detected (observed and heard calling) in honey mesquite thicket immediately adjacent to (N of) Well 16 (Figure 8c). Tamarisk thicket adjacent to Well 18 also suitable for foraging particularly during migration. Study area not within designated critical habitat for this species.
Falco mexicanus **prairie falcon**	F: MBTA, BCC C: WL (nesting), FGC State Rank: S4 CVMSHCP: No	Inhabits dry, open terrain, either level or hilly. Breeding sites located on cliffs, but forages far afield.	**Nesting**: **Absent** Suitable habitat lacking. **Foraging: Moderate** May nest or winter nearby & forage over study area, particularly Wells 16, 17 & 18.
Gelochelidon nilotica **gull-billed tern**	F: MBTA, BCC C: SSC, FGC State Rank: S1 CVMSHCP: No	Nests on low, sandy islets. Forages on fish and grasshoppers in alfalfa fields. Only known breeding colonies located at San Diego Bay and the Salton Sea.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Absent** Suitable foraging habitat lacking.
Haliaeetus leucocephalus **bald eagle**	F: BEPA, MBTA, BCC C: **END**, FP, FGC State: S3 CVMSHCP: No	Margins of lakes, rivers, and other bodies of water. In Southern California, nests at Big Bear Lake and Lake Silverwood in the San Bernardino Mountains and Lake Hemet in the San Jacinto Mountains.	**Nesting: Absent** Suitable habitat lacking. **Foraging: Absent** Suitable foraging habitat (i.e., aquatic sites with fish) lacking.
Icteria virens **yellow-breasted chat**	F: MBTA C: SSC, FGC State Rank: S4 CVMSHCP: **Yes**	Riparian vegetation communities. The species nests in early successional riparian habitats with a well-developed shrub layer and an open canopy. Nesting habitat usually restricted to the narrow borders of streams, creeks, sloughs and rivers.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Low** Suitable foraging habitat (mesquite & saltcedar thickets) absent from all facilities but present in adjacent buffer zone study areas of Wells 16 and 18. Potential during migration only.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Lanius ludovicianus **loggerhead shrike**	F: BCC, MBTA C: SSC (nesting), FGC State Rank: S4 CVMSHCP: No	Open fields with scattered trees or shrubs, open country with short vegetation, pastures, old orchards, cemeteries, golf courses, riparian areas & open woodlands.	**Nesting: Moderate** Although suitable nesting habitat is not present on any of the fenced facilities, it is present in buffer zone study areas adjacent to Wells 16 & 18. **Foraging: High** If nesting nearby. Suitable foraging habitat present in buffer zone study areas adjacent to Wells 11, 16, 17 & 18.
Nycticorax nycticorax **black-crowned night heron**	F: MBTA C: FGC State Rank: S4 CVMSHCP: No	Colonial nester, usually in trees but also dense patches of tules. Rookery sites located in proximity to foraging areas such lake margins and marshy areas.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Absent** Suitable foraging habitat lacking.
Plegadis chihi **white-faced ibis**	F: MBTA C: FGC State Rank: S3S4 CVMSHCP: No	Shallow freshwater marshes. Nests in dense tule thickets interspersed with areas of shallow water for foraging.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Absent** Suitable foraging habitat lacking.
Polioptila melanura **black-tailed gnatcatcher**	F: MBTA C: WL, FGC State rank: S3S4 CVMSHCP: No	Desert wash and scrub habitats. Nests in desert wash habitats containing mesquite, palo verde, ironwood and acacia. Absent from areas where saltcedar is introduced.	**Nesting: Moderate** Although suitable nesting habitat is not present on any of the fenced facilties, it is present in buffer zone study areas adjacent to Wells 16 & 18. **Foraging: High** Suitable foraging habitat present adjacent to Wells 16 & 18.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Pyrocephalus obscurus **vermilion flycatcher**	F: MBTA C: SSC (nesting), FGC State Rank: S2S3 CVMSHCP: No	During nesting, inhabits desert riparian adjacent to irrigated fields, irrigation ditches, pastures, & other open, mesic areas with nests in cottonwood, willow, mesquite, or other large desert riparian trees. Also known to nest in landscaped areas such as commercial and residential developments, golf courses and parks.	**Nesting: High** Species observed (Wel 17) and suitable nesting habitat present adjacent to Wells 12 & 17. Several inactive stick nests (species undetermined) observed in trees immediately adjacent to Well 17 (Figure 8d). **Foraging: Occurs** Species observed adjacent to Well 17 (Figure 8d). Suitable foraging habitat present in buffer zone study areas adjacent to Wells 12 & 17 (i.e., Bagdouma Park & Rancho Las Flores Park).
Rallus obsoletus yumanesis **Yuma Ridgeway's rail**	F: END, MBTA C: THR, FP, FGC State Rank: S1 CVMSHCP: **Yes**	Nests in freshwater marshes with dense stands of cattails and tules with narrow channels of flowing water along the Colorado River and along the south and east ends of the Salton Sea.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Absent** Suitable nesting habitat lacking.
Recurvirostra americana **American avocet**	F: MBTA, BCC C: FGC State rank: N/A CVMSHCP: No	Shallow fresh & saltwater wetlands, mudflats & other open, sparsely vegetated areas near water, including salt flats, lagoons & flooded fields. Often nests in loose colonies with nests being simple scrapes on the ground in open areas, which may be slightly elevated or lined with debris.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Absent** Suitable foraging habitat lacking.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Rynchops niger **black skimmer**	F: MBTA, BCC C: SSC, FGC State Rank: S2 CVMSHCP: No	Nests on gravel bars, low islets and sandy beaches in unvegetated sites.	**Nesting: Absent** Suitable nesting habitat lacking. **Foraging: Absent** Suitable foraging habitat lacking.
Toxostoma crissale **crissal thrasher**	F: BLM(S), MBTA C: SSC (nesting), FGC State Rank: S2 CVMSHCP: **Yes***	Desert riparian and wash habitats. Nests in dense vegetation along streams and washes; mesquite, ironwood, catclaw acacia, arrowweed and willows.	**Nesting**: **Very Low** Suitable nesting habitat present at Wells 16 & 18 but species considered to be nearly extirpated from the Coachella Valley. **Foraging**: **Low** Suitable foraging habitat present adjacent to Wells 16 & 18 but species considered to be nearly extirpated from the Coachella Valley.
Toxostoma lecontei **LeConte's thrasher**	F: BLM(S), BCC, MBTA C: **SC**, SSC (nesting), FGC State Rank: S3 CVMSHCP: **Yes***	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Nest in dense, spiny shrub or densely branched cactus in desert wash habitat, usually 2-8 feet above ground.	**Nesting**: **Low** Suitable nesting habitat present at Wells 16 & 18 but species considered to be nearly extirpated from the Coachella Valley. **Foraging**: **Low** Suitable foraging habitat present adjacent to Wells 16 & 18 but species considered to be nearly extirpated from the Coachella Valley.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Vireo bellii pusillus **least Bell's vireo**	F: **END**, MBTA C: **END**, FGC State rank: S3 CVMSHCP: **Yes**	Riparian woodland habitats along lowland (below 2,000 ft) riverine systems of Southern California, primarily in San Diego, Santa Barbara, and Riverside Counties. Needs dense shrub cover within 1 to 2 meters (3 to 6 feet) off the ground for nesting, and stratified canopy for foraging.	**Nesting: Absent** Suitable habitat lacking from all wells and adjacent buffer zone study areas. **Foraging: Low** During migration only (particularly within mesquite thicket adjacent to Well 16 and tamarisk thicket adjacent to Well 18).
MAMMALS			
Antrozous pallidus **pallid bat**	F: BLM(S) C: SSC, FGC State Rank: S3 WBWG: L (Region 8) CVMSHCP: No	Inhabits low elevation (<1,828 m [6,000 ft]) rocky arid deserts and canyons, shrub-steppe grasslands, karst formations, and higher elevation coniferous forests 2,133 m (>7,000 ft). Most abundant in xeric ecosystems, including the Great Basin, Mojave & Sonoran Deserts. Roosts alone, in small groups (2 to 20 bats) or gregariously (100s of individuals) in rocky outcrop crevices, on cliffs, in caves, mines, trees and on/under bridges, barns, porches, bat boxes and human occupied as well as vacant buildings (Western Bat Working Group 2023). Pallid bats have also been known to roost in cliff swallow nests in California (California Bat Working Group 2022).	**Roosting: Low** Suitable trees and man-made roosting habitat (mesquite & tamarisk thickets, mature trees, bridges, buildings, etc.) present within adjacent buffer zone study areas of all facilities. **Foraging: Moderate** Suitable foraging habitat present adjacent to all facilities.
Chaetodipus fallax pallidus **pallid San Diego pocket mouse**	F: ND C: ND State Rank: S3S4 CVMSHCP: No	Desert border areas in desert wash, desert scrub, desert succulent scrub, pinon-juniper, etc. Sandy herbaceous areas usually in association with rocks or coarse gravel.	**Absent** Suitable habitat lacking from study area.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Corynorhinus townsendii **Townsend's big-eared bat**	F: BLM(S) C: SSC, FGC State Rank: S2 WBWG-High (Region 8) CVMSHCP: No	Occurs throughout the State in a variety of habitats but most common in mesic areas. Although known to roost on and in man-made, often abandoned structures, including bridges, this species is extremely sensitive to human disturbance.	**Roosting: Absent** Existing roosting habitat considered unsuitable due to this species extreme sensitivity to human disturbances. **Foraging: Low** Suitable foraging habitat present in study area.
Dipodomys merriami collinus **earthquake Merriam's kangaroo rat**	F: ND C: ND State rank: S2 CVMSHCP: No	Currently only known from Riverside and San Diego counties. Habitats are Riversidean Sage Scrub, chaparral, and nonnative grassland	**Absent** Suitable habitat lacking from study area.
Euderma maculatum **spotted bat**	F: BLM(S) C: SSC, FGC State Rank: S3 WBWG-High (Region 8) CVMSHCP: No	Occurs in a wide variety of habitats from desert scrubs to grasslands to mixed coniferous forests. Roosts in crevices in cliff faces and caves.	**Roosting: Absent** Suitable roosting habitat lacking from study area. **Foraging: Low** Suitable foraging habitat present in study area.
Eumops perotis californicus **western mastiff bat**	F: BLM(S) C: SSC, FGC State Rank: S3S4 WBWG-High (Region 8) CVMSHCP: No	Occurs in many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands & chaparral. Roosts in crevices in cliff faces, high buildings, trees & tunnels.	**Roosting: Very Low** Suitable tree-roosting habitat (i.e., mesquite, tamarisk thicket) present within buffer zone study areas adjacent to Wells 16 & 18. **Foraging: Low** Suitable foraging habitat present adjacent to all facilities.
Lasiurus xanthinus **western yellow bat**	F: ND C: SSC, FGC State Rank: S3 WBWG-High (Region 8) CVMSHCP: **Yes**	Valley foothill riparian, desert riparian, desert wash & palm oasis habitats. Roosts in trees, particularly palms and forages over water & among trees.	**Roosting: Low** Suitable roosting habitat lacking from all facilities but present adjacent to Wells 16, 17 & 18. **Foraging: Moderate** Suitable foraging habitat present at all facilities and throughout study area.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Neotoma albigula venusta **Colorado Valley woodrat**	F: ND C: FGC State rank: S1S2 CVMSHCP: No	Associated with beavertail cactus & mesquite in the Colorado Desert.	**Absent** Suitable habitat lacking in study area. Cacti (main food source) not observed (except for planted, non-native species used for landscaping). Woodrat middens not observed.
Neotoma lepida intermedia **San Diego desert woodrat**	F: ND C: SSC State Rank: S3S4 CVMSHCP: No	Coastal scrub of southern California. Moderate to dense canopies preferred. Particularly abundant in rock outcrops & rocky cliffs & slopes.	**Absent** Suitable habitat lacking from all facilties and adjacent buffer zone study areas.
Nyctinomops femorosaccus **pocketed free-tailed bat**	F: ND C: ND State rank: S3 WBWG = Medium (Region 8) MSHCP: No	Roosts in crevices on rugged cliffs, on high rocky outcrops and slopes. May also roost in buildings, caves, and under roof tiles.	**Roosting**: **Low** Suitable roosting habitat (buildings, roof tiles) present within adjacent buffer zone study areas of all facilities. **Foraging: Low** May forage at and adjacent to all study areas (especially over surface waters, when present in beneficial reuse ponds, brine pools, backyard water features, swimming pools & around artificial lighting)
Ovis canadensis nelsoni **desert bighorn sheep**	F: BLM(S) C: FP State Rank: S3 MSHCP: No	Steep, rocky desert mountains, hills, canyons and washes in the Mojave and Sonoran Deserts. Habitat must provide "escape terrain" with cliffs for predator evasion, good visibility and access to water. Ranges from the White Mountains south to the Mexican border.	**Absent** Suitable habitat lacking from all facilities and adjacent buffer zone study areas.
Ovis canadensis nelsoni (Pop. 2) **Peninsular bighorn sheep DPS**	F: **END** C: **THR**, FP State Rank: S2 MSHCP: **Yes**	Eastern slopes of the Peninsular Ranges below 4,600 feet. Optimal habitat includes steep-walled canyons/ridges bisected by rocky or sandy washes w/ available water	**Absent** Suitable habitat lacking. Study area not within designated critical habitat or CVMSHCP modeled habitat for this species.

Scientific Name Common Name	Status	Habitat	Potential for Occurrence
Perognathus longimembris bangsi **Palm Springs pocket mouse**	F: BLM(S) C: SSC State Rank: S1 CVMSHCP: **Yes**	Inhabits flat or gently sloping areas with sparse vegetative cover and packed or sandy soils.	**Absent** Suitable habitat lacking at all facilities. CVMSHCP modeled habitat for this species is not present at any of the facilities or in adjacent buffer zone study areas.
Taxidea taxus **American badger**	F: ND C: SSC, FGC State Rank: S3 CVMSHCP: No	Widespread, occurring in a wide variety of usually open habitats.	**Very Low** Suitable habitat not present within any of the fenced and developed facilities. Suitable habitat only present within the buffer zone study areas adjacent to Wells 11, 16 & 18.
Xerospermophilus tereticaudus chlorus **Palm Springs round-tailed ground squirrel**	F: BLM(S) C: SSC, FGC State Rank: S2 CVMSHCP: **Yes**	Prefers open, flat, grassy areas in fine-textured, sandy soil in desert succulent scrub, desert wash, desert scrub, alkali scrub, & levees.	**Very Low** Suitable habitat lacking at all fenced & developed facilities. Marginally suitable habitat present within buffer zone study areas adjacent to Wells 11, 16 & 18 (lacking from all other facilities). Facilities not within CVMSHCP modeled habitat for this species.

Sources: California Special Animals List (CDFW 2026a), California Natural Diversity Data Base (CNDDB), California Native Plant Society Electronic Inventory (CNPSEI), USFWS Information and Planning and Consultation (IPaC) Resources List; La Quinta, Martinez Mtn., Mecca, Myoma, Thermal, Valerie and West Berdoo Canyon, 7.5-minute quadrangle.

Key to Tables 1-3

[1]Status Codes:

Federal

END = Federally Endangered
THR = Federally Threatened
PT = Proposed Threated
FC = Federal Candidate
BCC = Bird of Conservation Concern
BLM(S) = Bureau of Land Management Sensitive
USFS(S) = U.S. Forest Service Sensitive
BGEPA = Bald and Golden Eagle Protection Act
MBTA = Migratory Bird Treaty Act

State

END = State Endangered
THR = State Threatened
SC = State Candidate
FP = Fully Protected
SSC = Species of Special Concern
WL = Watch List
FGC = Fish & Game Code

CNDDB

The California Natural Diversity Database program is a member of the NatureServe Network of natural heritage programs and uses the same conservation status methodology as other network programs.
Elements are ranked using standard criteria and definitions. This standardization makes the ranks comparable between organisms and across political boundaries.
The three main categories that are taken into consideration when assigning an element rank are rarity, threats, and trends. Within these three categories, various factors are considered, including:
• Range extent, area of occupancy, population size, total number of occurrences, and number of good occurrences (ranked A or B).

S1 = Critically Imperiled – At very high risk of extirpation in the State due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
S2 = Imperiled – At high risk of extirpation in the State due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3 = Vulnerable – At moderate risk of extirpation in the State due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 = Apparently Secure – At a fairly low risk of extirpation in the State due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5 = Secure – At very low or no risk of extirpation in the State due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
SX = Presumed Extirpated – Species is believed to be extirpated from the State. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered
SH = Possibly Extirpated – Known from only historical records but still some hope of rediscovery. There is evidence that the species may no longer be present in the State, but not enough to State this with certainty.
SNR = Unranked – State rank not yet assessed.

CNPS CRPR

1A = Presumed extirpated in California and either rare or extinct elsewhere
1B = Rare or Endangered in California and elsewhere
2A = Presumed extirpated in California, but more common elsewhere
2B = Rare or Endangered in California, but more common elsewhere
3 = Plants for which we need more information – Review list
4 = Plants of limited distribution – Watch list

Western Bat Working Group (WBWG)

The WBWG is composed of agencies, organizations, and individuals interested in bat research, management, and conservation from 13 western States and provinces. The goals of the group are to (1) facilitate communication among interested parties and reduce risks of species decline or extinction; (2) provide a mechanism by which current information on bat ecology, distribution, and research techniques can be readily accessed; and (3) develop a forum to discuss conservation strategies, provide technical assistance, and encourage education programs. Species are ranked as **High**, **Medium**, or **Low** Priority in each of 10 regions in western North America.

[2]Occurrence Probability

Occurs = Observed or detected within the study area by WSP biologists or recorded there by other qualified biologists.
High = Observed in similar habitat in region by qualified biologists, or habitat within study area is a type often utilized by the species and the study area is within the known geographic and/or elevational ranges of the species.
Moderate = Reported sightings in surrounding region, or study are within the known geographic and/or elevational range of the species and habitat within the study area is a type occasionally used by the species.
Low = Study area is within the known range of the species but habitat is considered to be marginal or rarely used by the species.
Absent = A focused study failed to detect the species, no suitable habitat is present for this species and/or the site is outside of the elevational range of the species.
Unknown = Distribution and habitat use has not been clearly determined.

APPENDIX F

CALIFORNIA NATURAL DIVERSITY DATA BASE QUERIES

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Indio (3311662))

Buteo regalis

Element Code: ABNKC19120

ferruginous hawk

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3S4
	Other:	CDFW_WL-Watch List, IUCN_LC-Least Concern			
Habitat:	**General:**	OPEN GRASSLANDS, SAGEBRUSH FLATS, DESERT SCRUB, LOW FOOTHILLS AND FRINGES OF PINYON AND JUNIPER HABITATS.			
	Micro:	EATS MOSTLY LAGOMORPHS, GROUND SQUIRRELS, AND MICE. POPULATION TRENDS MAY FOLLOW LAGOMORPH POPULATION CYCLES.			

Occurrence No.	105	**Map Index:** 99078	**EO Index:** 100610	**Element Last Seen:**	2016-01-19
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	2016-01-19
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2016-02-03

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.72941 / -116.16646	**Accuracy:**	80 meters
UTM:	Zone-11 N3732466 E577219	**Elevation (ft):**	40
PLSS:	T05S, R08E, Sec. 20, NW (S)	**Acres:**	0.0

Location: ABOUT 0.2 MI NW OF THE COACHELLA CANAL AT THE DILLON RD CROSSING & 0.4 MI SW OF LANDFILL RD AT DILLON RD, NW OF INDIO.

Detailed Location: MAPPED TO PROVIDED LOCATION.

Ecological: DISTURBED COLORADO DESERT, GRADED FOR DEVELOPMENT IN THE PAST.

General: 1 ADULT PERCHED ON A POWER POLE OBSERVED 19 JAN 2016. SURVEYOR REPORTED SEEING FERRUGINOUS HAWKS IN THIS AREA IN PAST YEARS. FURTHER SURVEY NEEDED TO CONFIRM OVERWINTERING USE.

Owner/Manager: UNKNOWN

Athene cunicularia

Element Code: ABNSB10010

burrowing owl

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	Candidate Endangered		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.			
	Micro:	SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.			

Occurrence No.	575	**Map Index:**	05913	**EO Index:**	51267	**Element Last Seen:**	1929-04-21
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1929-04-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-05-13

Quad Summary: Thermal Canyon (3311661), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.64055 / -116.14250	**Accuracy:**	1 mile
UTM:	Zone-11 N3722631 E579521	**Elevation (ft):**	-120
PLSS:	T06S, R08E, Sec. 22 (S)	**Acres:**	0.0

Location: THERMAL.

Detailed Location:

Ecological:

General: SBCM EGG SET #3402 COLLECTED 21 APR 1929.

Owner/Manager: UNKNOWN

Occurrence No.	577	**Map Index:**	05843	**EO Index:**	51269	**Element Last Seen:**	1927-03-20
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1927-03-20
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-05-13

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.71890 / -116.22140	**Accuracy:**	1 mile
UTM:	Zone-11 N3731260 E572139	**Elevation (ft):**	-10
PLSS:	T05S, R07E, Sec. 23 (S)	**Acres:**	0.0

Location: INDIO.

Detailed Location:

Ecological:

General: SBCM EGG SET #2579 COLLECTED 20 MAR 1927.

Owner/Manager: UNKNOWN

Occurrence No.	656	**Map Index:**	53933	**EO Index:**	53933	**Element Last Seen:**	2003-06-30
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	2003-12-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	2004-01-14

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.69886 / -116.20952	**Accuracy:**	80 meters
UTM:	Zone-11 N3729048 E573256	**Elevation (ft):**	-30
PLSS:	T05S, R07E, Sec. 36, NW (S)	**Acres:**	0.0

Location: SW OF THE INTERSECTION OF AVENUE 48 AND CALHOUN STREET, INDIO.

Detailed Location:

Ecological: "BURROW" CONSISTS OF AN AGRICULTURAL STAND PIPE IN AN AREA OF FALLOW AGRICULTURE, WHICH WAS DEVELOPED BY DEC 2003.

General: 1 INDIVIDUAL OBSERVED ON 30 JUN 2003 AT THE STAND PIPE ENTRANCE; BY DEC 2003 NO OWLS COULD BE FOUND, AND THE SITE WAS DEVELOPED.

Owner/Manager: UNKNOWN

Occurrence No.	1127	**Map Index:**	71504	**EO Index:**	72398	**Element Last Seen:**	2007-07-05
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-07-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-08-20

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.69197 / -116.16978	**Accuracy:**	80 meters
UTM:	Zone-11 N3728313 E576945	**Elevation (ft):**	730
PLSS:	T05S, R08E, Sec. 32 (S)	**Acres:**	0.0

Location:	0.52 MI NW OF THE JUNCTION OF TYLER ST & 50TH AVE, 0.73 MI NE OF COACHELLA.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF SAND DUNE AND DESERT SCRUB COMMUNITIES.
General:	2 ADULTS OBSERVED AT BURROW ON 5 JUL 2007.
Owner/Manager:	UNKNOWN

Occurrence No.	1603	**Map Index:**	81016	**EO Index:**	82003	**Element Last Seen:**	2007-05-15
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-05-15
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-12-07

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.71129 / -116.14241	**Accuracy:**	80 meters
UTM:	Zone-11 N3730475 E579463	**Elevation (ft):**	130
PLSS:	T05S, R08E, Sec. 27, NW (S)	**Acres:**	0.0

Location:	0.8 MI NNE POLK ST AT AVENUE 48, & 7.75 MI ESE OF DILLON RD AT I-10, 3 MI NE COACHELLA PO.
Detailed Location:	BLOCK CODE 3730-575 - LOCATION CODE A. MAPPED TO PROVIDED COORDINATES.
Ecological:	LOWLAND ELEVATION SUBREGION.
General:	1 ADULT OBSERVED AND 1 BREEDING PAIR ESTIMATED TO OCCUR IN AREA ON 15 MAY 2007.
Owner/Manager:	UNKNOWN

Pyrocephalus rubinus **Element Code:** ABPAE36010

vermilion flycatcher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	DURING NESTING, INHABITS DESERT RIPARIAN ADJACENT TO IRRIGATED FIELDS, IRRIGATION DITCHES, PASTURES, AND OTHER OPEN, MESIC AREAS.			
	Micro:	NEST IN COTTONWOOD, WILLOW, MESQUITE, AND OTHER LARGE DESERT RIPARIAN TREES.			

Occurrence No.	20	**Map Index:** 05913	**EO Index:** 4744	**Element Last Seen:**	1948-04-11
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1948-04-11
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Thermal Canyon (3311661), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.64055 / -116.14250	**Accuracy:**	1 mile
UTM:	Zone-11 N3722631 E579521	**Elevation (ft):**	120
PLSS:	T06S, R08E, Sec. 22, NW (S)	**Acres:**	0.0

Location: THERMAL, ABOUT 7 MI SE OF INDIO.

Detailed Location:

Ecological:

General: SPECIMEN (UCLA #11966) COLLECTED IN 1918. MUSEUM EGG SET (SBMNH #8832) COLLECTED IN 1948.

Owner/Manager: UNKNOWN

Polioptila melanura

Element Code: ABPBJ08030

black-tailed gnatcatcher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3S4
	Other:	CDFW_WL-Watch List, IUCN_LC-Least Concern			
Habitat:	**General:**	PRIMARILY INHABITS WOODED DESERT WASH HABITATS; ALSO OCCURS IN DESERT SCRUB HABITAT, ESPECIALLY IN WINTER.			
	Micro:	NESTS IN DESERT WASHES CONTAINING MESQUITE, PALO VERDE, IRONWOOD, ACACIA; ABSENT FROM AREAS WHERE SALT CEDAR INTRODUCED.			

Occurrence No.	16	**Map Index:** 05913	**EO Index:** 4731	**Element Last Seen:**	1940-03-15
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1940-03-15
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Thermal Canyon (3311661), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.64055 / -116.14250	**Accuracy:**	1 mile
UTM:	Zone-11 N3722631 E579521	**Elevation (ft):**	-120
PLSS:	T06S, R08E, Sec. 22, NW (S)	**Acres:**	0.0

Location: THERMAL.

Detailed Location:

Ecological:

General: SBCM EGG SET #6578; OTHER EGG SETS COLLECTED IN 1922, 1934, 1938, 1939, AND 1940.

Owner/Manager: UNKNOWN

Occurrence No.	17	**Map Index:** 05882	**EO Index:** 25012	**Element Last Seen:**	1934-02-26
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1934-02-26
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.68335 / -116.17862	**Accuracy:**	1 mile
UTM:	Zone-11 N3727350 E576134	**Elevation (ft):**	
PLSS:	T06S, R08E, Sec. 05 (S)	**Acres:**	0.0

Location: COACHELLA.

Detailed Location:

Ecological:

General: LACM SPECIMEN #18414 AND SBCM EGG #6121 (1928-03-27).

Owner/Manager: UNKNOWN

Toxostoma crissale

Element Code: ABPBK06090

Crissal thrasher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	RESIDENT OF SOUTHEASTERN DESERTS IN DESERT RIPARIAN AND DESERT WASH HABITATS.			
	Micro:	NESTS IN DENSE VEGETATION ALONG STREAMS/WASHES; MESQUITE, SCREWBEAN MESQUITE, IRONWOOD, CATCLAW, ACACIA, ARROWWEED, WILLOW.			

Occurrence No.	2	**Map Index:**	05882	**EO Index:**	24425	**Element Last Seen:**	1941-03-30
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1941-03-30
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Indio (3311662)
County Summary: Riverside

Lat/Long:	33.68335 / -116.17862	**Accuracy:**	1 mile
UTM:	Zone-11 N3727350 E576134	**Elevation (ft):**	-71
PLSS:	T06S, R08E, Sec. 05, NW (S)	**Acres:**	0.0

Location: COACHELLA.
Detailed Location:
Ecological:
General: EGG SET #6837 SBCM.
Owner/Manager: UNKNOWN

Occurrence No.	3	**Map Index:**	05843	**EO Index:**	24419	**Element Last Seen:**	1924-04-19
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1924-04-19
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2020-09-15

Quad Summary: Indio (3311662)
County Summary: Riverside

Lat/Long:	33.71890 / -116.22140	**Accuracy:**	1 mile
UTM:	Zone-11 N3731260 E572139	**Elevation (ft):**	-14
PLSS:	T05S, R07E, Sec. 23, SE (S)	**Acres:**	0.0

Location: INDIO.
Detailed Location: LOCATION ONLY STATED AS INDIO.
Ecological:
General: 1 COLLECTED ON 19 APR 1924 BY JOSEPH MAILLIARD.
Owner/Manager: UNKNOWN

Occurrence No.	4	**Map Index:**	05913	**EO Index:**	4745	**Element Last Seen:**	1922-04-07
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1922-04-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1991-04-11

Quad Summary: Thermal Canyon (3311661), Indio (3311662)
County Summary: Riverside

Lat/Long:	33.64055 / -116.14250	**Accuracy:**	1 mile
UTM:	Zone-11 N3722631 E579521	**Elevation (ft):**	-120
PLSS:	T06S, R08E, Sec. 22, NW (S)	**Acres:**	0.0

Location: THERMAL.
Detailed Location:
Ecological:
General: #4727 LACM, #B256 UCLA. ALSO SEEN HERE 1-27-1916.
Owner/Manager: UNKNOWN

Toxostoma lecontei

Element Code: ABPBK06100

Le Conte's thrasher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	Candidate Threatened		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	DESERT RESIDENT; PRIMARILY OF OPEN DESERT WASH, DESERT SCRUB, ALKALI DESERT SCRUB, AND DESERT SUCCULENT SCRUB HABITATS.			
	Micro:	COMMONLY NESTS IN A DENSE, SPINY SHRUB OR DENSELY BRANCHED CACTUS IN DESERT WASH HABITAT, USUALLY 2-8 FEET ABOVE GROUND.			

Occurrence No.	26	**Map Index:** 05843	**EO Index:** 24537	**Element Last Seen:**	1924-04-19
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1924-04-19
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.71890 / -116.22140	**Accuracy:**	1 mile
UTM:	Zone-11 N3731260 E572139	**Elevation (ft):**	-10
PLSS:	T05S, R07E, Sec. 23, SE (S)	**Acres:**	0.0

Location: INDIO.

Detailed Location:

Ecological:

General: CAS SPECIMEN #26589.

Owner/Manager: UNKNOWN

Lasiurus xanthinus

Element Code: AMACC05070

western yellow bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	FOUND IN VALLEY FOOTHILL RIPARIAN, DESERT RIPARIAN, DESERT WASH, AND PALM OASIS HABITATS.			
	Micro:	ROOSTS IN TREES, PARTICULARLY PALMS. FORAGES OVER WATER AND AMONG TREES.			

Occurrence No.	14	**Map Index:** 05882	**EO Index:** 58911	**Element Last Seen:**	1981-06-18
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1981-06-18
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2004-12-21

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.68335 / -116.17862	**Accuracy:**	1 mile
UTM:	Zone-11 N3727350 E576134	**Elevation (ft):**	70
PLSS:	T06S, R08E, Sec. 05 (S)	**Acres:**	0.0

Location: COACHELLA.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED IN THE VICINTY OF COACHELLA.

Ecological:

General: ONE FEMALE SPECIMEN COLLECTED 18 JUN 1981 BY D. CONSTANTINE AT "COACHELLA." DEPOSITED AT MVZ #181880.

Owner/Manager: UNKNOWN

Occurrence No.	20 **Map Index:** 05843	**EO Index:**	58921	**Element Last Seen:**	1985-09-17
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	1985-09-17
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2004-12-21

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.71890 / -116.22140	**Accuracy:**	1 mile
UTM:	Zone-11 N3731260 E572139	**Elevation (ft):**	-10
PLSS:	T05S, R07E, Sec. 23 (S)	**Acres:**	0.0

Location:	INDIO.
Detailed Location:	EXACT LOCATION NOT KNOWN. MAPPED IN THE VICINITY OF INDIO AND THE LAT-LONG COORDINATES GIVEN. LOCATION UNCERTAINTY GIVEN AS 1066.8 M (0.66 MI).
Ecological:	
General:	2 MALE & 1 FEMALE SPECIMENS COLLECTED 4 OCT 1977, 24 JUN 1982 & 17 SEP 1985 BY D. CONSTANTINE AT "INDIO." DEPOSITED AT MVZ #181898, 181899 & 181900.
Owner/Manager:	UNKNOWN

Occurrence No.	32 **Map Index:** 05913	**EO Index:**	58940	**Element Last Seen:**	1976-06-27
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	1976-06-27
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2004-12-21

Quad Summary:	Thermal Canyon (3311661), Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.64055 / -116.14250	**Accuracy:**	1 mile
UTM:	Zone-11 N3722631 E579521	**Elevation (ft):**	-120
PLSS:	T06S, R08E, Sec. 22 (S)	**Acres:**	0.0

Location:	THERMAL, RIVERSIDE COUNTY.
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED IN THE VICINTY OF THERMAL.
Ecological:	
General:	1 MALE & 1 FEMALE SPECIMENS COLLECTED 14 APR & 27 JUN 1976 BY D. CONSTANTINE AT "THERMAL." DEPOSITED AT MVZ #181924 & 181925.
Owner/Manager:	UNKNOWN

Eumops perotis californicus

Element Code: AMACD02011

western mastiff bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5T4
	State:	None		**State:**	S3S4
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER AND DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL, ETC.			
	Micro:	ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES AND TUNNELS.			

Occurrence No.	77	**Map Index:** 05882	**EO Index:** 66409	**Element Last Seen:**	1939-03-15
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1939-03-15
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2006-09-26

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.68335 / -116.17862	**Accuracy:**	1 mile
UTM:	Zone-11 N3727350 E576134	**Elevation (ft):**	
PLSS:	T06S, R08E, Sec. 05 (S)	**Acres:**	0.0

Location: COACHELLA.

Detailed Location: MAPPED IN THE GENERAL VICINITY OF COACHELLA.

Ecological:

General: 1 FEMALE SPECIMEN COLLECTED BY B.L. CLARY ON 15 MAR 1939, LACM #30978.

Owner/Manager: UNKNOWN

Xerospermophilus tereticaudus chlorus

Element Code: AMAFB05161

Palm Springs round-tailed ground squirrel

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	None		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	RESTRICTED TO THE COACHELLA VALLEY. PREFERS DESERT SUCCULENT SCRUB, DESERT WASH, DESERT SCRUB, ALKALI SCRUB, AND LEVEES.			
	Micro:	PREFERS OPEN, FLAT, GRASSY AREAS IN FINE-TEXTURED, SANDY SOIL. DENSITY CORRELATED WITH WINTER RAINFALL.			

Occurrence No.	7	**Map Index:** 05882	**EO Index:** 24195	**Element Last Seen:**	1938-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1938-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.68335 / -116.17862	**Accuracy:**	1 mile
UTM:	Zone-11 N3727350 E576134	**Elevation (ft):**	70
PLSS:	T06S, R08E, Sec. 05 (S)	**Acres:**	0.0

Location: COACHELLA.

Detailed Location:

Ecological:

General: PG 359.

Owner/Manager: UNKNOWN

Occurrence No.	9 **Map Index:** 45736	**EO Index:**	45736	**Element Last Seen:**	2000-11-13
Occ. Rank:	Poor	**Presence:**	Presumed Extant	**Site Last Seen:**	2000-11-13
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2001-12-12

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.72405 / -116.16150	**Accuracy:**	80 meters
UTM:	Zone-11 N3731875 E577684	**Elevation (ft):**	35
PLSS:	T05S, R08E, Sec. 21, NE (S)	**Acres:**	0.0

Location:	WEST SIDE OF THE COACHELLA CANAL, EAST OF DILLON RD AND NORTH OF I-10. ABOUT 3 MILES EAST OF INDIO.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF THE CANAL LEVEE, VINEYARDS, AND DESERT SALTBUSH SCRUB.
General:	1 INDIVIDUAL OBSERVED ON 13 NOV 2000.
Owner/Manager:	UNKNOWN

Occurrence No.	10 **Map Index:** 45742	**EO Index:**	45742	**Element Last Seen:**	2000-04-07
Occ. Rank:	Poor	**Presence:**	Presumed Extant	**Site Last Seen:**	2000-04-07
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2001-12-12

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.73107 / -116.16349	**Accuracy:**	80 meters
UTM:	Zone-11 N3732652 E577493	**Elevation (ft):**	45
PLSS:	T05S, R08E, Sec. 16, SW (S)	**Acres:**	0.0

Location:	ALONG THE EAST SIDE OF DILLON ROAD, 0.3 MILE NORTH OF COACHELLA CANAL, EAST OF INDIO.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF DISTURBED DESERT SALTBUSH SCRUB.
General:	2 INDIVIDUALS OBSERVED ON 7 APR 2000.
Owner/Manager:	UNKNOWN

Perognathus longimembris bangsi

Element Code: AMAFD01043

Palm Springs pocket mouse

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	None		**State:**	S1
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	DESERT RIPARIAN, DESERT SCRUB, DESERT WASH AND SAGEBRUSH HABITATS. MOST COMMON IN CREOSOTE-DOMINATED DESERT SCRUB.			
	Micro:	RARELY FOUND ON ROCKY SITES. OCCURS IN ALL CANOPY COVERAGE CLASSES.			

Occurrence No.	5	**Map Index:**	51793	**EO Index:**	51793	**Element Last Seen:**	1999-06-XX
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1999-06-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-07-17

Quad Summary: Indio (3311662), West Berdoo Canyon (3311672)

County Summary: Riverside

Lat/Long:	33.75099 / -116.19132	**Accuracy:**	non-specific area
UTM:	Zone-11 N3734841 E574897	**Elevation (ft):**	75
PLSS:	T05S, R08E, Sec. 07 (S)	**Acres:**	942.3

Location: AT THE BASE OF THE SOUTHERN END OF THE INDIO HILLS, NE OF INDIO.

Detailed Location: TRAPLINES SET ON BOTH THE EAST AND WEST SIDES OF INDIO HILLS.

Ecological: HABITAT CONSISTS OF DESERT SCRUB AND RIPARIAN, DOMINATED BY C. LINEARIS, LARREA TRIDENTATA, E. FARINOSA, A. DUMOSA, AND H. SALSOLA. SITE HAS ~15% SHRUB COVER ON SANDY/GRAVELLY SOILS (LEVEL).

General: 4 ADULTS CAPTURED DURING JUN 1999 SURVEYS.

Owner/Manager: UNKNOWN

Occurrence No.	14	**Map Index:**	70534	**EO Index:**	71441	**Element Last Seen:**	2001-07-14
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-07-14
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2007-11-27

Quad Summary: Thermal Canyon (3311661), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.69855 / -116.11617	**Accuracy:**	non-specific area
UTM:	Zone-11 N3729083 E581907	**Elevation (ft):**	330
PLSS:	T05S, R08E, Sec. 35 (S)	**Acres:**	1938.0

Location: I-10/MCNAUGHTON INTERCHANGE, COACHELLA VALLEY.

Detailed Location:

Ecological: HABITAT CONSISTS OF CREOSOTE DESERT SCRUB, DOMINATED BY CREOSOTE BUSH, INDIGO BUSH, AND CHEESEBUSH. SITE IS LOCATED ON THE NORTHERN BORDER OF STEEP BADLANDS, BRAIDED STREAMBEDS, AND BORDERED BY SMALL HILLS AND BENCHES.

General: 3 JUVENILES DETECTED DURING SURVEYS CONDUCTED 10-14 JUL 2001.

Owner/Manager: UNKNOWN

Taxidea taxus **Element Code:** AMAJF04010

American badger

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS.			
	Micro:	NEEDS SUFFICIENT FOOD, FRIABLE SOILS AND OPEN, UNCULTIVATED GROUND. PREYS ON BURROWING RODENTS. DIGS BURROWS.			

Occurrence No.	303	**Map Index:** 05843	**EO Index:** 57546	**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2004-10-21

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.71890 / -116.22140	**Accuracy:**	1 mile
UTM:	Zone-11 N3731260 E572139	**Elevation (ft):**	-10
PLSS:	T05S, R07E, Sec. 23 (S)	**Acres:**	0.0

Location: INDIO.

Detailed Location:

Ecological:

General: 1 COLLECTED, UCLA.

Owner/Manager: UNKNOWN

Phrynosoma mcallii **Element Code:** ARACF12040

flat-tailed horned lizard

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened			
Habitat:	**General:**	RESTRICTED TO DESERT WASHES AND DESERT FLATS IN CENTRAL RIVERSIDE, EASTERN SAN DIEGO, AND IMPERIAL COUNTIES.			
	Micro:	CRITICAL HABITAT ELEMENT IS FINE SAND, INTO WHICH LIZARDS BURROW TO AVOID TEMPERATURE EXTREMES; REQUIRES VEGETATIVE COVER AND ANTS.			

Occurrence No.	64 **Map Index:** 36959	**EO Index:**	31956	**Element Last Seen:**	1997-06-19
Occ. Rank:	Good	**Presence:**	Presumed Extant	**Site Last Seen:**	1997-06-19
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2016-07-20
Quad Summary:	Indio (3311662)				
County Summary:	Riverside				
Lat/Long:	33.73749 / -116.18037			**Accuracy:**	80 meters
UTM:	Zone-11 N3733351 E575924			**Elevation (ft):**	50
PLSS:	T05S, R08E, Sec. 17, NW (S)			**Acres:**	0.0
Location:	NORTH SIDE OF COACHELLA CANAL, SOUTH OF THE INDIO HILLS, 2 MILES NE OF INDIO.				
Detailed Location:	2 FEMALES LIZARD COLLECTED BY M. POLLECK, NE OF INDIO, 9 JUNE 1964, GENERAL LOCATION GIVEN, MUSEUM RECORD #00330 & #00928.				
Ecological:	HABITAT CONSISTS OF A SANDY AREA WITH MESQUITE HUMMOCKS, INTERSPERSED WITH LOWER LYING ALKALI SCRUB. AGRICULURAL AREAS AND THE COACHELLA CANAL LIE TO THE SOUTH.				
General:	1 ADULT OBSERVED ON 19 JUNE 1997. MUSEUM SPECIMENS (CPC), #00330 (00300?) & #00928, MAY 1964.				
Owner/Manager:	UNKNOWN				

Occurrence No.	219 **Map Index:** 05843	**EO Index:**	82789	**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2011-02-16
Quad Summary:	Indio (3311662)				
County Summary:	Riverside				
Lat/Long:	33.71890 / -116.22140			**Accuracy:**	1 mile
UTM:	Zone-11 N3731260 E572139			**Elevation (ft):**	-10
PLSS:	T05S, R07E, Sec. 23 (S)			**Acres:**	0.0
Location:	INDIO.				
Detailed Location:	LOCATION STATED AS "INDIO".				
Ecological:					
General:	USNM #84029 COLLECTED BY D. MOORE ON AN UNKNOWN DATE.				
Owner/Manager:	UNKNOWN				

Occurrence No.	384 **Map Index:** 96979	**EO Index:**	98212	**Element Last Seen:**	1995-06-15
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	1995-06-15
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2015-07-24
Quad Summary:	Indio (3311662), West Berdoo Canyon (3311672)				
County Summary:	Riverside				
Lat/Long:	33.75314 / -116.17390			**Accuracy:**	3/5 mile
UTM:	Zone-11 N3735092 E576509			**Elevation (ft):**	200
PLSS:	T05S, R08E, Sec. 08 (S)			**Acres:**	0.0
Location:	SE END OF INDIO HILLS, NW OF INTERSECTION OF DILLON ROAD AND FARGO CANYON ROAD, NE OF INDIO.				
Detailed Location:	MAPPED BY CNDDB CENTERED ON COORDINATES PROVIDED BY COACHELLA VALLEY ASSOCIATION OF GOVERNMENTS GIS DATA. LOCATION DESCRIBED AS "E END OF INDIO HILLS; S OF ORCHARD, NEAR ROAD, N BASE OF HILLS."				
Ecological:					
General:	DETECTED ON 15 JUN 1995.				
Owner/Manager:	UNKNOWN				

Uma inornata **Element Code:** ARACF15010

Coachella Valley fringe-toed lizard

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	IUCN_EN-Endangered			
Habitat:	**General:**	LIMITED TO SANDY AREAS IN THE COACHELLA VALLEY, RIVERSIDE COUNTY.			
	Micro:	REQUIRES FINE, LOOSE, WINDBLOWN SAND (FOR BURROWING), INTERSPERSED WITH HARDPAN AND WIDELY-SPACED DESERT SHRUBS.			

Occurrence No.	55	**Map Index:**	05892	**EO Index:**	27896	**Element Last Seen:**	2008-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	2008-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	2025-05-02

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.73208 / -116.16488	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3732763 E577364	**Elevation (ft):**	51
PLSS:	T05S, R08E, Sec. 17, SE (S)	**Acres:**	280.0

Location: VICINITY OF DILLON ROAD JUST NORTH OF COACHELLA CANAL, ABOUT 2.5 ROAD MILES NE OF HWY 111, ABOUT 3 MILES E OF INDIO.

Detailed Location: MAPPED GENERALLY TO LOCATIONS STATED AS DILLON RD 3 MI E OF INDIO (1956, 1957, 1968), SECTION 16 SWSW (CIRCA 1969-1975), 0.5 MI N COACHELLA CANAL (1972), DILLON RD 2.5 MI E OF HWY 111 (1975, BRODE FIELD #257), AND SECTION 17 SW (1975).

Ecological: SOUTH OF CANAL WAS CONVERTED TO AGRICULTURE BY 1968, N OF CANAL WAS NATURAL HABITAT IN 1968 AERIAL. W SIDE OF DILLON RD WAS GRADED FOR DEVELOPMENT IN 2004 WITH HOUSES IN 2015. 1988 REVIEW NOTED POSSIBLE FEW EXTANT, BUT NOT VIABLE.

General: HISTORIC 1917 RECORD ATTRIBUTED HERE. COLLECTED IN 1956, 1957, 1968, & 1972. OBSERVED 6 MAY 1975. DRAFT & FINAL RECOVERY PLANS NOTE PRESENT CIRCA 1969-1975 & IN JUL 1975. BARROWS DETAILS DROUGHT. NOT FOUND IN 2008. PRESUMED EXTANT BY USFWS.

Owner/Manager: PVT, UNKNOWN

Occurrence No.	103	**Map Index:**	31526	**EO Index:**	2536	**Element Last Seen:**	2008-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	2008-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-02

Quad Summary: Indio (3311662), West Berdoo Canyon (3311672)

County Summary: Riverside

Lat/Long:	33.74535 / -116.17076	**Accuracy:**	non-specific area
UTM:	Zone-11 N3734230 E576807	**Elevation (ft):**	90
PLSS:	T05S, R08E, Sec. 08 (S)	**Acres:**	121.5

Location: ABOUT 1.3 MILES NNE OF COACHELLA CANAL AT DILLON RD, ABOUT 3.1 MILE NE OF CENTRAL INDIO, SOUTHERN END OF INDIO HILLS.

Detailed Location: MAPPED NON-SPECIFICALLY TO 1/4 1/4 SECTIONS STATED AS SECTION 17 NENE (DAVIS), SECTION 8 NESW (ENGLAND & NELSON), AND SW 1/4 OF SE 1/4 SECTION 8 (MUTH). UNCLEAR IF THIS POPULATION SURVIVED THE PROLONG DROUGHT OF 2000-2004; NEEDS RESEARCH.

Ecological: SCATTERED PATCHES CREOSOTE SCRUB AND AEOLIAN SAND. LAND USE NOTED IN 1994 WAS AGRICULTURAL AND MINING (SAND & GRAVEL). PARTIAL SOUTHERN CALIFORNIA EDISON RIGHT OF WAY. AREA APPEARS UNDEVELOPED IN 2022-2025 AERIAL IMAGES.

General: DRAFT & FINAL RECOVERY PLANS REPORT PRESENT BY DAVIS CIRCA 1969-1975 AND BY ENGLAND & NELSON JUL 1975. 7 DETECTED, 5 CAPTURED/RELEASED 28 AUG 1994. BARROWS, VANDERGAST SUGGEST ETIRPATED BY 2008. PRESUMED EXTANT BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	188	**Map Index:**	50030	**EO Index:**	50030	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-30

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.74585 / -116.21897	**Accuracy:**	non-specific area
UTM:	Zone-11 N3734250 E572341	**Elevation (ft):**	0
PLSS:	T05S, R07E, Sec. 11, SE (S)	**Acres:**	39.5

Location:	NW CORNER OF JACKSON ST AT AVENUE 42, ABOUT 0.5 MILES N OF I-10 AT JACKSON ST, ABOUT 1.75 MILES N OF DOWNTOWN INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS SECTION 11 SESE.
Ecological:	UNCLEAR HOW THIS DETECTION WAS MADE OR IF LOCALITY IN ERROR; THIS 1/4 1/4 SECTION WAS AGRICULTURE IN 1959 & 1968 AERIALS. RESIDENTIAL DEVELOPMENT STARTED OCCURING HERE IN 2004 AND BY 2020 THE SECTION AND NEIGHBORING AREAS WERE DEVELOPED.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS CIRCA 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	189	**Map Index:**	50031	**EO Index:**	50031	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-25

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.69823 / -116.21878	**Accuracy:**	non-specific area
UTM:	Zone-11 N3728971 E572398	**Elevation (ft):**	20
PLSS:	T05S, R07E, Sec. 35, NE (S)	**Acres:**	39.6

Location:	SW CORNER OF AVENUE 48 AT JACKSON STREET, 1.5 MILES SOUTH OF INDIO, COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCALITY STATED AS T5S R7E SECTION 35 NENE. SPECIMEN COLLECTED AROUND 1939 WITH LOCALITY OF "INDIO" INCLUDED HERE.
Ecological:	THIS AREA APPEARS TO BE UNDEVELOPED NATURAL HABITAT IN 1968 AERIALS. ENTIRE SECTION 35 WAS CONVERTED TO A RESIDENTIAL GOLF COURSE IN THE 1990S.
General:	COLLECTED FROM THE INDIO AREA AROUND 1939 (KU #88350). ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	190	**Map Index:**	50034	**EO Index:**	50034	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-25

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.68721 / -116.21862	**Accuracy:**	non-specific area
UTM:	Zone-11 N3727749 E572423	**Elevation (ft):**	30
PLSS:	T05S, R07E, Sec. 35, SE (S)	**Acres:**	135.7

Location:	NW CORNER OF AVENUE 50 AT JACKSON STREET, 2.25 MILES SOUTH OF INDIO, COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCALITY STATED AS T5S R7E SECTION 35 SESE.
Ecological:	THE SE QUARTER OF SECTION 35 & NEIGHBORING PARCELS APPEAR TO BE UNDEVELOPED NATURAL HABITAT IN 1968 AERIALS. PORTIONS OF THE NW QUARTER OF SEC 35 WERE AGRICULTURE. ALL OF SEC 35 WAS CONVERTED TO A RESIDENTAL GOLF COURSE IN THE 1990S.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY ENGLAND & NELSON IN JUL 1975 & BY DAVIS DURING SURVEYS BETWEEN 1969-1975. HABITAT DEVELOPED IN 1990S. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	191	**Map Index:**	50036	**EO Index:**	50036	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-08-08

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.70183 / -116.23168	**Accuracy:**	non-specific area
UTM:	Zone-11 N3729361 E571200	**Elevation (ft):**	0
PLSS:	T05S, R07E, Sec. 26, SW (S)	**Acres:**	39.5

Location:	NE CORNER OF AVENUE 48 AT MONROE STREET, ABOUT 1.5 MILES SSW OF CENTRAL INDIO, COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCALITY STATED AS T5S R7E SECTION 26 SWSW.
Ecological:	THIS AREA APPEARS TO BE UNDEVELOPED NATURAL HABITAT IN 1968 AERIALS. ALL OF THE SW QUARTER OF SECTION 26 WAS CONVERTED TO RESIDENTIAL DEVELOPMENT IN THE 1990S.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	196	**Map Index:**	50060	**EO Index:**	50060	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-29

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.74553 / -116.19694	**Accuracy:**	non-specific area
UTM:	Zone-11 N3734231 E574382	**Elevation (ft):**	100
PLSS:	T05S, R08E, Sec. 07, SW (S)	**Acres:**	41.7

Location:	NE OF THE INTERSECTION OF AVENUE 42 AND VAN BUREN STREET, NE INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS SECTION 7 SWSW.
Ecological:	THIS QUARTER SECTION AND ADJACENT LAND TO THE EAST FOR ABOUT 1 MILE AND NORTH OF THE CANAL WAS DEVELOPED AS THE TERRA LAGO GOLF CLUB BY 2002. SOME SAND DUNES PRESENT BETWEEN GREENWAYS AND TO WEST AND NORTH; UNKNOWN IF UMA INORNATA PERSIST.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS CIRCA 1969-1975. CONSIDERED PRESUMED EXTANT BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	197	**Map Index:**	50061	**EO Index:**	50061	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-02

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.74013 / -116.15129	**Accuracy:**	non-specific area
UTM:	Zone-11 N3733666 E578615	**Elevation (ft):**	200
PLSS:	T05S, R08E, Sec. 16, NE (S)	**Acres:**	161.6

Location:	SOUTH SIDE OF FARGO CANYON RD (42 AVE) ABOUT 0.75 MILES E OF DILLON ROAD, ABOUT 4 MILES ENE OF CENTRAL INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS SECTION 16 NE.
Ecological:	HABITAT APPEARS INTACT IN 2022 AND 2025 AERIAL IMAGES. BARROWS (2007, 2010, 2025) AND VANDERGAST (2016) SUGGEST THAT THE PROLONG DROUGHT OF 2000-2004 MAY HAVE EXTIRPATED POPULATIONS IN THIS AREA; NEEDS RESEARCH.
General:	DRAFT & FINAL RECOVERY PLANS REPORT PRESENT BY DAVIS CIRCA 1969-1975. EXACT AREAS OF SURVEYING UNCLEAR, BUT GENERALLY NOT FOUND IN THIS AREA IN 2008; EXTIPRATED DUE TO DROUGHT. CONSIDERED PRESUMED EXTANT BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	199	**Map Index:**	50063	**EO Index:**	50063	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-25

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.70578 / -116.14869	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3729860 E578887	**Elevation (ft):**	2
PLSS:	T05S, R08E, Sec. 28, SE (S)	**Acres:**	70.0

Location:	ABOUT 1 MILE ENE OF TYLER STREET AT AVENUE 48, VICINITY OF COACHELLA CANAL AT I-10, 4 MILES ESE OF INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCALITY STATED AS T5S R8E SECTION 28 NESE. THIS QUARTER QUARTER SECTION HAS SINCE BEEN CONVERTED TO AGRICULTURE; IT IS UNKNOWN IF UMA INORNATA ARE EXTANT N AND E OF THIS AREA.
Ecological:	THE AREA NEAR THE COACHELLA CANAL & HWY 60/HWY 70 (NOW I-10) APPEARS AS NATURAL HABITAT IN 1968 AERIALS. BY 1996 THERE WAS AGRICULTURE ENCROACHMENT BUT STILL AREAS OF HABITAT. MOST OF THE AREA S OF THE CANAL & I-10 HAS BEEN CONVERTED TO AG.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED PRESUMED EXTANT BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	201	**Map Index:**	50065	**EO Index:**	50065	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-17

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.68347 / -116.23184	**Accuracy:**	non-specific area
UTM:	Zone-11 N3727325 E571200	**Elevation (ft):**	-10
PLSS:	T06S, R07E, Sec. 02, NW (S)	**Acres:**	40.1

Location:	SE CORNER OF MONROE STREET AT AVENUE 50, 3.5 MILES WNW OF COACHELLA, SOUTHERN COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO THE LOCATION DESCRIBED AS T6S R7E SECTION 2 NWNW.
Ecological:	POTENTIALLY ABOUT 47 ACRES OF NATURAL HABITAT IN THIS AREA BASED ON 1968 AND 1981 AERIAL IMAGES, THOUGH W PORTION OF QUARTER QUARTER SECTION DEVELOPED AS AGRICULTURE. AREA PRIMARILY DEVELOPED AS A GOLF COURSE & RESIDENCES SINCE ABOUT 1996.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	203	**Map Index:**	50066	**EO Index:**	50066	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-17

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.66923 / -116.23176	**Accuracy:**	non-specific area
UTM:	Zone-11 N3725746 E571220	**Elevation (ft):**	-20
PLSS:	T06S, R07E, Sec. 11, NW (S)	**Acres:**	39.9

Location:	AREA SE OF INTERSECTION OF MONROE STREET AND AVENUE 52, 3.2 MILES WEST OF COACHELLA.
Detailed Location:	MAPPED NON-SPECIFICALLY TO THE LOCATION DESCRIBED AS T6S R7E SECTION 11 NWNW.
Ecological:	THOUGH PART OF THIS STATED QUARTER QUARTER SECTION WAS DEVELOPED AS AGRICULTURE (DATE PALMS?) BY 1968, IT APPEARS THERE MAY HAVE BEEN ABOUT 96 ACRES OF NATURAL HABITAT SURROUNDED BY AGRICULTURE. ENTIRE AREA ALTERED/DEVELOPED BY 2002.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	204	**Map Index:**	50067	**EO Index:**	50067	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-17

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.66917 / -116.21873	**Accuracy:**	non-specific area
UTM:	Zone-11 N3725749 E572428	**Elevation (ft):**	-30
PLSS:	T06S, R07E, Sec. 11, NE (S)	**Acres:**	39.5

Location:	VICINITY OF COACHELLA VALLEY CEMETERY, SW CORNER OF JACKSON STREET AT AVENUE 52, 2.7 MILES WSW OF COACHELLA.
Detailed Location:	MAPPED NON-SPECIFICALLY TO THE LOCATION DESCRIBED AS T6S R7E SECTION 11 NENE. THE COACHELLA VALLEY PUBLIC CEMETERY WAS ESTABLISHED HERE IN 1927 ALONG JACKSON ST WITH BURIAL EXPANSION TO THE WEST BY 1996. FRANK CAPRA IS BURIED HERE.
Ecological:	1968 AERIALS SHOW THAT THERE MAY HAVE BEEN ABOUT 63 ACRES OF NATURAL HABITAT IN THIS AREA. THE AREA HAS SINCE UNDERGONE FURTHER LANDSCAPE CHANGES BY 2002, PRIMARILY FURTHER BURIAL EXPANSION OF THE CEMETERY.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	205	**Map Index:**	50072	**EO Index:**	50072	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-17

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.65475 / -116.23166	**Accuracy:**	non-specific area
UTM:	Zone-11 N3724141 E571241	**Elevation (ft):**	-30
PLSS:	T06S, R07E, Sec. 14, NW (S)	**Acres:**	39.6

Location:	SE CORNER OF MONROE ST AT AVENUE 54, 3.7 MILES SW OF COACHELLA, SOUTHERN COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO THE LOCATION DESCRIBED AS T6S R7E SECTION 14 NWNW.
Ecological:	THOUGH SURROUNDED BY AGRICULTURE IN 1959 AND 1968 AERIALS, THIS AREA PRIMARILY APPEARED TO BE NATURAL HABITAT POSSIBLY UP TILL 1996. REMAINING HABITAT ALTERED BY 2002.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	206	**Map Index:**	50074	**EO Index:**	50074	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-17

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.65474 / -116.21422	**Accuracy:**	non-specific area
UTM:	Zone-11 N3724152 E572858	**Elevation (ft):**	-50
PLSS:	T06S, R07E, Sec. 13, NW (S)	**Acres:**	39.8

Location:	SE CORNER OF JACKSON ST AT AVENUE 54, 3 MILES SW OF COACHELLA, SOUTHERN COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO THE LOCATION DESCRIBED AS T6S R7E SECTION 13 NWNW.
Ecological:	BASED ON 1968 AND 1981 AERIAL IMAGERY, THERE WAS ABOUT 63 ACRES OF WHAT APPEARED TO BE NATURAL HABITAT, SURROUNDED BY ARICULTURE OR RESIDENTIAL DEVELOPMENT. THIS SITE WAS CONVERTED TO AGRICULUTURE BY 1989 OR 1986.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	207	**Map Index:** 50079	**EO Index:**	50079		**Element Last Seen:**	1975-07-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2025-04-17
Quad Summary:	Indio (3311662)						
County Summary:	Riverside						
Lat/Long:	33.64298 / -116.22797				**Accuracy:**	non-specific area	
UTM:	Zone-11 N3722838 E571593				**Elevation (ft):**	-50	
PLSS:	T06S, R07E, Sec. 14 (S)				**Acres:**	162.4	

Location: ALONG AVENUE 56 (AIRPORT BLVD) BETWEEN MONROE ST AND JACKSON ST, 2.5 MI W OF SANDY KORNER, 4 MI SW OF COACHELLA.

Detailed Location: MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTIONS STATED AS T6S R7E SECTION 14 SESW (ENGLAND & NELSON) AND T6S R7E SECTION 23 NWNW (DAVIS), AND TO DOT MAP LOCALITIES IN DRAFT AND FINAL RECOVERY PLANS.

Ecological: WHEREAS SOME OF THESE PARCELS APPEAR AS MOSTLY NATURAL HABITAT IN 1968 AERIALS, WESTSIDE ELEMENTARY SCHOOL WAS ESTABLISHED IN THE NWNW CORNER OF SECTION 23 BY 1963. THESE PARCELS HAVE PRIMARILY BEEN CONVERTED TO AGRICULTURE BY 2002.

General: ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969 -1975 & BY ENGLAND & NELSON IN JUL 1975. ENGLAND DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	208	**Map Index:** 50081	**EO Index:**	50081		**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2025-04-16
Quad Summary:	Valerie (3311652), Indio (3311662)						
County Summary:	Riverside						
Lat/Long:	33.62567 / -116.23116				**Accuracy:**	non-specific area	
UTM:	Zone-11 N3720917 E571311				**Elevation (ft):**	-70	
PLSS:	T06S, R07E, Sec. 26, NW (S)				**Acres:**	40.4	

Location: SE CORNER OF MONROE STREET AT AVENUE 58, 3.8 MILES W OF J. COCHRAN AIRPORT, 4.9 MILES SW OF COACHELLA, COACHELLA VALLEY.

Detailed Location: MAPPED NON-SPECIFICALLY TO LOCATION DESCRIBED AS T6S R7E SECTION 26 NWNW.

Ecological: UNCLEAR HOW THIS DETECTION WAS MADE OR IF LOCALITY IN ERROR; THIS QUARTER QUARTER SECTION WAS CONVERTED TO AGRICULTURE BY 1953 ALONG WITH ADJACENT PARCELS, AND APPEARS AS AG IN 1959 AND 1968, THEN MODIFIED TO HOUSING BY THE 1990S.

General: ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	209	**Map Index:**	50082	**EO Index:**	50082	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-16

Quad Summary:	Valerie (3311652), Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.62567 / -116.21842	**Accuracy:**	non-specific area
UTM:	Zone-11 N3720926 E572493	**Elevation (ft):**	-60
PLSS:	T06S, R07E, Sec. 26, NE (S)	**Acres:**	39.8

Location:	SW CORNER OF AVENUE 58 AT JACKSON STREET, 4.5 MILES SSW OF COACHELLA, SOUTHERN COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION DESCRIBED AS T6S R7E SECTION 26 NENE. THIS PARCEL APPEARS TO STILL BE UNDEVELOPED WITH (POSSIBLE) SANDY HUMMOCKS. A SITE VISIT MAY BE WORTHWHILE AND FINDINGS REPORTED.
Ecological:	BOTH THE NE AND THE NW PORTION OF THE NE 1/4 OF SECTION 26 APPEARED TO BE NATURAL HABITAT IN 1959 AND 1968 AERIALS, THOUGH SURROUNDED BY AGRICULTURE. THE NENE PARCEL AT THE CORNER OF AVE 58 & JACKSON REMAINS UNDEVELOPED (2025).
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	215	**Map Index:**	50095	**EO Index:**	50095	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-16

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.64386 / -116.18358	**Accuracy:**	non-specific area
UTM:	Zone-11 N3722967 E575708	**Elevation (ft):**	-90
PLSS:	T06S, R08E, Sec. 18, SE (S)	**Acres:**	40.4

Location:	SANDY KORNER, NW CORNER OF AVENUE 56 AT HWY 86 (HARRISON ST), 2.5 MILES SOUTH OF COACHELLA, SOUTHERN COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION DESCRIBED AS T6S R8E SECTION 18 SESE. ENTIRE SECTION 18 IS PART OF THE AUGUSTINE BAND OF CAHUILLA INDIANS. SITE SHOULD BE RESURVEYED AND REPORTED.
Ecological:	ENTIRE SECTION APPEARS AS NATURAL LANDSCAPE IN 1953, 1968, & 1978 AERIALS, WHEREAS MUCH OF THE SURROUNDING AREA WAS DEVELOPED AS AGRICULTURE OR HOUSING. MOST OF SECTION (SW, SE, NE) REMAINS PRIMARILY UNDEVELOPED; CASINO IN NW, OPENED 2002.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED POSSIBLY EXTIRPATED BY USFWS (2023).
Owner/Manager:	BIA-AUGUSTINE RES

Euparagia unidentata

Element Code: IIHYMBC010

Algodones euparagia

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G1G2
	State:	None		**State:**	S1S2
	Other:				
Habitat:	**General:**				
	Micro:				

Occurrence No.	3	**Map Index:** B5373	**EO Index:** 118274	**Element Last Seen:**	1973-03-06
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1973-03-06
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2020-05-04

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.70927 / -116.14829	**Accuracy:**	1 mile
UTM:	Zone-11 N3730246 E578921	**Elevation (ft):**	40
PLSS:	T05S, R08E, Sec. 28 (S)	**Acres:**	1987.0

Location: 4 MILES EAST OF INDIO, COACHELLA VALLEY.

Detailed Location:

Ecological:

General: A PARATYPE COLLECTION WAS MADE IN THIS VICINITY ON 6 MAR 1973.

Owner/Manager: UNKNOWN

Macrobaenetes valgum

Element Code: IIORT22020

Coachella giant sand treader cricket

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G1G2
	State:	None		**State:**	S2
	Other:	IUCN_VU-Vulnerable			
Habitat:	**General:**	KNOWN FROM THE SAND DUNE RIDGES IN THE VICINITY OF COACHELLA VALLEY.			
	Micro:	POPULATION SIZE REGULATED BY AMOUNT OF ANNUAL RAINFALL; SOME SPOTS FAVOR PERMANENT HABITATION WHERE SPRINGS DAMPEN SAND.			

Occurrence No.	2	**Map Index:** 05795	**EO Index:** 22602	**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-11

Quad Summary: Indio (3311662), La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.72224 / -116.26528	**Accuracy:**	1 mile
UTM:	Zone-11 N3731601 E568070	**Elevation (ft):**	40
PLSS:	T05S, R07E, Sec. 21, W (S)	**Acres:**	0.0

Location: 2 MILES WEST OF INDIO.

Detailed Location:

Ecological: FOUND ON WIND-SWEPT SAND DUNE RIDGES. ALTHOUGH LARGELY REGULATED IN ABUNDANCE BY WINTER RAINS, THERE ARE SOME SPOTS, WHERE SPRINGS KEEP THE SAND DAMP, THAT ARE FAVORABLE TO PERMANENT HABITATION.

General: IN VERY DRY YEARS, THE SPECIES DISAPPEARS OVER MOST OF THE SAND AREAS.

Owner/Manager: PVT

Ditaxis claryana

Element Code: PDEUP080L0

glandular ditaxis

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G4
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	IN DRY WASHES AND ON ROCKY HILLSIDES. SANDY SOILS. 15-505 M.			

Occurrence No.	3	**Map Index:** 05843	**EO Index:** 5163	**Element Last Seen:**	1906-04-27
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1906-04-27
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-02-24

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.71890 / -116.22140	**Accuracy:**	1 mile
UTM:	Zone-11 N3731260 E572139	**Elevation (ft):**	
PLSS:	T05S, R07E, Sec. 23 (S)	**Acres:**	0.0

Location: INDIO.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS AT INDIO.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE ARE TWO 1906 COLLECTIONS BY JONES. NEEDS FIELWORK.

Owner/Manager: UNKNOWN

Astragalus preussii var. laxiflorus

Element Code: PDFAB0F721

Lancaster milk-vetch

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T2
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.1			
Habitat:	**General:**	CHENOPOD SCRUB.			
	Micro:	ALKALINE CLAY FLATS OR GRAVELLY OR SANDY WASHES AND ALONG DRAWS IN GULLIED BADLANDS. 700-735 M IN CALIFORNIA.			

Occurrence No.	5	**Map Index:** 84032	**EO Index:** 85068	**Element Last Seen:**	1928-04-04
Occ. Rank:	None		**Presence:** Possibly Extirpated	**Site Last Seen:**	1928-04-04
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2011-10-19

Quad Summary: Martinez Mtn. (3311653), Indio (3311662), La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.63614 / -116.26100	**Accuracy:**	4/5 mile
UTM:	Zone-11 N3722059 E568534	**Elevation (ft):**	
PLSS:	T06S, R07E, Sec. 21 (S)	**Acres:**	0.0

Location: CORAL REEF RANCH, COACHELLA VALLEY.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB BASED ON HISTORIC DESCRIPTION FOR "CORAL REEF" NEAR RAU RANCH LOCATED AT THE NORTHWEST CORNER OF AVE 58 AND MADISON ST.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1928 COLLECTION BY ACKLEY. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Astragalus sabulonum **Element Code:** PDFAB0F7R0

gravel milk-vetch

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	DESERT DUNES, MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	SANDY OR GRAVELLY FLATS, WASHES, AND ROADSIDES. -60-885 M.			

Occurrence No.	12	**Map Index:** 05843	**EO Index:** 85327	**Element Last Seen:**	1906-04-30
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1906-04-30
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2011-11-17

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.71890 / -116.22140	**Accuracy:**	1 mile
UTM:	Zone-11 N3731260 E572139	**Elevation (ft):**	
PLSS:	T05S, R07E, Sec. 23 (S)	**Acres:**	0.0

Location: INDIO.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB CENTERED ON THE CITY OF INDIO.

Ecological:

General: ONLY SOURCES OF INFORMATION FOR THIS OCCURRENCE ARE AN 1891 ORCUTT COLLECTION AND A 1906 JONES COLLECTION, BOTH WITH LOCALITIES GIVEN ONLY AS "INDIO." NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Astragalus lentiginosus var. coachellae **Element Code:** PDFAB0FB97

Coachella Valley milk-vetch

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G5T1
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture			
Habitat:	**General:**	SONORAN DESERT SCRUB, DESERT DUNES.			
	Micro:	SANDY FLATS, WASHES, OUTWASH FANS, SOMETIMES ON DUNES. 35-695 M.			

Occurrence No.	36	**Map Index:** 05843	**EO Index:** 71934	**Element Last Seen:**	1929-03-16
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1929-03-16
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2008-03-17

Quad Summary: Indio (3311662)

County Summary: Riverside

Lat/Long:	33.71890 / -116.22140	**Accuracy:**	1 mile
UTM:	Zone-11 N3731260 E572139	**Elevation (ft):**	
PLSS:	T05S, R07E, Sec. 23 (S)	**Acres:**	0.0

Location: NEAR INDIO, COLORADO DESERT.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS IN VICINITY OF THE TOWN OF INDIO.

Ecological: SANDY DESERT.

General: OCCURRENCE BASED ON A 1926 MINTHORN COLLECTION. A 1929 CLARK COLLECTION FROM "N. INDIO" ALSO ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Abronia villosa var. aurita **Element Code:** PDNYC010P1

chaparral sand-verbena

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2?
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive			
Habitat:	**General:**	CHAPARRAL, COASTAL SCRUB, DESERT DUNES.			
	Micro:	SANDY AREAS. -60-1570 M.			

Occurrence No.	58	**Map Index:** 05843	**EO Index:** 73388	**Element Last Seen:**	1949-04-09
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1949-04-09
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2008-10-06

Quad Summary:	Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.71890 / -116.22140	**Accuracy:**	1 mile
UTM:	Zone-11 N3731260 E572139	**Elevation (ft):**	25
PLSS:	T05S, R07E, Sec. 23 (S)	**Acres:**	0.0

Location:	INDIO.
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS A BEST GUESS CENTERED ON THE CITY OF INDIO.
Ecological:	ROCKY, SANDY TYPE SOIL. SIDE OF DRY RIVER BED.
General:	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1949 COLLECTION BY LAGE, ET AL. COLLECTION MAY HAVE ORIGINATED FROM ALONG THE ADJACENT WHITEWATER RIVER CHANNEL. NEEDS FIELDWORK.
Owner/Manager:	UNKNOWN

Stuckenia striata **Element Code:** PMPOT030K0

broadleaf pondweed

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5
	State:	None		**State:**	S2S3
	Other:	Rare Plant Rank - 2B.3			
Habitat:	**General:**	MARSHES AND SWAMPS.			
	Micro:	LAKES, PONDS, RIVERS, AND DRAINAGE CANALS. -70-2135 M.			

Occurrence No.	21	**Map Index:** C0734	**EO Index:** 131974	**Element Last Seen:**	1957-11-30
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1957-11-30
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2024-07-26

Quad Summary: Mecca (3311651), Valerie (3311652), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.62278 / -116.12876	**Accuracy:**	non-specific area
UTM:	Zone-11 N3720672 E580812	**Elevation (ft):**	-145
PLSS:	T06S, R08E, Sec. 26, W (S)	**Acres:**	221.0

Location: COACHELLA DRAINAGE DITCH, ~1.5 MI SSE OF THERMAL.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB TO INCLUDE HABITAT ALONG THE COACHELLA VALLEY STORMWATER CHANNEL AROUND 1.5 MI SSE OF THERMAL.

Ecological: SUBMERSED IN SUN IN SWIFT WATER.

General: ABUNDANT IN CLUMPS IN 1957. ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1957 COLLECTION BY WHEELER. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (La Quinta (3311663))

Falco mexicanus **Element Code:** ABNKD06090

prairie falcon

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S4
	Other:	CDFW_WL-Watch List, IUCN_LC-Least Concern			
Habitat:	**General:**	INHABITS DRY, OPEN TERRAIN, EITHER LEVEL OR HILLY.			
	Micro:	BREEDING SITES LOCATED ON CLIFFS. FORAGES FAR AFIELD, EVEN TO MARSHLANDS AND OCEAN SHORES.			

*** SENSITIVE ***

Occurrence No.	129	**Map Index:**	05710	**EO Index:**	26280	**Element Last Seen:**	1980-05-05
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1980-05-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2020-11-24

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:		**Accuracy:**	1/5 mile
UTM:		**Elevation (ft):**	1089
PLSS:		**Acres:**	70.0

Location: *SENSITIVE* LOCATION INFORMATION SUPPRESSED.

Detailed Location: PLEASE CONTACT THE CALIFORNIA NATURAL DIVERSITY DATABASE, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, FOR MORE INFORMATION: (916) 322-2493

Ecological: NEST WAS COMPROSED OF STICKS ABOUT 30 FT UP A SCARP.

General:

Owner/Manager:

*** SENSITIVE ***

Occurrence No.	130	**Map Index:**	05771	**EO Index:**	26289	**Element Last Seen:**	1977-05-10
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1977-05-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2020-11-24

Quad Summary: Martinez Mtn. (3311653), La Quinta (3311663)

County Summary: Riverside

Lat/Long:		**Accuracy:**	1/5 mile
UTM:		**Elevation (ft):**	826
PLSS:		**Acres:**	70.0

Location: *SENSITIVE* LOCATION INFORMATION SUPPRESSED.

Detailed Location: PLEASE CONTACT THE CALIFORNIA NATURAL DIVERSITY DATABASE, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, FOR MORE INFORMATION: (916) 322-2493

Ecological: NEST WAS IN A POTHOLE 175 FT UP A 225 FT SCARP.

General:

Owner/Manager:

Athene cunicularia **Element Code:** ABNSB10010

burrowing owl

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	Candidate Endangered		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.			
	Micro:	SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.			

Occurrence No.	856	**Map Index:**	66265	**EO Index:**	66344	**Element Last Seen:**	2007-05-15
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-05-15
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-05-06

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.74822 / -116.26556	**Accuracy:**	specific area
UTM:	Zone-11 N3734482 E568023	**Elevation (ft):**	50
PLSS:	T05S, R07E, Sec. 09, SW (S)	**Acres:**	6.0

Location:	EAST SIDE OF I-10, SE OF THE JEFFERSON STREET JUNCTION, INDIO.
Detailed Location:	BURROW WAS LOCATED NEAR THE TOE OF THE NE-FACING MANUFACTURED SLOPE BELOW THE FREEWAY OFFRAMP FOR THE WESTBOUND LANES. BLOCK CODE 3730-565 - LOCATION CODE A. MAPPED TO PROVIDED COORDINATES.
Ecological:	SLOPE SURROUNDING BURROW WAS VEGETATED BY ATRIPLEX CANESCENS, TIDESTOMIA OBLONGIFOLIA, CONYZA CANADENSIS, ENCELIA FARINOSA, BRASSICA TOURNEFORTII, SALSOLA TRAGUS, AVENA FATUA, CYNODON DACTYLON, AND SCHISMUS BARBATUS.
General:	PAIR WAS OBSERVED DEFENDING THIS BURROW ON 12 AUG AND 6-8 SEP 2006; NO YOUNG OBSERVED. 1 ADULT OBSERVED AND 1 BREEDING PAIR ESTIMATED TO OCCUR IN AREA ON 15 MAY 2007.
Owner/Manager:	CALTRANS

Pyrocephalus rubinus

Element Code: ABPAE36010

vermilion flycatcher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	DURING NESTING, INHABITS DESERT RIPARIAN ADJACENT TO IRRIGATED FIELDS, IRRIGATION DITCHES, PASTURES, AND OTHER OPEN, MESIC AREAS.			
	Micro:	NEST IN COTTONWOOD, WILLOW, MESQUITE, AND OTHER LARGE DESERT RIPARIAN TREES.			

Occurrence No.	3	**Map Index:** 05740	**EO Index:** 25282	**Element Last Seen:**	1930-05-11
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1930-05-11
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.71753 / -116.31142	**Accuracy:**	1 mile
UTM:	Zone-11 N3731049 E563799	**Elevation (ft):**	120
PLSS:	T05S, R06E, Sec. 24, S (S)	**Acres:**	0.0

Location: INDIAN WELLS.

Detailed Location:

Ecological:

General: UCLA DICKEY COLLECTION #32572.

Owner/Manager: UNKNOWN

Polioptila melanura

Element Code: ABPBJ08030

black-tailed gnatcatcher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3S4
	Other:	CDFW_WL-Watch List, IUCN_LC-Least Concern			
Habitat:	**General:**	PRIMARILY INHABITS WOODED DESERT WASH HABITATS; ALSO OCCURS IN DESERT SCRUB HABITAT, ESPECIALLY IN WINTER.			
	Micro:	NESTS IN DESERT WASHES CONTAINING MESQUITE, PALO VERDE, IRONWOOD, ACACIA; ABSENT FROM AREAS WHERE SALT CEDAR INTRODUCED.			

Occurrence No.	19	**Map Index:** 05750	**EO Index:** 25011	**Element Last Seen:**	1953-01-13
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1953-01-13
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.69642 / -116.30702	**Accuracy:**	1 mile
UTM:	Zone-11 N3728711 E564222	**Elevation (ft):**	430
PLSS:	T05S, R06E, Sec. 36 (S)	**Acres:**	0.0

Location: 2 MI S OF INDIAN WELLS.

Detailed Location:

Ecological:

General: CSULB SPECIMEN #525.

Owner/Manager: UNKNOWN

Occurrence No.	20	**Map Index:**	05740	**EO Index:**	25017	**Element Last Seen:**	1919-03-16
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1919-03-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1989-08-10

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.71753 / -116.31142	**Accuracy:**	1 mile
UTM:	Zone-11 N3731049 E563799	**Elevation (ft):**	100
PLSS:	T05S, R06E, Sec. 24, SW (S)	**Acres:**	0.0

Location:	INDIAN WELLS.
Detailed Location:	
Ecological:	
General:	SBCM SPECIMEN #8137 AND WFVZ EGG SET (1930-04-13).
Owner/Manager:	UNKNOWN

Occurrence No.	21	**Map Index:**	05744	**EO Index:**	25009	**Element Last Seen:**	1984-05-02
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1984-05-02
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-07-26

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.64252 / -116.31278	**Accuracy:**	1 mile
UTM:	Zone-11 N3722732 E563728	**Elevation (ft):**	415
PLSS:	T06S, R06E, Sec. 13, S (S)	**Acres:**	0.0

Location:	BAJADA S OF LA QUINTA IN THE VICINITY OF BEAR CREEK AND SANTA ROSA WILDLIFE AREA, BLM.
Detailed Location:	MAPPED TO "BAJADA S OF LA QUINTA" AND PROVIDED MAP, WHERE POPULATION DENSITIES WERE OBSERVED TO BE THE HIGHEST.
Ecological:	HABITAT DESCRIBED AS ROCKY AND SANDY CREOSOTE BAJADA; WASH WITH PALO VERDE, MESQUITE, AND SMOKE TREE. VISIBLE DISTURBANCES INCLUDE DUMPING AND ORV USE.
General:	50+ OBSERVED ON 9 JUL 1983; MAINLY IN BAJADA, WITH LOWER DENSITIES THROUGH LA QUINTA AND N OF TOWN. 6 OBS BREEDING & FEEDING IN AREA ON 2 MAY 1984; LOWER DETECTIONS MAY BE DUE TO LESS SURVEY EFFORT, SMALLER AREA COVERED, &/OR DRYER WINTER.
Owner/Manager:	UNKNOWN

Occurrence No.	27	**Map Index:** 05786	**EO Index:**	25010	**Element Last Seen:**	1984-05-01
Occ. Rank:	Good		**Presence:**	Presumed Extant	**Site Last Seen:**	1984-05-01
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2011-07-26

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.66279 / -116.28028	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3725000 E566726	**Elevation (ft):**	150
PLSS:	T06S, R07E, Sec. 08, SW (S)	**Acres:**	0.0

Location: APPROXIMATELY 1.5 MI E OF LA QUINTA PO (HISTORICAL), JUST W OF COACHELLA CANAL, COACHELLA VZALLEY.

Detailed Location: MAPPED TO PROVIDED MAP. LOCALITY DESCRIBED AS "ROCKY SLOPES AND SMALL BAJADA BETWEEN LA QUINTA AND LAKE CAHUILLA."

Ecological: HABITAT DESCRIBED AS DEBRIS CHUTES, ALLUVIAL FAN, ROCKY SLOPE AND BAJADA VEGETATION CONSISTING OF ENCILIA SP, LARREA SP, AND PROSOPIS SP.

General: 2 INDIVIDUALS OBSERVED BREEDING AND FEEDING IN AREA BETWEEN 30 APR AND 1 MAY 1984.

Owner/Manager: BLM, PVT

Toxostoma crissale

Element Code: ABPBK06090

Crissal thrasher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	RESIDENT OF SOUTHEASTERN DESERTS IN DESERT RIPARIAN AND DESERT WASH HABITATS.			
	Micro:	NESTS IN DENSE VEGETATION ALONG STREAMS/WASHES; MESQUITE, SCREWBEAN MESQUITE, IRONWOOD, CATCLAW, ACACIA, ARROWWEED, WILLOW.			

Occurrence No.	17	**Map Index:** 05740	**EO Index:**	24420	**Element Last Seen:**	1932-12-29
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1932-12-29
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.71753 / -116.31142	**Accuracy:**	1 mile
UTM:	Zone-11 N3731049 E563799	**Elevation (ft):**	100
PLSS:	T05S, R06E, Sec. 24, SE (S)	**Acres:**	0.0

Location: INDIAN WELLS.

Detailed Location:

Ecological:

General: #32325 UCLA.

Owner/Manager: UNKNOWN

Toxostoma lecontei **Element Code:** ABPBK06100

Le Conte's thrasher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	Candidate Threatened		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	DESERT RESIDENT; PRIMARILY OF OPEN DESERT WASH, DESERT SCRUB, ALKALI DESERT SCRUB, AND DESERT SUCCULENT SCRUB HABITATS.			
	Micro:	COMMONLY NESTS IN A DENSE, SPINY SHRUB OR DENSELY BRANCHED CACTUS IN DESERT WASH HABITAT, USUALLY 2-8 FEET ABOVE GROUND.			

Occurrence No.	25	**Map Index:**	05740	**EO Index:**	24536	**Element Last Seen:**	1919-03-16
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1919-03-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1989-08-10

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.71753 / -116.31142	**Accuracy:**	1 mile
UTM:	Zone-11 N3731049 E563799	**Elevation (ft):**	100
PLSS:	T05S, R06E, Sec. 24, SE (S)	**Acres:**	0.0

Location:	INDIAN WELLS.
Detailed Location:	
Ecological:	
General:	SBCM SPECIMEN #S-4151.
Owner/Manager:	UNKNOWN

Cyprinodon macularius

Element Code: AFCNB02060

desert pupfish

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	AFS_EN-Endangered, IUCN_VU-Vulnerable			
Habitat:	**General:**	DESERT PONDS, SPRINGS, MARSHES AND STREAMS IN SOUTHERN CALIFORNIA.			
	Micro:	CAN LIVE IN SALINITIES FROM FRESHWATER TO 68 PPT; CAN WITHSTAND TEMPS FROM 9 - 45 C AND DISSOLVED OXYGEN LEVELS DOWN TO 0.1 PPM.			

Occurrence No.	24	**Map Index:**	52688	**EO Index:**	28600	**Element Last Seen:**	1985-05-22
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1985-05-22
Occ. Type:	Refugium; Artificial Habitat/Occurrence			**Trend:**	Unknown	**Record Last Updated:**	2004-12-29

Quad Summary:	La Quinta (3311663), Rancho Mirage (3311664)
County Summary:	Riverside

Lat/Long:	33.70048 / -116.37547	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3729121 E557875	**Elevation (ft):**	385
PLSS:	T05S, R06E, Sec. 29 (S)	**Acres:**	0.0

Location:	LIVING DESERT RESERVE; 47900 S PORTOLA AVE, PALM DESERT.
Detailed Location:	
Ecological:	CONCRETE PONDS ORIGINALLY STOCKED IN 1972.
General:	3 PONDS WITH STOCK FROM BOTH SALTON SEA AND SAN FELIPE CR (FROM ANZA BORREGO). NEW TRANSPLANTS KEPT SEPARATE.
Owner/Manager:	PVT

Lasiurus xanthinus

Element Code: AMACC05070

western yellow bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	FOUND IN VALLEY FOOTHILL RIPARIAN, DESERT RIPARIAN, DESERT WASH, AND PALM OASIS HABITATS.			
	Micro:	ROOSTS IN TREES, PARTICULARLY PALMS. FORAGES OVER WATER AND AMONG TREES.			

Occurrence No.	19	**Map Index:**	05740	**EO Index:**	58920	**Element Last Seen:**	1979-03-24
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1979-03-24
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2004-12-29

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.71753 / -116.31142	**Accuracy:**	1 mile
UTM:	Zone-11 N3731049 E563799	**Elevation (ft):**	1700
PLSS:	T05S, R06E, Sec. 24 (S)	**Acres:**	0.0

Location:	INDIAN WELLS.
Detailed Location:	LAT-LONG GIVEN (33.43068 -115.1869 WITH 1 MI UNCERTAINTY), IS 0.57 MI NW OF THE WELL "INDIAN WELL" WHICH IS IN IMPERIAL CO. BUT RIVERSIDE IS GIVEN AS COUNTY OF COLLECTION THEREFORE, MAPPED AT COMMUNITY OF "INDIAN WELLS" IN RIVERSIDE CO.
Ecological:	
General:	2 MALE SPECIMENS COLLECTED 4 NOV 1977 & 24 MAR 1979 BY D. CONSTANTINE AT "INDIAN WELLS." DEPOSITED AY MVZ #181896 & 181897.
Owner/Manager:	UNKNOWN

Occurrence No.	21	**Map Index:**	52323	**EO Index:**	58923	**Element Last Seen:**	1987-10-19
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1987-10-19
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2004-12-29

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.66637 / -116.29970	**Accuracy:**	1 mile
UTM:	Zone-11 N3725385 E564923	**Elevation (ft):**	400
PLSS:	T06S, R07E, Sec. 07 (S)	**Acres:**	0.0

Location:	LA QUINTA.
Detailed Location:	EXACT LOCATION NOT GIVEN. MAPPED AT THE LAT-LONG COORDINATES GIVEN. LOCATION UNCERTAINTY GIVEN AS 762 M (0.5 MI).
Ecological:	
General:	2 FEMALE & 1 MALE SPECIMENS COLLECTED 6 AUG 1975, 29 SEP 1982 & 19 OCT 1987 BY D. CONSTANTINE AT "LA QUINTA." DEPOSITED AT MVZ #181901-181903.
Owner/Manager:	UNKNOWN

Occurrence No.	25	**Map Index:** 05676	**EO Index:**	58932	**Element Last Seen:**	1977-09-16
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1977-09-16
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2004-12-21

Quad Summary: La Quinta (3311663), Rancho Mirage (3311664)

County Summary: Riverside

Lat/Long:	33.71030 / -116.37417	**Accuracy:**	1 mile
UTM:	Zone-11 N3730211 E557990	**Elevation (ft):**	225
PLSS:	T05S, R06E, Sec. 29 (S)	**Acres:**	0.0

Location: CITY OF PALM DESERT.

Detailed Location: EXACT LOCATION NOT KNOWN. MAPPED IN THE VICINITY OF CITY OF PALM DESERT.

Ecological:

General: 2 MALE SPECIMENS COLLECTED 2 JUN 1976 & 16 SEP 1977 BY D. CONSTANTINE AT "PALM DESERT." DEPOSITED AT MVZ #181905 & 181906.

Owner/Manager: UNKNOWN

Nyctinomops femorosaccus

Element Code: AMACD04010

pocketed free-tailed bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	VARIETY OF ARID AREAS IN SOUTHERN CALIFORNIA; PINE-JUNIPER WOODLANDS, DESERT SCRUB, PALM OASIS, DESERT WASH, DESERT RIPARIAN, ETC.			
	Micro:	ROCKY AREAS WITH HIGH CLIFFS.			

Occurrence No.	19	**Map Index:** 52323	**EO Index:**	68720	**Element Last Seen:**	1994-04-13
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1994-04-13
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2007-03-14

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.66637 / -116.29970	**Accuracy:**	1 mile
UTM:	Zone-11 N3725385 E564923	**Elevation (ft):**	400
PLSS:	T06S, R07E, Sec. 07 (S)	**Acres:**	0.0

Location: LA QUINTA.

Detailed Location: MAPPED ACCORDING TO LAT/LONG COORDINATES PROVIDED BY MANIS, WITH UNCERTAINTY OF 762 M (0.5 MI).

Ecological:

General: 1 MALE SPECIMEN (MVZ #186386) COLLECTED AT "LA QUINTA" BY DENNY G. CONSTANTINE OF RIVERSIDE COUNTY HEALTH LABORATORY ON 13 APR 1994.

Owner/Manager: UNKNOWN

Xerospermophilus tereticaudus chlorus **Element Code:** AMAFB05161

Palm Springs round-tailed ground squirrel

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	None		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	RESTRICTED TO THE COACHELLA VALLEY. PREFERS DESERT SUCCULENT SCRUB, DESERT WASH, DESERT SCRUB, ALKALI SCRUB, AND LEVEES.			
	Micro:	PREFERS OPEN, FLAT, GRASSY AREAS IN FINE-TEXTURED, SANDY SOIL. DENSITY CORRELATED WITH WINTER RAINFALL.			

Occurrence No.	12	**Map Index:** 51827	**EO Index:** 51827	**Element Last Seen:**	2002-08-24
Occ. Rank:	Poor		**Presence:** Presumed Extant	**Site Last Seen:**	2002-08-24
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2003-07-21

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.70857 / -116.29077	**Accuracy:**	specific area
UTM:	Zone-11 N3730069 E565719	**Elevation (ft):**	75
PLSS:	T05S, R07E, Sec. 30, NE (S)	**Acres:**	58.6

Location:	EAST OF WASHINGTON STREET, NORTH OF 47TH AVENUE, WEST OF HIGHWAY 111, AND SOUTH OF SIMON DRIVE, LA QUINTA.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF HIGHLY-DISTURBED CREOSITE BUSH SCRUB.
General:	ONE JUVENILE CAPTURED/RELEASED ON 20 AUG 2002, DURING A 775-TRAPNIGHT SURVEY FOR PALM SPRINGS POCKET MOUSE.
Owner/Manager:	PVT

Chaetodipus fallax pallidus

Element Code: AMAFD05032

pallid San Diego pocket mouse

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3T4
	State:	None		**State:**	S3S4
	Other:				
Habitat:	**General:**	DESERT BORDER AREAS OF SAN DIEGO, RIVERSIDE, SAN BERNARDINO, AND LOS ANGELES COUNTIES IN DESERT WASH, DESERT SCRUB, DESERT SUCCULENT SCRUB, PINYON-JUNIPER, ETC.			
	Micro:	SANDY, HERBACEOUS AREAS, USUALLY IN ASSOCIATION WITH ROCKS OR COARSE GRAVEL.			

Occurrence No.	3	**Map Index:** 57440	**EO Index:** 57456	**Element Last Seen:**	1996-12-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1996-12-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2004-10-18

Quad Summary: La Quinta (3311663), Rancho Mirage (3311664)

County Summary: Riverside

Lat/Long:	33.65036 / -116.37644	**Accuracy:**	non-specific area
UTM:	Zone-11 N3723564 E557819	**Elevation (ft):**	900
PLSS:	T06S, R06E, Sec. 17 (S)	**Acres:**	163.9

Location: DEEP CANYON, ABOUT 1.25 MI EAST OF STATE HWY 74 & 3.5 MI WEST OF LA QUINTA. BOYD DEEP CANYON DESERT RESEARCH CENTER.

Detailed Location: TRAPPING STATIONS WERE SET IN FOUR LOCATIONS: 2 WITHIN DEEP CANYON (CHOLLA & PALO VERDE) & 2 ON HILLS SURROUNDING DEEP CANYON (CHUCKWALLA & STATION).

Ecological: CHUCKWALLA SITE IS ON THE SOUTH FACING SLOPE OF CHUCKWALLA HILL, STATION SITE IS ON THE NORTH FACING SLOPE OF HILL IMMEDIATELY SOUTH OF PHILIP L. BOYD CANYON DESERT RESEARCH STATION. CHOLLA & PALO VERDE SITES ARE ON FLOOR OF DEEP CANYON.

General: TRAPPING WAS CONDUCTED IN JUN-JUL 1996 AND AGAIN IN DEC 1996. CAPTURES COUNTS FOR EACH SITE: CHOLLA: JUN/JULY=5; DEC=0; PALO VERDE: JUN/JULY=1; DEC=0; CHUCKWALLA: JUN/JULY=1; DEC=2; STATION: JUN/JULY=1; DEC=5.

Owner/Manager: UCNR-BOYD DEEP CYN DRC, OTHER

Phrynosoma mcallii

Element Code: ARACF12040

flat-tailed horned lizard

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened			
Habitat:	**General:**	RESTRICTED TO DESERT WASHES AND DESERT FLATS IN CENTRAL RIVERSIDE, EASTERN SAN DIEGO, AND IMPERIAL COUNTIES.			
	Micro:	CRITICAL HABITAT ELEMENT IS FINE SAND, INTO WHICH LIZARDS BURROW TO AVOID TEMPERATURE EXTREMES; REQUIRES VEGETATIVE COVER AND ANTS.			

Occurrence No.	38	**Map Index:** 77662	**EO Index:**	27931	**Element Last Seen:**	1978-06-XX
Occ. Rank:	None		**Presence:**	Possibly Extirpated	**Site Last Seen:**	1978-06-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2012-08-13

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.69567 / -116.30793	**Accuracy:**	non-specific area
UTM:	Zone-11 N3728628 E564138	**Elevation (ft):**	80
PLSS:	T05S, R06E, Sec. 36, NE (S)	**Acres:**	160.0

Location: ABOUT 1.2 MILES NORTH OF LA QUINTA POST OFFICE AND 1.5 MILES EAST OF EISENHOWER MOUNTAIN.

Detailed Location: PLOT 17 IN 1978 SURVEY; MAPPED ACCORDING TO PROVIDED TRS, "NE 1/4 OF SECTION 36 T5S, R6E."

Ecological: 1978: DOMINANT PLANTS WERE CAMISSONIA CLAVIFORMIS, ATRIPLEX CANESCENS, LARREA TRIDENTATA, CRYPTANTHA ANGUSTIFOLIA. 57 NESTS OF 6 ANT SPECIES FOUND. SOIL WAS ROSITAS LOAMY SAND.

General: 10 OBSERVED DURING JUNE 1978 IN STAND OF LARREA & ATRIPLEX IN DUNES.

Owner/Manager: UNKNOWN

Occurrence No.	75	**Map Index:** 05792	**EO Index:**	34663	**Element Last Seen:**	1935-04-29
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1935-04-29
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2009-12-31

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.66196 / -116.27251	**Accuracy:**	1 mile
UTM:	Zone-11 N3724913 E567448	**Elevation (ft):**	20
PLSS:	T06S, R07E, Sec. 08 (S)	**Acres:**	0.0

Location: 2 MILES EAST OF LA QUINTA.

Detailed Location: MAPPED ACCORDING TO LOCALITY DESCRIPTION "2 MILES EAST OF LA QUINTA."

Ecological:

General: SDNHM #23368 COLLECTED ON 29 APRIL 1935 BY L. M. KLAUBER.

Owner/Manager: UNKNOWN

Occurrence No.	376	**Map Index:** 05740	**EO Index:**	98168	**Element Last Seen:**	1968-06-08
Occ. Rank:	None		**Presence:**	Possibly Extirpated	**Site Last Seen:**	1968-06-08
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2015-07-30

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.71753 / -116.31142	**Accuracy:**	1 mile
UTM:	Zone-11 N3731049 E563799	**Elevation (ft):**	120
PLSS:	T05S, R06E, Sec. 24 (S)	**Acres:**	0.0

Location: INDIAN WELLS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB BASED ON A SERIES OF HISTORICAL COLLECTIONS FROM INDIAN WELLS, AND WASHINGTON ST, 1.1 MILES NORTH OF MILES AVE.

Ecological:

General: COLLECTIONS WERE MADE IN 1923, 1936, 1938, AND 1968.

Owner/Manager: UNKNOWN

Uma inornata **Element Code:** ARACF15010

Coachella Valley fringe-toed lizard

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	IUCN_EN-Endangered			
Habitat:	**General:**	LIMITED TO SANDY AREAS IN THE COACHELLA VALLEY, RIVERSIDE COUNTY.			
	Micro:	REQUIRES FINE, LOOSE, WINDBLOWN SAND (FOR BURROWING), INTERSPERSED WITH HARDPAN AND WIDELY-SPACED DESERT SHRUBS.			

Occurrence No.	13	**Map Index:**	33785	**EO Index:**	27910	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-09-04

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.71424 / -116.30319	**Accuracy:**	non-specific area
UTM:	Zone-11 N3730690 E564564	**Elevation (ft):**	80
PLSS:	T05S, R07E, Sec. 30 (S)	**Acres:**	890.6

Location: VICINITY OF INDIAN WELLS ALONG HWY 111 ABOUT 5 MILES W OF INDIO, COACHELLA VALLEY.

Detailed Location: MAPPED NON-SPECIFICALLY TO COLLECTIONS FROM 1 MI E INDIAN WELLS; INDIAN WELLS; AND 5 MI W OF INDIO; AND TO OBSERVATIONS FROM T5S R6E SECTION 24 SE AND SECTION 25 NE; AND T5S R7E SECTION 19 SW, AND SECTION 30 NW AND SWNE.

Ecological: AREA GENERALLY UNDEVELOPED IN 1959 AERIALS WITH GOLF COURSES AND RESIDENTIAL DEVELOPMENT NEAR THE MOUNTAINS BY 1978. BARROWS (1988) NOTED LOSS OF HABITAT. NEARLY ALL HABITAT IN THIS AREA ELIMINATED BY 2002.

General: COLLECTED IN 1933, 1938, 1960, & 1968. STUDIED BY STEBBINS & COWLES IN 1940S. DRAFT & FINAL RECOVERY PLANS REPORT PRESENT BY DAVIS CIRCA 1969-1975 AND BY ENGLAND & NELSON IN JUL 1975. CONSIDERED EXTIRPATED BY BARROWS (2010) & USFWS (2023).

Owner/Manager: PVT

Occurrence No.	14	**Map Index:**	05776	**EO Index:**	27914	**Element Last Seen:**	1949-05-07
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1949-05-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-01

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.69031 / -116.30607	**Accuracy:**	non-specific area
UTM:	Zone-11 N3728035 E564315	**Elevation (ft):**	53
PLSS:	T05S, R06E, Sec. 36, SE (S)	**Acres:**	40.5

Location: VICINITY OF EISENHOWER DRIVE ABOUT 1 MILE NORTH OF LA QUINTA P.O.

Detailed Location: MAPPED NON-SPECIFICALLY TO SPECIMEN LOCALITIES STATED AS 1 MI N OF LA QUINTA. KLAUBER'S FIELD NOTES CORROBORATE THAT SHAW SHOT 2 UMA ABOUT 1 MILE NORTH OF LA QUINTA. DRAFT RECOVERY PLAN INTERPRETED THIS AS THE NE 1/4 THE SE 1/4 SEC 36.

Ecological: BARROWS NOTED SOME HABITAT & UMA MAY BE EXTANT (1988); THAT AREA WAS LIKELY E OF WASHINGTON ST IN ADJACENT E SECTION 31. THIS AREA WAS DEVELOPED AS THE LA QUINTA DUNES GOLF COURSE (LA QUINTA COUNTRY CLUB) BY 1965. W SIDE OF RD DEV. BY 1953.

General: 2 ADULT COLLECTED BY SHAW ON 7 MAY 1949 AND REFERENCED BY BLM (1980), BRODE (1980), AND THE DRAFT AND FINAL RECOVERY PLANS (1982, 1984). CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	21	**Map Index:** 33786	**EO Index:**	27911		**Element Last Seen:**	1975-07-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2025-04-23
Quad Summary:	La Quinta (3311663)						
County Summary:	Riverside						
Lat/Long:	33.67767 / -116.27703				**Accuracy:**	2/5 mile	
UTM:	Zone-11 N3726652 E567016				**Elevation (ft):**	40	
PLSS:	T06S, R07E, Sec. 05 (S)				**Acres:**	0.0	

Location: LOCATED BETWEEN AVENUE 50 AND AVENUE 52, WEST OF JEFFERSON STREET, ABOUT 1 MILE EAST OF LA QUINTA.

Detailed Location: MAPPED NON-SPECIFICALLY WITH RESPECT TO SPECIMEN LABLED 1 MI E LA QUINTA, ENGLAND & NELSON LOCATION STATED AS T6S R7E SECTION 5 SENW, ENGLAND & NELSON FIG 10 MAP, AND RECOVERY PLAN MAP.

Ecological: UNCLEAR HOW DETECTED IN 1975 OR IF LOCALITY IN ERROR; MOST OF THIS SECTION WAS AGRICULTURE IN 1968 AERIAL. AERIAL IMAGERY SHOWS THAT THIS SITE WAS CONVERTED TO A RESIDENTIAL GOLF COURSE BY 1996, ALONG WITH THE SURROUNDING AREAS DEVELOPED.

General: ONE COLLECTED ON 4 SEP 1968 (SSC #769). ACCORDING TO ENGLAND & NELSON 1976, THE DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT IN THIS AREA DURING SURVEYS IN JUL 1975. CONSIDERED EXTIRPATED BY BARROWS (1988) AND USFWS (2023).

Owner/Manager: PVT

Occurrence No.	52	**Map Index:** 05677	**EO Index:**	27901		**Element Last Seen:**	1961-10-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1961-10-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2025-05-08
Quad Summary:	La Quinta (3311663)						
County Summary:	Riverside						
Lat/Long:	33.72126 / -116.36724				**Accuracy:**	non-specific area	
UTM:	Zone-11 N3731430 E558625				**Elevation (ft):**	220	
PLSS:	T05S, R06E, Sec. 21 (S)				**Acres:**	380.0	

Location: VICINTY OF PALM DESERT, ABOUT 3 MILES W OF INDIAN WELLS.

Detailed Location: MAPPED GENERALLY TO PALM DESERT. LOCTIONS OF COLLECTIONS SIMPLY STATED AS 3 MI W OF INDIAN WELLS (1932) AND PALM DESERT (1952, 1961) INCLUDED HERE. BEFORE 1950S COULD HAVE BEEN COLLECTED ANYWHERE; AFTER LIKELY NORTH OF WHITEWATER RIVER.

Ecological: THIS AREA WAS ESSENTIALLY UNINHABITAT IN THE 1930S WITH EXPANSIVE SAND HILLS. THE AREA BETWEEN PALM VILLAGE & INDIAN WELLS WAS PRIMARILY CONVERTED TO AGRICULTURE BY THE 1950S, AND BY THE 1960S EXPANSIVE RESIDENTIAL DEVELOPMENT HAD OCCURED.

General: COLLECTED BY KLAUBER ON 24 MAR 1932, BY CARPENTER ON 22 AUG 1952, AND BY MAYHEW 9 APR 1961. ADDITIONALLY COLLECTED IN OCT 1961. MAYHEW EXTENSIVELY STUDIED UMA INORNATA IN THE COACHELLA VALLEY 1950S-1960S. CONSIDERED EXTIRPATED (2023).

Owner/Manager: PVT

Occurrence No.	82	**Map Index:** 05789	**EO Index:**	27885		**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Decreasing		**Record Last Updated:**	2025-05-05
Quad Summary:	La Quinta (3311663)						
County Summary:	Riverside						
Lat/Long:	33.71796 / -116.28182				**Accuracy:**	non-specific area	
UTM:	Zone-11 N3731116 E566541				**Elevation (ft):**	80	
PLSS:	T05S, R07E, Sec. 20, SW (S)				**Acres:**	231.0	

Location: ALONG DUNE PALMS RD AT MILES RD, ABOUT 0.6 MILES N OF WHITEWATER RIVER, AND ABOUT 1.5 MILES E OF INDIAN WELLS.

Detailed Location: MAPPED NON-SPECIFICALLY TO LOCALITIES: N END DUNE PALMS RD, 1/2 MI S BERMUDA DUNES COUNTY CLUB; DUNE PALMS RD OFF MILES AVE; OFF DUNE PALMS RD NR. PALM DESERT; DUNE PALMS RD (SAND DUNES), NW OF INDIO; AND T5S R7E SECTION 20 SW.

Ecological: MOST OF SECTION 20 APPEARS UNDEVELOPED NATURAL HABITAT IN 1968, 1978, AND 1980 AERIAL IMAGES. BARROWS (1988) NOTED SOME EXTANT HABITAT PRESUMABLY WITH A FEW LIZARDS BUT PROBABLY NOT A VIABLE POPULATION. FULLY DEVELOPED BY LATE 1990S.

General: 2 OR MORE OBSERVED/COLLECTED BY LONG 27 APR 1968. 3 COLLECTED 9 JUN 1968. 1 COLLECTED 13 APR 1969. ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS CIRCA 1969-1975. CONSIDERED EXTIRPATED USFWS (2023).

Owner/Manager: PVT

Occurrence No.	168	**Map Index:** 49981	**EO Index:**	49981		**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2025-05-06
Quad Summary:	La Quinta (3311663), Rancho Mirage (3311664)						
County Summary:	Riverside						
Lat/Long:	33.73279 / -116.37316				**Accuracy:**	non-specific area	
UTM:	Zone-11 N3732705 E558068				**Elevation (ft):**	180	
PLSS:	T05S, R06E, Sec. 16 (S)				**Acres:**	79.8	

Location: EITHER SIDE OF PORTOLA AVE ABOUT 0.8 MILES N OF HWY 111, S OF THE WHITEWATER RIVER, 0.9 MILES N OF PALM DESERT P.O.

Detailed Location: MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R6E SECTION 16 NWSW AND SECTION 17 SESE.

Ecological: UNCLEAR HOW THESE DETECTIONS WERE MADE OR IF LOCATIONS ARE IN ERROR. BY 1965 SEC 16 NWSW WAS DISCED WITH INITIAL DEVELOPMENT OF A. LINCOLN ELEMENTARY & SEC 17 SESE WAS BEING DEVELOPED AS THE RANCHO RD NEIGHBORHOOD. ALL DEVELOPED BY 1996.

General: ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	169	**Map Index:**	49982	**EO Index:**	49982	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-06

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.73423 / -116.35839	**Accuracy:**	non-specific area
UTM:	Zone-11 N3732873 E559435	**Elevation (ft):**	160
PLSS:	T05S, R06E, Sec. 16, SE (S)	**Acres:**	39.7

Location:	JUST SW OF WHITEWATER RIVER AT COOK STREET, ABOUT 0.9 MILES ENE OF AVENUE 44 AT PORTOLA AVE, PALM DESERT.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R6E SECTION 16 NESE.
Ecological:	AREA APPEARS AS UNDEVELOPED NATURAL HABITAT IN 1965 & 1978 AERIALS WITH AGRICULTURE IMMEDIATELY WEST AND RESIDENTIAL DEVELOPMENT TO NORTH. SITE DEVELOPED AS PALM DESERT HIGH SCHOOL BY 1996.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	174	**Map Index:**	50002	**EO Index:**	50002	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-09-04

Quad Summary:	La Quinta (3311663), Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.74920 / -116.27548	**Accuracy:**	non-specific area
UTM:	Zone-11 N3734584 E567104	**Elevation (ft):**	60
PLSS:	T05S, R07E, Sec. 08, SE (S)	**Acres:**	40.2

Location:	VICINITY OF BERMUDA DUNES AIRPORT, ABOUT 0.7 MILES NE OF AVENUE 42 AT ADAMS ST, SOUTH SIDE OF I-10, HISTORIC MYOMA.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R7E SECTION 8 NWSE.
Ecological:	UNDEVELOPED NATURAL DUNE HABITAT IN 1959 JUST NORTH OF BERMUDA DUNES COUNTRY CLUB. AIRFIELD DEVELOPED BY 1965 WITH SOME SURROUNDING HABITAT. BY 1981 THERE WAS RESIDENTIAL DEVELOPMENT TAKING PLACE & HABITAT ESSENTIALLY ELIMINATED BY 1989.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969 -1975. GENERAL AREA CONSIDERED EXTIRPATED BY BARROWS ET AL. 2010 DUE TO DROUGHT. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	177	**Map Index:**	50008	**EO Index:**	50008	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-06

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.7307 / -116.3343	**Accuracy:**	non-specific area
UTM:	Zone-11 N3732496 E561670	**Elevation (ft):**	173
PLSS:	T05S, R06E, Sec. 14, SW (S)	**Acres:**	81.0

Location:	N SIDE OF AVENUE 44 ABOUT 1.6 MILES NE OF INDIAN WELLS, ABOUT 1.8 ENE OF HWY 111 AT DEEP CANYON RD, ENE OF PALM DESERT.
Detailed Location:	MAPPED TO LOCATIONS STATED AS T5S R6E SECTION 14 SWSW (DAVIS) AND SECTION 14 SWSE (ENGLAND & NELSON; INTERPRETED AS THE SE 1/4 OF THE SW 1/4 AS THE NEIGHBORING GOLF COURSE WAS DEVELOPED BY 1978).
Ecological:	NATURAL DUNE HABITAT IN 1959 WITH RESIDENTIAL GOLF COURSE DEVELOPED IN SE SEC 14 BY 1978. EAST 1/2 OF SEC 14 UNDEVELOPED THROUGH 1996, BUT CONVERTED TO A GOLF COURSE BY 2004.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975, AND BY ENGLAND & NELSON DURING JUL 1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	179	**Map Index:**	50012	**EO Index:**	50012	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-09-04

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.72695 / -116.30165	**Accuracy:**	non-specific area
UTM:	Zone-11 N3732100 E564697	**Elevation (ft):**	130
PLSS:	T05S, R07E, Sec. 19, NW (S)	**Acres:**	39.4

Location:	SE CORNER OF WASHINGTON ST AT FRED WARING DR (AVENUE 44), 0.75 MILES N OF POINT HAPPY, 5 MILES W OF DOWNTOWN INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R7E SECTION 19 NWNW.
Ecological:	AREA APPEARS AS UNDEVELOPED NATURAL HABITAT IN 1978 AND 1980 AERIAL IMAGES. THIS SPECIFIC AREA WAS DEVELOPED IN THE LATE 1990S WITH SOME SURROUNDING NATURAL HABITAT. ESSENTIALLY ALL DEVELOPED BY 2013.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY ENGLAND & NELSON DURING JUL 1975. CONSIDERED EXTIRPATED BY BARROWS ET AL. (2010), USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	180	**Map Index:**	50013	**EO Index:**	50013	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-09-04

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.73468 / -116.27535	**Accuracy:**	non-specific area
UTM:	Zone-11 N3732974 E567128	**Elevation (ft):**	58
PLSS:	T05S, R07E, Sec. 17, SE (S)	**Acres:**	43.0

Location:	VICINITY OF BERMUDA DUNES COUNTRY CLUB, EAST OF ADAMS STREET AND NORTH OF AVENUE 44, SOUTH OF MYOMA.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T 5S R7E SECTION 17 NWSE.
Ecological:	AREA WAS BEING DEVELOPED AS THE BERMUDA DUNES COUNTRY CLUB BY 1959. MUCH OF THE SE 1/4 OF SECTION 17 WAS UNDEVELOPED NATURAL HABITAT IN 1978 TO 1996, BUT DEVELOPED AS RESIDENTIAL HOUSING BY 2004.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969 -1975. CONSIDERED EXTIRPATED BY BARROWS ET AL. (2010), USFWS (2023), AND BY BARROWS (2025).
Owner/Manager:	PVT

Occurrence No.	181	**Map Index:**	50014	**EO Index:**	50014	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-05

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.72169 / -116.27094	**Accuracy:**	non-specific area
UTM:	Zone-11 N3731536 E567546	**Elevation (ft):**	64
PLSS:	T05S, R07E, Sec. 20, E (S)	**Acres:**	77.0

Location:	NW AND SW CORNERS OF MILES AVE AT JEFFERSON ST, ABOUT 2.25 MILES E OF INDIAN WELLS AND 3 MILES W OF DOWNTOWN INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R7E SECTION 20 NESE. INCLUDED BOTH NE 1/4 OF SE 1/4 AND SE 1/4 OF NE1/4 BECAUSE UNCLEAR AND ALL OF THIS AREA WAS UNDEVELOPED AND LIKELY HABITAT AT THE TIME.
Ecological:	MOST OF SECTION 20 APPEARS UNDEVELOPED NATURAL HABITAT IN 1968, 1978, AND 1980 AERIAL IMAGES. AREA WAS CONVERTED TO RESIDENTIAL HOUSING AND GOLF COURSE BY 2002.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS CIRCA 1969-1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	182	**Map Index:**	50015	**EO Index:**	50015	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-02

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.72373 / -116.26214	**Accuracy:**	non-specific area
UTM:	Zone-11 N3731769 E568360	**Elevation (ft):**	41
PLSS:	T05S, R07E, Sec. 21, NW (S)	**Acres:**	36.0

Location:	N SIDE OF MILES AVE ABOUT 0.4 MILES E OF JEFFERSON ST, 2.5 MILES W OF DOWNTOWN INDIO, AND 2.6 MILES E OF INDIAN WELLS.
Detailed Location:	MAPPED TO LOCATION STATED AS SECTION 21 NWSE (INTERPRETED AS SE 1/4 OF NE 1/4 AS OTHER POSSIBILITY WAS AGRICULTURE AND WHITEWATER RIVER), AND WITH RESPECT TO DRAFT AND FINAL RECOVERY PLAN MAPS.
Ecological:	AREA APPEARED TO BE NATURAL HABITAT THROUGH THE 1970S AND UP UNTIL 1989. THIS AREA WAS CONVERTED TO A GOLF COURSE BY 1996 AND THE SURROUNDING LANDSCAPE HEAVILY DEVELOPED BY 2004.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY ENGLAND & NELSON DURING JUL 1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	183	**Map Index:**	50016	**EO Index:**	50016	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-02

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.70907 / -116.28366	**Accuracy:**	non-specific area
UTM:	Zone-11 N3730129 E566378	**Elevation (ft):**	72
PLSS:	T05S, R07E, Sec. 29, NW (S)	**Acres:**	41.0

Location:	N OF HWY 111 & S OF WHITEWATER RIV 0.3 MI W OF DUNE PALMS RD, 0.75 MI E OF POINT HAPPY & WASHINGTON ST, 4 MI W OF INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCALITY STATED AS SECTION 29 NWSW (INTERPRETED AS SW 1/4 OF NW 1/4 AS SOUTH OF HWY 111 WAS IMPACTED BY AGRICULTURE IN 1968 & 1978 AERIALS), AND WITH RESPECT TO MAP FIGURES IN DRAFT AND FINAL RECOVERY PLANS.
Ecological:	THE AREA BETWEEN HWY 111 & THE WHITEWATER RIVER WAS NATURAL HABITAT IN SEC 29 IN 1968, 1978, & 1989 AERIALS. UNDEVELOPED IN 1996 AERIAL, BUT SURROUNDINGS WERE DEVELOPED BY RESIDENTIAL, INDUSTRIAL, & GOLF COURSE. GRADED & DEVELOPED BY 2006.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY ENGLAND & NELSON DURING JUL 1975. CONSIDERED POSSIBLY EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	184	**Map Index:**	50017	**EO Index:**	50017	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-09-04

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.69771 / -116.30152	**Accuracy:**	non-specific area
UTM:	Zone-11 N3728858 E564731	**Elevation (ft):**	53
PLSS:	T05S, R07E, Sec. 31, NW (S)	**Acres:**	42.0

Location:	0.4 MILES WNW OF WASHINGTON STREET AT EISENHOWER DRIVE, ABOUT 1.5 MILES N OF LA QUINTA P.O.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS SECTION 31 NWNW.
Ecological:	NORTH OF EISENHOWER DR APPEARS TO HAVE CONTAINED NATURAL HABITAT IN 1953, 1965, & 1978 AERIALS, WITH RESIDENTIAL DEVELOPMENT NOTABLE BY 1989.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS CIRCA 1969-1975. PROBABLY EXTIRPATED DUE TO DEVELOPMENT OR DROUGHT (2010). CONSIDERED EXTIRPATED BY USFWS (2023) AND BARROWS (2025).
Owner/Manager:	PVT

Occurrence No.	185	**Map Index:**	50018	**EO Index:**	50018	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-05

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.68341 / -116.30128	**Accuracy:**	non-specific area
UTM:	Zone-11 N3727273 E564765	**Elevation (ft):**	51
PLSS:	T06S, R07E, Sec. 6, NW (S)	**Acres:**	43.0

Location:	SOUTH SIDE OF AVENUE 50 ABOUT 0.4 MILES W OF WASHINGTON STREET, ABOUT 0.5 MILES NORTH OF LA QUINTA P.O.
Detailed Location:	MAPPED NON-SPECIFICALLY TO QUARTER QUARTER LOCATION STATED AS T6S R7E SEC 6 NWNW (DAVIS). LOCATION ORIGINALLY INCLUDED HERE STATED AS T5S R7E SECTION 31 SESW APPEARS TO BE THE SW 1/4 OF THE SE 1/4 OF SEC 31 BASED ON OTHER REPORTS.
Ecological:	LA QUINTA WAS BEING DEVELOPED IN THE LATE 1950S. UNCLEAR HOW DETECTED HERE OR IF LOCALITY IS IN ERROR; 1959, 1965, & 1978 AERIAL IMAGERY SHOWS THE 1/4 1/4 SECTION CONVERTED TO AGRICULTURE. AREA DEVELOPED AS GOLF COURSE BY 1989.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969 -1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	186	**Map Index:**	50019	**EO Index:**	50019	**Element Last Seen:**	1979-05-19
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1979-05-19
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-02

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.6871 / -116.29008	**Accuracy:**	non-specific area
UTM:	Zone-11 N3727689 E565799	**Elevation (ft):**	40
PLSS:	T05S, R07E, Sec. 31, SE (S)	**Acres:**	77.0

Location:	NE CORNER OF WASHINGTON STREET AT AVENUE 50, ABOUT 1 MILE NE OF LA QUINTA P.O.
Detailed Location:	MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTION STATED AS T5S R7E SECTION 31 SESW (INTERPRETED AS SW 1/4 OF SE 1/4) (ENGLAND & NELSON; BRODE & CORDONE), AND SECTION 31 SESE (DAVIS). SPECIMENS FROM NE JCT OF WASHINGTON AND AVE 50.
Ecological:	NATURAL HABITAT EXISTED TILL 1978/1981. GENERAL AREA HAS BEEN DEVELOPED AS A SCHOOL AND RESIDENCES SINCE 1989, THOUGH ABOUT 24 ACRES OF RUDERAL, UNDEVELOPED LAND STILL EXISTS BETWEEN WASHINGTON AND A DRAINAGE WASH TO EAST.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS CIRCA 1969-1975, BY BRODE & CORDONE 6 MAY 1975 (FIELD #256), AND BY ENGLAND & NELSON IN JUL 1975. 2 COLLECTED ON 19 MAY 1979. CONSIDERED EXTIRPATED BY USFS (2023).
Owner/Manager:	PVT

Occurrence No.	187	**Map Index:**	50020	**EO Index:**	50020	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-30

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.69965 / -116.27079	**Accuracy:**	non-specific area
UTM:	Zone-11 N3729093 E567577	**Elevation (ft):**	60
PLSS:	T05S, R07E, Sec. 32 (S)	**Acres:**	80.2

Location:	AREA 0.5 MILE SOUTH OF STATE ROUTE 111 AND BORDERED TO THE EAST BY JEFFERSON STREET, NE OF LA QUINTA.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATIONS STATED AS SECTION 29 SESE AND SECTION 32 NENE.
Ecological:	AREA APPEARED TO BE NATURAL HABITAT IN 1968 AERIAL IMAGERY WITH SOME AGRICULTURAL DEVELOPMENT EAST OF JEFFERSON ST. AREA APPEARS TO HAVE BEEN DEVELOPED IN THE 1990S AND BY 2020 EXTENSIVE RESIDENTIAL, COMMERCIAL, AND GOLF COURSE DEVELOPMENT.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS CIRCA 1969-1975, AND BY ENGLAND & NELSON IN JUL 1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	202	**Map Index:**	50091	**EO Index:**	50091	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-17

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.66876 / -116.26386	**Accuracy:**	non-specific area
UTM:	Zone-11 N3725672 E568244	**Elevation (ft):**	20
PLSS:	T06S, R07E, Sec. 09, NW (S)	**Acres:**	140.4

Location: SE CORNER OF JEFFERSON ST AT AVENUE 52, VICINITY OF COACHELLA CANAL, 2 MILES EAST OF LA QUINTA.

Detailed Location: MAPPED NON-SPECIFICALLY TO THE LOCATION DESCRIBED AS T6S R7E SECTION 9 NENW (ENGLAND & NELSON) AND AS T6S R7E SECTION 9 NWNW (DAVIS).

Ecological: BASED ON 1968 AERIAL IMAGERY & POSSIBLY TILL 1996, MOST OF THE N PORTION OF SEC 9 WAS UNDEVELOPED SUGGESTING ABOUT 360 ACRES OF HABITAT (THOUGH BISECTED BY COACHELLA CANAL). ENTIRE AREA CONVERTED TO THE HIDEAWAY GOLF CLUB & RESIDENCES.

General: ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS CIRCA 1969-1975, AND BY ENGLAND & NELSON IN JUL 1975. ENGLAND DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Crotalus ruber

Element Code: ARADE02090

red-diamond rattlesnake

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive			
Habitat:	**General:**	CHAPARRAL, WOODLAND, GRASSLAND, AND DESERT AREAS FROM COASTAL SAN DIEGO COUNTY TO THE EASTERN SLOPES OF THE MOUNTAINS.			
	Micro:	OCCURS IN ROCKY AREAS AND DENSE VEGETATION. NEEDS RODENT BURROWS, CRACKS IN ROCKS OR SURFACE COVER OBJECTS.			

Occurrence No.	56	**Map Index:**	05671	**EO Index:**	47579	**Element Last Seen:**	1954-05-09
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1954-05-09
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2002-04-04

Quad Summary: La Quinta (3311663), Rancho Mirage (3311664)

County Summary: Riverside

Lat/Long:	33.64436 / -116.38298	**Accuracy:**	1 mile
UTM:	Zone-11 N3722895 E557217	**Elevation (ft):**	1200
PLSS:	T06S, R06E, Sec. 17 (S)	**Acres:**	0.0

Location: DIRECTIONS GIVEN AS "5 MILES SOUTH OF PALM DESERT" WHICH PUTS IT IN THE VICINITY OF DEEP CANYON.

Detailed Location:

Ecological:

General: LA COUNTY MUSEUM #3039.

Owner/Manager: UCNR-BOYD DEEP CYN DRC, BLM

Desert Fan Palm Oasis Woodland

Element Code: CTT62300CA

Desert Fan Palm Oasis Woodland

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3.2
	Other:				
Habitat:	**General:**	□			
	Micro:	□			

Occurrence No.	41	**Map Index:**	05691	**EO Index:**	13619	**Element Last Seen:**	1977-03-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1977-03-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-22

Quad Summary: Martinez Mtn. (3311653), La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.62116 / -116.35582	**Accuracy:**	1 mile
UTM:	Zone-11 N3720338 E559751	**Elevation (ft):**	2800
PLSS:	T06S, R06E, Sec. 27, W (S)	**Acres:**	0.0

Location: BEAR CREEK PALMS, SOUTH OF COYOTE CREEK HEADWATERS, EAST OF DEEP CANYON. SOURCE MAP NOT VERY ACCURATE.

Detailed Location: 300 PALMS REPORTED 1977, 84 ADULT PALMS & 300 UP TO 6 FT TALL COUNTED 1936, 172 COUNTED OVER 6 FT TALL & EST OF 250 SMALLER 1947.

Ecological: WASHINGTONIA FILIFERA GROVE. INTERMITTENT STREAM.

General: ACCESS VIA IMPROVED 3-MILE TRAIL. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: UNKNOWN

Occurrence No.	50	**Map Index:**	05671	**EO Index:**	28844	**Element Last Seen:**	1981-01-19
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1981-01-19
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary: La Quinta (3311663), Rancho Mirage (3311664)

County Summary: Riverside

Lat/Long:	33.64436 / -116.38298	**Accuracy:**	1 mile
UTM:	Zone-11 N3722895 E557217	**Elevation (ft):**	2400
PLSS:	T06S, R06E, Sec. 17 (S)	**Acres:**	0.0

Location: DEEP CANYON, EAST OF & PARALLEL TO HWY 74. PORTION BETWEEN COYOTE CREEK & HIDDEN PALMS CANYON.

Detailed Location: SCATTERED WASHINGTONIA FILIFERA IN CANYON BOTTOM. (MOST LARGE GROVES ARE IN STEEP SIDE CYNS). AT UC DESERT RESEARCH LAB.

Ecological: SITE AT 1400 FT W/PALMS, BACCHARIS SERGILOIDES, GRASSES SEEN 1981; PALMS, BACCHARIS, GRASSES, FERNS, MOSSES SEEN AT 2100 FT, 1981.

General: SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: UCNR-BOYD DEEP CYN DRC, BLM

Dinacoma caseyi

Element Code: IICOLX5010

Casey's June beetle

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	None		**State:**	S1
	Other:				
Habitat:	**General:**	FOUND ONLY IN TWO POPULATIONS IN A SMALL AREA OF SOUTHERN PALM SPRINGS.			
	Micro:	FOUND IN SANDY SOILS; THE FEMALES LIVE UNDERGROUND AND ONLY COME TO THE GROUND SURFACE TO MATE.			

Occurrence No.	4	**Map Index:**	60902	**EO Index:**	60938	**Element Last Seen:**	1953-04-25
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1953-04-25
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2005-04-08

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.71854 / -116.31381	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3731160 E563576	**Elevation (ft):**	120
PLSS:	T05S, R06E, Sec. 24 (S)	**Acres:**	0.0

Location: INDIAN WELLS.

Detailed Location:

Ecological: FOUND ON ALLUVIAL FANS WHERE DISSIPATING FLOWS DEPOSIT FINER SILTS AND SANDS.

General: HISTORICAL LOCALITY, CITED IN EMERGENCY LISTING PETITION. TWO SPECIMENS IN LA COUNTY MUSEUM OF NATURAL HISTORY, COLLECTED 24-25 APR 1953.

Owner/Manager: UNKNOWN

Oliarces clara

Element Code: IINEU04010

cheeseweed owlfly (cheeseweed moth lacewing)

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G1G3
	State:	None		**State:**	S2
	Other:				
Habitat:	**General:**	INHABITS THE LOWER COLORADO RIVER DRAINAGE.			
	Micro:	FOUND UNDER ROCKS OR IN FLIGHT OVER STREAMS. LARREA TRIDENTATA IS THE SUSPECTED LARVAL HOST.			

Occurrence No.	5	**Map Index:**	58315	**EO Index:**	58351	**Element Last Seen:**	1976-04-30
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1976-04-30
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2005-03-10

Quad Summary: La Quinta (3311663), Rancho Mirage (3311664)

County Summary: Riverside

Lat/Long:	33.65217 / -116.37463	**Accuracy:**	specific area
UTM:	Zone-11 N3723766 E557985	**Elevation (ft):**	800
PLSS:	T06S, R06E, Sec. 17 (S)	**Acres:**	524.0

Location: DEEP CANYON, NEAR PALM DESERT.

Detailed Location:

Ecological:

General: UNKNOWN NUMBER COLLECTED 30 APR 1976. DEPOSITED IN UC RIVERSIDE ENTOMOLOGY MUSEUM.

Owner/Manager: UCNR-BOYD DEEP CANYON DRC

Macrobaenetes valgum **Element Code:** IIORT22020

Coachella giant sand treader cricket

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G1G2
	State:	None		**State:**	S2
	Other:	IUCN_VU-Vulnerable			
Habitat:	**General:**	KNOWN FROM THE SAND DUNE RIDGES IN THE VICINITY OF COACHELLA VALLEY.			
	Micro:	POPULATION SIZE REGULATED BY AMOUNT OF ANNUAL RAINFALL; SOME SPOTS FAVOR PERMANENT HABITATION WHERE SPRINGS DAMPEN SAND.			

Occurrence No.	2	**Map Index:**	05795	**EO Index:**	22602	**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1989-08-11

Quad Summary: Indio (3311662), La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.72224 / -116.26528	**Accuracy:**	1 mile
UTM:	Zone-11 N3731601 E568070	**Elevation (ft):**	40
PLSS:	T05S, R07E, Sec. 21, W (S)	**Acres:**	0.0

Location: 2 MILES WEST OF INDIO.

Detailed Location:

Ecological: FOUND ON WIND-SWEPT SAND DUNE RIDGES. ALTHOUGH LARGELY REGULATED IN ABUNDANCE BY WINTER RAINS, THERE ARE SOME SPOTS, WHERE SPRINGS KEEP THE SAND DAMP, THAT ARE FAVORABLE TO PERMANENT HABITATION.

General: IN VERY DRY YEARS, THE SPECIES DISAPPEARS OVER MOST OF THE SAND AREAS.

Owner/Manager: PVT

Occurrence No.	3	**Map Index:**	05760	**EO Index:**	22601	**Element Last Seen:**	1958-05-03
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1958-05-03
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1989-08-11

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.72167 / -116.30084	**Accuracy:**	1 mile
UTM:	Zone-11 N3731515 E564776	**Elevation (ft):**	80
PLSS:	T05S, R07E, Sec. 19, W (S)	**Acres:**	0.0

Location: 4 MILES WEST OF INDIO.

Detailed Location:

Ecological: FOUND ON WIND-SWEPT SAND DUNE RIDGES. ALTHOUGH THIS SPECIES IS LARGELY REGULATED IN ABUNDANCE BY WINTER RAINS, SOME SPOTS, WHERE SPRINGS KEEP THE SAND DAMP, ARE FAVORABLE TO PERMANENT HABITATION.

General: IN VERY DRY YEARS, THE SPECIES DISAPPEARS OVER MOST OF THE SAND AREAS.

Owner/Manager: PVT

Occurrence No.	6	**Map Index:** 05675	**EO Index:**	22599	**Element Last Seen:**	1959-05-21
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1959-05-21
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	1989-08-11

Quad Summary: La Quinta (3311663), Rancho Mirage (3311664), Myoma (3311673), Cathedral City (3311674)

County Summary: Riverside

Lat/Long:	33.73723 / -116.37418	**Accuracy:**	1 mile
UTM:	Zone-11 N3733196 E557970	**Elevation (ft):**	60
PLSS:	T05S, R06E, Sec. 17, W (S)	**Acres:**	0.0

Location: 1 MILE NORTH OF PALM DESERT.

Detailed Location:

Ecological: FOUND ON WIND-SWEPT SAND DUNE RIDGES. ALTHOUGH THIS SPECIES IS LARGELY REGULATED IN ABUNDANCE BY WINTER RAINS, SOME SPOTS, WHERE SPRINGS KEEP THE SAND DAMP, ARE FAVORABLE TO PERMANENT HABITATION.

General: IN VERY DRY YEARS, THE SPECIES DISAPPEARS OVER MOST OF THE SAND AREAS.

Owner/Manager: PVT

Matelea parvifolia

Element Code: PDASC0A0J0

spear-leaf matelea

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3
	Other:	Rare Plant Rank - 2B.3, USFS_S-Sensitive			
Habitat:	**General:**	MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	DRY ROCKY LEDGES AND SLOPES. 360-1440 M.			

Occurrence No.	8	**Map Index:** 21941	**EO Index:**	21753	**Element Last Seen:**	1974-03-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1974-03-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2010-04-22

Quad Summary: La Quinta (3311663), Rancho Mirage (3311664)

County Summary: Riverside

Lat/Long:	33.64802 / -116.37713	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3723304 E557756	**Elevation (ft):**	2700
PLSS:	T06S, R06E, Sec. 17, E (S)	**Acres:**	0.0

Location: AGAVE HILL, BOYD DEEP CANYON CENTER, EAST OF HWY 74.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AROUND BOYD DEEP CANYON CENTER.

Ecological:

General: 2 ZABRISKI COLLECTIONS FROM AGAVE HILL ARE ATTRIBUTED TO THIS SITE: FROM "AGAVE HILL, BOYD DEEP CANYON CENTER" AND "UPPER SITE (AGAVE HILL) WEATHER SITE, E OF HIGHWAY 74."

Owner/Manager: UNKNOWN

Ditaxis serrata var. californica

Element Code: PDEUP08050

California ditaxis

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3T4
	State:	None		**State:**	S2?
	Other:	Rare Plant Rank - 3.2			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	ON SANDY WASHES AND ALLUVIAL FANS OF THE FOOTHILLS AND LOWER DESERT SLOPES. 60-705 M.			

Occurrence No.	1	**Map Index:**	05689	**EO Index:**	18761	**Element Last Seen:**	1984-02-13
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1984-02-13
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-02-02

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.70116 / -116.35805	**Accuracy:**	non-specific area
UTM:	Zone-11 N3729207 E559489	**Elevation (ft):**	400
PLSS:	T05S, R06E, Sec. 28, SE (S)	**Acres:**	47.0

Location: LIVING DESERT RESERVE ON EISENHOWER MTN TRAIL ALONG WASH, S OF PALM DESERT.

Detailed Location: LOCATION MAPPED IN SEC 28 SE 1/4 OF SE 1/4 BASED ON FIELD SURVEY FORM.

Ecological: IN A SANDY WASH ASSOCIATED WITH CREOSOTE BUSH SCRUB, LARREA, ENCELIA, AMBROSIA, DALEA SCHOTTII, AND DITAXIS NEOMEXICANA.

General: 46 PLANTS OBSERVED IN 1984.

Owner/Manager: BLM

Occurrence No.	2	**Map Index:**	77995	**EO Index:**	18760	**Element Last Seen:**	1978-05-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1978-05-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-02-11

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.64798 / -116.36699	**Accuracy:**	non-specific area
UTM:	Zone-11 N3723306 E558697	**Elevation (ft):**	1000
PLSS:	T06S, R06E, Sec. 16 (S)	**Acres:**	100.0

Location: ALONG COYOTE CREEK, W OF LA QUINTA, ABOUT 5 MI S OF PALM DESERT, SANTA ROSA MOUNTAINS.

Detailed Location: MAPPED ALONG MAIN CHANNEL OF COYOTE CREEK IN SEC 16 BASED ON A 1978 ZABRIESKI TELEPHONE CONVERSATION. SOURCE STATES, "ALONG COYOTE CREEK E OF TOWN OF LA QUINTA," BUT COYOTE CREEK IS WEST OF LA QUINTA.

Ecological:

General: LAST SEEN IN 1978. A 1933 CLARY COLLECTION FROM "DEEP CANYON, 15 MILES SOUTHWEST OF INDIO" ALSO ATTRIBUTED TO THIS SITE; ONLY 3 PLANTS AND ONE SEEDLING SEEN IN 1933. INCLUDES FORMER EO #4.

Owner/Manager: STATE LANDS COMMISSION

Occurrence No.	3	**Map Index:**	05687	**EO Index:**	18762	**Element Last Seen:**	1978-05-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1978-05-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1989-08-11

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.69168 / -116.36168	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3728153 E559160	**Elevation (ft):**	480
PLSS:	T05S, R06E, Sec. 33, SE (S)	**Acres:**	0.0

Location: NW SIDE OF HIDDEN VALLEY, S OF TOWN OF PALM DESERT.

Detailed Location:

Ecological:

General:

Owner/Manager: PVT

Occurrence No.	5	**Map Index:** 05773	**EO Index:**	18755	**Element Last Seen:**	1997-11-06
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1997-11-06
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2010-02-11

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.66530 / -116.31895	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3725254 E563139	**Elevation (ft):**	200
PLSS:	T06S, R06E, Sec. 12, NW (S)	**Acres:**	0.0

Location: LA QUINTA; JUST W OF AVENIDA MONTEZUMA AND CALLE NOGALES, E FOOT OF INDIO MTN, COACHELLA VALLEY.

Detailed Location:

Ecological: ROCKY, AND GRAVELLY AREA NEAR MOUTH OF WASH; CREOSOTE BUSH SCRUB WITH ENCELIA FARINOSA, HYMENOCLEA SALSOLA, CERCIDIUM FLORIDUM, ALLIONIA INCARNATA, PERITYLE EMORYI, DITAXIS LANCEOLATA, LARREA TRIDENTATA, PSOROTHAMNUS SCHOTTII, ETC.

General: <10 PLANTS SEEN IN 1997. A VAGUE 1905 HALL COLLECTION FROM "MARSHALL CANYON, 7 MILES W OF COACHELLA" ALSO ATTRIBUTED TO THIS SITE.

Owner/Manager: PVT

Ditaxis claryana

Element Code: PDEUP080L0

glandular ditaxis

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G4
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	IN DRY WASHES AND ON ROCKY HILLSIDES. SANDY SOILS. 15-505 M.			

Occurrence No.	4	**Map Index:** 35282	**EO Index:**	4824	**Element Last Seen:**	1959-01-08
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1959-01-08
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2010-02-24

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.67788 / -116.31295	**Accuracy:**	non-specific area
UTM:	Zone-11 N3726652 E563686	**Elevation (ft):**	400
PLSS:	T06S, R06E, Sec. 01 (S)	**Acres:**	644.0

Location: LA QUINTA AREA, ABOUT 8 MI WEST OF COACHELLA.

Detailed Location: MAPPED BY CNDDB AS PER BLM DIRECTIONS: T6S R6E SECTION 1.

Ecological:

General: 1932 AND 1933 CLARY COLLECTIONS FROM "CORAL REEF RANCH, 8 MI WEST OF COACHELLA" AND A 1959 ROSE COLLECTION FROM "LA QUINTA" ARE ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Occurrence No.	5	**Map Index:**	35281	**EO Index:**	4822	**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1996-08-01

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.70777 / -116.27750	**Accuracy:**	1 mile
UTM:	Zone-11 N3729989 E566949	**Elevation (ft):**	60
PLSS:	T05S, R07E, Sec. 29 (S)	**Acres:**	0.0

Location:	4 MILES WEST OF INDIO, COACHELLA VALLEY.
Detailed Location:	OBSERVED AT T05S R06E SECTION 29.
Ecological:	
General:	ONLY SOURCE OF INFORMATION FOR THIS SITE IS UNDATED SITE REPORT BY BLM.
Owner/Manager:	UNKNOWN

Occurrence No.	17	**Map Index:**	78490	**EO Index:**	79410	**Element Last Seen:**	1932-03-14
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1932-03-14
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-04-06

Quad Summary:	La Quinta (3311663), Rancho Mirage (3311664)
County Summary:	Riverside

Lat/Long:	33.70723 / -116.36535	**Accuracy:**	4/5 mile
UTM:	Zone-11 N3729876 E558808	**Elevation (ft):**	300
PLSS:	T05S, R06E, Sec. 28 (S)	**Acres:**	0.0

Location:	DEEP CANYON, COACHELLA VALLEY.
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS AROUND THE PORTION OF DEEP CANYON AT ABOUT 300 FEET IN ELEVATION.
Ecological:	ON DRY, STONY SLOPES.
General:	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1932 MUNZ COLLECTION. NEEDS FIELDWORK.
Owner/Manager:	UNKNOWN

Astragalus preussii var. laxiflorus

Element Code: PDFAB0F721

Lancaster milk-vetch

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T2
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.1			
Habitat:	**General:**	CHENOPOD SCRUB.			
	Micro:	ALKALINE CLAY FLATS OR GRAVELLY OR SANDY WASHES AND ALONG DRAWS IN GULLIED BADLANDS. 700-735 M IN CALIFORNIA.			

Occurrence No.	5	**Map Index:** 84032	**EO Index:** 85068	**Element Last Seen:**	1928-04-04
Occ. Rank:	None		**Presence:** Possibly Extirpated	**Site Last Seen:**	1928-04-04
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2011-10-19

Quad Summary: Martinez Mtn. (3311653), Indio (3311662), La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.63614 / -116.26100	**Accuracy:**	4/5 mile
UTM:	Zone-11 N3722059 E568534	**Elevation (ft):**	
PLSS:	T06S, R07E, Sec. 21 (S)	**Acres:**	0.0

Location: CORAL REEF RANCH, COACHELLA VALLEY.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB BASED ON HISTORIC DESCRIPTION FOR "CORAL REEF" NEAR RAU RANCH LOCATED AT THE NORTHWEST CORNER OF AVE 58 AND MADISON ST.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1928 COLLECTION BY ACKLEY. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Astragalus lentiginosus var. coachellae

Element Code: PDFAB0FB97

Coachella Valley milk-vetch

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G5T1
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture			
Habitat:	**General:**	SONORAN DESERT SCRUB, DESERT DUNES.			
	Micro:	SANDY FLATS, WASHES, OUTWASH FANS, SOMETIMES ON DUNES. 35-695 M.			

Occurrence No.	37	**Map Index:** 05740	**EO Index:** 71935	**Element Last Seen:**	1922-04-14
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1922-04-14
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2008-09-25

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.71753 / -116.31142	**Accuracy:**	1 mile
UTM:	Zone-11 N3731049 E563799	**Elevation (ft):**	350
PLSS:	T05S, R06E, Sec. 24 (S)	**Acres:**	0.0

Location: INDIAN WELLS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS AT INDIAN WELLS.

Ecological: SAND HILLS.

General: ONLY SOURCE OF INFORMATION IS A 1922 MUNZ & KECK COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Marina orcuttii var. orcuttii **Element Code:** PDFAB2F031

California marina

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2G3T1T2
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.3, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive			
Habitat:	**General:**	PINYON AND JUNIPER WOODLAND, SONORAN DESERT SCRUB, CHAPARRAL.			
	Micro:	GRAVELLY HILLSIDES, ROCKY SOIL. 365-1160 M.			

Occurrence No.	3	**Map Index:** 77841	**EO Index:** 78735	**Element Last Seen:**	1976-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1976-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-01-19

Quad Summary:	La Quinta (3311663), Rancho Mirage (3311664)
County Summary:	Riverside

Lat/Long:	33.64945 / -116.38381	**Accuracy:**	non-specific area
UTM:	Zone-11 N3723459 E557136	**Elevation (ft):**	1200
PLSS:	T06S, R06E, Sec. 17 (S)	**Acres:**	627.0

Location:	DEEP CANYON WHERE IT OPENS TO DEEP CANYON VALLEY, EAST OF STATE ROUTE 74 AND SOUTH OF PALM DESERT.
Detailed Location:	MAPPED BY CNDDB ACCORDING TO TRS PROVIDED BY ANONYMOUS BLM FIELD SURVEY FORM: T06S R06E SEC 17.
Ecological:	CREOSOTE, SAGEBRUSH AND JUNIPER-PINYON PLANT COMMUNITY ASSOCIATIONS. LAND FORM SPECIFIED AS CANYON BOTTOM, PLAIN, AND DRY WASH WITH GRAVELY SANDY SOIL.
General:	ONLY SOURCE IS A BLM FIELD SURVEY FORM FROM 1976.
Owner/Manager:	STATE

Abronia villosa var. aurita **Element Code:** PDNYC010P1

chaparral sand-verbena

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2?
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive			
Habitat:	**General:**	CHAPARRAL, COASTAL SCRUB, DESERT DUNES.			
	Micro:	SANDY AREAS. -60-1570 M.			

Occurrence No.	59	**Map Index:** 05740	**EO Index:** 73389	**Element Last Seen:**	1922-04-14
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1922-04-14
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2018-05-30

Quad Summary:	La Quinta (3311663)
County Summary:	Riverside

Lat/Long:	33.71753 / -116.31142	**Accuracy:**	1 mile
UTM:	Zone-11 N3731049 E563799	**Elevation (ft):**	300
PLSS:	T05S, R06E, Sec. 24 (S)	**Acres:**	0.0

Location:	INDIAN WELLS.
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS A BEST GUESS CENTERED ON THE CITY OF INDIAN WELLS.
Ecological:	SANDY DESERT.
General:	SITE BASED ON 1920 & 1922 COLLECTIONS FROM "INDIAN WELLS". BARRUS DESCRIBES PLANTS AS "VERY COMMON IN COLORADO DESERT AT THIS TIME, IN PLACES THE DESERT FLOOR WAS PINK WITH [THE FLOWERS] FOR MILES" IN 1920. NEEDS FIELDWORK.
Owner/Manager:	UNKNOWN

Nemacaulis denudata var. gracilis **Element Code:** PDPGN0G012

slender cottonheads

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G4T3?
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	COASTAL DUNES, DESERT DUNES, SONORAN DESERT SCRUB.			
	Micro:	IN DUNES OR SAND. -45-745 M.			

Occurrence No.	6	**Map Index:** 30068	**EO Index:** 19785	**Element Last Seen:**	1980-05-20
Occ. Rank:	None		**Presence:** Possibly Extirpated	**Site Last Seen:**	1980-05-20
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-04-12

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.72558 / -116.31900	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3731937 E563090	**Elevation (ft):**	100
PLSS:	T05S, R06E, Sec. 24, NW (S)	**Acres:**	0.0

Location: NORTH SIDE OF WHITEWATER WASH, WEST OF MILES AVE AND NORTH OF HWY 111, INDIAN WELLS.

Detailed Location:

Ecological: DUNE.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1980 COLLECTION BY ERTTER AND STRACHAN. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Occurrence No.	7	**Map Index:** 30069	**EO Index:** 19777	**Element Last Seen:**	1978-04-02
Occ. Rank:	None		**Presence:** Extirpated	**Site Last Seen:**	198X-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-04-12

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.71404 / -116.30767	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3730665 E564149	**Elevation (ft):**	100
PLSS:	T05S, R06E, Sec. 24, SE (S)	**Acres:**	0.0

Location: SOUTHWEST OF INTERSECTION OF HIGHWAY 111 AND BAY CLUB DRIVE, INDIAN WELLS.

Detailed Location:

Ecological: SAND DUNES.

General: SITE BASED ON A 1978 SANDERS COLLECTION.

Owner/Manager: PVT

Stemodia durantifolia **Element Code:** PDSCR1U010

purple stemodia

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.1, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	SANDY SOILS; MESIC SITES. 35-385 M.			

Occurrence No.	20	**Map Index:** 05679	**EO Index:** 81377	**Element Last Seen:**	1928-02-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1928-02-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-10-21

Quad Summary: La Quinta (3311663), Rancho Mirage (3311664)

County Summary: Riverside

Lat/Long:	33.66012 / -116.37144	**Accuracy:**	1 mile
UTM:	Zone-11 N3724648 E558277	**Elevation (ft):**	1000
PLSS:	T06S, R06E, Sec. 09 (S)	**Acres:**	0.0

Location: DEEP CREEK.

Detailed Location: CREEK AREA. EXACT LOCATION UNKNOWN, UNABLE TO LOCATE DEEP CREEK. MAPPED BY CNDDB AS BEST GUESS AROUND CENTRAL CREEK WITHIN DEEP CANYON AT AROUND 1000 FEET IN ELEVATION AS GIVEN IN SOURCE.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1928 DAYTON COLLECTION. NEEDS FIELDWORK.

Owner/Manager: STATE LANDS COMMISSION

Pseudorontium cyathiferum **Element Code:** PDSCR2R010

Deep Canyon snapdragon

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 2B.3			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	ROCKY SITES. 0-800 M.			

Occurrence No.	1	**Map Index:** 83947	**EO Index:** 31157	**Element Last Seen:**	1978-04-23
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1978-04-23
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2011-10-13

Quad Summary: La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.65236 / -116.36958	**Accuracy:**	non-specific area
UTM:	Zone-11 N3723789 E558453	**Elevation (ft):**	900
PLSS:	T06S, R06E, Sec. 16, NW (S)	**Acres:**	151.0

Location: SOUTH OF PALM DESERT; COYOTE WASH AT JUNCTION WITH DEEP CANYON WASH, DEEP CANYON FLOODPLAIN.

Detailed Location: MAPPED BY CNDDB IN THE NW 1/4 OF SEC 16 TO ENCOMPASS TRS PROVIDED BY TEVIS. SANDERS COLLECTION CITES "0.25 MI SW/NW [UCR RECORD GIVES SW, LABEL SCAN GIVES NW] OF BOYD CENTER", THOUGH MAPPED LOCATION IS ~0.25 MI NE OF BOYD CENTER.

Ecological: FLOODPLAIN, WEST-FACING ROCKY SLOPE.

General: MAIN SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1968 COLLECTION BY TEVIS. 1978 SANDERS COLLECTION IS ALSO ATTRIBUTED TO THIS OCCURRENCE. NEEDS FIELDWORK.

Owner/Manager: STATE LANDS COMMISSION

Selaginella eremophila **Element Code:** PPSEL010G0

desert spike-moss

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S2S3
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	SONORAN DESERT SCRUB, CHAPARRAL.			
	Micro:	SHADED SITES, GRAVELLY SOILS; CREVICES OR AMONG ROCKS. 225-1570 M.			

Occurrence No.	20	**Map Index:** 05679	**EO Index:** 55290	**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2012-12-10

Quad Summary: La Quinta (3311663), Rancho Mirage (3311664)

County Summary: Riverside

Lat/Long:	33.66012 / -116.37144	**Accuracy:**	1 mile
UTM:	Zone-11 N3724648 E558277	**Elevation (ft):**	
PLSS:	T06S, R06E, Sec. 09 (S)	**Acres:**	0.0

Location: DEEP CANYON.

Detailed Location: MAPPED AS BEST GUESS BY CNDDB IN VICINITY OF MOUTH OF DEEP CANYON, BASED ON SITE DESCRIPTION, "DEEP CANYON IN THE COACHELLA VALLEY OF RIVERSIDE COUNTY" FROM REISER'S RARE PLANTS OF SAN DIEGO COUNTY.

Ecological: NORTH-FACING RIDGELINES ON ROCKY SLOPES.

General: SITE BASED ON A NOTE IN REISER'S RARE PLANTS OF SAN DIEGO COUNTY AND LISTED IN A CHECKLIST OF PLANTS FROM "BOYD DEEP CANYON ECOLOGICAL RESERVE." NEEDS FIELDWORK.

Owner/Manager: UCNR-BOYD DEEP CANYON DRC

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Martinez Mtn. (3311653))

Batrachoseps major aridus **Element Code:** AAAAD02042

desert slender salamander

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G4T1
	State:	Endangered		**State:**	S1
	Other:				
Habitat:	**General:**	KNOWN ONLY FROM HIDDEN PALM CANYON AND GUADALUPE CREEK, RIVERSIDE COUNTY, IN BARREN, PALM OASIS, DESERT WASH, AND DESERT SCRUB.			
	Micro:	OCCURS UNDER LIMESTONE SHEETS, ROCKS, AND TALUS, USUALLY AT THE BASE OF DAMP, SHADED, NORTH AND WEST-FACING WALLS.			

*** SENSITIVE ***

Occurrence No.	2	**Map Index:**	05714	**EO Index:**	28258	**Element Last Seen:**	1985-XX-XX
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	1985-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-07-02

Quad Summary: Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:		**Accuracy:**	2/5 mile
UTM:		**Elevation (ft):**	3200
PLSS:		**Acres:**	0.0

Location: *SENSITIVE* LOCATION INFORMATION SUPPRESSED.

Detailed Location: PLEASE CONTACT THE CALIFORNIA NATURAL DIVERSITY DATABASE, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, FOR MORE INFORMATION: (916) 322-2493

Ecological: FIRST OBSERVED BY D. GIULIANI IN FEB 1981 IN A SEEPAGE AREA AMONG BOULDERS AND CREVICES BESIDE A LARGE WATERFALL. HABITAT MOST CLOSELY ASSOCIATED WITH BACCHARIS SERGILOIDES SHUBLAND ALLIANCE.

General:

Owner/Manager:

Falco mexicanus **Element Code:** ABNKD06090

prairie falcon

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S4
	Other:	CDFW_WL-Watch List, IUCN_LC-Least Concern			
Habitat:	**General:**	INHABITS DRY, OPEN TERRAIN, EITHER LEVEL OR HILLY.			
	Micro:	BREEDING SITES LOCATED ON CLIFFS. FORAGES FAR AFIELD, EVEN TO MARSHLANDS AND OCEAN SHORES.			

*** SENSITIVE ***

Occurrence No.	128	**Map Index:**	05751	**EO Index:**	26290	**Element Last Seen:**	1977-05-08
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1977-05-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2020-11-30

Quad Summary: Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:		**Accuracy:**	1/5 mile
UTM:		**Elevation (ft):**	1249
PLSS:		**Acres:**	70.0

Location: *SENSITIVE* LOCATION INFORMATION SUPPRESSED.

Detailed Location: PLEASE CONTACT THE CALIFORNIA NATURAL DIVERSITY DATABASE, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, FOR MORE INFORMATION: (916) 322-2493

Ecological: NEST WAS ON A LEDGE IN A POTHOLE 30 FT UP A 45 FT OUTCROP.

General:

Owner/Manager:

*** SENSITIVE ***

Occurrence No.	130	**Map Index:**	05771	**EO Index:**	26289	**Element Last Seen:**	1977-05-10
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1977-05-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2020-11-24

Quad Summary: Martinez Mtn. (3311653), La Quinta (3311663)

County Summary: Riverside

Lat/Long:		**Accuracy:**	1/5 mile
UTM:		**Elevation (ft):**	826
PLSS:		**Acres:**	70.0

Location: *SENSITIVE* LOCATION INFORMATION SUPPRESSED.

Detailed Location: PLEASE CONTACT THE CALIFORNIA NATURAL DIVERSITY DATABASE, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, FOR MORE INFORMATION: (916) 322-2493

Ecological: NEST WAS IN A POTHOLE 175 FT UP A 225 FT SCARP.

General:

Owner/Manager:

Chaetodipus fallax pallidus **Element Code:** AMAFD05032

pallid San Diego pocket mouse

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3T4
	State:	None		**State:**	S3S4
	Other:				
Habitat:	**General:**	DESERT BORDER AREAS OF SAN DIEGO, RIVERSIDE, SAN BERNARDINO, AND LOS ANGELES COUNTIES IN DESERT WASH, DESERT SCRUB, DESERT SUCCULENT SCRUB, PINYON-JUNIPER, ETC.			
	Micro:	SANDY, HERBACEOUS AREAS, USUALLY IN ASSOCIATION WITH ROCKS OR COARSE GRAVEL.			

Occurrence No.	38	**Map Index:** 60458	**EO Index:** 60494	**Element Last Seen:**	1970-03-20
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1970-03-20
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2005-03-09

Quad Summary: Martinez Mtn. (3311653), Toro Peak (3311654)

County Summary: Riverside

Lat/Long:	33.60090 / -116.36105	**Accuracy:**	1 mile
UTM:	Zone-11 N3718089 E559280	**Elevation (ft):**	4000
PLSS:	T06S, R06E, Sec. 33 (S)	**Acres:**	0.0

Location: NEAR NORTHERN TRIBUTARY OF BEAR CREEK IN THE SANTA ROSA MOUNTAINS ABOUT 1.4 MILES NORTHEAST OF SHEEP MOUNTAIN.

Detailed Location: EXACT LOCATION NOT KNOWN. MAPPED ACCORDING TO LAT/LONG COORDINATES PROVIDED BY MANIS WITH AN UNCERTAINTY OF 2414 METERS (ABOUT 1.5 MILES).

Ecological:

General: ONE MALE SPECIMEN COLLECTED 20 MAR 1970 BY J. PATTON AT "PALM DESERT, 8 MI S" (MVZ #139931).

Owner/Manager: UNKNOWN

Ovis canadensis nelsoni pop. 2 **Element Code:** AMALE04012

Peninsular bighorn sheep DPS

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G4T3Q
	State:	Threatened		**State:**	S2
	Other:	CDFW_FP-Fully Protected			
Habitat:	**General:**	EASTERN SLOPES OF THE PENINSULAR RANGES BELOW 4,600 FT ELEVATION. THIS DPS OF THE SUBSPECIES INHABITS THE PENINSULAR RANGES IN SOUTHERN CALIFORNIA FROM THE SAN JACINTO MOUNTAINS SOUTH TO THE US-MEXICO INTERNATIONAL BORDER.			
	Micro:	OPTIMAL HABITAT INCLUDES STEEP WALLED CANYONS AND RIDGES BISECTED BY ROCKY OR SANDY WASHES, WITH AVAILABLE WATER.			

Occurrence No.	6	**Map Index:** 05774	**EO Index:** 14519	**Element Last Seen:**	1986-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1986-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Decreasing	**Record Last Updated:**	1995-11-02

Quad Summary: Fonts Point (3311632), Rabbit Peak (3311642), Clark Lake NE (3311643), Martinez Mtn. (3311653), Toro Peak (3311654), Rancho Mirage (3311664)

County Summary: Riverside, San Diego

Lat/Long:	33.53678 / -116.31242	**Accuracy:**	specific area
UTM:	Zone-11 N3711008 E563839	**Elevation (ft):**	3400
PLSS:	T07S, R06E, Sec. 25, SW (S)	**Acres:**	83641.5

Location: SANTA ROSA MOUNTAINS, SOUTHERN PORTION OF RANGE.

Detailed Location: THIS IS THE LARGEST POPULATION OF THE PENINSULAR SSP. IN CALIFORNIA.

Ecological: HABITAT IS CREOSOTE BUSH SCRUB, WITH STEEP FAULT SCARPS AND DEEP CANYONS.

General: POPULATION ESTIMATE OF 350.

Owner/Manager: DFG-SANTA ROSA WA, BLM, PVT

Desert Fan Palm Oasis Woodland

Element Code: CTT62300CA

Desert Fan Palm Oasis Woodland

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3.2
	Other:				
Habitat:	**General:**	□			
	Micro:	□			

Occurrence No.	41	**Map Index:** 05691	**EO Index:** 13619	**Element Last Seen:**	1977-03-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1977-03-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1998-07-22

Quad Summary: Martinez Mtn. (3311653), La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.62116 / -116.35582	**Accuracy:**	1 mile
UTM:	Zone-11 N3720338 E559751	**Elevation (ft):**	2800
PLSS:	T06S, R06E, Sec. 27, W (S)	**Acres:**	0.0

Location: BEAR CREEK PALMS, SOUTH OF COYOTE CREEK HEADWATERS, EAST OF DEEP CANYON. SOURCE MAP NOT VERY ACCURATE.

Detailed Location: 300 PALMS REPORTED 1977, 84 ADULT PALMS & 300 UP TO 6 FT TALL COUNTED 1936, 172 COUNTED OVER 6 FT TALL & EST OF 250 SMALLER 1947.

Ecological: WASHINGTONIA FILIFERA GROVE. INTERMITTENT STREAM.

General: ACCESS VIA IMPROVED 3-MILE TRAIL. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: UNKNOWN

Occurrence No.	92	**Map Index:** 05725	**EO Index:** 28818	**Element Last Seen:**	1981-02-19
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1981-02-19
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1998-07-23

Quad Summary: Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.58881 / -116.32157	**Accuracy:**	1 mile
UTM:	Zone-11 N3716771 E562952	**Elevation (ft):**	2500
PLSS:	T07S, R06E, Sec. 02, SE (S)	**Acres:**	0.0

Location: GUADALUPE CREEK, ABOUT 4 MILES SOUTH OF LA QUINTA.

Detailed Location:

Ecological: WASHINGTONIA FILIFERA, RHUS OVATA, BACCHARIS SERGILOIDES, GRASSES.

General: SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: BLM-INDIO RA

Juniperella mirabilis **Element Code:** IICOLX9010

juniper metallic wood-boring beetle

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S1
	Other:				
Habitat:	**General:**	LARVAE DEVELOP IN JUNIPER IN SANTA ROSA MTS. IN SOUTHERN CALIFORNIA.			
	Micro:	□			

Occurrence No.	1	**Map Index:** B5374	**EO Index:** 118290	**Element Last Seen:**	1946-06-25
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1946-06-25
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2020-05-04

Quad Summary: Clark Lake NE (3311643), Collins Valley (3311644), Bucksnort Mtn. (3311645), Martinez Mtn. (3311653), Toro Peak (3311654), Butterfly Peak (3311655)

County Summary: Riverside

Lat/Long:	33.525 / -116.42467	**Accuracy:**	5 miles
UTM:	Zone-11 N3709639 E553425	**Elevation (ft):**	5000
PLSS:	T07S, R05E, Sec. 36 (S)	**Acres:**	49683.0

Location: SANTA ROSA MOUNTAINS.

Detailed Location: COLLECTION LOCALITY WAS DESCRIBED AS "FROM JUNIPER (JUNIPERUS CALIFORNICA CARR.) AT 4,000 FT. ELEVATION IN SANTA ROSA MOUNTAINS, CALIFORNIA."

Ecological:

General: THIS OCCURRENCE IS KNOWN ONLY FROM THE HOLOTYPE COLLECTION, MADE ON 25 JUN 1946.

Owner/Manager: UNKNOWN

Jaffueliobryum raui **Element Code:** NBMUS97010

Rau's jaffueliobryum moss

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.3			
Habitat:	**General:**	ALPINE DWARF SCRUB, CHAPARRAL, MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	DRY OPENINGS, ROCK CREVICES. ON DRY SANDSTONE OR LIMESTONE. 425-2015 M.			

Occurrence No.	1	**Map Index:** 92604	**EO Index:** 93750	**Element Last Seen:**	1963-03-16
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1963-03-16
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2014-06-04

Quad Summary: Clark Lake NE (3311643), Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.50038 / -116.26181	**Accuracy:**	non-specific area
UTM:	Zone-11 N3707005 E568566	**Elevation (ft):**	1640
PLSS:	T08S, R07E, Sec. 04, SW (S)	**Acres:**	82.0

Location: MARTINEZ CANYON NEAR AGUA ALTA CANYON WEST OF HIGHWAY 86 AND THE COACHELLA VALLEY, SANTA ROSA MOUNTAINS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS ALONG MARTINEZ CANYON IN THE VICINITY OF THE GIVEN ELEVATION OF ABOUT 500 M, SW OF AGUA ALTA CANYON.

Ecological: DESERT SCRUB. GRANITIC SOILS.

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1963 WHEELER COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Funastrum crispum **Element Code:** PDASC0F020

wavyleaf twinvine

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 2B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	PINYON AND JUNIPER WOODLAND, CHAPARRAL.			
	Micro:	1215-1850 M.			

Occurrence No.	1 **Map Index:** A4851	**EO Index:**	106549	**Element Last Seen:**	2015-12-20
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	2015-12-20
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2017-05-25

Quad Summary: Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.55191 / -116.35358	**Accuracy:**	80 meters
UTM:	Zone-11 N3712662 E560008	**Elevation (ft):**	6065
PLSS:	T07S, R06E, Sec. 22, NW (S)	**Acres:**	5.0

Location: MARTINEZ MOUNTAIN; SW END ABOUT 0.6 AIR MILE EAST OF CACTUS SPRING TRAIL AND 1.75 AIR MILE NW OF AGUA ALTA SPRING.

Detailed Location: MAPPED BY CNDDB FROM 2015 BARROWS COORDINATES, IN THE NW 1/4 OF THE NW 1/4 OF SECTION 22.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 2015 INATURALIST OBSERVATION. NEEDS HABITAT AND POPULATION INFORMATION.

Owner/Manager: USFS-SAN BERNARDINO NF

Bursera microphylla **Element Code:** PDBUR01020

little-leaf elephant tree

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.3, IUCN_LC-Least Concern, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	HILLSIDES AND WASHES AND ON CANYON SIDES IN CALIFORNIA; ROCKY SITES. 195-610 M.			

Occurrence No.	14 **Map Index:** 60928	**EO Index:**	60964	**Element Last Seen:**	2000-07-12
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	2000-07-12
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2015-03-17

Quad Summary: Clark Lake NE (3311643), Valerie (3311652), Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.50712 / -116.26084	**Accuracy:**	non-specific area
UTM:	Zone-11 N3707753 E568651	**Elevation (ft):**	1800
PLSS:	T08S, R07E, Sec. 04 (S)	**Acres:**	370.0

Location: NORTH SLOPE OF MARTINEZ CANYON, JUST SW OF THE JUNCTION WITH AGUA ALTA CANYON, SANTA ROSA MOUNTAINS.

Detailed Location: MAPPED BY CNDDB ALONG THE NORTH SIDE OF MARTINEZ CANYON IN SECTION 4, BASED UPON SITE DESCRIPTION AND TRS GIVEN BY DICE.

Ecological: RUGGED CANYON SLOPES.

General: AT LEAST 20 TREES OBSERVED IN 2000. TWO 1939 COLLECTIONS BY CLARY FROM "MARTINEZ CANYON" ALSO ATTRIBUTED TO THIS SITE.

Owner/Manager: BLM-SANTA ROSA WA

Ditaxis claryana **Element Code:** PDEUP080L0

glandular ditaxis

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G4
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	IN DRY WASHES AND ON ROCKY HILLSIDES. SANDY SOILS. 15-505 M.			

Occurrence No.	16	**Map Index:** 78489	**EO Index:** 79409	**Element Last Seen:**	2014-03-04
Occ. Rank:	Fair		**Presence:** Presumed Extant	**Site Last Seen:**	2014-03-04
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2014-09-22

Quad Summary:	Martinez Mtn. (3311653)
County Summary:	Riverside

Lat/Long:	33.62122 / -116.26562	**Accuracy:**	80 meters
UTM:	Zone-11 N3720401 E568117	**Elevation (ft):**	120
PLSS:	T06S, R07E, Sec. 28, NW (S)	**Acres:**	0.0

Location:	1.3 MILES DOWN DIRT BLM ROAD FROM PAVED 58TH AVENUE, JUST NE OF MOUTH OF DEVIL CANYON, EAST SIDE OF SANTA ROSA MTNS.
Detailed Location:	4WD ROAD SOUTH OF LAKE CAHUILLA AND LA QUINTA. MAPPED ACCORDING TO COORDINATES PROVIDED BY CONOCCHIOLI & DE GROOT, IN THE SW 1/4 OF THE NW 1/4 OF SECTION 28.
Ecological:	W-FACING, GRANITIC SLOPE. ASSOCIATED WITH LARREA TRIDENTATA, SENEGALIA GREGGII, DATURA WRIGHTII, PARKINSONIA FLORIDA, AND STEPHANOMERIA PAUCIFLORA.
General:	3-5 PLANTS OBSERVED IN 2014. A 1983 JUNAK COLLECTION FROM "E SIDE OF JEFFERSON RD ACROSS FROM ENTRANCE TO CAHUILLA LAKE COUNTY PARK, S OF INDIO" IS ATTRIBUTED HERE. VISIBLE DISTURBANCES: OHV USE, LOTS OF BROKEN GLASS, LITTER, & BULLETS.
Owner/Manager:	BLM

Astragalus preussii var. laxiflorus **Element Code:** PDFAB0F721

Lancaster milk-vetch

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T2
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.1			
Habitat:	**General:**	CHENOPOD SCRUB.			
	Micro:	ALKALINE CLAY FLATS OR GRAVELLY OR SANDY WASHES AND ALONG DRAWS IN GULLIED BADLANDS. 700-735 M IN CALIFORNIA.			

Occurrence No.	5	**Map Index:**	84032	**EO Index:**	85068	**Element Last Seen:**	1928-04-04
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1928-04-04
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-10-19

Quad Summary: Martinez Mtn. (3311653), Indio (3311662), La Quinta (3311663)

County Summary: Riverside

Lat/Long:	33.63614 / -116.26100	**Accuracy:**	4/5 mile
UTM:	Zone-11 N3722059 E568534	**Elevation (ft):**	
PLSS:	T06S, R07E, Sec. 21 (S)	**Acres:**	0.0

Location: CORAL REEF RANCH, COACHELLA VALLEY.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB BASED ON HISTORIC DESCRIPTION FOR "CORAL REEF" NEAR RAU RANCH LOCATED AT THE NORTHWEST CORNER OF AVE 58 AND MADISON ST.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1928 COLLECTION BY ACKLEY. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Astragalus tricarinatus **Element Code:** PDFAB0F920

triple-ribbed milk-vetch

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	JOSHUA TREE WOODLAND, SONORAN DESERT SCRUB.			
	Micro:	HOT, ROCKY SLOPES IN CANYONS AND ALONG EDGE OF BOULDER-STREWN DESERT WASHES, WITH LARREA AND ENCELIA. 455-1585 M.			

Occurrence No.	8	**Map Index:** 28294	**EO Index:** 22105	**Element Last Seen:**	1985-03-16
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	201X-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2019-11-05

Quad Summary:	Martinez Mtn. (3311653)
County Summary:	Riverside

Lat/Long:	33.52441 / -116.26351	**Accuracy:**	80 meters
UTM:	Zone-11 N3709668 E568390	**Elevation (ft):**	1500
PLSS:	T07S, R07E, Sec. 33, NW (S)	**Acres:**	0.0

Location:	AGUA ALTA CANYON, ABOUT 1.6 MILES UPSTREAM FROM MARTINEZ CANYON, SANTA ROSA MOUNTAINS.
Detailed Location:	IN WASH WITHIN THE NW 1/4 OF THE NW 1/4 OF SECTION 33.
Ecological:	IN GRAVELLY SOILS OF WASH.
General:	1 PLANT OBSERVED IN 1985. BELL AND FRAGA WERE UNABLE TO RELOCATE PLANTS AT THIS SITE DURING 2014-2017 SURVEYS.
Owner/Manager:	BLM

Eriastrum harwoodii

Element Code: PDPLM030B1

Harwood's eriastrum

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture			
Habitat:	**General:**	DESERT DUNES.			
	Micro:	SANDY SOILS. 15-1100M.			

Occurrence No.	66	**Map Index:** A9640	**EO Index:**	111499	**Element Last Seen:**	1939-05-04
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1939-05-04
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2018-06-07

Quad Summary: Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.52176 / -116.32376	**Accuracy:**	1 mile
UTM:	Zone-11 N3709337 E562798	**Elevation (ft):**	
PLSS:	T07S, R06E, Sec. 35 (S)	**Acres:**	1987.0

Location: PINON ALTA FLATS, SANTA ROSA MOUNTAINS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS AROUND PINYON ALTA FLAT. ELEVATION GIVEN AS 5200 FEET WHICH IS HIGH FOR THIS AREA.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1939 JAEGER COLLECTION. COLLECTION ANNOTATED TO ERIASTRUM HARWOODII BY SARAH DE GROOT IN 2015.

Owner/Manager: UNKNOWN

Leptosiphon floribundus ssp. hallii

Element Code: PDPLM090J3

Santa Rosa Mountains leptosiphon

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T1T2
	State:	None		**State:**	S1S2
	Other:	Rare Plant Rank - 1B.3, BLM_S-Sensitive, USFS_S-Sensitive			
Habitat:	**General:**	SONORAN DESERT SCRUB, PINYON AND JUNIPER WOODLAND.			
	Micro:	DESERT CANYONS. 910-2290 M.			

Occurrence No.	5	**Map Index:** 55056	**EO Index:**	55056	**Element Last Seen:**	1902-05-01
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1902-05-01
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2004-04-06

Quad Summary: Clark Lake NE (3311643), Valerie (3311652), Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.49788 / -116.28174	**Accuracy:**	non-specific area
UTM:	Zone-11 N3706715 E566717	**Elevation (ft):**	
PLSS:	T08S, R07E, Sec. 08 (S)	**Acres:**	623.1

Location: MARTINEZ CANYON.

Detailed Location: EXACT LOCATION UNKNOWN; MAPPED BY CNDDB TO INCLUDE ENTIRE CANYON.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1902 COLLECTION BY DAVIDSON. NEEDS FIELDWORK.

Owner/Manager: BLM?

Ayenia compacta **Element Code:** PDSTE01020

California ayenia

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3
	Other:	Rare Plant Rank - 2B.3, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	SANDY AND GRAVELLY WASHES IN THE DESERT; DRY DESERT CANYONS. 60-1830 M.			

Occurrence No.	33	**Map Index:** 36267	**EO Index:** 31264	**Element Last Seen:**	1986-02-11
Occ. Rank:	Excellent		**Presence:** Presumed Extant	**Site Last Seen:**	1986-02-11
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1997-07-29

Quad Summary: Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.53133 / -116.25653	**Accuracy:**	80 meters
UTM:	Zone-11 N3710440 E569033	**Elevation (ft):**	1500
PLSS:	T07S, R07E, Sec. 28, SE (S)	**Acres:**	0.0

Location: AGUA ALTA CANYON ABOUT 1.8 MILES WEST OF JUNCTION WITH MARTINEZ CANYON, SANTA ROSA MOUNTAINS.

Detailed Location: MAPPED WITHIN THE NW 1/4 OF THE SE 1/4 OF SECTION 28.

Ecological: SANDY WASH WITH DALEA SPINOSA, HYPTIS EMORYI, HYMENOCLEA, ACACIA GREGGII, AND CERCIDIUM.

General: 1 PLANT OBSERVED IN 1986 BY STEWART.

Owner/Manager: UNKNOWN

Occurrence No.	34	**Map Index:** 36268	**EO Index:** 31265	**Element Last Seen:**	2016-03-23
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	2016-03-23
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2019-01-30

Quad Summary: Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.53015 / -116.29043	**Accuracy:**	80 meters
UTM:	Zone-11 N3710287 E565886	**Elevation (ft):**	2090
PLSS:	T07S, R07E, Sec. 30, SE (S)	**Acres:**	5.0

Location: AGUA ALTA CANYON ABOUT 2.6 MILES EAST OF AGUA ALTA SPRING, SANTA ROSA MOUNTAINS.

Detailed Location: MAPPED BY CNDDB IN THE NW 1/4 SE 1/4 OF PROJECTED SECTION 30 BASED ON 2016 BELL COORDINATES.

Ecological: SCATTERED IN ROCKY CANYON BOTTON, AND ON ROCKY BENCH GROWING FROM BENEATH A ROCK. ASSOCIATED WITH LARREA, KRAMERIA, AMBROSIA, ENCELIA, AND FOUQUIERIA. SANDY SOILS.

General: DOZENS OF PLANTS OBSERVED SCATTERED OVER A LARGE AREA IN 2016. FEWER THAN 10 PLANTS OBSERVED IN SOUTH HALF OF SECTION 30 IN 1985 BY STEWART.

Owner/Manager: BLM-SANTA ROSA WA

Occurrence No.	35	**Map Index:**	36269	**EO Index:**	31266	**Element Last Seen:**	1985-03-16
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1985-03-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-10-28

Quad Summary: Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.52193 / -116.26309	**Accuracy:**	non-specific area
UTM:	Zone-11 N3709393 E568431	**Elevation (ft):**	1400
PLSS:	T07S, R07E, Sec. 33, NW (S)	**Acres:**	159.0

Location: AGUA ALTA CANYON ABOUT 4 MILES EAST OF AGUA ALTA SPRING, SANTA ROSA MOUNTAINS.

Detailed Location:

Ecological: ON SANDY WASH BOTTOM GROWING FROM BENEATH A ROCK. ASSOCIATED WITH BEBBIA, HYMENOCLEA, CERCIDIUM, AND DALEA SPINOSA.

General: FIELD SURVEY MENTIONS 1 PLANT OBSERVED WHILE COLLECTION FROM SAME DATE MENTIONS 10 PLANTS SEEN, BOTH FROM STEWART IN 1985.

Owner/Manager: UNKNOWN

Occurrence No.	76	**Map Index:**	B2209	**EO Index:**	114135	**Element Last Seen:**	2016-03-22
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-03-22
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2019-02-04

Quad Summary: Clark Lake NE (3311643), Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.50059 / -116.25507	**Accuracy:**	80 meters
UTM:	Zone-11 N3707033 E569193	**Elevation (ft):**	1580
PLSS:	T08S, R07E, Sec. 4, SE (S)	**Acres:**	5.0

Location: SIDE CANYON OFF OF MARTINEZ CANYON, 1.7 AIR MI SW OF MOUTH OF AGUA ALTA CANYON AND ABOUT 4.75 AIR MI NNW OF RABBIT PEAK.

Detailed Location: MAPPED BY CNDDB IN THE SE 1/4 SECTION 4, BASED ON 2016 BELL COORDINATES.

Ecological: NARROW, ROCKY CANYON BOTTOM.

General: SITE BASED ON 2016 BELL COORDINATES. 15 PLANTS SCATTERED IN CANYON BOTTOM IN 2016.

Owner/Manager: BLM-SANTA ROSA WA

Occurrence No.	77	**Map Index:**	B2210	**EO Index:**	114136	**Element Last Seen:**	2016-02-17
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-02-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2019-02-04

Quad Summary: Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.58092 / -116.26929	**Accuracy:**	80 meters
UTM:	Zone-11 N3715930 E567810	**Elevation (ft):**	530
PLSS:	T07S, R07E, Sec. 8, NE (S)	**Acres:**	5.0

Location: MARTINEZ SLIDE NORTH OF TORO CANYON, ABOUT 2 AIR MI SW OF GOLF CLUB AND 4.7 AIR MI ENE OF SUMMIT OF MARTINEZ MTN.

Detailed Location: MAPPED IN THE NE 1/4 NE 1/4 SECTION 8 BASED ON 2016 BELL COORDINATES.

Ecological: SCATTERED IN ROCKY CANYON BOTTOM.

General: SITE BASED ON A 2016 BELL COLLECTION; DESCRIBED AS "UNCOMMON" IN 2016.

Owner/Manager: BLM

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Mecca (3311651))

Scaphiopus couchii **Element Code:** AAABF01020

Couch's spadefoot

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	TEMPORARY DESERT RAINPOOLS THAT LAST AT LEAST 7 DAYS, WITH WATER TEMPS > 15 C, AND WITH SUBTERRANEAN REFUGE SITES CLOSE BY.			
	Micro:	AN INSECT FOOD BASE, ESPECIALLY TERMITES, MUST BE AVAILABLE.			

Occurrence No.	4	**Map Index:**	73557	**EO Index:**	74525	**Element Last Seen:**	2007-02-01
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-02-01
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-02-09

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.57069 / -116.07874	**Accuracy:**	80 meters
UTM:	Zone-11 N3714936 E585503	**Elevation (ft):**	-180
PLSS:	T07S, R09E, Sec. 08 (S)	**Acres:**	0.0

Location:	BETWEEN HWY 111 & RAILROAD TRACKS, SOUTH OF 4TH ST, WEST OF MECCA.
Detailed Location:	
Ecological:	FLOODED DESERT SCRUB. A RAILROAD, HIGHWAYS, AGRICULTURAL FIELDS, SMALL TOWN DEVELOPMENT, AND SOME NATURAL HABITATS SURROUND LOCATION.
General:	1 ADULT OBSERVED DURING UNION PACIFIC RAILROAD SENSITIVE SPECIES PROJECT.
Owner/Manager:	UNION PACIFIC

Ardea herodias **Element Code:** ABNGA04010

great blue heron

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S4
	Other:	CDF_S-Sensitive, IUCN_LC-Least Concern			
Habitat:	**General:**	COLONIAL NESTER IN TALL TREES, CLIFFSIDES, AND SEQUESTERED SPOTS ON MARSHES.			
	Micro:	ROOKERY SITES IN CLOSE PROXIMITY TO FORAGING AREAS: MARSHES, LAKE MARGINS, TIDE-FLATS, RIVERS AND STREAMS, WET MEADOWS.			

Occurrence No.	65	**Map Index:**	32049	**EO Index:**	47993	**Element Last Seen:**	1992-07-10
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1992-07-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2002-05-23

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.50273 / -116.07602	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3707404 E585823	**Elevation (ft):**	-230
PLSS:	T08S, R09E, Sec. 05, SW (S)	**Acres:**	0.0

Location:	NEAR THE JUNCTION OF LINCOLN STREET AND AVENUE 76, ON THE NW CORNER OF THE SALTON SEA.
Detailed Location:	
Ecological:	NESTS ARE LOCATED IN FLOODED (KILLED BY RISING SALTON SEA) SALT CEDAR, MESQUITE AND COTTONWOOD.
General:	5 ACTIVE NESTS OBSERVED ON 10 JUL 1992.
Owner/Manager:	UNKNOWN

Occurrence No.	66	**Map Index:**	40686	**EO Index:**	47995	**Element Last Seen:**	1992-07-10
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1992-07-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2002-05-23

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.52119 / -116.05666	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3709467 E587602	**Elevation (ft):**	-230
PLSS:	T07S, R09E, Sec. 33 (S)	**Acres:**	0.0

Location:	NW END OF THE SALTON SEA, AT THE END OF JOHNSON STREET, 2 MILES SOUTH OF HWY 111, 3 MILES SOUTH OF MECCA.
Detailed Location:	SITE A TOWARDS NORTH AND SITE B TOWARDS SOUTH.
Ecological:	NESTS ARE LOCATED IN FLOODED (KILLED BY RISING SALTON SEA) SALT CEDAR, MESQUITE AND COTTONWOOD.
General:	2 ACTIVE NESTS OBSERVED (1 AT SITE A AND 1 AT SITE B) ON 10 JUL 1992.
Owner/Manager:	UNKNOWN

Ardea alba **Element Code:** ABNGA04040

great egret

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S4
	Other:	CDF_S-Sensitive, IUCN_LC-Least Concern			
Habitat:	**General:**	COLONIAL NESTER IN LARGE TREES.			
	Micro:	ROOKERY SITES LOCATED NEAR MARSHES, TIDE-FLATS, IRRIGATED PASTURES, AND MARGINS OF RIVERS AND LAKES.			

Occurrence No.	23	**Map Index:** 32049	**EO Index:** 3826	**Element Last Seen:**	1994-07-20
Occ. Rank:	Fair		**Presence:** Presumed Extant	**Site Last Seen:**	1994-07-20
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2002-05-22

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.50273 / -116.07602	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3707404 E585823	**Elevation (ft):**	-230
PLSS:	T08S, R09E, Sec. 05, W (S)	**Acres:**	0.0

Location: NEAR THE JUNCTION OF LINCOLN STREET AND AVENUE 76, ON THE NW CORNER OF THE SALTON SEA.

Detailed Location:

Ecological: NESTS ARE LOCATED IN FLOODED (KILLED BY RISING SALTON SEA) SALT CEDAR.

General: 15 ACTIVE NESTS OBSERVED ON 10 JUL 1992. NEST SITE CONTINUES TO DEGRADE AS DEAD SHRUBS AND SMALL SHRUBS ROT AND FALL OVER. 90 ACTIVE GREAT EGRET NESTS WERE OBSERVED ON 20 JULY 1994.

Owner/Manager: UNKNOWN

Occurrence No.	28	**Map Index:** 40686	**EO Index:** 47998	**Element Last Seen:**	1992-07-10
Occ. Rank:	Fair		**Presence:** Presumed Extant	**Site Last Seen:**	1992-07-10
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2002-05-24

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.52119 / -116.05666	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3709467 E587602	**Elevation (ft):**	-230
PLSS:	T07S, R09E, Sec. 33 (S)	**Acres:**	0.0

Location: NW END OF THE SALTON SEA, AT THE END OF JOHNSON STREET, 2 MILES SOUTH OF HWY 111, 3 MILES SOUTH OF MECCA.

Detailed Location: SITE A TO THE NORTH, SITE B TO THE SOUTH.

Ecological: NESTS ARE LOCATED IN FLOODED (KILLED BY RISING SALTON SEA) SALT CEDAR, MESQUITE AND COTTONWOOD.

General: 30 NESTS OBSERVED AT SITE A AND 6 NESTS OBSERVED AT SITE B ON 10 JUL 1992.

Owner/Manager: UNKNOWN

Egretta thula **Element Code:** ABNGA06030

snowy egret

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S4
	Other:	IUCN_LC-Least Concern			
Habitat:	**General:**	COLONIAL NESTER, WITH NEST SITES SITUATED IN PROTECTED BEDS OF DENSE TULES.			
	Micro:	ROOKERY SITES SITUATED CLOSE TO FORAGING AREAS: MARSHES, TIDAL-FLATS, STREAMS, WET MEADOWS, AND BORDERS OF LAKES.			

Occurrence No.	7	**Map Index:**	32049	**EO Index:**	3828	**Element Last Seen:**	1994-07-20
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1994-07-20
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2002-05-22

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.50273 / -116.07602	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3707404 E585823	**Elevation (ft):**	-230
PLSS:	T08S, R09E, Sec. 05, W (S)	**Acres:**	0.0

Location:	NEAR THE JUNCTION OF LINCOLN STREET AND AVENUE 76, ON THE NW CORNER OF THE SALTON SEA.
Detailed Location:	
Ecological:	NESTS ARE LOCATED IN FLOODED (KILLED BY RISING SALTON SEA) SALT CEDAR.
General:	15 ACTIVE NESTS OBSERVED ON 10 JUL 1992. NEST SITE CONTINUES TO DEGRADE AS DEAD SHRUBS AND SMALL TREES ROT AND FALL OVER. 390 ACTIVE SNOWY EGRET NESTS WERE OBSERVED ON 20 JULY 1994.
Owner/Manager:	UNKNOWN

Occurrence No.	11	**Map Index:**	40686	**EO Index:**	48000	**Element Last Seen:**	1992-07-10
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1992-07-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2002-05-24

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.52119 / -116.05666	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3709467 E587602	**Elevation (ft):**	-230
PLSS:	T07S, R09E, Sec. 33, NW (S)	**Acres:**	0.0

Location:	NW END OF THE SALTON SEA, AT THE END OF JOHNSON STREET, 2 MILES SOUTH OF HWY 111, 3 MILES SOUTH OF MECCA.
Detailed Location:	SITE A TOWARDS THE NORTH AND SITE B TOWARDS THE SOUTH.
Ecological:	NESTS ARE LOCATED IN FLOODED (KILLED BY RISING SALTON SEA) SALT CEDAR, MESQUITE AND COTTONWOOD.
General:	50 NESTS OBSERVED AT SITE A AND 2 NESTS OBSERVED AT SITE B ON 10 JUL 1992.
Owner/Manager:	UNKNOWN

Nycticorax nycticorax **Element Code:** ABNGA11010

black-crowned night heron

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S4
	Other:	IUCN_LC-Least Concern			
Habitat:	**General:**	COLONIAL NESTER, USUALLY IN TREES, OCCASIONALLY IN TULE PATCHES.			
	Micro:	ROOKERY SITES LOCATED ADJACENT TO FORAGING AREAS: LAKE MARGINS, MUD-BORDERED BAYS, MARSHY SPOTS.			

Occurrence No.	7	**Map Index:**	32049	**EO Index:**	3827	**Element Last Seen:**	1994-07-20
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1994-07-20
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2002-05-22

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.50273 / -116.07602	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3707404 E585823	**Elevation (ft):**	-230
PLSS:	T08S, R09E, Sec. 05, W (S)	**Acres:**	0.0

Location:	NEAR THE JUNCTION OF LINCOLN STREET AND AVENUE 76, ON THE NW CORNER OF THE SALTON SEA.
Detailed Location:	
Ecological:	NESTS ARE LOCATED IN FLOODED (KILLED BY RISING SALTON SEA) SALT CEDAR.
General:	10 ACTIVE NESTS OBSERVED ON 10 JUL 1992. NEST SITE CONTINUES TO DEGRADE AS DEAD SHRUBS AND SMALL SHRUBS ROT AND FALL OVER. 90 ACTIVE BLACK-CROWNED NIGHT HERON NESTS WERE OBSERVED ON 20 JUL 1994.
Owner/Manager:	UNKNOWN

Occurrence No.	12	**Map Index:**	40686	**EO Index:**	47997	**Element Last Seen:**	1992-07-10
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1992-07-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2002-05-24

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.52119 / -116.05666	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3709467 E587602	**Elevation (ft):**	-230
PLSS:	T07S, R09E, Sec. 33 (S)	**Acres:**	0.0

Location:	NW END OF THE SALTON SEA, AT THE END OF JOHNSON STREET, 2 MILES SOUTH OF HWY 111, 3 MILES SOUTH OF MECCA.
Detailed Location:	SITE A, NORTH AREA.
Ecological:	NESTS ARE LOCATED IN FLOODED (KILLED BY RISING SALTON SEA) SALT CEDAR, MESQUITE AND COTTONWOOD.
General:	20 NESTS OBSERVED AT SITE A ON 10 JUL 1992.
Owner/Manager:	UNKNOWN

Plegadis chihi **Element Code:** ABNGE02020

white-faced ibis

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3S4
	Other:	CDFW_WL-Watch List, IUCN_LC-Least Concern			
Habitat:	**General:**	SHALLOW FRESHWATER MARSH.			
	Micro:	DENSE TULE THICKETS FOR NESTING, INTERSPERSED WITH AREAS OF SHALLOW WATER FOR FORAGING.			

Occurrence No.	17	**Map Index:** 48050	**EO Index:** 48050	**Element Last Seen:**	1997-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1997-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2002-06-05

Quad Summary: Durmid (3311547), Salton (3311548), Mortmar (3311558), Oasis (3311641), Mecca (3311651)

County Summary: Imperial, Riverside

Lat/Long:	33.46954 / -115.97923	**Accuracy:**	non-specific area
UTM:	Zone-11 N3703808 E594849	**Elevation (ft):**	-220
PLSS:	T08S, R10E, Sec. 19 (S)	**Acres:**	43021.6

Location: NORTH END OF SALTON SEA, RIVERSIDE COUNTY.

Detailed Location:

Ecological:

General: COLONY ACTIVE (K. STURM, PERS. COMM., 1997).

Owner/Manager: UNKNOWN

Falco mexicanus **Element Code:** ABNKD06090

prairie falcon

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S4
	Other:	CDFW_WL-Watch List, IUCN_LC-Least Concern			
Habitat:	**General:**	INHABITS DRY, OPEN TERRAIN, EITHER LEVEL OR HILLY.			
	Micro:	BREEDING SITES LOCATED ON CLIFFS. FORAGES FAR AFIELD, EVEN TO MARSHLANDS AND OCEAN SHORES.			

*** SENSITIVE ***

Occurrence No.	132	**Map Index:** 06015	**EO Index:** 26277	**Element Last Seen:**	1977-05-16
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1977-05-16
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2020-12-01

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:		**Accuracy:**	1/5 mile
UTM:		**Elevation (ft):**	800
PLSS:		**Acres:**	0.0

Location: *SENSITIVE* LOCATION INFORMATION SUPPRESSED.

Detailed Location: PLEASE CONTACT THE CALIFORNIA NATURAL DIVERSITY DATABASE, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, FOR MORE INFORMATION: (916) 322-2493

Ecological: NEST WAS IN A POTHOLE 65 FT UP A 300 FT SCARP.

General:

Owner/Manager:

Rallus obsoletus yumanensis **Element Code:** ABNME0501A

Yuma Ridgway's rail

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G3T3
	State:	Threatened		**State:**	S1
	Other:	CDFW_FP-Fully Protected			
Habitat:	**General:**	NESTS IN FRESHWATER MARSHES ALONG THE COLORADO RIVER AND ALONG THE SOUTH AND EAST ENDS OF THE SALTON SEA.			
	Micro:	PREFERS STANDS OF CATTAILS AND TULES DISSECTED BY NARROW CHANNELS OF FLOWING WATER; PRINCIPLE FOOD IS CRAYFISH.			

Occurrence No.	1	**Map Index:** 05985	**EO Index:** 25910	**Element Last Seen:**	1978-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1978-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.50959 / -116.05854	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3708179 E587439	**Elevation (ft):**	220
PLSS:	T08S, R09E, Sec. 04, NW (S)	**Acres:**	0.0

Location: WHITEWATER RIVER DELTA, N END SALTON SEA.

Detailed Location:

Ecological:

General: SMALL NUMBER OF BREEDING PAIRS STUDIED IN 1978 BY BENNETT AND OHMART.

Owner/Manager: BIA-TORRES MARTINEZ RES

Gelochelidon nilotica **Element Code:** ABNNM08010

gull-billed tern

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S1
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	ONLY KNOWN BREEDING COLONIES AT SAN DIEGO BAY AND THE SALTON SEA.			
	Micro:	NESTS ON LOW, SANDY ISLETS. KNOWN TO FEED ON FISHES AT MOUTH OF COLORADO RIVER AND ON GRASSHOPPERS IN ALFALFA FIELDS.			

Occurrence No.	4	**Map Index:** 25148	**EO Index:**	5974	**Element Last Seen:** 1994-08-XX
Occ. Rank:	Good		**Presence:**	Presumed Extant	**Site Last Seen:** 1994-08-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 1995-01-09

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.51677 / -116.05929	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3708974 E587363	**Elevation (ft):**	-235
PLSS:	T07S, R09E, Sec. 33, SW (S)	**Acres:**	0.0

Location:	END OF JOHNSON STREET, 3.5 MILES SSE OF MECCA.
Detailed Location:	
Ecological:	BIRDS UTILIZE BARE, EARTHEN LEVEE REMNANTS LITTERED WITH A FEW SUAEDA SHRUBS AS THEIR NEST SITE.
General:	ESTIMATED 150 ADULTS AND 50 JUVENILES OBSERVED AT THIS SITE DURING APRIL-AUGUST 1993. 76 ADULTS NESTED DURING MAR-AUG 1994; NESTING SUCCESS UNKNOWN.
Owner/Manager:	UNKNOWN

Rynchops niger

Element Code: ABNNM14010

black skimmer

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	NESTS ON GRAVEL BARS, LOW ISLETS, AND SANDY BEACHES, IN UNVEGETATED SITES. NESTING COLONIES USUALLY LESS THAN 200 PAIRS.			
	Micro:	□			

Occurrence No.	5	**Map Index:**	40686	**EO Index:**	35693	**Element Last Seen:**	1994-07-20
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1994-07-20
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2002-05-23

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.52119 / -116.05666	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3709467 E587602	**Elevation (ft):**	-220
PLSS:	T07S, R09E, Sec. 33, NW (S)	**Acres:**	0.0

Location:	NW END OF THE SALTON SEA, AT THE END OF JOHNSON STREET, 2 MILES SOUTH OF HWY 111, 3 MILES SOUTH OF MECCA.
Detailed Location:	ROOKERY IS LOCATED ON AN ARTIFICIAL ISLAND FORMED AS PART OF A NOW-DEFUNCT MARINE DEVELOPMENT.
Ecological:	NEST SITE CONSISTS OF A SMALL (ARTIFICIAL) ISLAND, CONSISTING OF ELEVATED DIKES, SURROUNDED BY WATER. SITE IS ALSO USED BY NESTING GULL-BILLED TERNS.
General:	1992: 50 ADULTS AND 7 JUVENILES OBSERVED ON 23 JUN, 70 ADULTS (ESTIMATED 35 ACTIVE NESTS) OBSERVED ON 29 JUN, 70 ADULTS AND 20 JUVENILES OBSERVED ON 10 JUL. 40 ACTIVE NESTS OBSERVED ON 20 JUL 1994.
Owner/Manager:	UNKNOWN

Athene cunicularia

Element Code: ABNSB10010

burrowing owl

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	Candidate Endangered		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.			
	Micro:	SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.			

Occurrence No.	413	**Map Index:**	45677	**EO Index:**	45677	**Element Last Seen:**	2001-04-23
Occ. Rank:	Poor			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-04-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2002-03-06

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.59756 / -116.04376	**Accuracy:**	80 meters
UTM:	Zone-11 N3717945 E588722	**Elevation (ft):**	70
PLSS:	T07S, R09E, Sec. 04, NE (S)	**Acres:**	0.0

Location:	WEST SIDE OF THE COACHELLA CANAL, COACHELLA VALLEY.
Detailed Location:	MULTIPLE BURROWS LOCATED ON THIS 40-ACRE SITE.
Ecological:	HABITAT CONSISTS OF SONORAN CREOSOTE SCRUB (41.5 ACRES)/DESERT SALTBUSH SCRUB. SITE IS A FLAT PARCEL OF NATURAL LAND SURROUNDED BY AGRICULTURE.
General:	1 INDIVIDUAL OBSERVED STANDING NEAR THE BURROW SITE ON 10 OCT 2000. 23 APR 2001: 1 BREEDING PAIR AND BURROW SITE OBSERVED. SPERMOPHILUS TERETICAUDUS CHLORUS OBSERVED IN VICINITY.
Owner/Manager:	BIA-TORRES MARTINEZ RES

Occurrence No.	1131	**Map Index:**	71509	**EO Index:**	72405	**Element Last Seen:**	2006-03-31
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-03-31
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-06-13

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.59741 / -116.02363	**Accuracy:**	80 meters
UTM:	Zone-11 N3717946 E590589	**Elevation (ft):**	150
PLSS:	T07S, R09E, Sec. 02 (S)	**Acres:**	0.0

Location:	PAINTED CANYON RD, 1.11 MI E OF THE JUNCTION OF COACHELLA CANAL RD & 62ND AVE, 3.20 MI NE OF MECCA.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF SAND DUNE AND DESERT SCRUB COMMUNITIES.
General:	BURROW SITE. PROBABLE BREEDING PAIR OBSERVED AT BURROW WITH WHITE WASH AND PELLETS, ON 31 MAR 2006. NO YOUNG OBSERVED.
Owner/Manager:	UNKNOWN

Occurrence No.	1487	**Map Index:**	80367	**EO Index:**	81355	**Element Last Seen:**	2007-05-23
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-05-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-10-12

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.59171 / -116.08182	**Accuracy:**	specific area
UTM:	Zone-11 N3717265 E585196	**Elevation (ft):**	-150
PLSS:	T07S, R09E, Sec. 06, NE (S)	**Acres:**	10.0

Location:	0.5 MI SSW LINCOLN ST AT 62ND AVE, 1.1 MI ESE BM -163 (SOUTHERN PACIFIC RR), IN CABAZON INDIAN RESERVATION, NNW MECCA.
Detailed Location:	BLOCK CODE 3715-585 - LOCATION CODES A (SOUTH) AND C (NORTH). MAPPED TO PROVIDED COORDINATES.
Ecological:	HABITAT TYPE LISTED AS BRUSHLAND. LOWLAND ELEVATION SUBREGION. NO GROUND SQUIRRELS DETECTED WITHIN 100 M RADIUS OF BREEDING LOCATIONS.
General:	2 ADULTS OBSERVED FLYING TO AND FROM BURROW, AND PRESUMABLY 2 JUVENILES OBSERVED ON THE GROUND NEXT TO BURROW AT A; 1 ADULT FLUSHED FROM STUMP ABOVE MOUND AT C; 1 BREEDING PAIR ESTIMATED TO OCCUR AT EACH LOCATION ON 23 MAY 2007.
Owner/Manager:	BIA-CABAZON INDIAN RES

Occurrence No.	1488	**Map Index:**	80368	**EO Index:**	81356	**Element Last Seen:**	2007-05-23
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-05-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-10-12

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.59755 / -116.07856	**Accuracy:**	80 meters
UTM:	Zone-11 N3717915 E585493	**Elevation (ft):**	-140
PLSS:	T07S, R09E, Sec. 06, NE (S)	**Acres:**	0.0

Location:	0.1 MI SSW LINCOLN ST AT 62ND AVE, 1.3 MI E BM -163 (SOUTHERN PACIFIC RR), IN CABAZON INDIAN RESERVATION, N OF MECCA.
Detailed Location:	BLOCK CODE 3715-585 - LOCATION CODE B. MAPPED TO PROVIDED COORDINATES.
Ecological:	HABITAT TYPE LISTED AS BRUSHLAND. LOWLAND ELEVATION SUBREGION. NO GROUND SQUIRRELS DETECTED WITHIN 100 M RADIUS OF BREEDING LOCATION.
General:	2 ADULTS AND 1 JUVENILE OBSERVED, AND 1 BREEDING PAIR ESTIMATED TO OCCUR IN AREA ON 23 MAY 2007.
Owner/Manager:	BIA-CABAZON INDIAN RES

Occurrence No.	1600	**Map Index:**	81011	**EO Index:**	81998	**Element Last Seen:**	2007-06-17
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-06-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-12-07

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.59514 / -116.09369	**Accuracy:**	80 meters
UTM:	Zone-11 N3717635 E584091	**Elevation (ft):**	-160
PLSS:	T07S, R09E, Sec. 06, NW (S)	**Acres:**	0.0

Location:	0.25 MI SSE BUCHANAN ST AT 62ND AVE, IN CABAZON INDIAN RESERVATION, NW MECCA.
Detailed Location:	BLOCK CODE 3715-580 - LOCATION CODE D. MAPPED TO PROVIDED COORDINATES.
Ecological:	HABITAT TYPE CONSISTED OF BRUSHLAND. LOWLAND ELEVATION SUBREGION. NO GROUND SQUIRRELS DETECTED WITHIN 100 M RADIUS OF BREEDING LOCATIONS.
General:	1 ADULT AND 1 JUVENILE OBSERVED; 1 OWL FLUSHED FROM BURROW; 1 BREEDING PAIR ESTIMATED TO OCCUR IN AREA ON 17 JUN 2007.
Owner/Manager:	BIA-CABAZON INDIAN RES

Occurrence No.	1601	**Map Index:**	81013	**EO Index:**	81999	**Element Last Seen:**	2007-06-17
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-06-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-12-07

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.59708 / -116.08812	**Accuracy:**	80 meters
UTM:	Zone-11 N3717855 E584606	**Elevation (ft):**	-150
PLSS:	T07S, R09E, Sec. 06, NW (S)	**Acres:**	0.0

Location:	0.4 MI ESE BUCHANAN ST AT 62ND AVE, IN CABAZON INDIAN RESERVATION, NW MECCA.
Detailed Location:	BLOCK CODE 3715-580 - LOCATION CODE E. MAPPED TO PROVIDED COORDINATES.
Ecological:	HABITAT TYPE CONSISTS OF BRUSHLAND. LOWLAND ELEVATION SUBREGION. NO GROUND SQUIRRELS DETECTED WITHIN 100 M RADIUS OF BREEDING LOCATIONS.
General:	1 ADULT AND 1 JUVENILE FLUSHED FROM NATAL BURROW; 1 BREEDING PAIR ESTIMATED TO OCCUR IN AREA ON 17 JUN 2007.
Owner/Manager:	BIA-CABAZON INDIAN RES

Polioptila melanura

Element Code: ABPBJ08030

black-tailed gnatcatcher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3S4
	Other:	CDFW_WL-Watch List, IUCN_LC-Least Concern			
Habitat:	**General:**	PRIMARILY INHABITS WOODED DESERT WASH HABITATS; ALSO OCCURS IN DESERT SCRUB HABITAT, ESPECIALLY IN WINTER.			
	Micro:	NESTS IN DESERT WASHES CONTAINING MESQUITE, PALO VERDE, IRONWOOD, ACACIA; ABSENT FROM AREAS WHERE SALT CEDAR INTRODUCED.			

Occurrence No.	13	**Map Index:** 05976	**EO Index:** 25013	**Element Last Seen:**	1926-04-07
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1926-04-07
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-180
PLSS:	T07S, R09E, Sec. 08, SW (S)	**Acres:**	0.0

Location: MECCA.

Detailed Location:

Ecological:

General: SBCM EGG SET #3383 AND MVZ #623 (1908-03-12).

Owner/Manager: UNKNOWN

Toxostoma crissale

Element Code: ABPBK06090

Crissal thrasher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	RESIDENT OF SOUTHEASTERN DESERTS IN DESERT RIPARIAN AND DESERT WASH HABITATS.			
	Micro:	NESTS IN DENSE VEGETATION ALONG STREAMS/WASHES; MESQUITE, SCREWBEAN MESQUITE, IRONWOOD, CATCLAW, ACACIA, ARROWWEED, WILLOW.			

Occurrence No.	1	**Map Index:** 05976	**EO Index:** 24418	**Element Last Seen:**	1930-04-13
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1930-04-13
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-180
PLSS:	T07S, R09E, Sec. 08, SW (S)	**Acres:**	0.0

Location: MECCA.

Detailed Location:

Ecological:

General: EGG SET. #3697 SBCM.

Owner/Manager: UNKNOWN

Toxostoma lecontei **Element Code:** ABPBK06100

Le Conte's thrasher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	Candidate Threatened		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	DESERT RESIDENT; PRIMARILY OF OPEN DESERT WASH, DESERT SCRUB, ALKALI DESERT SCRUB, AND DESERT SUCCULENT SCRUB HABITATS.			
	Micro:	COMMONLY NESTS IN A DENSE, SPINY SHRUB OR DENSELY BRANCHED CACTUS IN DESERT WASH HABITAT, USUALLY 2-8 FEET ABOVE GROUND.			

Occurrence No.	23	**Map Index:** 05976	**EO Index:** 24530	**Element Last Seen:**	1908-04-13
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1908-04-13
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-180
PLSS:	T07S, R09E, Sec. 08, SW (S)	**Acres:**	0.0

Location:	MECCA.
Detailed Location:	
Ecological:	
General:	MVZ SPECIMEN #794.
Owner/Manager:	UNKNOWN

Icteria virens **Element Code:** ABPBX24010

yellow-breasted chat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S4
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	SUMMER RESIDENT; INHABITS RIPARIAN THICKETS OF WILLOW AND OTHER BRUSHY TANGLES NEAR WATERCOURSES.			
	Micro:	NESTS IN LOW, DENSE RIPARIAN, CONSISTING OF WILLOW, BLACKBERRY, WILD GRAPE; FORAGES AND NESTS WITHIN 10 FT OF GROUND.			

Occurrence No.	13	**Map Index:** 05976	**EO Index:**	24892	**Element Last Seen:** 1916-05-24
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:** 1916-05-24
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 1989-08-10

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-180
PLSS:	T07S, R09E, Sec. 08, SW (S)	**Acres:**	0.0

Location: MECCA.

Detailed Location:

Ecological:

General: EGG SET. MVZ #946 & 3059. ALSO SEEN BY HUEY IN 1914, UCLA #B264.

Owner/Manager: UNKNOWN

Xyrauchen texanus

Element Code: AFCJC11010

razorback sucker

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S2
	Other:	AFS_EN-Endangered, CDFW_FP-Fully Protected, IUCN_CR-Critically Endangered			
Habitat:	**General:**	FOUND IN THE COLORADO RIVER BORDERING CALIFORNIA.			
	Micro:	ADAPTED FOR SWIMMING IN SWIFT CURRENTS BUT ALSO NEED QUIET WATERS. SPAWN IN AREAS OF SAND/GRAVEL/ROCKS IN SHALLOW WATER.			

Occurrence No.	36	**Map Index:**	88486	**EO Index:**	89496	**Element Last Seen:**	1955-10-17
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1955-10-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-03-20

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57092 / -116.10963	**Accuracy:**	non-specific area
UTM:	Zone-11 N3714937 E582635	**Elevation (ft):**	-190
PLSS:	T07S, R08E, Sec. 12 (S)	**Acres:**	214.0

Location: ABOUT 2.1 MILES W OF MECCA, N OF SALTON SEA, COACHELLA VALLEY.

Detailed Location: LOCATION DESCRIBED AS "DRAINAGE: SALTON SEA, COACHELLA VALLEY WATER DISTRICT BASIN AT MECCA." MAPPED TO COACHELLA VALLEY STORMWATER CHANNEL, ALSO KNOWN AS WHITEWATER RIVER.

Ecological:

General: 1 RAZORBACK SUCKER COLLECTED (CAS #75456) ON 17 OCT 1955 BY UNKNOWN COLLECTOR. RESEARCH NEEDED.

Owner/Manager: UNKNOWN

Cyprinodon macularius

Element Code: AFCNB02060

desert pupfish

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	AFS_EN-Endangered, IUCN_VU-Vulnerable			
Habitat:	**General:**	DESERT PONDS, SPRINGS, MARSHES AND STREAMS IN SOUTHERN CALIFORNIA.			
	Micro:	CAN LIVE IN SALINITIES FROM FRESHWATER TO 68 PPT; CAN WITHSTAND TEMPS FROM 9 - 45 C AND DISSOLVED OXYGEN LEVELS DOWN TO 0.1 PPM.			

Occurrence No.	33	**Map Index:**	30149	**EO Index:**	4969	**Element Last Seen:**	1991-04-06
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1991-04-06
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1994-09-26

Quad Summary: Mortmar (3311558), Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.52369 / -116.00045	**Accuracy:**	specific area
UTM:	Zone-11 N3709792 E592820	**Elevation (ft):**	-230
PLSS:	T07S, R09E, Sec. 36, NW (S)	**Acres:**	6.2

Location: GARFIELD 0.5 DRAIN ON THE NORTHERN END OF THE SALTON SEA, RIVERSIDE CO.

Detailed Location:

Ecological: 1.5 FT DEEP IRRIGATION DRAIN. SUBSTRATE IS MUD WITH ALGAE. STEEP BANKS.

General: 2 PUPFISH FOUND 4/6/91.

Owner/Manager: UNKNOWN

Occurrence No.	60	**Map Index:**	26203	**EO Index:**	16742	**Element Last Seen:**	1991-06-12
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1991-06-12
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1994-08-22

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.52744 / -116.04377	**Accuracy:**	non-specific area
UTM:	Zone-11 N3710170 E588793	**Elevation (ft):**	-230
PLSS:	T07S, R09E, Sec. 28, SE (S)	**Acres:**	92.5

Location:	GRANT STREET DRAIN AND JOHNSON 0.5 DRAIN ON THE NORTH SHORE OF THE SALTON SEA, RIVERSIDE CO.
Detailed Location:	
Ecological:	AGRICULTURAL DRAINS WITH SOFT SANDY/MUDDY SUBSTRATE & MURKY WATER. MOLLIES, TILAPIA & LONGJAW MUDSUCKER FOUND HERE IN 1978.
General:	1 PUPFISH CAPTURED IN GRANT STREET DRAIN IN FALL 1978. 92 PUPFISH CAPTURED 4/07/91 IN GRANT STREET DRAIN. 36 PUPFISH CAPTURED 6/12/91 IN JOHNSON 0.5 DRAIN.
Owner/Manager:	UNKNOWN

Occurrence No.	61	**Map Index:**	26204	**EO Index:**	18265	**Element Last Seen:**	1991-04-07
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1991-04-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1994-09-26

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.52531 / -116.03511	**Accuracy:**	non-specific area
UTM:	Zone-11 N3709942 E589599	**Elevation (ft):**	-230
PLSS:	T07S, R09E, Sec. 34, N (S)	**Acres:**	25.9

Location:	GRANT 0.5 DRAIN ON THE NORTH SHORE OF THE SALTON SEA, RIVERSIDE CO.
Detailed Location:	
Ecological:	IRRIGATION DRAIN WITH SOFT, SANDY SUBSTRATE AND SLOW, CLEAR WATER. CATTAILS ALONG THE BANK AND ALGAL OVERLAY ON THE WATER.
General:	7 PUPFISH CAPTURED 4/07/91.
Owner/Manager:	UNKNOWN

Occurrence No.	62	**Map Index:**	26205	**EO Index:**	22877	**Element Last Seen:**	1991-04-07
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1991-04-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1994-09-26

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.52283 / -116.02638	**Accuracy:**	non-specific area
UTM:	Zone-11 N3709674 E590412	**Elevation (ft):**	-230
PLSS:	T07S, R09E, Sec. 34, NE (S)	**Acres:**	21.8

Location: HAYES STREET DRAIN ON THE NORTH SHORE OF THE SALTON SEA, RIVERSIDE CO.

Detailed Location:

Ecological: IRRIGATION DRAIN WITH STILL, MURKY WATER & MUDDY/SAND SUBSTRATE. ALGAL MATTING & LITTLE VEGETATION. IN 1978, MOLLIES, GULF CROAKER, & LONGJAW MUDSUCKER WERE FOUND AT THE MOUTH & MOLLIES, TILAPIA, & LONGJAW MUDSUCKER FOUND UPSTREAM.

General: 1 PUPFISH FOUND AT THE MOUTH IN WINTER 1978 & 2 FOUND UPSTREAM IN JANUARY 1979. 2 PUPFISH WERE CAPTURED 4/07/91.

Owner/Manager: UNKNOWN

Occurrence No.	63	**Map Index:**	26206	**EO Index:**	22880	**Element Last Seen:**	1991-04-07
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1991-04-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1994-09-26

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.52225 / -116.01779	**Accuracy:**	non-specific area
UTM:	Zone-11 N3709618 E591211	**Elevation (ft):**	-230
PLSS:	T07S, R09E, Sec. 35, N (S)	**Acres:**	24.4

Location: HAYES 0.5 (WHEELER) DRAIN ON THE NORTH SHORE OF THE SALTON SEA, RIVERSIDE CO.

Detailed Location:

Ecological: IRRIGATION DRAIN WITH SOFT MUD SUBSTRATE AND ALGAE ALONG THE BOTTOM. IN 1978, SAILFIN MOLLIES, LONGJAW MUDSUCKER, AND TILAPIA WERE FOUND HERE.

General: 2 PUPFISH CAPTURED IN SUMMER & 3 CAPTURED IN FALL, 1978. 9 PUPFISH CAPTURED 4/07/91.

Owner/Manager: UNKNOWN

Occurrence No.	64	**Map Index:**	26207	**EO Index:**	22879	**Element Last Seen:**	1991-06-12
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1991-06-12
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1994-08-22

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.52556 / -116.00913	**Accuracy:**	non-specific area
UTM:	Zone-11 N3709992 E592011	**Elevation (ft):**	-230
PLSS:	T07S, R09E, Sec. 35, NE (S)	**Acres:**	56.5

Location: GARFIELD DRAIN ON THE NORTH SHORE OF THE SALTON SEA, RIVERSIDE CO.

Detailed Location:

Ecological: IRRIGATION DRAIN.

General: PUPFISH WERE NOT TRAPPED, BUT THEY WERE POSITIVELY IDENTIFIED.

Owner/Manager: UNKNOWN

Euderma maculatum

Element Code: AMACC07010

spotted bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	OCCUPIES A WIDE VARIETY OF HABITATS FROM ARID DESERTS AND GRASSLANDS THROUGH MIXED CONIFER FORESTS.			
	Micro:	FEEDS OVER WATER AND ALONG WASHES. FEEDS ALMOST ENTIRELY ON MOTHS. NEEDS ROCK CREVICES IN CLIFFS OR CAVES FOR ROOSTING.			

Occurrence No.	36	**Map Index:** 05976	**EO Index:** 66329	**Element Last Seen:**	1907-10-01
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1907-10-01
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2006-10-17

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-170
PLSS:	T07S, R09E, Sec. 08 (S)	**Acres:**	0.0

Location: COLORADO DESERT, MECCA.

Detailed Location: COLLECTED BELOW SEA LEVEL.

Ecological:

General: 1 SPECIMEN COLLECTED BY JOSEPH GRINNELL ET AL. ON 1 OCT 1907, MVZ #1196.

Owner/Manager: UNKNOWN

Corynorhinus townsendii

Element Code: AMACC08010

Townsend's big-eared bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive			
Habitat:	**General:**	THROUGHOUT CALIFORNIA IN A WIDE VARIETY OF HABITATS. MOST COMMON IN MESIC SITES.			
	Micro:	ROOSTS IN THE OPEN, HANGING FROM WALLS AND CEILINGS. ROOSTING SITES LIMITING. EXTREMELY SENSITIVE TO HUMAN DISTURBANCE.			

Occurrence No.	284	**Map Index:** 05976	**EO Index:** 93137	**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2014-04-15

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-170
PLSS:	T07S, R09E, Sec. 08 (S)	**Acres:**	0.0

Location: MECCA.

Detailed Location: MAPPED GENERALLY TO PROVIDED LOCALITY "MECCA."

Ecological:

General: 1 MALE COLLECTED BY J. HORNUNG (LACM #30245).

Owner/Manager: UNKNOWN

Antrozous pallidus **Element Code:** AMACC10010

pallid bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive			
Habitat:	**General:**	DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS AND FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.			
	Micro:	ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.			

Occurrence No.	19	**Map Index:** 26329	**EO Index:** 26902	**Element Last Seen:**	1992-08-29
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1992-08-29
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1994-12-01

Quad Summary: Mortmar (3311558), Cottonwood Basin (3311568), Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.61967 / -115.99795	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3720437 E592949	**Elevation (ft):**	800
PLSS:	T06S, R09E, Sec. 25, E (S)	**Acres:**	0.0

Location: PAINTED CANYON, IN THE MECCA HILLS, 6 MILES NORTH OF SALTON SEA.

Detailed Location:

Ecological: HABITAT CONSISTS OF A DRY, DESERT CANYON.

General: 1 PALLID BAT OBSERVED IN A SMALL ROCK SHELTER.

Owner/Manager: UNKNOWN

Eumops perotis californicus **Element Code:** AMACD02011

western mastiff bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5T4
	State:	None		**State:**	S3S4
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER AND DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL, ETC.			
	Micro:	ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES AND TUNNELS.			

Occurrence No.	79	**Map Index:** 05976	**EO Index:** 66411	**Element Last Seen:**	1907-10-11
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1907-10-11
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2006-09-26

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	
PLSS:	T07S, R09E, Sec. 08 (S)	**Acres:**	0.0

Location: MECCA.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED IN THE GENERAL VICNITY OF MECCA.

Ecological:

General: 1 SPECIMEN COLLECTED BY G.W. URIE ON 11 OCT 1907, MVZ #182839.

Owner/Manager: UNKNOWN

Occurrence No.	126	**Map Index:** 66376	**EO Index:** 66473	**Element Last Seen:**	1992-08-29
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1992-08-29
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2006-09-25

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.60556 / -116.02315	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3718850 E590625	**Elevation (ft):**	240
PLSS:	T06S, R09E, Sec. 35, SW (S)	**Acres:**	0.0

Location: NE OF MECCA, PAINTED CANYON.

Detailed Location: MAPPED ACCORDING TO LAT/LONG COORDINATES GIVEN WHICH PUTS THE SITE AT THE MOUTH OF PAINTED CANYON.

Ecological:

General: SPECIMEN COLLECTED 11 OCT 1907 AND DEPOSITED AT CSULB. ROOST DETECTED IN AREA 29 AUG 1992.

Owner/Manager: UNKNOWN

Nyctinomops femorosaccus **Element Code:** AMACD04010

pocketed free-tailed bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	VARIETY OF ARID AREAS IN SOUTHERN CALIFORNIA; PINE-JUNIPER WOODLANDS, DESERT SCRUB, PALM OASIS, DESERT WASH, DESERT RIPARIAN, ETC.			
	Micro:	ROCKY AREAS WITH HIGH CLIFFS.			

Occurrence No.	3	**Map Index:** 26329	**EO Index:** 4125	**Element Last Seen:**	1992-08-29
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1992-08-29
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1995-01-17

Quad Summary:	Mortmar (3311558), Cottonwood Basin (3311568), Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.61967 / -115.99795	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3720437 E592949	**Elevation (ft):**	800
PLSS:	T06S, R09E, Sec. 25, E (S)	**Acres:**	0.0

Location:	PAINTED CANYON, 6.5 MILES NORTH OF SALTON SEA.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF A NARROW, DRY DESERT CANYON, WITH LOTS OF CLIFFS.
General:	>20 OBSERVED ON 29 AUGUST 1992.
Owner/Manager:	UNKNOWN

Xerospermophilus tereticaudus chlorus **Element Code:** AMAFB05161

Palm Springs round-tailed ground squirrel

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	None		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	RESTRICTED TO THE COACHELLA VALLEY. PREFERS DESERT SUCCULENT SCRUB, DESERT WASH, DESERT SCRUB, ALKALI SCRUB, AND LEVEES.			
	Micro:	PREFERS OPEN, FLAT, GRASSY AREAS IN FINE-TEXTURED, SANDY SOIL. DENSITY CORRELATED WITH WINTER RAINFALL.			

Occurrence No.	8	**Map Index:** 05976	**EO Index:** 24198	**Element Last Seen:**	1938-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1938-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-170
PLSS:	T07S, R09E, Sec. 08, S (S)	**Acres:**	0.0

Location: MECCA.

Detailed Location:

Ecological:

General: PG 359.

Owner/Manager: UNKNOWN

Occurrence No.	11	**Map Index:** 45677	**EO Index:** 45744	**Element Last Seen:**	2001-04-23
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2001-04-23
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2001-12-12

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.59756 / -116.04376	**Accuracy:**	80 meters
UTM:	Zone-11 N3717945 E588722	**Elevation (ft):**	10
PLSS:	T07S, R09E, Sec. 04, NE (S)	**Acres:**	0.0

Location: WEST SIDE OF THE COACHELLA CANAL, COACHELLA VALLEY.

Detailed Location:

Ecological: HABITAT CONSISTS OF SONORAN CREOSOTE SCRUB. SITE IS A FLAT PARCEL OF NATURAL LAND, WITH SANDY SOILS, SURROUNDED BY AGRICULTURE.

General: 3 ADULTS OBSERVED ON 23 APR 2001.

Owner/Manager: BIA-TORRES MARTINEZ RES

Chaetodipus fallax pallidus **Element Code:** AMAFD05032

pallid San Diego pocket mouse

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3T4
	State:	None		**State:**	S3S4
	Other:				
Habitat:	**General:**	DESERT BORDER AREAS OF SAN DIEGO, RIVERSIDE, SAN BERNARDINO, AND LOS ANGELES COUNTIES IN DESERT WASH, DESERT SCRUB, DESERT SUCCULENT SCRUB, PINYON-JUNIPER, ETC.			
	Micro:	SANDY, HERBACEOUS AREAS, USUALLY IN ASSOCIATION WITH ROCKS OR COARSE GRAVEL.			

Occurrence No.	34	**Map Index:** 60441	**EO Index:** 60477	**Element Last Seen:**	1984-06-30
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1984-06-30
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2005-03-09

Quad Summary: Mortmar (3311558), Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57900 / -115.99261	**Accuracy:**	1 mile
UTM:	Zone-11 N3715932 E593487	**Elevation (ft):**	150
PLSS:	T07S, R09E, Sec. 12 (S)	**Acres:**	0.0

Location: TORRES MARTINEZ INDIAN RESERVATION. ALONG CA-195 ABOUT 4.6 MILES ENE OF MECCA.

Detailed Location: EXACT LOCATION NOT KNOWN. MAPPED AS BEST GUESS BASED UPON LOCALITY DESCRIPTION.

Ecological:

General: ONE FEMALE SPECIMEN COLLECTED 30 JUN 1984 BY R. BAKER ET AL AT "MECCA, 4.6 MI NE OF; ON BOX CANYON ROAD" (TTU #41822).

Owner/Manager: UNKNOWN

Neotoma albigula venusta **Element Code:** AMAFF08031

Colorado Valley woodrat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3T4
	State:	None		**State:**	S1S2
	Other:				
Habitat:	**General:**	LOW-LYING DESERT AREAS IN SOUTHEASTERN CALIFORNIA. CLOSELY ASSOCIATED WITH BEAVER-TAIL CACTUS AND MESQUITE.			
	Micro:	INTOLERANT OF COLD TEMPS. EATS MAINLY SUCCULENT PLANTS. DISTRIBUTION INFLUENCED BY ABUNDANCE OF NEST BUILDING MATERIAL.			

Occurrence No.	10	**Map Index:** 05976	**EO Index:**	23800	**Element Last Seen:** 1908-04-13
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:** 1908-03-31
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2006-09-21

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-180
PLSS:	T07S, R09E, Sec. 08, SW (S)	**Acres:**	0.0

Location: MECCA.

Detailed Location:

Ecological:

General: MVZ #1158-1162 COLLECTED BETWEEN 31 MAR & 13 APR 1908.

Owner/Manager: UNKNOWN

Taxidea taxus **Element Code:** AMAJF04010

American badger

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS.			
	Micro:	NEEDS SUFFICIENT FOOD, FRIABLE SOILS AND OPEN, UNCULTIVATED GROUND. PREYS ON BURROWING RODENTS. DIGS BURROWS.			

Occurrence No.	25 **Map Index:** 56523	**EO Index:**	56539	**Element Last Seen:**	2001-04-28
Occ. Rank:	Good	**Presence:**	Presumed Extant	**Site Last Seen:**	2001-04-28
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2004-08-30

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.60612 / -116.04070	**Accuracy:**	80 meters
UTM:	Zone-11 N3718897 E588997	**Elevation (ft):**	50
PLSS:	T06S, R09E, Sec. 34, SW (S)	**Acres:**	0.0

Location:	EAST SIDE OF THE COACHELLA CANAL, AT THE BASE OF THE MECCA HILLS, 6 MILES NORTH OF SALTON SEA.
Detailed Location:	POTENTIAL BADGER AND COYOTE DIGS WERE FOUND THROUGHOUT THE AREA, BUT AVAILABLE MAMMALIAN PREY BASE APPEARED TO BE LOW.
Ecological:	HABITAT CONSISTS OF SONORAN CREOSOTE BUSH SCRUB, ON A SOUTH-FACING, 15% SLOPE, ON A LOOSE, ROCKY SUBSTRATE.
General:	BADGER SKULL FOUND ON 28 APR 2001.
Owner/Manager:	BLM

Phrynosoma mcallii **Element Code:** ARACF12040

flat-tailed horned lizard

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened			
Habitat:	**General:**	RESTRICTED TO DESERT WASHES AND DESERT FLATS IN CENTRAL RIVERSIDE, EASTERN SAN DIEGO, AND IMPERIAL COUNTIES.			
	Micro:	CRITICAL HABITAT ELEMENT IS FINE SAND, INTO WHICH LIZARDS BURROW TO AVOID TEMPERATURE EXTREMES; REQUIRES VEGETATIVE COVER AND ANTS.			

Occurrence No.	71 **Map Index:** 05976	**EO Index:**	34655	**Element Last Seen:**	1908-03-31
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	1908-03-31
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2016-07-21

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-180
PLSS:	T07S, R09E, Sec. 08 (S)	**Acres:**	0.0

Location: MECCA.

Detailed Location: LOCATION STATED AS "MECCA."

Ecological:

General: MVZ 447 AND 448 COLLECTED BY W.P. TAYLOR ON 31 MARCH 1908. MVZ 449 AND 450 COLLECTED BY C.H. RICHARDSON JR DURING MARCH 1908.

Owner/Manager: UNKNOWN

Uma inornata **Element Code:** ARACF15010

Coachella Valley fringe-toed lizard

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	IUCN_EN-Endangered			
Habitat:	**General:**	LIMITED TO SANDY AREAS IN THE COACHELLA VALLEY, RIVERSIDE COUNTY.			
	Micro:	REQUIRES FINE, LOOSE, WINDBLOWN SAND (FOR BURROWING), INTERSPERSED WITH HARDPAN AND WIDELY-SPACED DESERT SHRUBS.			

Occurrence No.	226	**Map Index:**	50115	**EO Index:**	50115	**Element Last Seen:**	1959-04-16
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1959-04-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-11

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.58622 / -116.09271	**Accuracy:**	1 mile
UTM:	Zone-11 N3716647 E584191	**Elevation (ft):**	-170
PLSS:	T07S, R09E, Sec. 06 (S)	**Acres:**	0.0

Location:	VICINITY OF HWY 195 (PIERCE ST/66TH AVE) NEAR WHITEWATER RIVER & TOWN OF MECCA, 5 MI N OF SALTON SEA, COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCALITY STATED AS 5 MILES NORTH OF SALTON SEA NEAR HWY 195. HWY 195 IS NOW PIERCE ST HEADING NORTH UP TOWARDS MECCA, AND THEN TURNS 90 DEGREES EAST TOWARDS AND THROUGH MECCA AS 66TH AVE.
Ecological:	BASED ON 1959 AERIALS, LIKELY COLLECTED ALONG HWY 195/PIERCE ST JUST SOUTH OF 66TH AVE, OR COLLECTED JUST NORTH OR WEST OF MECCA. MOST OF THIS AREA IS DEVELOPED AS AGRICULTURE NOW (2022) OR SURROUNDED BY AG REDUCING ECOLOGICAL PROCESSES.
General:	1 COLLECTED ON 16 APR 1959 AND DEPOSITED AT LACM (#97564). ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN SOUTH COACHELLA VALLEY. CONSIDERED EXTIRPATED IN THIS AREA BY USFWS (2023).
Owner/Manager:	UNKNOWN

Trichinorhipis knulli **Element Code:** IICOLX1100

Knull's metallic wood-boring beetle

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G1
	State:	None		**State:**	S1
	Other:				
Habitat:	**General:**	□			
	Micro:	□			

Occurrence No.	1	**Map Index:** B6166	**EO Index:** 119207	**Element Last Seen:**	1940-06-21
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1940-06-21
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2020-09-14

Quad Summary: Mortmar (3311558), Cottonwood Basin (3311568), Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.63038 / -115.99073	**Accuracy:**	non-specific area
UTM:	Zone-11 N3721631 E593607	**Elevation (ft):**	1000
PLSS:	T06S, R10E, Sec. 19 (S)	**Acres:**	442.0

Location: PAINTED CANYON, IN THE MECCA HILLS, NORTH OF THE SALTON SEA.

Detailed Location: COLLECTION LOCALITY DESCRIBED AS PAINTED CANYON, RIVERSIDE COUNTY. MAPPED NON-SPECIFICALLY ALONG THE LENGTH OF THE CANYON.

Ecological: COLLECTED FROM A SMALL, DEAD, UNIDENTIFIED DESERT SHRUB AT NIGHT.

General: THE HOLOTYPE WAS COLLECTED HERE ON 21 JUN 1940.

Owner/Manager: BLM

Oliarces clara **Element Code:** IINEU04010

cheeseweed owlfly (cheeseweed moth lacewing)

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G1G3
	State:	None		**State:**	S2
	Other:				
Habitat:	**General:**	INHABITS THE LOWER COLORADO RIVER DRAINAGE.			
	Micro:	FOUND UNDER ROCKS OR IN FLIGHT OVER STREAMS. LARREA TRIDENTATA IS THE SUSPECTED LARVAL HOST.			

Occurrence No.	1	**Map Index:** 05976	**EO Index:** 12872	**Element Last Seen:**	1908-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1908-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2005-03-10

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-180
PLSS:	T07S, R09E, Sec. 08, SE (S)	**Acres:**	0.0

Location: WALTERS STATION (NOW MECCA) COACHELLA VALLEY.

Detailed Location:

Ecological:

General: TYPE SPECIMEN (MALE) COLLECTED HERE BY J. B. SMITH IN APRIL. BOR REFERENCE GIVES YEAR AS 1908.

Owner/Manager: UNKNOWN

Occurrence No.	7	**Map Index:** 58307	**EO Index:** 58343	**Element Last Seen:**	1974-04-15
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1974-04-15
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2005-04-29

Quad Summary: Mortmar (3311558), Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.61318 / -116.00588	**Accuracy:**	specific area
UTM:	Zone-11 N3719710 E592219	**Elevation (ft):**	
PLSS:	T06S, R09E, Sec. 36 (S)	**Acres:**	146.2

Location: PAINTED CANYON ABOUT 4 MILES NORTHEAST OF MECCA.

Detailed Location:

Ecological:

General: UNKNOWN NUMBER COLLECTED 15 APR 1974. DEPOSITED IN UC RIVERSIDE ENTOMOLOGY MUSEUM. 16 SPECIMENS COLLECTED SAME DATE BY WASBAUER AND ANDREWS, DEPOSITED IN THE CALIFORNIA STATE COLLECTION OF ARTHROPODS (CDFA).

Owner/Manager: BLM

Ambrosia monogyra **Element Code:** PDAST50010

singlewhorl burrobrush

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank			
Habitat:	**General:**	CHAPARRAL, SONORAN DESERT SCRUB.			
	Micro:	SANDY SOILS. 5-475 M.			

Occurrence No.	32	**Map Index:** 05976	**EO Index:** 103121	**Element Last Seen:**	1922-03-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1922-03-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2016-08-18

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	
PLSS:	T07S, R09E, Sec. 08 (S)	**Acres:**	0.0

Location: MECCA.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS AROUND THE TOWN OF MECCA.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1922 WOODCOCK COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Xylorhiza cognata **Element Code:** PDASTA1010

Mecca-aster

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	STEEP CANYON SLOPES, IN SANDSTONE AND CLAY. 20-305 M.			

Occurrence No.	10	**Map Index:**	78183	**EO Index:**	31083	**Element Last Seen:**	2006-02-10
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-02-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-02-25

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.61224 / -116.00563	**Accuracy:**	specific area
UTM:	Zone-11 N3719607 E592244	**Elevation (ft):**	500
PLSS:	T06S, R09E, Sec. 36, NW (S)	**Acres:**	2.0

Location:	PAINTED CANYON; APPROXIMATELY 4 ROAD MILES NORTH OF THE JUNCTION OF PAINTED CANYON RD WITH BOX CANYON RD, MECCA HILLS.
Detailed Location:	MAPPED BY CNDDB AS 2 SMALL POLYGONS ACCORDING TO 2003 UCR, 2005 MCGLAUGHLIN, AND 2006 BENIGNO COORDINATES. HISTORICAL COLLECTIONS FROM PAINTED CYN AT AROUND 400-500 FT ARE ALSO ATTRIBUTED TO THIS SITE.
Ecological:	PLANTS GROWING IN SANDY SOILS AT BASE OF CANYON WALL. CANYONS AND WASH AREAS, MOSTLY CREOSOTE WASH AND SCRUBLAND. PLANT GROWS IN SANDY, FLAT, NARROW WASHES WITHIN CANYONS OR ON SANDY/ROCKY STEEP TO MID-SLOPE CANYON WALLS.
General:	SW POLYGON: 91 PLANTS SEEN IN 2003, 60 PLANTS IN 2006. ~25 PLANTS WERE SEEN IN THE NE POLYGON IN 2005; LIKELY MORE PLANTS IN THIS AREA. A 1938 COLLECTION BY FERRIS & ROSSBACH FROM "2 MILES UP PAINTED CANYON" ALSO ATTRIBUTED TO THIS SITE.
Owner/Manager:	BLM

Occurrence No.	12	**Map Index:**	36088	**EO Index:**	31085	**Element Last Seen:**	2011-03-10
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-03-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-02-28

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.60811 / -116.01772	**Accuracy:**	specific area
UTM:	Zone-11 N3719138 E591127	**Elevation (ft):**	300
PLSS:	T06S, R09E, Sec. 35, N (S)	**Acres:**	5.0

Location:	PAINTED CANYON, ABOUT 3 ROAD MILES N OF THE JUNCTION OF PAINTED CANYON RD WITH BOX CANYON RD, MECCA HILLS.
Detailed Location:	SEVERAL COLONIES MAPPED BY CNDDB AS 6 POLYGONS ACCORDING TO 2003 UCR COORDINATES, 2005 UCR DIGITAL DATA, AND 2006 BENIGNO & 2011 BELL COORDINATES.
Ecological:	LOWER SONORAN-LARREA. IN SMALL CANYONS. ASSOC WITH ATRIPLEX HYMENELYTRA, AMBROSIA DUMOSA, PALAFOXIA ARIDA, PALO VERDE, ENCELIA FARINOSA, LARREA TRIDENTATA, ERIOGONUM INFLATUM, PERITYLE EMORYI, SCHISMUS BARBATUS, PHACELIA CRENULATA, ETC.
General:	POP #S ARE FOR PARTS OF OCCURRENCE. 25 PLANTS SEEN IN SEC 35 IN 1976. ~247 PLANTS SEEN IN 2003, 137 PLANTS IN 2004, 166 PLANTS IN 2006, 110 PLANTS IN 2011. 2 HISTORIC COLLECTIONS FROM PAINTED CANYON AT ~250 FT ARE ALSO ATTRIBUTED HERE.
Owner/Manager:	BLM

Occurrence No.	29	**Map Index:**	78203	**EO Index:**	79056	**Element Last Seen:**	1933-03-04
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1933-03-04
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-02-25

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.59777 / -116.02467	**Accuracy:**	non-specific area
UTM:	Zone-11 N3717985 E590493	**Elevation (ft):**	140
PLSS:	T07S, R09E, Sec. 02, NW (S)	**Acres:**	40.0

Location:	LOWER END OF PAINTED CANYON, MECCA HILLS.
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS ALONG THE PORTION OF PAINTED CANYON RD BETWEEN 100 AND 180 FT IN ELEVATION BASED ON ELEVATION ON COLLECTION LABELS. CANYON SIDES.
Ecological:	
General:	SITE BASED ON A 1920 SPENCER COLLECTION, A 1929 BRAUNTON COLLECTION AND A 1933 DUNKLE COLLECTION FROM 180 FT, 100 FT, & 150 FT IN ELEVATION RESPECTIVELY. NEEDS FIELDWORK.
Owner/Manager:	UNKNOWN

Occurrence No.	43	**Map Index:**	88276	**EO Index:**	89288	**Element Last Seen:**	2012-03-18
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2012-03-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-02-22

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.59533 / -116.01043	**Accuracy:**	specific area
UTM:	Zone-11 N3717728 E591816	**Elevation (ft):**	160
PLSS:	T07S, R09E, Sec. 02, NE (S)	**Acres:**	1.0

Location:	IN THE VICINITY OF SKELETON CANYON AT THE MOUTH OF PAINTED CANYON, MECCA HILLS.
Detailed Location:	ON STEEP SANDSTONE WALLS AND SLOPES IN THE NE 1/4 OF THE NE 1/4 OF SECTION 2.
Ecological:	OPEN WASH BOTTOM WITH STEEP SANDSTONE WALL. GROWING WITH LARREA TRIDENTATA, AMBROSIA DUMOSA, ACACIA GREGGII, PALAFOXIA ARIDA, ENCELIA FARINOSA, AND PLANTAGO OVATA.
General:	11 PLANTS OBSERVED IN 2012.
Owner/Manager:	UNKNOWN

Astragalus sabulonum **Element Code:** PDFAB0F7R0

gravel milk-vetch

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	DESERT DUNES, MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	SANDY OR GRAVELLY FLATS, WASHES, AND ROADSIDES. -60-885 M.			

Occurrence No.	8	**Map Index:** 84293	**EO Index:** 85318	**Element Last Seen:**	1985-03-24
Occ. Rank:	None		**Presence:** Extirpated	**Site Last Seen:**	1985-03-24
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2011-11-17

Quad Summary:	Mecca (3311651)
County Summary:	Riverside

Lat/Long:	33.56946 / -116.03190	**Accuracy:**	non-specific area
UTM:	Zone-11 N3714840 E589851	**Elevation (ft):**	-50
PLSS:	T07S, R09E, Sec. 15, NE (S)	**Acres:**	18.0

Location:	FLATS ALONG BOX CANYON ROAD (HIGHWAY 195), 2.5 MILES EAST OF MECCA, 0.7 MILE EAST OF GRANT STREET, COACHELLA VALLEY.
Detailed Location:	
Ecological:	SANDY ROADSIDE. ASSOCIATED WITH ASTRAGALUS ARIDUS.
General:	MAIN SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1985 COLLECTION BY SANDERS. OTHER HISTORIC COLLECTIONS FROM "2 OR 3 MILES EAST OF MECCA", "MECCA" AND "SANDS EAST OF MECCA" ALSO ATTRIBUTED HERE.
Owner/Manager:	PVT

Astragalus lentiginosus var. coachellae **Element Code:** PDFAB0FB97

Coachella Valley milk-vetch

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G5T1
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture			
Habitat:	**General:**	SONORAN DESERT SCRUB, DESERT DUNES.			
	Micro:	SANDY FLATS, WASHES, OUTWASH FANS, SOMETIMES ON DUNES. 35-695 M.			

Occurrence No.	52	**Map Index:** 79117	**EO Index:** 80078	**Element Last Seen:**	1927-03-12
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1927-03-12
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-06-21

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.60749 / -116.02101	**Accuracy:**	1 mile
UTM:	Zone-11 N3719066 E590822	**Elevation (ft):**	
PLSS:	T06S, R09E, Sec. 35 (S)	**Acres:**	0.0

Location: PAINTED CANYON, SOUTHEAST COACHELLA VALLEY, MECCA HILLS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS CENTERED ON LOWER CANYON AND MOUTH OF PAINTED CANYON.

Ecological:

General: ONLY SOURCE OF OCCURRENCE IS 1927 COLLECTION BY STASON. NEEDS FIELDWORK.

Owner/Manager: BLM, UNKNOWN

Petalonyx linearis

Element Code: PDLOA04010

narrow-leaf sandpaper-plant

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3?
	Other:	Rare Plant Rank - 2B.3			
Habitat:	**General:**	MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	SANDY OR ROCKY CANYONS. -30-1090 M.			

Occurrence No.	18	**Map Index:** 79117	**EO Index:** 106674	**Element Last Seen:**	1979-03-22
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1979-03-22
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2017-06-07

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.60749 / -116.02101	**Accuracy:**	1 mile
UTM:	Zone-11 N3719066 E590822	**Elevation (ft):**	
PLSS:	T06S, R09E, Sec. 35 (S)	**Acres:**	0.0

Location: PAINTED CANYON, MECCA.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS AROUND THE PORTION OF PAINTED CANYON NEAR MECCA BASED ON TWO HISTORICAL COLLECTIONS. LOCATION OF PLANTS WITHIN PAINTED CANYON IS UNKNOWN.

Ecological: DESERT WASH.

General: SITE BASED ON A 1925 MUNZ COLLECTION FROM "PAINTED CANYON, MECCA" AND A 1979 SAWYER COLLECTION FROM "PAINTED CANYON COUNTY PARK IN THE MECCA HILLS EAST OF INDIO". NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Nemacaulis denudata var. gracilis

Element Code: PDPGN0G012

slender cottonheads

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3G4T3?
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	COASTAL DUNES, DESERT DUNES, SONORAN DESERT SCRUB.			
	Micro:	IN DUNES OR SAND. -45-745 M.			

Occurrence No.	5	**Map Index:** 05976	**EO Index:** 5272	**Element Last Seen:**	1922-03-28
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1922-03-28
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1994-07-29

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.57390 / -116.07444	**Accuracy:**	1 mile
UTM:	Zone-11 N3715296 E585899	**Elevation (ft):**	-160
PLSS:	T07S, R09E, Sec. 08 (S)	**Acres:**	0.0

Location: MECCA.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS AT MECCA.

Ecological: IN DRY SAND.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1922 SPENCER COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Stuckenia striata **Element Code:** PMPOT030K0

broadleaf pondweed

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5
	State:	None		**State:**	S2S3
	Other:	Rare Plant Rank - 2B.3			
Habitat:	**General:**	MARSHES AND SWAMPS.			
	Micro:	LAKES, PONDS, RIVERS, AND DRAINAGE CANALS. -70-2135 M.			

Occurrence No.	1	**Map Index:** C0664	**EO Index:** 131896	**Element Last Seen:**	1973-07-18
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1973-07-18
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2024-07-26

Quad Summary: Mecca (3311651)

County Summary: Riverside

Lat/Long:	33.53964 / -116.06123	**Accuracy:**	non-specific area
UTM:	Zone-11 N3711509 E587160	**Elevation (ft):**	-220
PLSS:	T07S, R09E, Sec. 28 (S)	**Acres:**	128.0

Location: JOHNSON STREET DRAIN, SOUTH OF MECCA NEAR SALTON SEA.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB TO ENCOMPASS POTENTIAL HABITAT ALONG AND JUST BEYOND JOHNSON STREET, NEAR THE SALTON SEA.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1973 COLLECTION BY CUNNINGHAM. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Occurrence No.	21	**Map Index:** C0734	**EO Index:** 131974	**Element Last Seen:**	1957-11-30
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1957-11-30
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2024-07-26

Quad Summary: Mecca (3311651), Valerie (3311652), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.62278 / -116.12876	**Accuracy:**	non-specific area
UTM:	Zone-11 N3720672 E580812	**Elevation (ft):**	-145
PLSS:	T06S, R08E, Sec. 26, W (S)	**Acres:**	221.0

Location: COACHELLA DRAINAGE DITCH, ~1.5 MI SSE OF THERMAL.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB TO INCLUDE HABITAT ALONG THE COACHELLA VALLEY STORMWATER CHANNEL AROUND 1.5 MI SSE OF THERMAL.

Ecological: SUBMERSED IN SUN IN SWIFT WATER.

General: ABUNDANT IN CLUMPS IN 1957. ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1957 COLLECTION BY WHEELER. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Myoma (3311673))

Falco mexicanus

Element Code: ABNKD06090

prairie falcon

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S4
	Other:	CDFW_WL-Watch List, IUCN_LC-Least Concern			
Habitat:	**General:**	INHABITS DRY, OPEN TERRAIN, EITHER LEVEL OR HILLY.			
	Micro:	BREEDING SITES LOCATED ON CLIFFS. FORAGES FAR AFIELD, EVEN TO MARSHLANDS AND OCEAN SHORES.			

*** SENSITIVE ***

Occurrence No.	126	**Map Index:**	05678	**EO Index:**	26291	**Element Last Seen:**	1976-06-05
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1976-06-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2020-11-30

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:		**Accuracy:**	1/5 mile
UTM:		**Elevation (ft):**	800
PLSS:		**Acres:**	0.0

Location: *SENSITIVE* LOCATION INFORMATION SUPPRESSED.

Detailed Location: PLEASE CONTACT THE CALIFORNIA NATURAL DIVERSITY DATABASE, CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, FOR MORE INFORMATION: (916) 322-2493

Ecological: NEST WAS IN A POTHOLE 50 FT UP A SCARP.

General:

Owner/Manager:

Athene cunicularia

Element Code: ABNSB10010

burrowing owl

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	Candidate Endangered		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.			
	Micro:	SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.			

Occurrence No.	1119	**Map Index:**	71489	**EO Index:**	72387	**Element Last Seen:**	2007-03-01
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-03-01
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-06-12

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.78318 / -116.30332	**Accuracy:**	80 meters
UTM:	Zone-11 N3738334 E564499	**Elevation (ft):**	130
PLSS:	T04S, R06E, Sec. 36 (S)	**Acres:**	0.0

Location:	0.70 MI NNE OF THE JUNCTION OF WASHINGTON ST & AVENUE 38, COACHELLA VALLEY. COACHELLA VALLEY ECOLOGCIAL RESERVE.
Detailed Location:	BURROW SITE CONTAINED 6-8 ENTRANCES & CLEARED OF VEG.
Ecological:	HABITAT CONSISTS OF SAND DUNE AND DESERT SCRUB COMMUNITIES.
General:	1 ADULT FLUSHED FROM BURROW SITE; 2 BURROW ENTRANCES W/TRACKS, BUT NO PELLETS OR SCAT. NEIGHBORING POINT STAKES W/DROPPINGS. BIRD FLUSHED 40 M E & VOCALIZED 2 LOW VOLUME ALARM CALLS ON 15 FEB 2007. BIRD RESIGHTED ON 1 MAR 2007.
Owner/Manager:	DFG-COACHELLA VALLEY ER

Occurrence No.	1120	**Map Index:**	71490	**EO Index:**	72388	**Element Last Seen:**	2007-03-01
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-03-01
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-06-12

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.78771 / -116.30725	**Accuracy:**	80 meters
UTM:	Zone-11 N3738834 E564132	**Elevation (ft):**	155
PLSS:	T04S, R06E, Sec. 25 (S)	**Acres:**	0.0

Location:	0.74 MI SW OF FLEMING RANCH, COACHELLA VALLEY. COACHELLA VALLEY NATIONAL WILDLIFE REFUGE.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF SAND DUNE AND DESERT SCRUB COMMUNITIES.
General:	1 ADULT FLUSHED FROM BURROW MOUND; MANY STAKES SHOWING SCAT & 1 PELLET FOUND CONTAINING SMALL RODENT, AT BURROW ENTRANCE, 1-2 PELLETS COMPRISED OF ELYTRA OF BLACK BEETLES. BIRD FLEW 80 M S ON APPROACH, VOCALIZED 2 WHIMPERING "CLUCKS".
Owner/Manager:	USFWS-COACHELLA VALLEY NWR

Occurrence No.	1121	**Map Index:**	71491	**EO Index:**	72389	**Element Last Seen:**	2007-02-16
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-02-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-06-13

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.77976 / -116.31532	**Accuracy:**	non-specific area
UTM:	Zone-11 N3737948 E563391	**Elevation (ft):**	140
PLSS:	T04S, R06E, Sec. 36 (S)	**Acres:**	10.0

Location:	0.74 MI NNW OF THE JUNCTION OF WASHINGTON ST & AVENUE 38, COACHELLA VALLEY. COACHELLA VALLEY ECOLOGICAL RESERVE.
Detailed Location:	2007, BURROW ENTRANCE SHOWED 2 PELLETS OF BLACK BEETLE ELYTRA.
Ecological:	HABITAT CONSISTS OF SAND DUNE AND DESERT SCRUB COMMUNITIES.
General:	1 ADULT & 2 JUVENILES OBSERVED ON 17 JUL 2006. 1 ADULT FLUSHED FROM OCCUPIED BURROW SITE 29 NOV 2006. 1 ADULT FLUSHED FROM BURROW ENTRANCE; FLEW 60 M SW; VOCALIZED WHIMPERING 'CLUCKS' AND ONE LOW VOLUME ALARM CALL ON 16 FEB 2007.
Owner/Manager:	DFG-COACHELLA VALLEY ER

Occurrence No.	1122	**Map Index:**	71494	**EO Index:**	72390	**Element Last Seen:**	2007-01-19
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-01-19
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-06-13

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.79887 / -116.34244	**Accuracy:**	non-specific area
UTM:	Zone-11 N3740050 E560866	**Elevation (ft):**	180
PLSS:	T04S, R06E, Sec. 27 (S)	**Acres:**	11.0

Location:	0.34 MI NE OF THE JUNCTION OF MUSTANG DR & COWBOY DR, COACHELLA VALLEY. COACHELLA VALLEY NATIONAL WILDLIFE REFUGE.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF SAND DUNE AND DESERT SCRUB COMMUNITIES.
General:	2 ADULTS & 1+ JUVENILES OBSERVED AT A BURROW ON 13 JUL 2006. 1 ADULT FLUSHED FROM ACTIVE BURROW ON 6 DEC 2006. 1 ADULT FLUSHED NEAR THE DEC 2006 BURROW ON 19 JAN 2007.
Owner/Manager:	USFWS-COACHELLA VALLEY NWR

Occurrence No.	1123	**Map Index:**	71500	**EO Index:**	72392	**Element Last Seen:**	2007-05-07
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-05-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-10-13

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.78908 / -116.33354	**Accuracy:**	non-specific area
UTM:	Zone-11 N3738970 E561697	**Elevation (ft):**	160
PLSS:	T04S, R06E, Sec. 26, SW (S)	**Acres:**	16.0

Location:	1.2 MI ENE OF I-10 AT COOK ST, ABOUT 2.8 MI SW HIDDEN PALMS, NE CLASSIC CLUB, ZC THOUSAND PALMS, COACHELLA VALLEY NWR.
Detailed Location:	BLOCK CODE 3735-560 - LOCATION CODE D (SOUTH). MAPPED TO PROVIDED COORDINATES. JUN 2006 DATA DID NOT SPECIFY DATUM; MAPPED TO INCLUDE NAD27 (NORTHWEST) AND NAD83 (MIDDLE).
Ecological:	HABITAT CONSISTS OF BRUSHLAND, SAND DUNE AND DESERT SCRUB COMMUNITIES. UPLAND ELEVATION SUBREGION. GROUND SQUIRRELS DETECTED WITHIN 100 M RADIUS OF D.
General:	2 ADULTS OBSERVED AT BURROW ON 18 JUN 2006, WHICH WERE LATER OBSERVED AGAIN ON 23 SEP AND 30 SEP 2006. 1 ADULT FLUSHED FROM ACTIVE BURROW ON 13 DEC 2006 AND 1 ADULT FLUSHED FROM SAME BURROW ON 7 MAY 2007 (LOCATION D).
Owner/Manager:	USFWS-COACHELLA VALLEY NWR

Occurrence No.	1204	**Map Index:**	72189	**EO Index:**	73142	**Element Last Seen:**	2006-09-06
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-09-06
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-08

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.75105 / -116.26903	**Accuracy:**	80 meters
UTM:	Zone-11 N3734794 E567700	**Elevation (ft):**	60
PLSS:	T05S, R07E, Sec. 08 (S)	**Acres:**	0.0

Location:	NORTH SIDE OF THE I-10 OFFRAMP TO JEFFERSON ST, INDIO.
Detailed Location:	MAPPED ACCORDING TO LOCATION DISCRIPTION NOT COORDINATES PROVIDED. COORDINATES PUT LOCATION ABOUT 0.50 MI NE OF THE OFFRAMP.
Ecological:	HABITAT CONSISTS OF LOW DUNES AND HUMMOCKS WITH SCATTERED SALTBUSH. SURROUNDING AREA IS RESIDENTIAL, TRAILER PARK AND I-10 FREEWAY.
General:	BURROW SITE. 1 BUOW OBSERVED, ON A POST, ON THE NORTH FACING SLOPE OF I-10 WESTBOUND JEFFERSON ST OFFRAMP.
Owner/Manager:	CALTRANS

Occurrence No.	1491	**Map Index:**	80391	**EO Index:**	81378	**Element Last Seen:**	2007-06-14
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-06-14
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-10-13

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.79631 / -116.30633	**Accuracy:**	specific area
UTM:	Zone-11 N3739788 E564211	**Elevation (ft):**	180
PLSS:	T04S, R06E, Sec. 25, NE (S)	**Acres:**	10.0

Location:	0.5 MI WSW OF INTERSECTION OF WASHINGTON ST & FRANCES WAY. ABOUT 4.5 MI SE OF THOUSAND PALMS. COACHELLA VALLEY NWR.
Detailed Location:	BLOCK CODE 3735-560 - LOCATION CODES A (WEST) AND B (EAST). MAPPED TO PROVIDED COORDINATES.
Ecological:	HABITAT TYPE LISTED AS BRUSHLAND. UPLAND ELEVATION SUBREGION. GROUND SQUIRRELS DETECTED WITHIN 100 M RADIUS OF B, BUT NOT AT A.
General:	1 ADULT OBSERVED AND 1 BREEDING PAIR ESTIMATED TO OCCUR AT B ON 1 JUN 2007. 1 ADULT OBSERVED AND 1 BREEDING PAIR ESTIMATED TO OCCUR AT A ON 14 JUN 2007.
Owner/Manager:	USFWS-COACHELLA VALLEY NWR

Occurrence No.	1492	**Map Index:**	80392	**EO Index:**	81379	**Element Last Seen:**	2007-06-05
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-06-05
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-10-13

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.78036 / -116.30859	**Accuracy:**	80 meters
UTM:	Zone-11 N3738018 E564014	**Elevation (ft):**	140
PLSS:	T04S, R06E, Sec. 36, E (S)	**Acres:**	0.0

Location:	1.4 MI NNW OF WASHINGTON ST AT I-10, E OF CATHEDRAL CITY, SE THOUSAND PALMS, COACHELLA VALLEY ECOLOGICAL RESERVE.
Detailed Location:	BLOCK CODE 3735-560 - LOCATION CODE C. MAPPED TO PROVIDED COORDINATES.
Ecological:	HABITAT TYPE LISTED AS BRUSHLAND. UPLAND ELEVATION SUBREGION. GROUND SQUIRRELS DETECTED WITHIN 100 M RADIUS OF BREEDING LOCATION. SURROUNDING PRIVATE LAND WITHIN 0.5 TO 1.5 MILES IS BEING DEVELOPED.
General:	2 ADULTS OBSERVED AND 1 BREEDING PAIR ESTIMATED TO OCCUR IN AREA ON 5 JUN 2007.
Owner/Manager:	DFG-COACHELLA VALLEY ER

Empidonax traillii extimus **Element Code:** ABPAE33043

southwestern willow flycatcher

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	Endangered		**State:**	S3
	Other:				
Habitat:	**General:**	RIPARIAN WOODLANDS IN SOUTHERN CALIFORNIA.			
	Micro:	□			

Occurrence No.	71	**Map Index:** 79125	**EO Index:** 87103	**Element Last Seen:**	2002-06-17
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	2002-06-17
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2012-06-08

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.84197 / -116.31051	**Accuracy:**	3/5 mile
UTM:	Zone-11 N3744848 E563791	**Elevation (ft):**	600
PLSS:	T04S, R06E, Sec. 12 (S)	**Acres:**	0.0

Location:	VICINITY OF THOUSAND PALMS OASIS, ABOUT 2 MI NE OF RAMON RD AT THOUSAND PALMS CANYON RD, 4.25 MI SW OF FAN HILL.
Detailed Location:	MAPPED TO LOCATION DESCRIBED AS "THOUSAND PALMS OASIS (COACHELLA VALLEY PRESERVE)."
Ecological:	
General:	2002: 3 DETECTED 23 MAY, POSSIBLE PAIR & AT LEAST 1 SINGING MALE DETECTED 17 JUN. REPEATED DETECTIONS AT THE SAME LOCATION SUGGEST BREEDING BUT THIS WAS NOT CONFIRMED AND NO DETECTIONS WERE MADE AFTER THIS DATE. MORE RESEARCH NEEDED.
Owner/Manager:	TNC-COACHELLA VALLEY PRESERVE

Lanius ludovicianus **Element Code:** ABPBR01030

loggerhead shrike

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S4
	Other:	CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened			
Habitat:	**General:**	BROKEN WOODLANDS, SAVANNAH, PINYON-JUNIPER, JOSHUA TREE, AND RIPARIAN WOODLANDS, DESERT OASES, SCRUB AND WASHES.			
	Micro:	PREFERS OPEN COUNTRY FOR HUNTING, WITH PERCHES FOR SCANNING, AND FAIRLY DENSE SHRUBS AND BRUSH FOR NESTING.			

Occurrence No.	45	**Map Index:** 80942	**EO Index:** 81941	**Element Last Seen:**	2005-05-19
Occ. Rank:	Fair		**Presence:** Presumed Extant	**Site Last Seen:**	2005-05-19
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-12-20

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.77202 / -116.31916	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3737087 E563041	**Elevation (ft):**	133
PLSS:	T05S, R06E, Sec. 01, NW (S)	**Acres:**	0.0

Location: COACHELLA VALLEY, 0.7 MI E OF I-10 AT 38TH AVE, 1 MI W OF CHUCKWALLA RANCH (HISTORICAL), 3.5 MI N OF INDIAN WELLS PO.

Detailed Location: ALONG SOUTHERN BORDER OF THE COACHELLA VALLEY NATIONAL WILDLIFE REFUGE, JUST SOUTH OF 38TH AVENUE. MAPPED TO COORDINATES PROVIDED.

Ecological: SILT AND FINE SANDS WITH PATCHES OF COARSE SANDS AND GRAVEL. VISIBLE DISTURBANCES: NON-NATIVE INVASIVE PLANT SPECIES. COACHELLA VALLEY GIANT SAND-TREADER CRICKET ALSO OBSERVED AT THIS SITE.

General: 2 ADULTS & 3 FLEDGLINGS OBSERVED ON 19 MAY 2005.

Owner/Manager: PVT

Cyprinodon macularius **Element Code:** AFCNB02060

desert pupfish

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	AFS_EN-Endangered, IUCN_VU-Vulnerable			
Habitat:	**General:**	DESERT PONDS, SPRINGS, MARSHES AND STREAMS IN SOUTHERN CALIFORNIA.			
	Micro:	CAN LIVE IN SALINITIES FROM FRESHWATER TO 68 PPT; CAN WITHSTAND TEMPS FROM 9 - 45 C AND DISSOLVED OXYGEN LEVELS DOWN TO 0.1 PPM.			

Occurrence No.	77	**Map Index:**	37928	**EO Index:**	32935	**Element Last Seen:**	1998-01-20
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1998-01-20
Occ. Type:	Refugium; Artificial Habitat/Occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-01-20

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.84045 / -116.31225	**Accuracy:**	non-specific area
UTM:	Zone-11 N3744678 E563631	**Elevation (ft):**	440
PLSS:	T04S, R06E, Sec. 12 (S)	**Acres:**	83.7

Location:	THOUSAND PALMS OASIS, THOUSAND PALMS ROAD, FORMER COACHELLA VALLEY PRESERVE, 6 AIR MILES NNW OF MYOMA.
Detailed Location:	SIMONE/MCCALLUM POND & WILHELM/THOUSAND PALMS POND. INTRODUCED TO MCCALLUM POND 11/1987 FROM SALT CR, THEN WILHELM/THOUSAND PALMS (VISITORS CENTER POND) 11/13/89. PUPFISH AT SPRING IN SEC. 1. MOST PUPFISH WHERE CREEK & ROAD CROSS IN SEC 12.
Ecological:	78 SALT CREEK PUPFISH COLLECTED & TRANSFERRED 10/14/87 TO THOUSAND PALMS & PLACED IN AQUARIA, ACCLIMATED TO SALINITY LEVEL OF 1500 PPM FROM 39000 PPM & HELD UNTIL THE ERADICATION OF CRAYFISH & TILAPIA.
General:	MCCALLUM POND: 238 FISH TAKEN IN 1989; 85 IN 1990; 215 IN 1991; 125 IN 1992. WILHELM/THOUSAND PALMS POND: 404 TAKEN IN 1991; 121 IN 1992. 40 PUPFISH TAKEN IN 1994, ALONG WITH 100 MOSQUITO FISH & 10 CRAYFISH (REMOVED). PUPFISH PRESENT 1998.
Owner/Manager:	CNLM

Perognathus longimembris bangsi **Element Code:** AMAFD01043

Palm Springs pocket mouse

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	None		**State:**	S1
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	DESERT RIPARIAN, DESERT SCRUB, DESERT WASH AND SAGEBRUSH HABITATS. MOST COMMON IN CREOSOTE-DOMINATED DESERT SCRUB.			
	Micro:	RARELY FOUND ON ROCKY SITES. OCCURS IN ALL CANOPY COVERAGE CLASSES.			

Occurrence No.	1	**Map Index:**	51786	**EO Index:**	51786	**Element Last Seen:**	1997-05-30
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-05-30
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-07-16

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.86996 / -116.29891	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3747958 E564842	**Elevation (ft):**	980
PLSS:	T03S, R07E, Sec. 31, NW (S)	**Acres:**	0.0

Location:	SE OF THE INTERSECTION OF DILLON ROAD AND THOUSAND PALMS ROAD, 11 MILES NE OF CATHEDRAL CITY.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF CREOSOTE BUSH SCRUB, ON SANDY SOILS WITH SOME COBBLE.
General:	1 ADULT OBSERVED ON 30 MAY 1997.
Owner/Manager:	UNKNOWN

Occurrence No.	13	**Map Index:**	70533	**EO Index:**	71439	**Element Last Seen:**	2005-05-19
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-05-19
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2007-11-27

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.77195 / -116.31916	**Accuracy:**	80 meters
UTM:	Zone-11 N3737079 E563041	**Elevation (ft):**	133
PLSS:	T05S, R06E, Sec. 01, NW (S)	**Acres:**	0.0

Location:	SOUTH OF AVENUE 38, 0.7 MILE EAST OF THE JUNCTION OF AVENUE 38 AND VARNER ROAD, NORTH OF PALM DESERT.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF SILT AND FINE SANDS WITH PATCHES OF COARSE GRAVEL/SAND.
General:	1 ADULT DETECTED ON 19 MAY 2005.
Owner/Manager:	PVT

Dipodomys merriami collinus **Element Code:** AMAFD03144

Earthquake Merriam's kangaroo rat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2?
	State:	None		**State:**	S2
	Other:				
Habitat:	**General:**	KNOWN ONLY FROM SAN DIEGO AND RIVERSIDE COUNTIES. ASSOCIATED WITH RIVERSIDEAN SAGE SCRUB, CHAPARRAL, AND NON-NATIVE GRASSLAND.			
	Micro:	NEED SANDY LOAM SUBSTRATES FOR DIGGING OF BURROWS.			

Occurrence No.	18	**Map Index:**	71200	**EO Index:**	72111	**Element Last Seen:**	2003-06-26
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2003-06-26
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2024-11-19

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.77430 / -116.30590	**Accuracy:**	specific area
UTM:	Zone-11 N3737348 E564267	**Elevation (ft):**	110
PLSS:	T04S, R06E, Sec. 36, SE (S)	**Acres:**	14.0

Location: 0.8 MILE NORTH & 0.25 MILE WEST OF THE INTERSECTION OF INTERSTATE 10 AND WASHINGTON STREET, INDIO.

Detailed Location: MAPPED ACCORDING TO STATED COORDINATES. ALONG AND NORTH OF 38TH AVENUE, 0.1 MILE WEST OF WASHINGTON STREET.

Ecological:

General: 1 BREEDING FEMALE ADULT TRAPPED & RELEASED ON 25 JUNE 2003, AND 1 FEMALE & 1 MALE BREEDING ADULTS TRAPPED AND RELEASED ON 26 JUNE 2003.

Owner/Manager: USFWS-COACHELLA VALLEY NWR

Occurrence No.	19	**Map Index:**	71201	**EO Index:**	72112	**Element Last Seen:**	2003-06-26
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2003-06-26
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-04-25

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.77394 / -116.32625	**Accuracy:**	specific area
UTM:	Zone-11 N3737295 E562383	**Elevation (ft):**	140
PLSS:	T04S, R06E, Sec. 35, SE (S)	**Acres:**	13.0

Location: 1.6 MILES NORTHWEST OF THE INTERSECTION OF INTERSTATE 10 & WASHINGTON STREET, INDIO.

Detailed Location: MAPPED ACCORDING TO STATED COORDINATES. ALONG AND NORTH OF 38TH AVENUE, 1.3 MILES WEST OF WASHINGTON STREET.

Ecological:

General: 1 FEMALE & 1 MALE BREEDING ADULTS TRAPPED & RELEASED ON 25 JUNE 2003, AND 2 MALE BREEDING ADULTS TRAPPED AND RELEASED ON 26 JUNE 2003.

Owner/Manager: USFWS-COACHELLA VALLEY NWR

Chaetodipus fallax pallidus

Element Code: AMAFD05032

pallid San Diego pocket mouse

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3T4
	State:	None		**State:**	S3S4
	Other:				
Habitat:	**General:**	DESERT BORDER AREAS OF SAN DIEGO, RIVERSIDE, SAN BERNARDINO, AND LOS ANGELES COUNTIES IN DESERT WASH, DESERT SCRUB, DESERT SUCCULENT SCRUB, PINYON-JUNIPER, ETC.			
	Micro:	SANDY, HERBACEOUS AREAS, USUALLY IN ASSOCIATION WITH ROCKS OR COARSE GRAVEL.			

Occurrence No.	79	**Map Index:** 57724	**EO Index:**	85033	**Element Last Seen:** 1995-06-21
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:** 1995-06-23
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2011-10-18

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.82883 / -116.31173	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3743391 E563687	**Elevation (ft):**	475
PLSS:	T04S, R06E, Sec. 13, NW (S)	**Acres:**	0.0

Location: LOCATED IN THOUSAND PALMS CANYON, ABOUT 0.5 MILE SSW OF SQUAW HILL. COACHELLA VALLEY FRINGE-TOED LIZARD PRESERVE.

Detailed Location: TRAPLINE/TRANSECT 4 (50 TRAPS). MAPPED TO PROVIDED MAP.

Ecological: HABITAT WAS DOMINATED BY PSOROTHAMNUS SPINOSUS AND BEBBIA JUNCEA. SOIL WAS CARSITAS COBBLY SAND.

General: ONE INDIVIDUAL TRAPPED ON 21 JUN 1995; 0 CAPTURED ON 22 & 23 JUN 1995.

Owner/Manager: BLM

Neotoma lepida intermedia

Element Code: AMAFF08041

San Diego desert woodrat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3T4
	State:	None		**State:**	S3S4
	Other:				
Habitat:	**General:**	COASTAL SCRUB OF SOUTHERN CALIFORNIA FROM SAN DIEGO COUNTY TO SAN LUIS OBISPO COUNTY.			
	Micro:	MODERATE TO DENSE CANOPIES PREFERRED. THEY ARE PARTICULARLY ABUNDANT IN ROCK OUTCROPS, ROCKY CLIFFS, AND SLOPES.			

Occurrence No.	82	**Map Index:**	73807	**EO Index:**	74780	**Element Last Seen:**	1995-06-08
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1995-06-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-03-09

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.85646 / -116.30546	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3746458 E564247	**Elevation (ft):**	780
PLSS:	T04S, R06E, Sec. 01, NE (S)	**Acres:**	0.0

Location:	NEAR THOUSAND PALMS ROAD, ABOUT 1.4 MI NORTH OF SQUAW HILL, NEAR THE COACHELLA VALLEY FRINGE-TOED LIZARD PRESERVE.
Detailed Location:	TRAPLINE 3 (100 TRAPS). MAPPED TO TRAPLINE LOCATION FROM PROVIDED MAP.
Ecological:	HABITAT IS DOMINATED BY LARREA TRIDENTATA AND AMBROSIA DUMOSA. SOIL IS CARSITAS COBBLY SAND. AVERAGE SHRUB HEIGHT IS 1-2 M.
General:	8 INDIVIDUALS CAPTURED ON 6 JUN, 8 ON 7 JUN, & 11 ON 8 JUN 1995.
Owner/Manager:	BLM

Occurrence No.	83	**Map Index:**	57724	**EO Index:**	74799	**Element Last Seen:**	1995-06-23
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1995-06-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-03-09

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.82883 / -116.31173	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3743391 E563687	**Elevation (ft):**	475
PLSS:	T04S, R06E, Sec. 13, NW (S)	**Acres:**	0.0

Location:	THOUSAND PALMS CANYON, ABOUT 0.5 MILE SSW OF SQUAW HILL. COACHELLA VALLEY FRINGE-TOED LIZARD PRESERVE VICINITY.
Detailed Location:	TRAPLINE 4 (50 TRAPS). MAPPED TO TRAPLINE LOCATION FROM PROVIDED MAP.
Ecological:	HABITAT IS DOMINATED BY PSOROTHAMNUS SPINOSUS AND BEBBIA JUNCEA. SOIL IS CARSITAS COBBLY SAND. AVERAGE SHRUB HEIGHT IS 1-3 M.
General:	2 INDIVIDUALS CAPTURED ON 21 JUN, 4 ON 22 JUN, & 6 ON 23 JUN 1995.
Owner/Manager:	BLM

Occurrence No.	84	**Map Index:**	73808	**EO Index:**	74800	**Element Last Seen:**	1995-06-23
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1995-06-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-03-09

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.84794 / -116.31398	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3745508 E563465	**Elevation (ft):**	640
PLSS:	T04S, R06E, Sec. 01, SW (S)	**Acres:**	0.0

Location:	MCCALLUM GROVE, ABOUT 0.9 MI NNW OF SQUAW HILL, COACHELLA VALLEY FRINGE-TOED LIZARD PRESERVE.
Detailed Location:	TRAPLINE 5 (50 TRAPS). MAPPED TO TRAPLINE LOCATION FROM PROVIDED MAP.
Ecological:	HABITAT DOMINATED BY ERICAMERIA SP. SOIL IS MYOMA FINE SAND. AVERAGE SHRUB HEIGHT IS 1-2 M.
General:	6 INDIVIDUALS CAPTURED ON 22 JUN & 8 ON 23 JUN 1995.
Owner/Manager:	TNC-COACHELLA VALLEY PRESERVE

Occurrence No.	85	**Map Index:**	73809	**EO Index:**	74801	**Element Last Seen:**	1995-06-17
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1995-06-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-03-09

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.82123 / -116.32952	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3742537 E562046	**Elevation (ft):**	320
PLSS:	T04S, R06E, Sec. 14, SW (S)	**Acres:**	0.0

Location: SOUTH OF WILLIS PALMS, ABOUT 0.3 MI NNW OF THOUSAND PALMS RD AT RAMON RD, COACHELLA VALLEY FRINGE-TOED LIZARD PRESERVE.

Detailed Location: DENSITY PLOT 6 (128 TRAPS). MAPPED TO DENSITY PLOT LOCATION FROM PROVIDED MAP.

Ecological: HABITAT IS DOMINATED BY LARREA TRIDENTATA. SOIL IS CARSITAS COBBLY SAND. AVERAGE SHRUB HEIGHT IS 1-2.5 M. UNDERSTORY IS BARE GROUND/HERBS.

General: 1 INDIVIDUAL CAPTURED ON 15 JUN, 1 ON 16 JUN, & 1 ON 17 JUN 1995.

Owner/Manager: BLM

Occurrence No.	89	**Map Index:**	73816	**EO Index:**	74807	**Element Last Seen:**	1995-04-12
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1995-04-12
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-03-09

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.87317 / -116.30080	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3748313 E564665	**Elevation (ft):**	1000
PLSS:	T03S, R07E, Sec. 31, NW (S)	**Acres:**	0.0

Location: ABOUT 0.1 MI SSE OF DILLON RD AT THOUSAND PALMS RD, INDIO HILLS.

Detailed Location: TRAPLINE 5 (100 TRAPS). MAPPED TO TRAPLINE LOCATION FROM PROVIDED MAP.

Ecological: HABITAT DOMINATED BY LARREA TRIDENTATA & AMBROSIA DUMOSA. SOIL IS CARRIZO STONY SAND & CARSITAS COBBLY SAND. AVERAGE SHRUB HEIGHT IS 0.5-2 M. UNDERSTORY IS BARE GROUND/HERBS.

General: 1 INDIVIDUAL CAPTURED ON 10 APR, 2 ON 11 APR, & 2 ON 12 APR 1995.

Owner/Manager: DPR-INDIO HILLS PALMS

Occurrence No.	90	**Map Index:**	73819	**EO Index:**	74811	**Element Last Seen:**	1995-04-14
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1995-04-14
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-03-09

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.86378 / -116.28431	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3747283 E566198	**Elevation (ft):**	1050
PLSS:	T03S, R07E, Sec. 31, SE (S)	**Acres:**	0.0

Location: ABOUT 1.3 MI SE OF DILLON ROAD AT THOUSAND PALMS RD, INDIO HILLS PALMS.

Detailed Location: TRAPLINE 6 (50 TRAPS). MAPPED TO TRAPLINE LOCATION FROM PROVIDED MAP.

Ecological: HABITAT DOMINATED BY LARREA TRIDENTATA. SOIL IS CARRIZO STONY SAND. AVERAGE SHRUB HEIGHT IS 1-2 M. UNDERSTORY IS HERBS TO BARE GROUND TO ROCKY.

General: 2 INDIVIDUALS CAPTURED ON 13 APR & 2 ON 14 APR 1995.

Owner/Manager: DPR-INDIO HILLS PALMS

Phrynosoma mcallii

Element Code: ARACF12040

flat-tailed horned lizard

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened			
Habitat:	**General:**	RESTRICTED TO DESERT WASHES AND DESERT FLATS IN CENTRAL RIVERSIDE, EASTERN SAN DIEGO, AND IMPERIAL COUNTIES.			
	Micro:	CRITICAL HABITAT ELEMENT IS FINE SAND, INTO WHICH LIZARDS BURROW TO AVOID TEMPERATURE EXTREMES; REQUIRES VEGETATIVE COVER AND ANTS.			

Occurrence No.	80	**Map Index:**	05717	**EO Index:**	34695	**Element Last Seen:**	2014-10-11
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2014-10-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2016-07-14

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.79506 / -116.32892	**Accuracy:**	non-specific area
UTM:	Zone-11 N3739636 E562121	**Elevation (ft):**	180
PLSS:	T04S, R06E, Sec. 26 (S)	**Acres:**	4230.0

Location: N SIDE OF I-10, VICINITY OF CHASE SCHOOL, 2-6 MILES SE OF THOUSAND PALMS, COACHELLA VALLEY PRESERVE.

Detailed Location: 1967: ON RAMON RD. 1990: NE1/4 SEC 35. 2001: S 1/2 OF SEC 25 & 36. 2005: PRIVATE PROPERTY AT S EDGE OF PRESERVE. 2006: SEC 22, 26, 35, & 36. 2003-11: UP TO 177 PLOTS IN SEC 25-27, 35, & 36. 2003-04, 2012, 2014: MAINLY SE CORNER OF PRESERVE.

Ecological: AEOLIAN SAND, CREOSOTE HUMMOCKS, BARCHAN DUNE, CREOSOTE SCRUB.

General: COLLECTED IN 1967, 1970 & 2002. OBSERVED 1987, '88, '89, '90, '91, '97, '98, 2000. ~294 OBS, 2001. 197 IN '03. 82 IN '04. 3 IN '05. 9 IN '06. #/YR ON PLOTS: 56/03, 31/04, 17/05, 30/06, 17/07, 12/08, 17/09, 5/10, 24/11. 3 OBS, '12. 5 IN '14.

Owner/Manager: USFWS, DFG, UNKNOWN

Occurrence No.	258	**Map Index:**	86089	**EO Index:**	87125	**Element Last Seen:**	2011-05-07
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-05-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2012-10-09

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.82757 / -116.36149	**Accuracy:**	80 meters
UTM:	Zone-11 N3743220 E559084	**Elevation (ft):**	270
PLSS:	T04S, R06E, Sec. 16, NE (S)	**Acres:**	0.0

Location: ABOUT 1 MI NE OF RAMON RD AT VIA LAS PALMAS & 3 MI SW OF MCCALLUM GROVE, COACHELLA VALLEY ER.

Detailed Location: MAPPED TO PROVIDED COORDINATES. DETECTION ADJACENT TO UTILITY CORRIDOR.

Ecological: CREOSOTE SCRUB WITH ENCELIA AND SALTBUSH ON HARD-PACKED SUBSTRATE INTERSPERSED WITH LOOSE DECOMPOSED GRANITE. SURROUNDING AREA USED FOR SHOOTING AND DUMPING, WITH VISIBLE DISTURBANCES FROM OHV USE.

General: 1 ADULT OBSERVED PERCHED ON HORSE MANURE PROXIMATE TO AREA OF DUMPING ON 7 MAY 2011.

Owner/Manager: DFG-COACHELLA VALLEY ER

Uma inornata

Element Code: ARACF15010

Coachella Valley fringe-toed lizard

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	IUCN_EN-Endangered			

Habitat:	**General:**	LIMITED TO SANDY AREAS IN THE COACHELLA VALLEY, RIVERSIDE COUNTY.
	Micro:	REQUIRES FINE, LOOSE, WINDBLOWN SAND (FOR BURROWING), INTERSPERSED WITH HARDPAN AND WIDELY-SPACED DESERT SHRUBS.

Occurrence No.	1	**Map Index:**	05667	**EO Index:**	27913	**Element Last Seen:**	1971-09-17
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1971-09-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-14

Quad Summary:	Myoma (3311673), Cathedral City (3311674)
County Summary:	Riverside

Lat/Long:	33.76518 / -116.38476	**Accuracy:**	4/5 mile
UTM:	Zone-11 N3736290 E556972	**Elevation (ft):**	260
PLSS:	T05S, R06E, Sec. 05 (S)	**Acres:**	0.0

Location:	AREA NORTH OF COUNTY CLUB DR BETWEEN MONTEREY AVE AND PORTOLA AVE, ABOUT 3 MILES NORTH OF PALM DESERT.
Detailed Location:	MAPPED NON-SPECIFICALLY TO AREA OF SECTION 5 ABOUT 3 MILES NORTH OF PALM DESERT. MAYHEW'S SITE "2 MILES N OF PALM DESERT" WAS FROM ALONG COUNTRY CLUB DR IN THIS AREA (PER FIELD NOTES).
Ecological:	AREA WAS EXPANSIVE NATURAL SAND HILLS IN 1965 AERIAL IMAGERY. MUCH OF SECTION 5 WAS CONVERTED TO RESIDENTIAL HOUSING AND GOLF COURSE BY 1978 WITH ADJACENT NATURAL HABITAT. NEARLY ALL HABITAT DEVELOPED IN AREA BY 2002.
General:	2 COLLECTED ON 9 SEP 1959. 2 COLLECTED IN THIS AREA ON 15 JUN, AND 3 COLLECTED 17 SEP, 1971. CONSIDERED EXTIRPATED BY BARROWS (1988) AND USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	25	**Map Index:**	33797	**EO Index:**	2314	**Element Last Seen:**	2005-05-19
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-05-19
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-03-07

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.78089 / -116.31119	**Accuracy:**	non-specific area
UTM:	Zone-11 N3738075 E563772	**Elevation (ft):**	140
PLSS:	T04S, R06E, Sec. 36 (S)	**Acres:**	880.0

Location:	COACHELLA VALLEY ECOLOGICAL RESERVE & NWR, NW OF 38TH & WASHINGTON ST JCT, 3.75 MI S OF THOUSAND PALMS OASIS, RIV CO.
Detailed Location:	DUNE SYSTEM ('88) SEC22, 23, 26, 27, 35, 36. DAVIS REC:T4SR6E NE1/4 NE1/4 SEC36; T4SR7E NW1/4NW1/4 SEC31. ENGLAND&NELSON:T4SR6E SE1/4SE1/4 SEC25, SE1/4NE1/4 SEC36. TURNER: PLOTS 2,4. AUG '94: SW1/4SW1/4, NW1/4NW1/4 SEC36. '05:NW1/4 SEC 1.
Ecological:	AEOLIAN SAND, CREOSOTE HUMMOCKS, "BARCHAN" DUNE, CREOSOTE SCRUB. GOOD HABITAT & VIABLE LIZARD POPULATION, BUT DEVELOPMENT TO EAST MAY HAVE EXTIRPATED OTHER POPULATIONS.
General:	1970:1 DOR, WASHINGTON ST. TURNER,1980:68 CAP/RELEASED. POP REDUCED BTWN '86&'88 (DROUGHT?). DATA THROUGH '92 SHOW POP STABLE IN SHORT TERM. AUG '94:25 OBS, 23 ADULTS C/R. 2001: 1 OBS DURING FTHL SURVEYS SE CORNER OF PRESERVE. '05:3 ADULTS.
Owner/Manager:	DFG, CENTER FOR NAT LANDS MGT

Occurrence No.	43	**Map Index:**	33784	**EO Index:**	27903	**Element Last Seen:**	1980-04-16
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1980-04-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	2025-05-12

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.76596 / -116.35801	**Accuracy:**	non-specific area
UTM:	Zone-11 N3736392 E559449	**Elevation (ft):**	263
PLSS:	T05S, R06E, Sec. 4 (S)	**Acres:**	84.0

Location:	VICINITY OF COUNTRY CLUB DR AT COOK ST, ABOUT 8.5 MILES WNW OF INDIO AND 4 MILES NNE OF PALM DESERT, COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY AS A 3 PART POLYGON TO LOCATIONS STATED AS T5S R6E SECTION 10 NWNW (SE CORNER OF COUNTRY CLUB & COOK) AND TO TURNER PLOT 7 (NATURAL) AND 8 (WIND BREAK) EITHER SIDE OF COOK ST ABOUT 0.4 MI N OF COUNTRY CLUB.
Ecological:	EXPANSIVE SANDY DUNE HABITAT IN 1965 AERIAL. MOSTLY NATURAL HABITAT IN 1980 AERIAL EXCEPT FOR WIND BREAKS ON E SIDE OF COOK ST (SEE TURNER). ALL AREAS DEVELOPED OR IN PROCESS OF DEVELOPMENT AS RESIDENTIAL GOLF COURSES BY 1996.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY ENGLAND & NELSON DURING JUL 1975. 38 CAPTURED/RELEASED (21 F, 17 M) ON NATURAL PLOT 7 AND 1 ON WIND BREAK PLOT 8 DURING 7-16 APR 1980. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	53	**Map Index:**	05684	**EO Index:**	27898	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-01-22

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.81599 / -116.35636	**Accuracy:**	non-specific area
UTM:	Zone-11 N3741939 E559566	**Elevation (ft):**	210
PLSS:	T04S, R06E, Sec. 21 (S)	**Acres:**	201.5

Location:	ALONG RAMON RD, 2.5 MILES EAST OF I-10, 1.7 MILES EAST OF THOUSAND PALMS.
Detailed Location:	BRODE & CORDONE FIELD NOTES 251 & 262: RAMON RD 2.5 MI E I-10. ENGLAND & NELSON: T4S R6E SE1/4 OF SE1/4 SEC 16, NE1/4 OF NE1/4 SEC 21. DAVIS RECORD: T4S R6E NE1/4 OF NE1/4 SEC 21. RECOVERY PLAN: T4S R6E NW AREA OF SEC 22.
Ecological:	HABITAT DEGRADED AND NO LIZARDS EXTANT ACCORDING TO BARROWS.
General:	ENGLAND AND NELSON: LOCALITIES FOR JULY 1975. LAST OBSERVED MAY 1975 (BRODE AND CORDONE FIELD #251 & 262). DAVIS RECORD FOR TIME PERIOD 1969-1975. SIGHTINGS FROM RECOVERY PLAN FOR TIME PERIOD 1969-1975.
Owner/Manager:	UNKNOWN

Occurrence No.	61	**Map Index:**	05758	**EO Index:**	27891	**Element Last Seen:**	1975-05-08
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-05-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-01-22

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.80370 / -116.30351	**Accuracy:**	non-specific area
UTM:	Zone-11 N3740609 E564467	**Elevation (ft):**	160
PLSS:	T04S, R06E, Sec. 24, SE (S)	**Acres:**	40.1

Location: ALONG WEST SIDE OF WASHINGTON ST, APPROXIMATELY 3 MILES NORTH OF I-10, 2.2 MILES SOUTH OF THOUSAND PALMS OASIS.

Detailed Location: M. LONG FG 756: RAMON RD 5.6 MI E OF THOUSAND PALMS. BRODE AND CORDONE FIELD #263: WASHINGTON ST 3 MI NE I-10. DAVIS RECORD: T4S R6E SE 1/4 OF SE 1/4 SECTION 24.

Ecological: HABITAT AND LIZARDS EXTIRPATED ACCORDING TO BARROWS (1988).

General: COLLECTED BY M. LONG (FG 756) ON 10 JUL 1970. COLLECTED BY BRODE AND CORDONE (FIELD #263) ON 8 MAY 1975. DAVIS RECORD FOR TIME PERIOD 1969-1975.

Owner/Manager: UNKNOWN

Occurrence No.	83	**Map Index:**	05730	**EO Index:**	27887	**Element Last Seen:**	1951-04-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1951-04-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-10-09

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.83835 / -116.31278	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3744445 E563583	**Elevation (ft):**	660
PLSS:	T04S, R06E, Sec. 12 (S)	**Acres:**	0.0

Location: THOUSAND PALMS OASIS.

Detailed Location:

Ecological: NO HABITAT OR LIZARDS REMAIN ACCORDING TO BARROWS.

General: LACM #97582 FROM APRIL 1951.

Owner/Manager: TNC-COACHELLA VALLEY PRESERVE

Occurrence No.	96	**Map Index:**	05720	**EO Index:**	13464	**Element Last Seen:**	1984-03-28
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1984-03-28
Occ. Type:	Natural/Native occurrence			**Trend:**	Increasing	**Record Last Updated:**	1997-07-27

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.85302 / -116.31755	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3746068 E563131	**Elevation (ft):**	650
PLSS:	T04S, R06E, Sec. 01, SW (S)	**Acres:**	0.0

Location: 0.25 MI NW OF SIMONE PALM OASIS, NORTHERN MOST PALMS AT THOUSAND PALMS OASIS.

Detailed Location: OBSERVED AT EDGE OF SAND DUNE ALONG A LARGE WASH. PROXIMITY OF LOCATION TO WATER IS <0.5 MI.

Ecological: SUBSTRATE IS FINE BLOW SAND. ASSOC WITH MESQUITE. HABITAT SIZE IS SMALL BUT LIZARDS ARE PRESENT AND DOING FINE.

General: FORMER TNC PRESERVE; NOW MANAGED BY CNLM.

Owner/Manager: CNLM

Occurrence No.	159	**Map Index:**	49940	**EO Index:**	49940	**Element Last Seen:**	1975-07-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-01-22

Quad Summary:	Myoma (3311673), Cathedral City (3311674)
County Summary:	Riverside

Lat/Long:	33.81818 / -116.37725	**Accuracy:**	non-specific area
UTM:	Zone-11 N3742170 E557632	**Elevation (ft):**	240
PLSS:	T04S, R06E, Sec. 17, SE (S)	**Acres:**	41.7

Location:	BORDERED TO SOUTH BY RAMON ROAD, 0.6 MILE EAST OF THOUSAND PALMS.
Detailed Location:	ENGLAND AND NELSON: T4S R6E SW 1/4 OF SE 1/4 SECTION 17. LACM #97581: NR 1000 PALMS. MVZ #58516: 1000 PALMS.
Ecological:	ACCORDING TO BARROWS, NO HABITAT OR LIZARDS LEFT AT THOUSAND PALMS (1988).
General:	ENGLAND AND NELSON LOCALITY FOR JULY 1975. LACM #97581: COLLECTED MAY 1958. MVZ #58516: COLLECTED 9 MAY 1953.
Owner/Manager:	UNKNOWN

Occurrence No.	163	**Map Index:**	49944	**EO Index:**	49944	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-01-22

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.84385 / -116.31690	**Accuracy:**	non-specific area
UTM:	Zone-11 N3745052 E563198	**Elevation (ft):**	620
PLSS:	T04S, R06E, Sec. 12, NW (S)	**Acres:**	40.3

Location:	0.5 MILE NNW OF THOUSAND PALMS OASIS.
Detailed Location:	T4S R6E NW 1/4 OF NW 1/4 SECTION 12.
Ecological:	
General:	DAVIS RECORD FOR TIME PERIOD 1969-1975.
Owner/Manager:	UNKNOWN

Occurrence No.	164	**Map Index:**	49945	**EO Index:**	49945	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-01-22

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.81468 / -116.30339	**Accuracy:**	non-specific area
UTM:	Zone-11 N3741826 E564470	**Elevation (ft):**	320
PLSS:	T04S, R06E, Sec. 24, NE (S)	**Acres:**	40.1

Location:	1.3 MILES EAST INTERSECT OF RAMON RD AND THOUSAND PALMS ROAD, 2 MILES SSE OF THOUSAND PALMS OASIS.
Detailed Location:	T4S R6E NE 1/4 OF NE 1/4 SECTION 24.
Ecological:	
General:	DAVIS RECORD FOR TIME PERIOD 1969-1975.
Owner/Manager:	UNKNOWN

Occurrence No.	165	**Map Index:**	49946	**EO Index:**	49946	**Element Last Seen:**	1978-05-04
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1978-05-04
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-09-12

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.79467 / -116.29274	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3739614 E565471	**Elevation (ft):**	140
PLSS:	T04S, R07E, Sec. 30, NE (S)	**Acres:**	0.0

Location:	VICINITY OF HISTORIC FLEMING RANCH, E SIDE OF WASHINGTON ST ABOUT 2.7 MILES N I-10, PRESENT DAY BLAKE DR, DESERT PALMS.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T4S R7E SECTION 30 SWSE AND DRAFT & FINAL RECOVERY PLAN MAPS. R. STEBBINS MVZ COLLECTION FROM THIS AREA STATED AS 3 MI NNE JUNCTION WASHINGTON RD AND STATE HWY 10, N OF INDIO (AND FIELD NOTES).
Ecological:	1978 AERIAL IMAGES SHOW THE SMALL AGRICULTURAL DEVELOPMENT OF FLEMING RANCH ON THE EAST SIDE OF WASHINGTON ST SURROUNDED BY UNDEVELOPED NATURAL HABITAT. ARICULTURE DEVELOPMENT EXPANDED IN THE 1980S, & THEN RESIDENTIALLY DEVELOPED BY 2002.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, DETECTED IN THIS AREA BY DAVIS BETWEEN 1969-1975. COLLECTED IN THIS AREA BY R. STEBBINS ON 4 MAY 1978 (MVZ #171457). CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	166	**Map Index:**	49948	**EO Index:**	49948	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-09-12

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.77493 / -116.27457	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3737437 E567169	**Elevation (ft):**	70
PLSS:	T04S, R07E, Sec. 32, SW (S)	**Acres:**	0.0

Location:	ALONG AVENUE 39 ABOUT 0.6 MILES E OF ADAMS ST, ABOUT 1.9 MILES NE OF I-10 AT WASHINGTON ST, MYOMA.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T4S R7E SECTION 32 SESW (FWS82U0002). ALONG AVENUE 39 BETWEEN ADAMS ST AND JEFFERSON ST. THIS AREA IS NOW THE TALAVERA GATED COMMUNITY, VICINITY OF TALAVERA BLVD.
Ecological:	AREA APPEARS AS UNDEVELOPED NATURAL HABITAT IN 1978 AERIAL IMAGERY, WITH NEARBY AGRICULTURAL DEVELOPMENT. SITE APPEARS UNDEVELOPED UP TILL ABOUT 2002, & THEN 2005 AND LATER AREIALS SHOW EXTENSIVE RESIDENTIAL DEVELOPMENT; GATED TALAVERA.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, PRESENT BY ENGLAND AND NELSON DURING JUL 1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	170	**Map Index:**	49993	**EO Index:**	49993	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-09

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.76012 / -116.30371	**Accuracy:**	non-specific area
UTM:	Zone-11 N3735776 E564481	**Elevation (ft):**	110
PLSS:	T05S, R07E, Sec. 06 (S)	**Acres:**	236.4

Location:	VICINITY OF WASHINGTON STREET AND I-10, WNW OF MYOMA.
Detailed Location:	MAPPED NON-SPECIFICALLY TO 1/4 1/4 SECTIONS STATED AS T5S R6E SECTION 1 NENE AND SECTION 1 SESE, AND TO T5S R7E SECTION 6 NWNW AND SECTION 6 SWSW; AND TO VARIOUS MAPS FROM THE DRAFT AND FINAL RECOVERY PLANS.
Ecological:	UNCLEAR HOW DETECTED IN SOME OF THESE AREAS OR IF STATED LOCATIONS IN ERROR. SEC 1 NENE WAS AGRICULTURE IN 1965 AND SEC 1 SESE AND SEC 6 SWSW WAS THE RELATIVELY NEW I-10 AND AG. FULLY DEVELOPED AS DESERT PALMS RETIREMENT COMMUNTY BY 1990S.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS CIRCA 1969-1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	171	**Map Index:**	49994	**EO Index:**	49994	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-09

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.76379 / -116.29301	**Accuracy:**	non-specific area
UTM:	Zone-11 N3736190 E565470	**Elevation (ft):**	90
PLSS:	T05S, R07E, Sec. 06, SE (S)	**Acres:**	40.4

Location:	ABOUT 0.6 MILES ENE OF WASHINGTON ST AT I-10 AND ABOUT 0.6 MILES NE OF VARNER RD AT ADAMS ST, DESERT PALMS.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R7E SECTION 6 NWSE.
Ecological:	AREA APPEARS AS UNDEVELOPED NATURAL HABITAT IN 1965, 1968, AND 1989 AERIAL IMAGERY. GRADED FOR DEVELOPMENT BY 1996 AS THE DESERT PALMS RETIREMENT COMMUNTY.
General:	ACCORDING TO DRAFT RECOVERY PLAN, REPORTED PRESENT BY ENGLAND AND NELSON DURING JUL 1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	172	**Map Index:**	49996	**EO Index:**	49996	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-09

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.77114 / -116.28858	**Accuracy:**	non-specific area
UTM:	Zone-11 N3737008 E565874	**Elevation (ft):**	90
PLSS:	T05S, R07E, Sec. 06, NE (S)	**Acres:**	40.0

Location:	SW CORNER OF AVE 39 AT ADAMS ST, 1 MI NE OF I-10 AT WASHINGTON ST, 5 MI NW OF INDIO, HISTORIC MYOMA, COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R7E SECTION 6 NENE.
Ecological:	UNCLEAR HOW DETECTION WAS MADE OR IF LOCATION IS IN ERROR. ENTIRE 1/4 1/4 SECTION WAS DEVELOPED AS AGRICULTURE IN 1965 & 1968 AERIALS. MUCH OF THE SURROUNDING LANDSCAPE WAS UNDEVELOPED NATURAL HABITAT. DEVELOPED AS DESERT PALMS BY 1996.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	173	**Map Index:**	49998	**EO Index:**	49998	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-09

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.76044 / -116.28295	**Accuracy:**	non-specific area
UTM:	Zone-11 N3735825 E566403	**Elevation (ft):**	70
PLSS:	T05S, R07E, Sec. 05 (S)	**Acres:**	242.2

Location:	VICINITY OF ADAMS ST AT AVENUE 40, ABOUT 1.2 MI NW OF I-10 AT JEFFERSON ST, ABOUT 4 MI NW OF INDIO, COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATIONS STATED AS T5S R7E SECTION 5 SW (DAVIS) AND SECTION 8 NWNW (ENGLAND & NELSON). SPECIMEN COLLECTED 4 MI N OF INDIO NEAR HWY 99 (NOW I-10) INCLUDED HERE.
Ecological:	AREA PRIMARILY APPEARED TO BE UNDEVELPED NATURAL HABITAT IN 1965, 1968, AND 1989 AERIAL IMAGES. THERE WAS ENCROACHING DEVELOPMENT BY 2002 AND THIS AREA WAS DEVELOPED OR GRADED FOR DEVELOPMENT IN 2006 AND 2025.
General:	COLLECTED IN AREA 13 MAR 1950. ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS CIRCA 1969-1975, AND BY ENGLAND & NELSON DURING JUL 1975. CONSIDERED POSSIBLY EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	174	**Map Index:** 50002	**EO Index:**	50002	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2025-09-04

Quad Summary:	La Quinta (3311663), Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.74920 / -116.27548	**Accuracy:**	non-specific area
UTM:	Zone-11 N3734584 E567104	**Elevation (ft):**	60
PLSS:	T05S, R07E, Sec. 08, SE (S)	**Acres:**	40.2

Location:	VICINITY OF BERMUDA DUNES AIRPORT, ABOUT 0.7 MILES NE OF AVENUE 42 AT ADAMS ST, SOUTH SIDE OF I-10, HISTORIC MYOMA.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R7E SECTION 8 NWSE.
Ecological:	UNDEVELOPED NATURAL DUNE HABITAT IN 1959 JUST NORTH OF BERMUDA DUNES COUNTRY CLUB. AIRFIELD DEVELOPED BY 1965 WITH SOME SURROUNDING HABITAT. BY 1981 THERE WAS RESIDENTIAL DEVELOPMENT TAKING PLACE & HABITAT ESSENTIALLY ELIMINATED BY 1989.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLANS, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969 -1975. GENERAL AREA CONSIDERED EXTIRPATED BY BARROWS ET AL. 2010 DUE TO DROUGHT. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	235	**Map Index:** 51275	**EO Index:**	51275	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2003-08-05

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.81531 / -116.33521	**Accuracy:**	non-specific area
UTM:	Zone-11 N3741877 E561524	**Elevation (ft):**	250
PLSS:	T04S, R06E, Sec. 23 (S)	**Acres:**	116.6

Location:	JUST NORTH & SOUTH OF RAMON ROAD, NORTH OF I-10 & APPROXIMATELY 2 MILES SW OF THOUSAND PALMS OASIS.
Detailed Location:	APPROXIMATELY 0.2-0.7 MILES WEST OF THE INTERSECTION OF RAMON ROAD AND THOUSAND PALMS ROAD. DAVIS: T4S R6E NE 1/4 OF NE 1/4 SECTION 22. ENGLAND AND NELSON: T4S R6E NW 1/4 OF NW 1/4 SECTION 23. RECOVERY PLAN: SW 1/4 OF SW 1/4 SECTION 14.
Ecological:	
General:	1969-1975: LOCALITY REPORTED BY DAVIS. JULY 1975: LOCALITY REPORTED BY ENGLAND AND NELSON. INCLUDES LOCATIONS FROM RECOVERY PLAN (1984).
Owner/Manager:	UNKNOWN

Occurrence No.	236	**Map Index:** 51276	**EO Index:**	51276	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2003-05-14

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.81467 / -116.32059	**Accuracy:**	non-specific area
UTM:	Zone-11 N3741814 E562878	**Elevation (ft):**	300
PLSS:	T04S, R06E, Sec. 23 (S)	**Acres:**	39.9

Location: SOUTH OF RAMON RD, 1.6 MILES SSW OF THOUSAND PALMS OASIS. 0.3 MI EAST OF INTERSECTION OF RAMON RD & THOUSAND PALMS RD.

Detailed Location: T4S R6E NE 1/4 OF NE 1/4 OF SECTION 23.

Ecological:

General: LOCALITY REPORTED BY DAVIS SOMETIME DURING 1969 TO 1975.

Owner/Manager: UNKNOWN

Desert Fan Palm Oasis Woodland

Element Code: CTT62300CA

Desert Fan Palm Oasis Woodland

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3.2
	Other:				
Habitat:	**General:**	□			
	Micro:	□			

Occurrence No.	52	**Map Index:** 05779	**EO Index:**	13144	**Element Last Seen:**	1976-09-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1976-09-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.82474 / -116.28112	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3742956 E566523	**Elevation (ft):**	800
PLSS:	T04S, R07E, Sec. 17, SW (S)	**Acres:**	0.0

Location: PUSHAWALLA PALMS OASIS, INDIO HILLS.

Detailed Location: WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. 429 PALMS COUNTED IN 1966. 261 COUNTED IN 1945. EXTENDING ALONG CANYON 1.25 MILES.

Ecological: WASH TYPE OASIS, ASSOC VEG INCLUDE POPULUS FREMONTII, SCIRPUS, TYPHA, PLUCHEA. SITE BURNED 1959.

General: ACQUIRED FOR INDIO HILLS PALMS COUNTY PARK. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: UNKNOWN

Occurrence No.	53	**Map Index:**	16007	**EO Index:**	28842	**Element Last Seen:**	1975-07-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	1998-07-23

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.85281 / -116.31757	**Accuracy:**	1 mile
UTM:	Zone-11 N3746045 E563129	**Elevation (ft):**	700
PLSS:	T04S, R06E, Sec. 01 (S)	**Acres:**	0.0

Location:	SIMONE PALMS OASIS, SECTION 1 NORTH OF THOUSAND PALMS OASIS.
Detailed Location:	WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. 210 PALMS COUNTED 1966.
Ecological:	UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.
General:	SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.
Owner/Manager:	PVT

Occurrence No.	54	**Map Index:**	05730	**EO Index:**	28841	**Element Last Seen:**	1975-07-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1986-04-24
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.83835 / -116.31278	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3744445 E563583	**Elevation (ft):**	700
PLSS:	T04S, R06E, Sec. 12 (S)	**Acres:**	0.0

Location:	THOUSAND PALMS OASIS IN THOUSAND PALMS CANYON NEAR SQUAW HILL.
Detailed Location:	WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. 286 PALMS IN 1966, 116 IMMATURE. ASSOC INCLUDE PLUCHEA SERICEEA, TAMARIX PENTANDRA AND TYPHA SPP. AROUND ARTIFICIAL POND.
Ecological:	PARTIALLY BURNED 1921, 1924, 1930. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.
General:	CONSIDERED BEST OF 24 OASES IN GROUP. TNC ACQUIRING, 1984. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.
Owner/Manager:	TNC-COACHELLA VALLEY PRESERVE

Occurrence No.	55	**Map Index:**	05711	**EO Index:**	28840	**Element Last Seen:**	1975-07-XX
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1986-04-24
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.82861 / -116.33029	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3743354 E561970	**Elevation (ft):**	500
PLSS:	T04S, R06E, Sec. 14, NW (S)	**Acres:**	0.0

Location:	WILLIS PALMS OASIS. NEAR JUNCTION OF RAMON ROAD AND THOUSAND PALMS CANYON ROAD.
Detailed Location:	WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. 484 PALMS SEEN 1966; 961 IN 1977. SEEP TYPE PALM OASIS. SALT CRUST ON THE SURFACE. TREMENDOUS PALM REPRODUCTION.
Ecological:	UNDERSTORY INCL JUNCUS ACUTUS, DISTICHLIS SPICATA, PLUCHEA SERICEA, SPOROBOLUS AIROIDES, PROSOPIS GLANDULOSA TORREYANA, SUAEDA FRUTICOSA, TAMARIX PENTANDRA, T. APHYLLA. ACACIA GREGGII, POLYPOGON MONSPELIENSIS. BURNED 1943, 1956.
General:	BURNED A FEW YEARS AGO. SOILS ARE ALKALINE. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.
Owner/Manager:	TNC

Occurrence No.	57	**Map Index:**	05788	**EO Index:**	28839	**Element Last Seen:**	1977-07-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1977-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.80862 / -116.27417	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3741173 E567179	**Elevation (ft):**	400
PLSS:	T04S, R07E, Sec. 20 (S)	**Acres:**	0.0

Location:	NOMAD PALMS OASIS, INDIO HILLS.
Detailed Location:	WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. 3 PALMS COUNTED 1966.
Ecological:	UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.
General:	SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.
Owner/Manager:	BLM

Occurrence No.	58	**Map Index:** 21416	**EO Index:**	28837	**Element Last Seen:**	1966-XX-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1966-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.84773 / -116.31330	**Accuracy:**	1 mile
UTM:	Zone-11 N3745484 E563528	**Elevation (ft):**	660
PLSS:	T04S, R06E, Sec. 01 (S)	**Acres:**	0.0

Location: POWELL PALMS OASIS, INDIO HILLS BETWEEN THOUSAND PALMS OASIS AND SIMONE PALMS.

Detailed Location: WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. 59 PALMS COUNTED IN 1966.

Ecological: UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.

General: SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: UNKNOWN

Occurrence No.	59	**Map Index:** 05805	**EO Index:**	28838	**Element Last Seen:**	1976-09-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1976-09-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	1997-04-16

Quad Summary: West Berdoo Canyon (3311672), Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.79113 / -116.25251	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3739248 E569198	**Elevation (ft):**	460
PLSS:	T04S, R07E, Sec. 28, SE (S)	**Acres:**	0.0

Location: BISKRA PALMS OASIS, INDIO HILLS.

Detailed Location: WASHINGTONIA FILIFERA OASIS AT POINT OF FRACTURE OF SAN ANDREAS FAULT INTO TWO BRANCHES. 215 PALMS COUNTED 1966, ALL MATURE.

Ecological: BOTH SEEP AND WASH OASIS CHARACTERISTICS.

General: IN INDIO HILLS PALMS STATE PARK. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: RIV COUNTY

Occurrence No.	60	**Map Index:** 05798	**EO Index:**	28836	**Element Last Seen:**	1976-09-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:**	1976-09-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.79862 / -116.25584	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3740076 E568884	**Elevation (ft):**	500
PLSS:	T04S, R07E, Sec. 28, NW (S)	**Acres:**	0.0

Location: MACOMBER OASIS, INDIO HILLS.

Detailed Location: WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. 536 PALMS COUNTED IN 1966, INCL 102 JUVENILES.

Ecological: BOTH SEEP AND WASH OASIS CHARACTERISTICS.

General: IN INDIO HILLS PALMS STATE PARK. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: RIV COUNTY

Occurrence No.	61	**Map Index:**	05754	**EO Index:**	28834	**Element Last Seen:**	1976-09-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1980-11-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.84424 / -116.29998	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3745106 E564763	**Elevation (ft):**	720
PLSS:	T04S, R07E, Sec. 07, NW (S)	**Acres:**	0.0

Location:	INDIAN PALMS OASIS. EAST OF THOUSAND PALMS CANYON ROAD, SOUTH OF DILLON ROAD, INDIO HILLS.
Detailed Location:	WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. 142 PALMS SEEN 1966, 127 PALMS INCL 14 DEAD MATURE TREES.
Ecological:	1942 TREMOR INCREASED WATER SUPPLY AND SEEDLING ESTABLISHMENT. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.
General:	SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.
Owner/Manager:	PVT

Occurrence No.	62	**Map Index:**	05764	**EO Index:**	28835	**Element Last Seen:**	1976-09-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1976-09-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.82723 / -116.29530	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3743223 E565209	**Elevation (ft):**	750
PLSS:	T04S, R07E, Sec. 18, NW (S)	**Acres:**	0.0

Location:	HORSESHOE PALMS OASIS. EAST OF THOUSAND PALMS CANYON ROAD, INDIO HILLS.
Detailed Location:	WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. 169 PALMS COUNTED IN 1966.
Ecological:	UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.
General:	IN INDIO HILLS PALMS STATE PARK. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.
Owner/Manager:	RIV COUNTY

Occurrence No.	63	**Map Index:**	05762	**EO Index:**	28833	**Element Last Seen:**	1976-09-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1976-09-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.83278 / -116.29695	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3743837 E565052	**Elevation (ft):**	650
PLSS:	T04S, R07E, Sec. 07, SW (S)	**Acres:**	0.0

Location:	TWIN PALMS OASIS, BETWEEN HORSESHOE PALMS AND INDIAN PALMS OASIS, EAST OF THOUSAND PALMS CANYON ROAD.
Detailed Location:	WASHINGTONIA FILIFERA ALONG FAULT SYSTEM.
Ecological:	UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.
General:	SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.
Owner/Manager:	RIV COUNTY

Occurrence No.	64	**Map Index:**	05759	**EO Index:**	28831	**Element Last Seen:**	1976-09-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1976-09-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.83988 / -116.29761	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3744624 E564986	**Elevation (ft):**	700
PLSS:	T04S, R07E, Sec. 07, NW (S)	**Acres:**	0.0

Location:	EAST INDIAN PALMS OASIS SE OF INDIAN PALMS OASIS, EAST OF THOUSAND PALMS CANYON ROAD, INDIO HILLS.
Detailed Location:	WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. OF 31 PALMS COUNTED IN 1966, 14 WERE JUVENILE.
Ecological:	UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.
General:	SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.
Owner/Manager:	UNKNOWN

Occurrence No.	65	**Map Index:**	05752	**EO Index:**	28832	**Element Last Seen:**	1976-09-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1976-09-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.82028 / -116.30194	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3742448 E564600	**Elevation (ft):**	480
PLSS:	T04S, R06E, Sec. 13, S (S)	**Acres:**	0.0

Location:	HIDDEN PALMS OASIS, EAST OF THOUSAND PALMS CANYON ROAD, INDIO HILLS.
Detailed Location:	WASHINGTONIA FILIFERA ALONG FAULT SYSTEM. 268 PALMS COUNTED IN 1966.
Ecological:	UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.
General:	IN INDIO HILLS PALMS STATE PARK. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.
Owner/Manager:	RIV COUNTY

Oliarces clara **Element Code:** IINEU04010

cheeseweed owlfly (cheeseweed moth lacewing)

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G1G3
	State:	None		**State:**	S2
	Other:				
Habitat:	**General:**	INHABITS THE LOWER COLORADO RIVER DRAINAGE.			
	Micro:	FOUND UNDER ROCKS OR IN FLIGHT OVER STREAMS. LARREA TRIDENTATA IS THE SUSPECTED LARVAL HOST.			

Occurrence No.	2	**Map Index:** 37928	**EO Index:**	22608	**Element Last Seen:** 1952-03-28
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:** 1952-03-28
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2004-12-03

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.84045 / -116.31225	**Accuracy:**	non-specific area
UTM:	Zone-11 N3744678 E563631	**Elevation (ft):**	560
PLSS:	T04S, R06E, Sec. 12, SE (S)	**Acres:**	83.7

Location:	THOUSAND PALMS CANYON, COACHELLA VALLEY.
Detailed Location:	COLLECTED IN FLIGHT OVER AN INTERMITTENT STREAM IN THE CANYON.
Ecological:	COLLECTIONS WERE MADE IN SPRING OF YEARS WITH A HEAVY PRECIPITATION.
General:	TWO INDIVIDUALS WERE COLLECTED DURING DAYLIGHT HOURS; AT FIRST THEY WERE MISTAKEN FOR ALDERFLIES (SIALIS SP). ONE OF THESE SPECIMENS IS DEPOSITED IN THE UCLA COLLECTION. HISTORICAL RECORD REFERRED TO IN WIESENBORN 1998.
Owner/Manager:	CNLM

Macrobaenetes valgum **Element Code:** IIORT22020

Coachella giant sand treader cricket

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G1G2
	State:	None		**State:**	S2
	Other:	IUCN_VU-Vulnerable			
Habitat:	**General:**	KNOWN FROM THE SAND DUNE RIDGES IN THE VICINITY OF COACHELLA VALLEY.			
	Micro:	POPULATION SIZE REGULATED BY AMOUNT OF ANNUAL RAINFALL; SOME SPOTS FAVOR PERMANENT HABITATION WHERE SPRINGS DAMPEN SAND.			

Occurrence No.	6	**Map Index:** 05675	**EO Index:** 22599	**Element Last Seen:**	1959-05-21
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1959-05-21
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-11

Quad Summary: La Quinta (3311663), Rancho Mirage (3311664), Myoma (3311673), Cathedral City (3311674)

County Summary: Riverside

Lat/Long:	33.73723 / -116.37418	**Accuracy:**	1 mile
UTM:	Zone-11 N3733196 E557970	**Elevation (ft):**	60
PLSS:	T05S, R06E, Sec. 17, W (S)	**Acres:**	0.0

Location: 1 MILE NORTH OF PALM DESERT.

Detailed Location:

Ecological: FOUND ON WIND-SWEPT SAND DUNE RIDGES. ALTHOUGH THIS SPECIES IS LARGELY REGULATED IN ABUNDANCE BY WINTER RAINS, SOME SPOTS, WHERE SPRINGS KEEP THE SAND DAMP, ARE FAVORABLE TO PERMANENT HABITATION.

General: IN VERY DRY YEARS, THE SPECIES DISAPPEARS OVER MOST OF THE SAND AREAS.

Owner/Manager: PVT

Xylorhiza cognata **Element Code:** PDASTA1010

Mecca-aster

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	STEEP CANYON SLOPES, IN SANDSTONE AND CLAY. 20-305 M.			

Occurrence No.	17	**Map Index:** 36093	**EO Index:** 31090	**Element Last Seen:**	2005-04-21
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	2005-04-21
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2013-02-27

Quad Summary: West Berdoo Canyon (3311672), Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.80363 / -116.26136	**Accuracy:**	non-specific area
UTM:	Zone-11 N3740629 E568368	**Elevation (ft):**	600
PLSS:	T04S, R07E, Sec. 21, SW (S)	**Acres:**	161.0

Location: VICINITY OF MACOMBER PALMS OASIS, INDIO HILLS.

Detailed Location: 2 N-MOST POLYGONS ARE SPECIFIC AND BASED ON 2005 MCGLAUGHLIN COORDINATES. THE REST OF THE OCCURRENCE IS BASED ON TRS INFORMATION FROM 1984 STEWART FIELD SURVEY FORMS. IN THE SW 1/4 OF SECTION 21 AND THE NORTH 1/2 OF SECTION 28.

Ecological: PLANTS GROWING IN SANDY SOILS AT BASE OF CANYON WALL. ASSOCIATED WITH ENCELIA FARINOSA AND LARREA TRIDENTATA.

General: 660 PLANTS OBSERVED IN THIS AREA IN 1984. 300+ PLANTS SEEN IN THE 2 N-MOST POLYGONS IN 2005; MOST LIKELY MORE IN THE AREA.

Owner/Manager: DPR-INDIO HILLS PALMS, PVT

Euphorbia abramsiana **Element Code:** PDEUP0D010

Abrams' spurge

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	SANDY SITES. -45-1445 M.			

Occurrence No.	13	**Map Index:** 78307	**EO Index:** 79233	**Element Last Seen:**	1968-03-05
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1968-03-05
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-03-09

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.75809 / -116.33487	**Accuracy:**	non-specific area
UTM:	Zone-11 N3735533 E561596	**Elevation (ft):**	200
PLSS:	T05S, R06E, Sec. 02 (S)	**Acres:**	68.0

Location:	PALM DESERT; COUNTRY CLUB RD, COACHELLA VALLEY.
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS ALONG COUNTRY CLUB DR AROUND 200 FT IN ELEVATION.
Ecological:	SANDY FLAT.
General:	ONLY SOURCE OF INFORMATION IS A VAGUE 1968 MYRICK COLLECTION. NEEDS FIELDWORK.
Owner/Manager:	UNKNOWN

Euphorbia arizonica **Element Code:** PDEUP0D060

Arizona spurge

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3
	Other:	Rare Plant Rank - 2B.3			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	SANDY SOILS. 150-900 M.			

Occurrence No.	5	**Map Index:** 54047	**EO Index:** 54047	**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2004-01-22

Quad Summary: Myoma (3311673), Cathedral City (3311674), East Deception Canyon (3311683), Seven Palms Valley (3311684)

County Summary: Riverside

Lat/Long:	33.86794 / -116.38763	**Accuracy:**	1 mile
UTM:	Zone-11 N3747683 E556638	**Elevation (ft):**	500
PLSS:	T03S, R06E, Sec. 32 (S)	**Acres:**	0.0

Location: NORTH OF SIERRA DEL SOL ROAD AND THOUSAND PALMS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB IN THE VICINITY OF THE NORTHERN EXTENT OF SIERRA DEL SOL ROAD, NORTH OF THOUSAND PALMS IN THE INDIO HILLS.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS SITE NAME IN REISER'S 'RARE PLANTS OF SAN DIEGO COUNTY' (2001). NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Euphorbia platysperma **Element Code:** PDEUP0D1X0

flat-seeded spurge

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	MOJAVEAN DESERT SCRUB, DESERT DUNES.			
	Micro:	SANDY PLACES OR SHIFTING DUNES. POSSIBLY A WAIF IN CALIFORNIA; MORE COMMON IN ARIZONA AND MEXICO. 60-960 M.			

Occurrence No.	2	**Map Index:** 28156	**EO Index:** 4753	**Element Last Seen:**	1964-08-17
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1964-08-17
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2018-06-20

Quad Summary: Myoma (3311673), Cathedral City (3311674)

County Summary: Riverside

Lat/Long:	33.80739 / -116.39198	**Accuracy:**	1 mile
UTM:	Zone-11 N3740966 E556275	**Elevation (ft):**	210
PLSS:	T04S, R06E, Sec. 19 (S)	**Acres:**	0.0

Location: NEAR EDOM, COLORADO DESERT.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB CENTERED ON EDOM NEAR THOUSAND PALMS. VAGUE COLLECTIONS FROM "CONCHILLA [COACHELLA] DESERT" AND "COACHELLA VALLEY" ARE ALSO ATTRIBUTED TO THIS SITE.

Ecological:

General: MAIN SOURCE FOR THIS SITE IS A 1926 ACKLEY COLLECTION. A 1914 JEPSON COLLECTION (E. PLATYSPERMA ON HERB LABEL, BUT CCH LISTS IT AS E. EREMICA WHICH IS AN UNRESOLVED TAXON) AND A 1964 JAEGER COLLECTION ARE ALSO ATTRIBUTED TO THIS SITE.

Owner/Manager: UNKNOWN

Astragalus tricarinatus

Element Code: PDFAB0F920

triple-ribbed milk-vetch

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	JOSHUA TREE WOODLAND, SONORAN DESERT SCRUB.			
	Micro:	HOT, ROCKY SLOPES IN CANYONS AND ALONG EDGE OF BOULDER-STREWN DESERT WASHES, WITH LARREA AND ENCELIA. 455-1585 M.			

Occurrence No.	17	**Map Index:** B4368	**EO Index:**	77298	**Element Last Seen:** 2019-03-05
Occ. Rank:	Unknown		**Presence:**	Presumed Extant	**Site Last Seen:** 2019-03-05
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:** 2019-11-07

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.84833 / -116.31222	**Accuracy:**	80 meters
UTM:	Zone-11 N3745552 E563628	**Elevation (ft):**	647
PLSS:	T04S, R06E, Sec. 1, SW (S)	**Acres:**	5.0

Location: UPPER END OF THOUSAND PALMS OASIS, WEST OF THOUSAND PALMS CANYON ROAD, COACHELLA VALLEY.

Detailed Location: MAPPED NEAR MCCALLUM GROVE ACCORDING TO 2019 SHORT COORDINATES, IN THE SE 1/4 OF THE SW 1/4 OF SECTION 1.

Ecological:

General: UNKNOWN NUMBER OF PLANTS SEEN IN 2019. A 1921 JAEGER COLLECTION FORM "THOUSAND PALMS" AND A 1921 SPENCER COLLECTION FROM "1000 PALMS CANYON" ARE ALSO ATTRIBUTED TO THIS SITE.

Owner/Manager: CNLM

Astragalus lentiginosus var. coachellae

Element Code: PDFAB0FB97

Coachella Valley milk-vetch

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G5T1
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 1B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture			
Habitat:	**General:**	SONORAN DESERT SCRUB, DESERT DUNES.			
	Micro:	SANDY FLATS, WASHES, OUTWASH FANS, SOMETIMES ON DUNES. 35-695 M.			

Occurrence No.	17	**Map Index:**	05701	**EO Index:**	12625	**Element Last Seen:**	2003-04-23
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2012-10-15

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.80782 / -116.34396	**Accuracy:**	non-specific area
UTM:	Zone-11 N3741041 E560720	**Elevation (ft):**	200
PLSS:	T04S, R06E, Sec. 22 (S)	**Acres:**	88.0

Location:	S OF SANDERS RD, E OF VISTA DEL PAJARO CHOCTAW RD, AND SE OF CALLE TOSCA AND MUSTANG DR INTERSECTION, THOUSAND PALMS.
Detailed Location:	MAPPED BY CNDDB AS 4 POLYGONS ACCORDING TO 1985 COCHRANE SURVEY & DATASETS FROM COACHELLA VALLEY MSHCP AND UCR CENTER FOR CONSERVATION BIOLOGY. E-MOST POLYGON IS NON-SPECIFIC FROM "1/4 MI S OF END OF SHADOW MTN DR." OTHER POLYGONS SPECIFIC.
Ecological:	IN OPEN, BLOWING SAND DUNES IN CREOSOTE BUSH SCRUB. ASSOCIATED WITH ATRIPLEX LENTIFORMIS, ATRIPLEX POLYCARPA AND ASTRAGALUS ARIDUS.
General:	20 SMALL PLANTS JUST S OF OLD HOMESTEAD IN 1985. NO PLANTS IN 1987 (BARROWS). 309 IN 1995 THROUGHOUT DUNE SYSTEM "N OF 38TH AVE" (MULTIPLE EOS). SITE MANAGED BY CNLM (1998). E POLY: 5 IN 2003, NO PLANTS IN 2004 OR 2005 ACCORDING TO MSHCP.
Owner/Manager:	USFWS, DFG

Occurrence No.	18	**Map Index:**	21001	**EO Index:**	9195	**Element Last Seen:**	2001-04-23
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-04-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	2012-10-15

Quad Summary:	Myoma (3311673), Cathedral City (3311674)
County Summary:	Riverside

Lat/Long:	33.78595 / -116.37368	**Accuracy:**	non-specific area
UTM:	Zone-11 N3738599 E557983	**Elevation (ft):**	250
PLSS:	T04S, R06E, Sec. 32, NE (S)	**Acres:**	477.0

Location:	FROM 0.17 MILE N OF SHADOW RIDGE RD AND GERALD FORD DR SOUTHEAST TO FRANK SINATRA DR AND COOK ST, S OF THOUSAND PALMS.
Detailed Location:	MAPPED BY CNDDB AS 4 POLYGONS. LARGE POLYGON REPRESENTS THE AREA SURVEYED BY WHITE IN 1991; UNKNOWN WHERE IN THIS POLYGON THE PLANTS OCCUR. 3 NW POLYGONS ARE FROM SPECIFIC DATA PROVIDED BY THE COACHELLA VALLEY MSHCP.
Ecological:	BLOWSAND.
General:	LARGE NON-SPECIFIC EAST POLYGON HAD 55 PLANTS IN 1991; MORE UNDOUBTEDLY PRESENT AT SITE. 3 NW POLYGONS: 26 PLANTS IN 2001 REPORTED BY MCDONALD & CORNETT; 2012 AERIAL IMAGERY SHOWS 3 NW POLYGONS MAY BE EXTIRPATED.
Owner/Manager:	PVT

Occurrence No.	21	**Map Index:**	50898	**EO Index:**	50898	**Element Last Seen:**	2001-05-11
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-05-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-04-09

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.75985 / -116.32189	**Accuracy:**	80 meters
UTM:	Zone-11 N3735735 E562798	**Elevation (ft):**	130
PLSS:	T05S, R06E, Sec. 02, SE (S)	**Acres:**	0.0

Location:	ADJACENT TO OASIS CLUB DRIVE, EAST OF THE GOLF COURSE, SOUTH OF HIGHWAY 10, 2.3 AIR MILES WNW OF MYOMA.
Detailed Location:	LOCATED ON TOP OF SMALL SAND DUNE ADJACENT TO PAVED ROAD. MAPPED WITHIN THE SE 1/4 SE 1/4 SECTION 2.
Ecological:	UNDISTURBED CREOSOTE SCRUB COMMUNITY ON TOP OF SMALL SAND DUNE.
General:	8 PLANTS OBSERVED IN 2001.
Owner/Manager:	UNKNOWN

Occurrence No.	38	**Map Index:**	71018	**EO Index:**	71936	**Element Last Seen:**	2019-03-03
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2019-03-03
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2021-08-27

Quad Summary:	Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.78207 / -116.31404	**Accuracy:**	specific area
UTM:	Zone-11 N3738204 E563509	**Elevation (ft):**	140
PLSS:	T04S, R06E, Sec. 36 (S)	**Acres:**	229.0

Location:	NORTH OF I-10 AND WEST OF WASHINGTON STREET, NORTHWEST OF MYOMA.
Detailed Location:	MAPPED AS MANY POLYGONS ACCORDING TO 2005, 2006, 2009, 2017, & 2019 COORDINATES, DATASETS PROVIDED BY UCR CENTER FOR CONSERVATION BIOLOGY AND THE COACHELLA VALLEY MSHCP, AND A 2007 MEINKE REPORT.
Ecological:	SPARSE DESERT SCRUB. ASSOCIATED SPECIES: CAMISSONIA CLAVIFORMIS, BRASSICA TOURNEFORTII, ABRONIA VILLOSA VAR. VILLOSA, SCHISMUS BARBATUS, LOTUS STRIGOSUS, MALACOTHRIX GLABRATA, LARREA TRIDENTATA, CRYPTANTHA INTERMEDIA, ETC.
General:	POP #S FOR PORTIONS OF SITE: <10 PLANTS IN 1987, 309 SEEN IN 1995 BY BARROWS (REPORTED IN COACHELLA VALLEY MSHCP) AMONG 3 DUNE SYSTEMS, 72 PLANTS ACROSS SITE IN 2001, 2500+ IN 2005/2006, SEEN IN 2009, 2017, 2019. INCLUDES FORMER EO #39.
Owner/Manager:	USFWS, DFG, PVT

Occurrence No.	57	**Map Index:**	79125	**EO Index:**	80088	**Element Last Seen:**	1987-03-30
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1987-03-30
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-06-22

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.84197 / -116.31051	**Accuracy:**	3/5 mile
UTM:	Zone-11 N3744848 E563791	**Elevation (ft):**	600
PLSS:	T04S, R06E, Sec. 12 (S)	**Acres:**	0.0

Location: THOUSAND PALMS OASIS, COACHELLA VALLEY PRESERVE.

Detailed Location: EXACT LOCATION WITHIN THE PRESERVE IS UNKNOWN. MAPPED BY CNDDB AS BEST GUESS CENTERED ON THE THOUSAND PALM OASIS AS INDICATED ON SMALL SCALE MAP PROVIDED BY BARROWS, 1987.

Ecological: COACHELLA VALLEY FRINGE-TOED LIZARD IS ALSO PRESENT HERE.

General: FEWER THAN 10 PLANTS SEEN IN 1987 BY BARROWS.

Owner/Manager: COACHELLA VALLEY PRESERVE

Occurrence No.	58	**Map Index:**	86724	**EO Index:**	87718	**Element Last Seen:**	2010-04-29
Occ. Rank:	Poor			**Presence:**	Presumed Extant	**Site Last Seen:**	2010-04-29
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-03-27

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.77277 / -116.32944	**Accuracy:**	80 meters
UTM:	Zone-11 N3737164 E562090	**Elevation (ft):**	152
PLSS:	T05S, R06E, Sec. 2, NE (S)	**Acres:**	5.0

Location: BERMUDA DUNES; JUST EAST OF THE JUNCTION OF VARNER ROAD AND 38TH AVENUE, 3.7 AIR MILES SE OF THOUSAND PALMS.

Detailed Location: BERMUDA DUNES. MAPPED ACCORDING TO COORDINATES PROVIDED WITH 2010 WOOD COLLECTION.

Ecological: ROADSIDE IN INACTIVE DUNES.

General: SITE BASED ON 2010 WOOD PHOTOS AND COLLECTION. SOLITARY PLANT OBSERVED HERE IN 2010.

Owner/Manager: UNKNOWN

Occurrence No.	59	**Map Index:**	86731	**EO Index:**	87728	**Element Last Seen:**	2000-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2000-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-09-24

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.79182 / -116.32250	**Accuracy:**	80 meters
UTM:	Zone-11 N3739280 E562718	**Elevation (ft):**	182
PLSS:	T04S, R06E, Sec. 26, SE (S)	**Acres:**	0.0

Location: 1.3 AIR MILES EAST OF CHASE SCHOOL, SOUTHEAST OF THOUSAND PALMS, COACHELLA VALLEY NATIONAL WILDLIFE REFUGE.

Detailed Location: MAPPED BY CNDDB ACCORDING TO COACHELLA VALLEY MSHCP SHAPEFILE. LOCATION DESCRIPTION (BARROWS) INCLUDES "NW 1/4 SE 1/4 SEC 26"; POINT IN SHAPEFILE IS LOCATED IN THE NE 1/4 OF THE SE 1/4 OF SEC 26.

Ecological:

General: 9 PLANTS OBSERVED IN 1993, 6 PLANTS OBSERVED IN 1998, AND MORE THAN 15 PLANTS OBSERVED IN 2000.

Owner/Manager: USFWS-COACHELLA VALLEY NWR

Occurrence No.	60	**Map Index:**	86735	**EO Index:**	87729	**Element Last Seen:**	2020-03-13
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2020-03-13
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2021-08-02

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.78973 / -116.33804	**Accuracy:**	specific area
UTM:	Zone-11 N3739039 E561280	**Elevation (ft):**	165
PLSS:	T04S, R06E, Sec. 27, SE (S)	**Acres:**	31.0

Location: FROM 0.4 MILE ENE TO 0.7 MILE SE OF CHASE SCHOOL, SE OF THOUSAND PALMS, COACHELLA VALLEY NATIONAL WILDLIFE REFUGE.

Detailed Location: MAPPED BY CNDDB AS 4 POLYGONS ACCORDING TO DATASETS PROVIDED BY COACHELLA VALLEY MSHCP AND UCR CENTER FOR CONSERVATION BIOLOGY. LOCATED IN THE EAST 1/2 OF THE SE 1/4 OF SEC 27 AND THE NW 1/4 OF THE NW 1/4 OF SEC 35.

Ecological:

General: IN THE N-MOST COLONY, 3 PLANTS IN 1993, 6 PLANTS IN 1998, AND 5 PLANTS IN 2000 (REPORTED BY BARROWS IN COACHELLA VALLEY MSHCP). UNKNOWN NUMBERS SEEN DURING TRANSECT SURVEYS OVER 5-7 YEAR PERIOD; LAST SURVEY DATE WAS 2005. SEEN IN 2020.

Owner/Manager: USFWS-COACHELLA VALLEY NWR

Petalonyx linearis

Element Code: PDLOA04010

narrow-leaf sandpaper-plant

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S3?
	Other:	Rare Plant Rank - 2B.3			
Habitat:	**General:**	MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	SANDY OR ROCKY CANYONS. -30-1090 M.			

Occurrence No.	22	**Map Index:**	86444	**EO Index:**	106681	**Element Last Seen:**	1921-04-21
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1921-04-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-06-07

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.83400 / -116.30988	**Accuracy:**	1 mile
UTM:	Zone-11 N3743964 E563855	**Elevation (ft):**	1000
PLSS:	T04S, R06E, Sec. 12 (S)	**Acres:**	0.0

Location: THOUSAND PALMS CANYON, COLORADO DESERT.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB TO ENCOMPASS THE MAIN PORTION OF THOUSAND PALMS CANYON. GIVEN ELEVATION IS 1000 FEET; SITE MAY HAVE BEEN FROM FURTHER NORTH BASED ON HIGHER ELEVATION.

Ecological:

General: SITE BASED ON SEVERAL VAGUE 1921 COLLECTIONS FROM JAEGER AND DAVIDSON. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Abronia villosa var. aurita **Element Code:** PDNYC010P1

chaparral sand-verbena

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2?
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive			
Habitat:	**General:**	CHAPARRAL, COASTAL SCRUB, DESERT DUNES.			
	Micro:	SANDY AREAS. -60-1570 M.			

Occurrence No.	38	**Map Index:**	60438	**EO Index:**	60474	**Element Last Seen:**	2010-04-29
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2010-04-29
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2012-11-27

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.77284 / -116.32675	**Accuracy:**	non-specific area
UTM:	Zone-11 N3737173 E562338	**Elevation (ft):**	150
PLSS:	T04S, R06E, Sec. 35, S (S)	**Acres:**	37.0

Location: AVENUE 38, BETWEEN WASHINGTON STREET AND I-10, ABOUT 6.5 MILES NW OF INDIO, BERMUDA DUNES, COACHELLA VALLEY.

Detailed Location: ROADSIDE NEAR ABANDONED JOJOBA FARM. MAPPED BY CNDDB AS BEST GUESS NEAR THE PORTION OF AVENUE 38 WHERE AN ON OLD JOJOBA FARM APPEARS TO BE LOCATED.

Ecological: ACTIVE/INACTIVE DUNES. ROADSIDES.

General: PLANTS DESCRIBED AS "UNCOMMON" AT THIS SITE IN 2009 AND "OCCASIONAL" IN 2010. A CNPS INTERNAL MEMO THAT MAKES REFERENCE TO A COLLECTION FROM CAS FROM "FRINGING US HWY 99 6.5 MILES NW OF INDIO" IS ALSO ATTRIBUTED HERE.

Owner/Manager: UNKNOWN

Occurrence No.	88	**Map Index:**	83959	**EO Index:**	85008	**Element Last Seen:**	2011-03-11
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2011-03-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2012-11-28

Quad Summary: Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.83152 / -116.33590	**Accuracy:**	80 meters
UTM:	Zone-11 N3743674 E561449	**Elevation (ft):**	406
PLSS:	T04S, R06E, Sec. 11, SW (S)	**Acres:**	0.0

Location: WILLIS PALMS LOOP AT BOUNDARY OF COACHELLA VALLEY PRESERVE AT END OF WILLIS PALMS ROAD, INDIO HILLS.

Detailed Location: MAPPED BY CNDDB ACCORDING TO 2011 SWANSON COORDINATES IN THE SW 1/4 OF THE SW 1/4 OF SECTION 11.

Ecological: GROWING IN FLAT GRAVELLY/SANDY AREAS ON UPPER LEVEL OF WASH WITH LARREA TRIDENTATA, AMBROSIA DUMOSA, PSOROTHAMNUS SCHOTTI, HYMENOCLEA SALSOLA, FAGONIA LAEVIS, HOFFMANNSEGGIA SP., MALACOTHRIX GLABRATA, CAMISSONIA CLAVIFORMIS, ETC.

General: 150+ PLANTS OBSERVED IN 2011.

Owner/Manager: BLM

Eremothera boothii ssp. boothii **Element Code:** PDONA03052

Booth's evening-primrose

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T4
	State:	None		**State:**	S3
	Other:	Rare Plant Rank - 2B.3			
Habitat:	**General:**	JOSHUA TREE WOODLAND, PINYON AND JUNIPER WOODLAND.			
	Micro:	285-2290 M.			

Occurrence No.	12	**Map Index:** 78584	**EO Index:** 79516	**Element Last Seen:**	1995-04-20
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1995-04-20
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-04-14

Quad Summary: Myoma (3311673), East Deception Canyon (3311683)

County Summary: Riverside

Lat/Long:	33.88219 / -116.29226	**Accuracy:**	non-specific area
UTM:	Zone-11 N3749319 E565448	**Elevation (ft):**	1200
PLSS:	T03S, R07E, Sec. 30 (S)	**Acres:**	661.0

Location: NEAR FAN HILL, NE OF 1000 PALMS; 0.6 MI NE OF DILLON RD, COACHELLA VALLEY.

Detailed Location: ON ABANDONED ROAD. MAPPED BY CNDDB WITHIN T03S R07E SECTION 30 AS STATED IN SANDERS 1995 COLLECTION.

Ecological: CREOSOTE SCRUB ON ROCKY ALLUVIAL SLOPES IN OPEN AREAS.

General: MENTIONED AS UNCOMMON IN 1995. ID SHOULD BE CHECKED; SITE IS OUTSIDE OF SUBSPECIES RANGE GIVEN IN THE JEPSON MANUAL.

Owner/Manager: BLM, UNKNOWN

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Rockhouse Canyon (3311671))

Ovis canadensis nelsoni **Element Code:** AMALE04013

desert bighorn sheep

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T3
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_FP-Fully Protected, USFS_S-Sensitive			
Habitat:	**General:**	WIDELY DISTRIBUTED FROM THE WHITE MTNS IN MONO CO. TO THE CHOCOLATE MTS IN IMPERIAL CO.			
	Micro:	OPEN, ROCKY, STEEP AREAS WITH AVAILABLE WATER AND HERBACEOUS FORAGE.			

Occurrence No.	14	**Map Index:** 05686	**EO Index:** 12417	**Element Last Seen:**	1986-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1986-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1995-10-24

Quad Summary: Thermal Canyon (3311661), Rockhouse Canyon (3311671), West Berdoo Canyon (3311672), Malapai Hill (3311681), Keys View (3311682), East Deception Canyon (3311683), Seven Palms Valley (3311684), Desert Hot Springs (3311685), Joshua Tree South (3411613), Yucca Valley South (3411614), Morongo Valley (3411615)

County Summary: Riverside, San Bernardino

Lat/Long:	33.90296 / -116.29325	**Accuracy:**	specific area
UTM:	Zone-11 N3751621 E565341	**Elevation (ft):**	
PLSS:	T03S, R07E, Sec. 19 (S)	**Acres:**	140891.3

Location: LITTLE SAN BERNARDINO MOUNTAINS.

Detailed Location: THIS RANGE BECOMES MORE ARID TO THE EAST AND THE SHEEP POPULATION BECOMES LESS DENSE AND IS USED LESS FREQUENTLY THAN THE WESTERN PORTION.

Ecological:

General: POPULATION ESTIMATE OF 100 INDIVIDUALS; RECENT INCREASES IN POPULATION NUMBERS.

Owner/Manager: NPS-JOSHUA TREE NP

Astragalus bernardinus **Element Code:** PDFAB0F190

San Bernardino milk-vetch

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive			
Habitat:	**General:**	JOSHUA TREE WOODLAND, PINYON AND JUNIPER WOODLAND.			
	Micro:	GRANITIC OR CARBONATE SUBSTRATES. 290-2290 M.			

Occurrence No.	43	**Map Index:** 94851	**EO Index:** 95969	**Element Last Seen:**	1986-04-12
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1986-04-12
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2015-01-13

Quad Summary: Rockhouse Canyon (3311671)

County Summary: Riverside

Lat/Long:	33.85670 / -116.08017	**Accuracy:**	non-specific area
UTM:	Zone-11 N3746648 E585087	**Elevation (ft):**	4800
PLSS:	T04S, R09E, Sec. 06 (S)	**Acres:**	971.0

Location: UPPER BERDOO CANYON, LITTLE SAN BERNARDINO MOUNTAINS.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB ACCORDING TO TRS PROVIDED BY EMMEL: T3S R9E SOUTH 1/2 SECTION 31, AND T4S R9E SECTION 6. ELEVATION GIVEN AS 4500-5000 FEET.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1986 EMMEL COLLECTION.

Owner/Manager: NPS-JOSHUA TREE NP

Saltugilia latimeri **Element Code:** PDPLM0H010

Latimer's woodland-gilia

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture, USFS_S-Sensitive			
Habitat:	**General:**	CHAPARRAL, MOJAVEAN DESERT SCRUB, PINYON AND JUNIPER WOODLAND.			
	Micro:	ROCKY OR SANDY SUBSTRATE; SOMETIMES IN WASHES, SOMETIMES LIMESTONE. 120-2200 M.			

Occurrence No.	3 **Map Index:** 60226	**EO Index:**	60262	**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	Unknown	**Presence:**	Presumed Extant	**Site Last Seen:**	XXXX-XX-XX
Occ. Type:	Natural/Native occurrence	**Trend:**	Unknown	**Record Last Updated:**	2005-02-24

Quad Summary: Rockhouse Canyon (3311671)

County Summary: Riverside

Lat/Long:	33.83016 / -116.09710	**Accuracy:**	non-specific area
UTM:	Zone-11 N3743691 E583547	**Elevation (ft):**	2850
PLSS:	T04S, R08E, Sec. 13 (S)	**Acres:**	111.4

Location: BERDOO CANYON, LITTLE SAN BERNARDINO MOUNTAINS.

Detailed Location: ONLY SOURCE IS UNDATED OBSERVATION FROM "UPPER BERDOO CANYON, CA. 2700-3000 FEET" (SILVERMAN). MAPPED ALONG BERDOO CANYON FROM 2700-3000 FEET ELEVATION.

Ecological: IN WASH.

General: SITE BASED ON AN UNDATED OBSERVATION. NEEDS FIELDWORK. ID UNCERTAIN; NEEDS VERIFICATION.

Owner/Manager: UNKNOWN

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Thermal Canyon (3311661))

Athene cunicularia **Element Code:** ABNSB10010

burrowing owl

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	Candidate Endangered		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	OPEN, DRY ANNUAL OR PERENNIAL GRASSLANDS, DESERTS, AND SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.			
	Micro:	SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.			

Occurrence No.	412	**Map Index:** 45675	**EO Index:** 45675	**Element Last Seen:**	2007-05-22
Occ. Rank:	Poor		**Presence:** Presumed Extant	**Site Last Seen:**	2007-05-22
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-10-12

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.63054 / -116.07491	**Accuracy:**	specific area
UTM:	Zone-11 N3721576 E585799	**Elevation (ft):**	0
PLSS:	T06S, R09E, Sec. 20, SW (S)	**Acres:**	10.0

Location: WEST SIDE OF THE COACHELLA CANAL, 1.1 MILES ENE OF 58TH AVE AT BUCHANAN STREET. ABOUT 4 MI N OF MECCA, COACHELLA VALLEY.

Detailed Location: BLOCK CODE 3720-585 - LOCATION CODES A (SE) AND B (S). MAPPED TO PROVIDED COORDINATES. THE MAP PROVIDED IN 2000 INDICATES OWL WAS FOUND IN VICINITY.

Ecological: HABITAT CONSISTS OF SONORAN CREOSOTE SCRUB/DESERT SALTBUSH SCRUB/BARREN AREAS. SITE IS SURROUNDED BY VINEYARDS, ORCHARDS, AND THE COACHELLA CANAL. GROUND SQUIRRELS DETECTED WITHIN 100 M OF BREEDING LOCATIONS.

General: 1 INDIVIDUAL OBSERVED STANDING NEAR A BURROW SITE ON 7 APR 2000. 2 ADULTS OBSERVED AND 1 BREEDING PAIR ESTIMATED TO OCCUR AT A ON 18 MAY 2007. 1 ADULT OBSERVED AND 1 BREEDING PAIR ESTIMATED TO OCCUR AT B ON 22 MAY 2007.

Owner/Manager: BLM, CVWD

Occurrence No.	438	**Map Index:** 47367	**EO Index:** 47367	**Element Last Seen:**	2001-04-29
Occ. Rank:	Good		**Presence:** Presumed Extant	**Site Last Seen:**	2001-04-29
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2002-03-07

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.67572 / -116.10429	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3726561 E583031	**Elevation (ft):**	40
PLSS:	T06S, R08E, Sec. 01, SW (S)	**Acres:**	0.0

Location: EAST EDGE COACHELLA VALLEY; 0.5 MILE EAST OF THE COACHELLA CANAL AND 1.5 MILES SOUTH OF INTERSTATE 12.

Detailed Location: LOCATED ON SOUTH FACING SLOPE AT BASE OF MECCA HILLS.

Ecological: HABITAT CONSISTS OF SONORAN CREOSOTE BUSH SCRUB. SUBSTRATE LOOSE/ROCKY; SLOPE IS 15%. LAND TO SOUTH AND WEST CONSISTS OF HEAVY AGRICULTURE AND THE COACHELLA CANAL.

General: 29 APR 2001: 1 ADULT OBSERVED. POTENTIAL BURROWS AND PELLETS FOUND THROUGHOUT AREA.

Owner/Manager: BLM

Occurrence No.	575	**Map Index:**	05913	**EO Index:**	51267	**Element Last Seen:**	1929-04-21
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1929-04-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-05-13

Quad Summary: Thermal Canyon (3311661), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.64055 / -116.14250	**Accuracy:**	1 mile
UTM:	Zone-11 N3722631 E579521	**Elevation (ft):**	-120
PLSS:	T06S, R08E, Sec. 22 (S)	**Acres:**	0.0

Location: THERMAL.

Detailed Location:

Ecological:

General: SBCM EGG SET #3402 COLLECTED 21 APR 1929.

Owner/Manager: UNKNOWN

Occurrence No.	918	**Map Index:**	69257	**EO Index:**	70037	**Element Last Seen:**	2006-04-18
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-04-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2007-05-14

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.70295 / -116.10373	**Accuracy:**	80 meters
UTM:	Zone-11 N3729581 E583056	**Elevation (ft):**	470
PLSS:	T05S, R08E, Sec. 25, N (S)	**Acres:**	0.0

Location: ABOUT 4.4 MILES ENE OF COACHELLA, 0.3 MILE NORTH OF INTERSTATE 10.

Detailed Location: MAPPED ACCORDING TO UTM COORDINATES PROVIDED BY SOURCE.

Ecological: CREOSOTE SCRUB, DESERT WASH SCRUB. CREOSOTE BUSH, PALO VERDE, BURRO BUSH. SANDY ALLUVIUM WITH FINE CLAY SOILS. SLOPE IS 6-10%.

General: BURROW SITE. 2 ADULTS OBSERVED ON 18 APR 2006.

Owner/Manager: UNKNOWN

Occurrence No.	919	**Map Index:**	69258	**EO Index:**	70038	**Element Last Seen:**	2006-04-18
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-04-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2007-05-14

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.69840 / -116.11419	**Accuracy:**	80 meters
UTM:	Zone-11 N3729069 E582091	**Elevation (ft):**	280
PLSS:	T05S, R08E, Sec. 35, NE (S)	**Acres:**	0.0

Location: ABOUT 3.8 MILES ENE OF COACHELLA, JUST SOUTH OF INTERSTATE 10.

Detailed Location: MAPPED ACCORDING TO UTM COORDINATES PROVIDED BY SOURCE.

Ecological: CREOSOTE SCRUB, DESERT WASH SCRUB. CREOSOTE BUSH, PALO VERDE, BURRO BUSH. SANDY ALLUVIUM WITH FINE CLAY SOILS. SLOPE IS 6-10%.

General: BURROW SITE. 2 ADULTS OBSERVED ON 18 APR 2006.

Owner/Manager: UNKNOWN

Occurrence No.	920	**Map Index:**	69259	**EO Index:**	70039	**Element Last Seen:**	2006-04-18
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-04-18
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2007-05-14

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.69661 / -116.12257	**Accuracy:**	80 meters
UTM:	Zone-11 N3728864 E581316	**Elevation (ft):**	150
PLSS:	T05S, R08E, Sec. 35, NW (S)	**Acres:**	0.0

Location: ABOUT 3.2 MILES ENE OF COACHELLA, 0.4 MILE SOUTH OF INTERSTATE 10.

Detailed Location: MAPPED ACCORDING TO UTM COORDINATES PROVIDED BY SOURCE.

Ecological: CREOSOTE SCRUB, DESERT WASH SCRUB. CREOSOTE BUSH, PALO VERDE, BURRO BUSH. SANDY ALLUVIUM WITH FINE CLAY SOILS. SLOPE IS 6-10%.

General: BURROW SITE. 2 ADULTS OBSERVED ON 18 APR 2006.

Owner/Manager: UNKNOWN

Occurrence No.	1205	**Map Index:**	72196	**EO Index:**	73146	**Element Last Seen:**	2006-05-23
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-05-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-09

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.70445 / -116.11936	**Accuracy:**	80 meters
UTM:	Zone-11 N3729735 E581606	**Elevation (ft):**	310
PLSS:	T05S, R08E, Sec. 26 (S)	**Acres:**	0.0

Location: JUST NORTH OF I-10, 3.60 MI NE OF COACHELLA.

Detailed Location:

Ecological: HABITAT CONSISTS OF LOW FOOTHILLS WITH SAND/GRAVEL/ROCK SUBSTRATE AND CREOSOTE BUSH SCRUB. SURROUNDING AREA USED FOR ORV'S AND ILLEGAL DUMPING.

General: BURROW SITE. 5 BUOW OBSERVED AT MULTIPLE BURROWS. CALPHOTO ID'S: 0000 0000 0106 0882, 0000 0000 0306 1156, 0000 0000 0506 3845, 0000 0000 0506 3847.

Owner/Manager: CALTRANS

Occurrence No.	1489	**Map Index:**	80374	**EO Index:**	81361	**Element Last Seen:**	2007-06-13
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-06-13
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-10-12

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.67993 / -116.11723	**Accuracy:**	80 meters
UTM:	Zone-11 N3727018 E581826	**Elevation (ft):**	40
PLSS:	T06S, R08E, Sec. 02, NE (S)	**Acres:**	0.0

Location: 0.9 MI NE FILLMORE ST AT 52ND AVE, 3.4 MI E OF COACHELLA PO, JUST W OF COACHELLA CANAL.

Detailed Location: BLOCK CODE 3725-580 - LOCATION CODE A. MAPPED TO PROVIDED COORDINATES.

Ecological: HABITAT TYPE LISTED AS BRUSHLAND. LOWLAND ELEVATION SUBREGION. AG TO THE WEST. GROUND SQUIRRELS DETECTED WITHIN 100 M RADIUS OF BREEDING LOCATION.

General: 2 ADULTS OBSERVED AND 1 BREEDING PAIR ESTIMATED TO OCCUR IN AREA ON 13 JUN 2007.

Owner/Manager: PVT

Occurrence No.	1490	**Map Index:**	80375	**EO Index:**	81362	**Element Last Seen:**	2007-06-13
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-06-13
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-10-12

Quad Summary:	Thermal Canyon (3311661)
County Summary:	Riverside

Lat/Long:	33.67061 / -116.11732	**Accuracy:**	80 meters
UTM:	Zone-11 N3725984 E581827	**Elevation (ft):**	-40
PLSS:	T06S, R08E, Sec. 11, NE (S)	**Acres:**	0.0

Location:	0.3 MI W OF BM1 (ON 52ND AVE), 0.6 MI W OF COACHELLA CANAL, 3.4 MI ESE OF COACHELLA PO, ABOUT 3 MI NE THERMAL AIRPORT.
Detailed Location:	BLOCK CODE 3725-580 - LOCATION CODE B. MAPPED TO PROVIDED COORDINATES.
Ecological:	HABITAT TYPE LISTED AS BRUSHLAND BUT 2009 AERIAL PHOTOS SHOW AREA IS IN AG. LOWLAND ELEVATION SUBREGION. GROUND SQUIRRELS DETECTED WITHIN 100 M RADIUS OF BREEDING LOCATION.
General:	2 ADULTS OBSERVED AND 1 BREEDING PAIR ESTIMATED TO OCCUR IN AREA ON 13 JUN 2007.
Owner/Manager:	BLM

Occurrence No.	1602	**Map Index:**	81014	**EO Index:**	82000	**Element Last Seen:**	2007-05-15
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-05-15
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-12-07

Quad Summary:	Thermal Canyon (3311661)
County Summary:	Riverside

Lat/Long:	33.71390 / -116.11696	**Accuracy:**	80 meters
UTM:	Zone-11 N3730785 E581819	**Elevation (ft):**	440
PLSS:	T05S, R08E, Sec. 26, NE (S)	**Acres:**	0.0

Location:	2.4 MI SSW FARGO CANYON RD AT AQUEDUCT RD, & 3.1 MI E OF DILLON RD & I-10, 4.2 MI NE COACHELLA PO.
Detailed Location:	BLOCK CODE 3730-580 - LOCATION CODE A. MAPPED TO PROVIDED COORDINATES.
Ecological:	UPLAND ELEVATION SUBREGION.
General:	1 ADULT OBSERVED AND 1 BREEDING PAIR ESTIMATED TO OCCUR IN AREA ON 15 MAY 2007.
Owner/Manager:	UNKNOWN

Pyrocephalus rubinus

Element Code: ABPAE36010

vermilion flycatcher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	DURING NESTING, INHABITS DESERT RIPARIAN ADJACENT TO IRRIGATED FIELDS, IRRIGATION DITCHES, PASTURES, AND OTHER OPEN, MESIC AREAS.			
	Micro:	NEST IN COTTONWOOD, WILLOW, MESQUITE, AND OTHER LARGE DESERT RIPARIAN TREES.			

Occurrence No.	20	**Map Index:**	05913	**EO Index:**	4744	**Element Last Seen:**	1948-04-11
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1948-04-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Thermal Canyon (3311661), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.64055 / -116.14250	**Accuracy:**	1 mile
UTM:	Zone-11 N3722631 E579521	**Elevation (ft):**	120
PLSS:	T06S, R08E, Sec. 22, NW (S)	**Acres:**	0.0

Location: THERMAL, ABOUT 7 MI SE OF INDIO.

Detailed Location:

Ecological:

General: SPECIMEN (UCLA #11966) COLLECTED IN 1918. MUSEUM EGG SET (SBMNH #8832) COLLECTED IN 1948.

Owner/Manager: UNKNOWN

Polioptila melanura

Element Code: ABPBJ08030

black-tailed gnatcatcher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3S4
	Other:	CDFW_WL-Watch List, IUCN_LC-Least Concern			
Habitat:	**General:**	PRIMARILY INHABITS WOODED DESERT WASH HABITATS; ALSO OCCURS IN DESERT SCRUB HABITAT, ESPECIALLY IN WINTER.			
	Micro:	NESTS IN DESERT WASHES CONTAINING MESQUITE, PALO VERDE, IRONWOOD, ACACIA; ABSENT FROM AREAS WHERE SALT CEDAR INTRODUCED.			

Occurrence No.	16	**Map Index:**	05913	**EO Index:**	4731	**Element Last Seen:**	1940-03-15
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1940-03-15
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Thermal Canyon (3311661), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.64055 / -116.14250	**Accuracy:**	1 mile
UTM:	Zone-11 N3722631 E579521	**Elevation (ft):**	-120
PLSS:	T06S, R08E, Sec. 22, NW (S)	**Acres:**	0.0

Location: THERMAL.

Detailed Location:

Ecological:

General: SBCM EGG SET #6578; OTHER EGG SETS COLLECTED IN 1922, 1934, 1938, 1939, AND 1940.

Owner/Manager: UNKNOWN

Toxostoma crissale

Element Code: ABPBK06090

Crissal thrasher

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S2
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	RESIDENT OF SOUTHEASTERN DESERTS IN DESERT RIPARIAN AND DESERT WASH HABITATS.			
	Micro:	NESTS IN DENSE VEGETATION ALONG STREAMS/WASHES; MESQUITE, SCREWBEAN MESQUITE, IRONWOOD, CATCLAW, ACACIA, ARROWWEED, WILLOW.			

Occurrence No.	4	**Map Index:** 05913	**EO Index:** 4745	**Element Last Seen:**	1922-04-07
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1922-04-07
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1991-04-11

Quad Summary: Thermal Canyon (3311661), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.64055 / -116.14250	**Accuracy:**	1 mile
UTM:	Zone-11 N3722631 E579521	**Elevation (ft):**	-120
PLSS:	T06S, R08E, Sec. 22, NW (S)	**Acres:**	0.0

Location: THERMAL.

Detailed Location:

Ecological:

General: #4727 LACM, #B256 UCLA. ALSO SEEN HERE 1-27-1916.

Owner/Manager: UNKNOWN

Lasiurus xanthinus

Element Code: AMACC05070

western yellow bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5
	State:	None		**State:**	S3
	Other:	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern			
Habitat:	**General:**	FOUND IN VALLEY FOOTHILL RIPARIAN, DESERT RIPARIAN, DESERT WASH, AND PALM OASIS HABITATS.			
	Micro:	ROOSTS IN TREES, PARTICULARLY PALMS. FORAGES OVER WATER AND AMONG TREES.			

Occurrence No.	32	**Map Index:** 05913	**EO Index:** 58940	**Element Last Seen:**	1976-06-27
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1976-06-27
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2004-12-21

Quad Summary: Thermal Canyon (3311661), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.64055 / -116.14250	**Accuracy:**	1 mile
UTM:	Zone-11 N3722631 E579521	**Elevation (ft):**	-120
PLSS:	T06S, R08E, Sec. 22 (S)	**Acres:**	0.0

Location: THERMAL, RIVERSIDE COUNTY.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED IN THE VICINTY OF THERMAL.

Ecological:

General: 1 MALE & 1 FEMALE SPECIMENS COLLECTED 14 APR & 27 JUN 1976 BY D. CONSTANTINE AT "THERMAL." DEPOSITED AT MVZ #181924 & 181925.

Owner/Manager: UNKNOWN

Eumops perotis californicus **Element Code:** AMACD02011

western mastiff bat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5T4
	State:	None		**State:**	S3S4
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER AND DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL, ETC.			
	Micro:	ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES AND TUNNELS.			

Occurrence No.	8	**Map Index:** 33083	**EO Index:** 12651	**Element Last Seen:**	1992-08-29
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1992-08-29
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1995-03-27

Quad Summary: Cottonwood Basin (3311568), Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.63251 / -116.00383	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3721855 E592390	**Elevation (ft):**	800
PLSS:	T06S, R09E, Sec. 24 (S)	**Acres:**	0.0

Location: PAINTED CANYON, IN THE MECCA HILLS, EAST OF COACHELLA VALLEY.

Detailed Location:

Ecological: HABITAT CONSISTS OF A NARROW, DRY DESERT CANYON, WITH LOTS OF CLIFFS.

General: EXCELLENT ROOSTING HABITAT; 23 MASTIFF BATS OF UNKNOWN AGE OBSERVED.

Owner/Manager: UNKNOWN

Perognathus longimembris bangsi **Element Code:** AMAFD01043

Palm Springs pocket mouse

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	None		**State:**	S1
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	DESERT RIPARIAN, DESERT SCRUB, DESERT WASH AND SAGEBRUSH HABITATS. MOST COMMON IN CREOSOTE-DOMINATED DESERT SCRUB.			
	Micro:	RARELY FOUND ON ROCKY SITES. OCCURS IN ALL CANOPY COVERAGE CLASSES.			

Occurrence No.	3	**Map Index:**	51788	**EO Index:**	51788	**Element Last Seen:**	1997-07-03
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-07-03
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-07-16

Quad Summary:	Thermal Canyon (3311661)
County Summary:	Riverside

Lat/Long:	33.70889 / -116.03800	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3730294 E589142	**Elevation (ft):**	1400
PLSS:	T05S, R09E, Sec. 27, NW (S)	**Acres:**	0.0

Location:	SOUTH OF YELLOW SPOTS CANYON, ALONG THE WEST EDGE OF THE LITTLE SAN BERNARDINO MOUNTAINS.
Detailed Location:	ABOUT 100 METERS SOUTH OF AN UNIMPROVED ROAD WHICH TRAVERSES SECTION 27 MORE OR LESS EAST-WEST.
Ecological:	HABITAT CONSISTS OF CREOSOTE BUSH SCRUB, ON SANDY SOILS; ON AN WEST ASPECT.
General:	1 ADULT OBSERVED ON 3 JUL 1997.
Owner/Manager:	UNKNOWN

Occurrence No.	14	**Map Index:**	70534	**EO Index:**	71441	**Element Last Seen:**	2001-07-14
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-07-14
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2007-11-27

Quad Summary:	Thermal Canyon (3311661), Indio (3311662)
County Summary:	Riverside

Lat/Long:	33.69855 / -116.11617	**Accuracy:**	non-specific area
UTM:	Zone-11 N3729083 E581907	**Elevation (ft):**	330
PLSS:	T05S, R08E, Sec. 35 (S)	**Acres:**	1938.0

Location:	I-10/MCNAUGHTON INTERCHANGE, COACHELLA VALLEY.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF CREOSOTE DESERT SCRUB, DOMINATED BY CREOSOTE BUSH, INDIGO BUSH, AND CHEESEBUSH. SITE IS LOCATED ON THE NORTHERN BORDER OF STEEP BADLANDS, BRAIDED STREAMBEDS, AND BORDERED BY SMALL HILLS AND BENCHES.
General:	3 JUVENILES DETECTED DURING SURVEYS CONDUCTED 10-14 JUL 2001.
Owner/Manager:	UNKNOWN

Ovis canadensis nelsoni **Element Code:** AMALE04013

desert bighorn sheep

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T3
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_FP-Fully Protected, USFS_S-Sensitive			
Habitat:	**General:**	WIDELY DISTRIBUTED FROM THE WHITE MTNS IN MONO CO. TO THE CHOCOLATE MTS IN IMPERIAL CO.			
	Micro:	OPEN, ROCKY, STEEP AREAS WITH AVAILABLE WATER AND HERBACEOUS FORAGE.			

Occurrence No.	14	**Map Index:** 05686	**EO Index:** 12417	**Element Last Seen:**	1986-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1986-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1995-10-24

Quad Summary: Thermal Canyon (3311661), Rockhouse Canyon (3311671), West Berdoo Canyon (3311672), Malapai Hill (3311681), Keys View (3311682), East Deception Canyon (3311683), Seven Palms Valley (3311684), Desert Hot Springs (3311685), Joshua Tree South (3411613), Yucca Valley South (3411614), Morongo Valley (3411615)

County Summary: Riverside, San Bernardino

Lat/Long:	33.90296 / -116.29325	**Accuracy:**	specific area
UTM:	Zone-11 N3751621 E565341	**Elevation (ft):**	
PLSS:	T03S, R07E, Sec. 19 (S)	**Acres:**	140891.3

Location: LITTLE SAN BERNARDINO MOUNTAINS.

Detailed Location: THIS RANGE BECOMES MORE ARID TO THE EAST AND THE SHEEP POPULATION BECOMES LESS DENSE AND IS USED LESS FREQUENTLY THAN THE WESTERN PORTION.

Ecological:

General: POPULATION ESTIMATE OF 100 INDIVIDUALS; RECENT INCREASES IN POPULATION NUMBERS.

Owner/Manager: NPS-JOSHUA TREE NP

Gopherus agassizii **Element Code:** ARAAF01012

Mojave desert tortoise

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G2G3
	State:	Endangered		**State:**	S2S3
	Other:	IUCN_CR-Critically Endangered			
Habitat:	**General:**	MOST COMMON IN DESERT SCRUB, DESERT WASH, AND JOSHUA TREE HABITATS; OCCURS IN ALMOST EVERY DESERT HABITAT.			
	Micro:	REQUIRE FRIABLE SOIL FOR BURROW AND NEST CONSTRUCTION. CREOSOTE BUSH HABITAT WITH LARGE ANNUAL WILDFLOWER BLOOMS PREFERRED.			

Occurrence No.	4	**Map Index:**	06371	**EO Index:**	14803	**Element Last Seen:**	1987-XX-XX
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1987-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	1996-02-15

Quad Summary: Quartz Peak (3311417), Ninemile Wash (3311418), Buzzards Peak (3311427), Mt. Barrow (3311428), Palo Verde Peak (3311437), West of Palo Verde Peak (3311438), Thumb Peak (3311447), Wiley Well (3311448), Roosevelt Mine (3311457), Hopkins Well (3311458), Blue Mountain (3311521), Mammoth Wash (3311522), Little Mule Mts. (3311531), Pegleg Well (3311532), Lion Head Mtn. (3311533), Iris Wash (3311534), Little Chuckwalla Mts. (3311541), Chuckwalla Spring (3311542), Augustine Pass (3311543), Iris Pass (3311544), East of Aztec Mines (3311551), Aztec Mines (3311552), Pilot Mountain (3311553), Red Cloud Canyon (3311554), East of Red Canyon (3311555), Red Canyon (3311556), Orocopia Canyon (3311557), Corn Spring (3311563), Desert Center (3311564), Hayfield Spring (3311565), Hayfield (3311566), Cottonwood Spring (3311567), Cottonwood Basin (3311568), Thermal Canyon (3311661)

County Summary: Imperial, Riverside

Lat/Long:	33.39605 / -115.15231	**Accuracy:**	specific area
UTM:	Zone-11 N3696719 E671839	**Elevation (ft):**	
PLSS:	T09S, R17E, Sec. 13 (S)	**Acres:**	637936.8

Location: CHUCKWALLA; MILPITAS WASH, CHUCKWALLA VALLEY AND BENCH IN THE SOUTHERN COLORADO DESERT.

Detailed Location: 1 OF 4 PRIMARY POPS IN CALIF. IN 1977, EST DENSITIES WERE 20 TO 250 TORTOISES/SQ MI.

Ecological: AREA COVERS APPROX 500 SQ MI FROM 500 TO 2000 FT ELEV WITH VARIOUS VEGETATION COMMUNITIES. BLM ACEC INCLUDED.

General:

Owner/Manager: BLM, PVT, STATE, DOD-NAVY

Occurrence No.	898	**Map Index:**	84082	**EO Index:**	85112	**Element Last Seen:**	2006-05-23
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-05-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-11-09

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.69534 / -116.09400	**Accuracy:**	80 meters
UTM:	Zone-11 N3728745 E583965	**Elevation (ft):**	570
PLSS:	T05S, R09E, Sec. 31, NW (S)	**Acres:**	0.0

Location: ABOUT 2.5 MI N OF THERMAL CANYON & 0.25 MI S OF I-10, 5 MI NE OF THE COACHELLA POST OFFICE.

Detailed Location: MAPPED TO PROVIDED COORDINATES.

Ecological: HABITAT CONSISTED OF CREOSOTE SCRUB AND DESERT WASH SCRUB IN LOW FOOTHILLS WITH SANDY ALLUVIUM AND FINE CLAY SOILS. VEGETATION INCLUDED CREOSOTE, PALLO VERDE, AND BURROW BUSH. SURROUNDING AREAS INCLUDED AGRICULTURAL AND OPEN SPACE.

General: 2 BURROWS OF DIFFERENT SIZES (8" AND 12") APPROXIMATELY 40 FEET APART, BOTH WITH DIFERENT SIZED PIECES OF FRESH SCAT (MANY MORE THAN 2.5" LONG), OBSERVED 23 MAY 2006.

Owner/Manager: UNKNOWN

Xylorhiza cognata **Element Code:** PDASTA1010

Mecca-aster

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	STEEP CANYON SLOPES, IN SANDSTONE AND CLAY. 20-305 M.			

Occurrence No.	13	**Map Index:**	36089	**EO Index:**	31086	**Element Last Seen:**	2003-07-03
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2003-07-03
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-02-23

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.65302 / -116.07802	**Accuracy:**	non-specific area
UTM:	Zone-11 N3724066 E585488	**Elevation (ft):**	
PLSS:	T06S, R09E, Sec. 18 (S)	**Acres:**	1043.0

Location: BETWEEN THERMAL CANYON AND PAINTED CANYON; E OF WHERE BUCHANAN ST CROSSES THE COACHELLA CANAL, MECCA HILLS.

Detailed Location: SITE MAPPED TO ENCOMPASS SEVERAL SOURCES WITH DIFFERENT TRS INFORMATION: T6S R9E SECTION 17 N1/2 (WEAR 1993); SECTION 17 NE1/4 OF SW1/4, NW1/4 OF SE1/4, NE1/4 OF SE1/4 (1995 BENNETT FIELD SURVEY FORM); & SECTION 18 (WHITE ET AL. 2003).

Ecological: DESERT, DRY WASH, WOODLAND WITH PSOROTHAMNUS SPINOSA, CERCIDIUM FLORIDUM, AND ACACIA GREGGII IN THE WASH. SCATTERED SONORAN CREOSOTE BUSH SCRUB IN THE WASH AND ON THE SURROUNDING HILLS WITH HYMENOCLEA, AMBROSIA AND LARREA.

General: 134 PLANTS OBSERVED IN SECTION 17 IN 1995. MENTIONED AS "OCCASIONAL" IN SECTION 18 IN 2003.

Owner/Manager: PVT

Occurrence No.	31	**Map Index:**	78205	**EO Index:**	79101	**Element Last Seen:**	2006-03-14
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-03-14
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-03-08

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.70047 / -116.11185	**Accuracy:**	80 meters
UTM:	Zone-11 N3729300 E582305	**Elevation (ft):**	250
PLSS:	T05S, R08E, Sec. 25, SW (S)	**Acres:**	0.0

Location: EAST OF INDIO; APPROXIMATELY 3.6 ROAD MILES EAST OF THE JUNCTION OF I-10 AND DILLON RD, NORTH END OF MECCA HILLS.

Detailed Location: AT PROPOSED I-10/MCNAUGHTON PARKWAY INTERCHANGE; IMMEDIATELY N OF FREEWAY. MAPPED BY CNDDB AT THE COMMON CORNER OF SECTIONS 25, 26, 35 & 36 BASED ON COORDINATES.

Ecological: OPEN DESERT SCRUB ON STEEP, ROCKY SLOPES AND WASHES. PLANTS ARE ON A STEEP SLOPE WITH LOOSE, SANDY SOIL AND ABUNDANT ROCKS AND COBBLES. ASSOCIATES INCLUDE PSOROTHAMNUS SCHOTTII, AMBROSIA DUMOSA, LARREA TRIDENTATA, TIDESTROMIA OBLONG., ETC.

General: 3 PLANTS SEEN IN 2005. 6 PLANTS SEEN IN 2006.

Owner/Manager: CALTRANS

Cleomella refracta **Element Code:** PDCPP09013

jackass-clover

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T5?
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 2B.2			
Habitat:	**General:**	PLAYAS, DESERT DUNES, MOJAVEAN DESERT SCRUB, SONORAN DESERT SCRUB.			
	Micro:	SANDY WASHES, ROADSIDES, ALKALINE FLATS. 380-1160 M.			

Occurrence No.	4	**Map Index:** 78244	**EO Index:** 79163	**Element Last Seen:**	1936-04-22
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1936-04-22
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-03-02

Quad Summary: Thermal Canyon (3311661)

County Summary: Riverside

Lat/Long:	33.68976 / -116.04171	**Accuracy:**	non-specific area
UTM:	Zone-11 N3728170 E588817	**Elevation (ft):**	1250
PLSS:	T05S, R09E, Sec. 34, SW (S)	**Acres:**	128.0

Location: 10 MILES EAST OF INDIO ALONG I-10, NORTH OF MECCA HILLS.

Detailed Location: MAPPED HERE ALONG PRESENT DAY I-10 WHICH WAS US RTS. 60, 70, & 99 PREVIOUSLY. THIS ROAD ORIGINALLY PASSED DIRECTLY THROUGH INDIO VIA INDIO BLVD. UNLIKE I-10 TODAY.

Ecological:

General: ONLY SOURCE OF OCCURRENCE IS A 1936 COLLECTION BY ROOS. SOURCE STATES "10 MILES E OF INDIO." NEEDS FIELDWORK.

Owner/Manager: BLM, PVT

Abronia villosa var. aurita **Element Code:** PDNYC010P1

chaparral sand-verbena

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2?
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive			
Habitat:	**General:**	CHAPARRAL, COASTAL SCRUB, DESERT DUNES.			
	Micro:	SANDY AREAS. -60-1570 M.			

Occurrence No.	87	**Map Index:** 83952	**EO Index:** 85007	**Element Last Seen:**	2009-03-26
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	2009-03-26
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2011-10-13

Quad Summary:	Thermal Canyon (3311661)
County Summary:	Riverside

Lat/Long:	33.64991 / -116.08603	**Accuracy:**	non-specific area
UTM:	Zone-11 N3723715 E584748	**Elevation (ft):**	80
PLSS:	T06S, R09E, Sec. 18 (S)	**Acres:**	613.0

Location:	JUST S OF THE MOUTH OF THERMAL CANYON; ABOUT 0.5 AIR MI E OF THE COACHELLA CANAL AND 4 AIR MI S OF I-10, MECCA HILLS.
Detailed Location:	MAPPED BY CNDDB AROUND SECTION 18 BASED ON TRS INFORMATION ON COLLECTION LABEL.
Ecological:	ROADSIDE IN LOOSE SAND. OPEN DESERT SCRUB ON ALLUVIAL SOILS IN AN UNNAMED WASH DRAINING TO THE WEST.
General:	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 2009 WOOD COLLECTION; MENTIONED AS UNCOMMON IN 2009. NEED MAP DETAIL FOR THIS SITE.
Owner/Manager:	BLM

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Valerie (3311652))

Uma inornata **Element Code:** ARACF15010

Coachella Valley fringe-toed lizard

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	IUCN_EN-Endangered			
Habitat:	**General:**	LIMITED TO SANDY AREAS IN THE COACHELLA VALLEY, RIVERSIDE COUNTY.			
	Micro:	REQUIRES FINE, LOOSE, WINDBLOWN SAND (FOR BURROWING), INTERSPERSED WITH HARDPAN AND WIDELY-SPACED DESERT SHRUBS.			

Occurrence No.	208	**Map Index:**	50081	**EO Index:**	50081	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-16

Quad Summary: Valerie (3311652), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.62567 / -116.23116	**Accuracy:**	non-specific area
UTM:	Zone-11 N3720917 E571311	**Elevation (ft):**	-70
PLSS:	T06S, R07E, Sec. 26, NW (S)	**Acres:**	40.4

Location: SE CORNER OF MONROE STREET AT AVENUE 58, 3.8 MILES W OF J. COCHRAN AIRPORT, 4.9 MILES SW OF COACHELLA, COACHELLA VALLEY.

Detailed Location: MAPPED NON-SPECIFICALLY TO LOCATION DESCRIBED AS T6S R7E SECTION 26 NWNW.

Ecological: UNCLEAR HOW THIS DETECTION WAS MADE OR IF LOCALITY IN ERROR; THIS QUARTER QUARTER SECTION WAS CONVERTED TO AGRICULTURE BY 1953 ALONG WITH ADJACENT PARCELS, AND APPEARS AS AG IN 1959 AND 1968, THEN MODIFIED TO HOUSING BY THE 1990S.

General: ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	209	**Map Index:**	50082	**EO Index:**	50082	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-16

Quad Summary: Valerie (3311652), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.62567 / -116.21842	**Accuracy:**	non-specific area
UTM:	Zone-11 N3720926 E572493	**Elevation (ft):**	-60
PLSS:	T06S, R07E, Sec. 26, NE (S)	**Acres:**	39.8

Location: SW CORNER OF AVENUE 58 AT JACKSON STREET, 4.5 MILES SSW OF COACHELLA, SOUTHERN COACHELLA VALLEY.

Detailed Location: MAPPED NON-SPECIFICALLY TO LOCATION DESCRIBED AS T6S R7E SECTION 26 NENE. THIS PARCEL APPEARS TO STILL BE UNDEVELOPED WITH (POSSIBLE) SANDY HUMMOCKS. A SITE VISIT MAY BE WORTHWHILE AND FINDINGS REPORTED.

Ecological: BOTH THE NE AND THE NW PORTION OF THE NE 1/4 OF SECTION 26 APPEARED TO BE NATURAL HABITAT IN 1959 AND 1968 AERIALS, THOUGH SURROUNDED BY AGRICULTURE. THE NENE PARCEL AT THE CORNER OF AVE 58 & JACKSON REMAINS UNDEVELOPED (2025).

General: ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	210	**Map Index:**	50084	**EO Index:**	50084	**Element Last Seen:**	1975-07-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-07-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-16

Quad Summary:	Valerie (3311652)
County Summary:	Riverside

Lat/Long:	33.61846 / -116.20284	**Accuracy:**	2/5 mile
UTM:	Zone-11 N3720138 E573945	**Elevation (ft):**	-90
PLSS:	T06S, R07E, Sec. 25, SE (S)	**Acres:**	280.0

Location:	W SIDE OF VAN BUREN ST BETWEEN AVE 58 & AVE 60, 2 MI W OF J. COCHRAN AIRPORT, 3.7 MI NNW OF VALERIE, S COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION DESCRIBED AS T6S R7E SECTION 25 SENE, WITH RESPECT TO PROVIDED MAPS, AND TO HABITAT AND AGRICULTURE DEVELOPMENT VISIBLE IN SEVERAL HISTORIC AERIAL IMAGES.
Ecological:	AREA APPEARS TO HAVE BEEN NATIVE HABITAT IN 1959 AND 1968 (ABOUT 160 ACRES) SURROUNDED BY VARIOUS AGRICULTURE & LOW DENSITY HOUSING. FROM ABOUT 2000-2022 80 ACRES OF POSSIBLE HABITAT REMAINED. ENTIRE AREA CONVERTED TO AG SINCE 2022.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY ENGLAND & NELSON DURING JUL 1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	211	**Map Index:**	50085	**EO Index:**	50085	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-15

Quad Summary:	Valerie (3311652)
County Summary:	Riverside

Lat/Long:	33.61098 / -116.21837	**Accuracy:**	non-specific area
UTM:	Zone-11 N3719297 E572510	**Elevation (ft):**	-90
PLSS:	T06S, R07E, Sec. 35, NE (S)	**Acres:**	40.9

Location:	SW CORNER OF AVENUE 60 AT JACKSON STREET, 3.6 MILES NNW OF VALERIE, SOUTHERN COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTION DESCRIBED AS T6S R7E SECTION 35 NENE.
Ecological:	UNCLEAR HOW THIS DETECTION WAS MADE OR IF LOCALITY IN ERROR; THIS QUARTER QUARTER SECTION AND SURROUNDING QUARTER QUARTER SECTIONS WERE ALREADY DEVELOPED AS AGICULTURE IN 1959 AND 1968.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	212	**Map Index:** 50086	**EO Index:**	50086		**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2025-04-15
Quad Summary:	Valerie (3311652)						
County Summary:	Riverside						
Lat/Long:	33.61113 / -116.23119				**Accuracy:**	non-specific area	
UTM:	Zone-11 N3719305 E571320				**Elevation (ft):**	-80	
PLSS:	T06S, R07E, Sec. 35, NW (S)				**Acres:**	39.7	

Location: SE CORNER OF AVENUE 60 AT MONROE STREET, 4 MILES NW OF VALERIE, SOUTHERN COACHELLA VALLEY.

Detailed Location: MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTION DESCRIBED AS T6S R7E SECTION 35 NWNW. THOUGH GRADED FOR DEVELOPMENT IN 2006, SITE IS UNDEVELOPED 2025 AERIALS.

Ecological: UNCLEAR HOW THIS DETECTION WAS MADE OR IF LOCALITY IN ERROR; THIS QUARTER QUARTER SECTION WAS ALREADY DEVELOPED AS AGICULTURE IN 1968 & 1978. PARCEL APPEARS FALLOW BETWEEN 1985-2005. DENUDED OF VEGETATION & GRADED FOR DEVELOPMENT IN 2006.

General: ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED POSSIBLY EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	217	**Map Index:** 50100	**EO Index:**	50100		**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2025-08-08
Quad Summary:	Valerie (3311652)						
County Summary:	Riverside						
Lat/Long:	33.61089 / -116.18347				**Accuracy:**	non-specific area	
UTM:	Zone-11 N3719312 E575747				**Elevation (ft):**	-115	
PLSS:	T06S, R08E, Sec. 31, NE (S)				**Acres:**	40.1	

Location: SW CORNER OF HWY 86 (HARRISON ST) AT AVENUE 60, 2.8 MILES N OF VALERIE, SOUTHERN COACHELLA VALLEY.

Detailed Location: MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTION DESCRIBED AS T6S R8E SECTION 31 NENE.

Ecological: QUARTER QUARTER SECTION NATURAL HABITAT IN 1968 AERIAL BUT MOSTLY SURROUNDED BY AGRICULTURE. APPEARS THAT MOST OF THE AREA WAS FURTHER DEVELOPED AS A RESIDENCE OR AGRICULTURE BY 1985.

General: ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	218	**Map Index:**	50101	**EO Index:**	50101	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-11

Quad Summary:	Valerie (3311652)
County Summary:	Riverside

Lat/Long:	33.59135 / -116.22442	**Accuracy:**	non-specific area
UTM:	Zone-11 N3717116 E571965	**Elevation (ft):**	-80
PLSS:	T07S, R07E, Sec. 02 (S)	**Acres:**	639.3

Location:	1 SQ MILE SECTION BOUNDED BY 62ND AVE, 64TH AVE, JACKSON ST, AND MONROE ST, 3 MI WNW OF VALERIE, SOUTH COACHELLA VALLEY.
Detailed Location:	PORTION OF TORRES MARTINEZ INDIAN RESERVATION WITH TORO CEMETERY IN SW QUARTER. MAPPED NON-SPECIFICALLY TO ALL OF SECTION DESCRIBED BY DAVIS AS T7S R7E SECTION 2 ALL.
Ecological:	1965 & 1968 AERIALS SHOW THAT MOST THE NW, NE, AND SE QUARTERS OF SECTION 2 WERE CONVERTED TO AGRICULTURE (DAVIS LOCALITY MAY BE IN ERROR). CURRENTLY (2022) MOST OF SECTION IS AGRICULTURE, RESIDENTIAL, OR HAS EXPERIENCED PAST AGRICULTURE.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	BIA-TORRES MARTINEZ RES

Occurrence No.	219	**Map Index:**	50102	**EO Index:**	50102	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-11

Quad Summary:	Valerie (3311652)
County Summary:	Riverside

Lat/Long:	33.56543 / -116.20749	**Accuracy:**	non-specific area
UTM:	Zone-11 N3714254 E573558	**Elevation (ft):**	-60
PLSS:	T07S, R07E, Sec. 13 (S)	**Acres:**	322.5

Location:	SOUTH SIDE OF 66TH AVE NEAR CALHOUN ST AND VAN BUREN ST, 1.5 MI W OF VALERIE, SOUTHERN COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO NORTH HALF OF SECTION 13; DAVIS RECORD SPECIFICALLY STATED T7S R7E SECTION 13 NORTH.
Ecological:	1965 & 1968 AERIALS INDICATE THE NE 1/4 OF SEC 13 WAS CONVERTED TO AGRICULTURE AND THE NW 1/4 OF SEC 13 WAS NATURAL HABITAT (DAVIS LOCALITY MAY BE IN ERROR). THE W 1/4 OF SEC 13 IS STILL UNDEVELOPED (2022) BUT MAY BE INAPPROPRIATE HABITAT.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	220	**Map Index:**	50103	**EO Index:**	50103	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-10

Quad Summary:	Valerie (3311652)
County Summary:	Riverside

Lat/Long:	33.56007 / -116.19226	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3713671 E574976	**Elevation (ft):**	-21
PLSS:	T07S, R08E, Sec. 18, SW (S)	**Acres:**	70.0

Location:	ABOUT 0.4 MILES ESE OF VAN BUREN ST AT 67TH AVE, 0.8 MILES SW OF VALERIE, SOUTHERN COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTION DESCRIBED AS T7S R8E SECTION 18 NESW.
Ecological:	UNCLEAR HOW THIS DETECTION WAS MADE OR IF LOCALITY IN ERROR; THIS QUARTER QUARTER SECTION IS INDICATED AS BEING DEVELOPED AS AGRICULTURE ON TOPOGRAPHIC MAPS (1960S). THIS PORTION ALSO AGRICULTURE IN 1985 AERIAL.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	221	**Map Index:**	50104	**EO Index:**	50104	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-10

Quad Summary:	Valerie (3311652)
County Summary:	Riverside

Lat/Long:	33.5564 / -116.16661	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3713283 E577361	**Elevation (ft):**	-52
PLSS:	T07S, R08E, Sec. 17, SE (S)	**Acres:**	70.0

Location:	NW CORNER OF TYLER ST AT 68TH AVE, VICINITY OF HARRISON ST (HWY 86), 1.75 MILES SE OF VALERIE, COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTION DETAILED AS T7S R8E SECTION 17 SESE.
Ecological:	UNCLEAR HOW THIS DETECTION WAS MADE OR IF LOCALITY IN ERROR; THIS QUARTER QUARTER SECTION WAS PRIMARILY AGICULTURE BY 1953 & ALL AGRICULTURE BY 1968, ALSO WITH A LOCAL HWY THROUGH IT. ENTIRE SECTION CONVERTED TO AGRICULTURE BY 1985.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	222	**Map Index:** 50105	**EO Index:**	50105		**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2025-04-10
Quad Summary:	Valerie (3311652)						
County Summary:	Riverside						
Lat/Long:	33.54893 / -116.15384				**Accuracy:**	1/5 mile	
UTM:	Zone-11 N3712465 E578552				**Elevation (ft):**	-76	
PLSS:	T07S, R08E, Sec. 21, NE (S)				**Acres:**	70.0	

Location: ABOUT 0.5 MILES SW OF POLK ST AT 68TH AVE, E SIDE OF HARRISON ST (HWY 86), 2 MILES SE OF VALERIE, COACHELLA VALLEY.

Detailed Location: MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTION DESCRIBED AS T7S R8E SECTION 21 SWNE.

Ecological: UNCLEAR HOW THIS DETECTION WAS MADE OR IF LOCALITY IN ERROR; THIS QUARTER QUARTER SECTION AND NEARLY ALL OF SECTION 21 IS AGRICULTURE IN 1968 AERIAL. THIS SECTION AND MOST SURROUNDING SECTIONS CONVERTED TO AGRICULTURE BY 1985.

General: ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	223	**Map Index:** 50106	**EO Index:**	50106		**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2025-08-08
Quad Summary:	Valerie (3311652)						
County Summary:	Riverside						
Lat/Long:	33.53444 / -116.13677				**Accuracy:**	1/5 mile	
UTM:	Zone-11 N3710871 E580151				**Elevation (ft):**	-106	
PLSS:	T07S, R08E, Sec. 27, NE (S)				**Acres:**	70.0	

Location: ABOUT 0.5 MILES SW OF 70TH AVE AT FILLMORE ST, 3.4 MILES SE OF VALERIE, SOUTHERN COACHELLA VALLEY.

Detailed Location: MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTION DESCRIBED AS T7S R8E SECTION 27 SWNE.

Ecological: QUARTER QUARTER SECTION NATURAL HABITAT IN 1968 AERIAL BUT SURROUNED BY AGRICULTURE. ENTIRE SECTION AND ALL SURROUNDING SECTIONS CONVERTED TO AGRICULTURE BY 1985.

General: ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	224	**Map Index:**	50107	**EO Index:**	50107	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-10

Quad Summary:	Valerie (3311652)
County Summary:	Riverside

Lat/Long:	33.52717 / -116.14944	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3710055 E578981	**Elevation (ft):**	-30
PLSS:	T07S, R08E, Sec. 28, SE (S)	**Acres:**	70.0

Location:	NW CORNER OF POLK ST AT 72ND AVE, 0.5 MILE W OF HARRISON ST, 3.3 MILES SSE OF VALERIE, SOUTHERN COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTION DETAILED AS T7S R8E SECTION 28 SESE.
Ecological:	SE QUARTER QUARTER PARTIALLY NATURAL HABITAT AND AGRICULTURE IN 1968 AERIAL. ENTIRE SECTION AND SOME SURROUNDING SECTIONS CONVERTED TO AGRICULTURE BY 1985.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	225	**Map Index:**	50108	**EO Index:**	50108	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-04-11

Quad Summary:	Valerie (3311652)
County Summary:	Riverside

Lat/Long:	33.5156 / -116.15878	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3708766 E578124	**Elevation (ft):**	48
PLSS:	T07S, R08E, Sec. 33, SW (S)	**Acres:**	70.0

Location:	ABOUT 1.75 MILES W OF HARRISON ST (HWY 86) AT 74TH AVE, 3.9 MILES SSE OF VALERIE, SOUTHERN COACHELLA VALLEY.
Detailed Location:	MAPPED NON-SPECIFICALLY TO QUARTER QUARTER IN SW SECTION 33. LOCATION DESCRIBED AS T7S R8E SECTION 33 NESW.
Ecological:	SW QUARTER NATURAL HABITAT IN 1968 AERIAL WITH AGRICULTURAL DEVELOPED IN NW, NE, & SE QUARTERS. ENTIRE SECTION CONVERTED TO AGRICULTURE BY 1985. NEIGHBORING SECTION 32 IS STILL NATURAL HABITAT (2022) & PRESERVED AS SANTA ROSA WILDLIFE AREA.
General:	ACCORDING TO DRAFT AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975, & ABSENT BY ENGLAND IN 1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	234	**Map Index:** 50297	**EO Index:**	50297		**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2025-05-02

Quad Summary: Valerie (3311652)

County Summary: Riverside

Lat/Long:	33.60046 / -116.18439	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3718156 E575671	**Elevation (ft):**	-124
PLSS:	T06S, R08E, Sec. 31, SE (S)	**Acres:**	70.0

Location: NW CORNER OF HWY 86 (HARRISON ST) AT AVENUE 62, 2.2 MILES N OF VALERIE, SOUTHERN COACHELLA VALLEY.

Detailed Location: MAPPED NON-SPECIFICALLY TO QUARTER QUARTER SECTION DESCRIBED AS T6S R8E SECTION 31 SESE.

Ecological: QUARTER QUARTER SECTION NATURAL HABITAT IN 1968 AND 1978 AERIALS BUT SURROUNDED BY AGRICULTURE. PARCEL CONVERTED TO AGRICULTURE BY 1989.

General: ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. ENGLAND (1976) DETAILED AGRICULTURE EXPANSION IN S COACHELLA VALLEY. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Bursera microphylla

Element Code: PDBUR01020

little-leaf elephant tree

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 2B.3, IUCN_LC-Least Concern, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	HILLSIDES AND WASHES AND ON CANYON SIDES IN CALIFORNIA; ROCKY SITES. 195-610 M.			

Occurrence No.	14	**Map Index:** 60928	**EO Index:**	60964		**Element Last Seen:**	2000-07-12
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	2000-07-12
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2015-03-17

Quad Summary: Clark Lake NE (3311643), Valerie (3311652), Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.50712 / -116.26084	**Accuracy:**	non-specific area
UTM:	Zone-11 N3707753 E568651	**Elevation (ft):**	1800
PLSS:	T08S, R07E, Sec. 04 (S)	**Acres:**	370.0

Location: NORTH SLOPE OF MARTINEZ CANYON, JUST SW OF THE JUNCTION WITH AGUA ALTA CANYON, SANTA ROSA MOUNTAINS.

Detailed Location: MAPPED BY CNDDB ALONG THE NORTH SIDE OF MARTINEZ CANYON IN SECTION 4, BASED UPON SITE DESCRIPTION AND TRS GIVEN BY DICE.

Ecological: RUGGED CANYON SLOPES.

General: AT LEAST 20 TREES OBSERVED IN 2000. TWO 1939 COLLECTIONS BY CLARY FROM "MARTINEZ CANYON" ALSO ATTRIBUTED TO THIS SITE.

Owner/Manager: BLM-SANTA ROSA WA

Phaseolus filiformis **Element Code:** PDFAB330P0

slender-stem bean

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S1
	Other:	Rare Plant Rank - 2B.1, IUCN_LC-Least Concern			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	GRAVELLY WASHES BORDERED BY CREOSOTE BUSH-DOMINATED ROCKY SLOPES. 120 M.			

Occurrence No.	1	**Map Index:** 37066	**EO Index:** 32063	**Element Last Seen:**	1982-12-19
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1982-12-19
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1997-10-06

Quad Summary:	Valerie (3311652)
County Summary:	Riverside

Lat/Long:	33.50726 / -116.19386	**Accuracy:**	non-specific area
UTM:	Zone-11 N3707814 E574873	**Elevation (ft):**	400
PLSS:	T08S, R08E, Sec. 06, NW (S)	**Acres:**	159.1

Location:	COACHELLA VALLEY SOUTH OF THE MOUTH OF MARTINEZ CANYON, ABOUT 2.6 MILES WEST OF POLK STREET AT AVENUE 74.
Detailed Location:	SOUTH SIDE OF RIDGE WHICH FORMS THE SOUTHERN BOUNDARY OF MARTINEZ CANYON. COLLECTED WITHIN T08S R08E NW 1/4 OF SECTION 6.
Ecological:	WITH EUPHORBIA SETILOBA, E. ERIANTHA, BOERHAVIA, ALLIONIA, ETC IN A GRAVELLY WASH BORDRED BY CREOSOTE DOMINATED ROCKY SLOPES.
General:	ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1982 COLLECTION BY SANDERS.
Owner/Manager:	UNKNOWN

Senna covesii **Element Code:** PDFAB491X0

Cove's cassia

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5
	State:	None		**State:**	S3
	Other:	Rare Plant Rank - 2B.2, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	SONORAN DESERT SCRUB.			
	Micro:	DRY, SANDY DESERT WASHES, SLOPES. 255-1295 M.			

Occurrence No.	11	**Map Index:** 37063	**EO Index:** 32060	**Element Last Seen:**	1985-03-16
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1985-03-16
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2010-07-29

Quad Summary: Valerie (3311652)

County Summary: Riverside

Lat/Long:	33.51472 / -116.22426	**Accuracy:**	non-specific area
UTM:	Zone-11 N3708620 E572043	**Elevation (ft):**	850
PLSS:	T07S, R07E, Sec. 35, S (S)	**Acres:**	323.2

Location: MARTINEZ CANYON WASH, EAST SLOPE OF THE SANTA ROSA MOUNTAINS.

Detailed Location: MAPPED IN THE S 1/2 OF SECTION 35 NEAR JUNCTION WITH AGUA ALTA CANYON BASED ON TRS INFORMATION ON A 1985 STEWART FIELD SURVEY FORM.

Ecological: SANDY WASH WITH CERCIDIUM, HYMENOCLEA, BEBBIA, AND DALEA SPINOSA.

General: 2 PLANTS OBS IN 1985. A 1921 COLLECTION BY JAEGER FROM "MARTINEZ CANYON" AND A SITE NOTE IN REISER'S "RARE PLANTS OF SAN DIEGO CO" FROM "MARTINEZ MTN" (POSSIBLY MEANT MARTINEZ CYN?) ARE ALSO ATTRIBUTED TO THIS SITE. INCLUDES FORMER EO #17.

Owner/Manager: UNKNOWN

Abronia villosa var. aurita

Element Code: PDNYC010P1

chaparral sand-verbena

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2?
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive			
Habitat:	**General:**	CHAPARRAL, COASTAL SCRUB, DESERT DUNES.			
	Micro:	SANDY AREAS. -60-1570 M.			

Occurrence No.	5	**Map Index:**	45037	**EO Index:**	45037	**Element Last Seen:**	1962-04-17
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1962-04-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-06-21

Quad Summary: Valerie (3311652)

County Summary: Riverside

Lat/Long:	33.61291 / -116.18125	**Accuracy:**	non-specific area
UTM:	Zone-11 N3719538 E575951	**Elevation (ft):**	-200
PLSS:	T06S, R08E, Sec. 29, SW (S)	**Acres:**	68.0

Location: 4 MILES SOUTH OF COACHELLA ON US HIGHWAY 99 (WHICH IS NOW STATE HIGHWAY 86).

Detailed Location: MAPPED BY CNDDB AS BEST GUESS APPROXIMATELY 4 ROAD MILES SOUTH OF COACHELLA. ELEVATION IN THIS AREA (-100 FEET) DOES NOT MATCH ELEVATION ON COLLECTION LABEL OF 200 FEET BELOW SEA LEVEL.

Ecological: ON ROADSIDES IN SANDY SOIL.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1962 HAINES COLLECTION; MENTIONED AS "OCCASIONAL" IN 1962.

Owner/Manager: UNKNOWN

Leptosiphon floribundus ssp. hallii

Element Code: PDPLM090J3

Santa Rosa Mountains leptosiphon

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T1T2
	State:	None		**State:**	S1S2
	Other:	Rare Plant Rank - 1B.3, BLM_S-Sensitive, USFS_S-Sensitive			
Habitat:	**General:**	SONORAN DESERT SCRUB, PINYON AND JUNIPER WOODLAND.			
	Micro:	DESERT CANYONS. 910-2290 M.			

Occurrence No.	5	**Map Index:**	55056	**EO Index:**	55056	**Element Last Seen:**	1902-05-01
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1902-05-01
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2004-04-06

Quad Summary: Clark Lake NE (3311643), Valerie (3311652), Martinez Mtn. (3311653)

County Summary: Riverside

Lat/Long:	33.49788 / -116.28174	**Accuracy:**	non-specific area
UTM:	Zone-11 N3706715 E566717	**Elevation (ft):**	
PLSS:	T08S, R07E, Sec. 08 (S)	**Acres:**	623.1

Location: MARTINEZ CANYON.

Detailed Location: EXACT LOCATION UNKNOWN; MAPPED BY CNDDB TO INCLUDE ENTIRE CANYON.

Ecological:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1902 COLLECTION BY DAVIDSON. NEEDS FIELDWORK.

Owner/Manager: BLM?

Stuckenia striata **Element Code:** PMPOT030K0

broadleaf pondweed

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4G5
	State:	None		**State:**	S2S3
	Other:	Rare Plant Rank - 2B.3			
Habitat:	**General:**	MARSHES AND SWAMPS.			
	Micro:	LAKES, PONDS, RIVERS, AND DRAINAGE CANALS. -70-2135 M.			

Occurrence No.	21	**Map Index:** C0734	**EO Index:** 131974	**Element Last Seen:**	1957-11-30
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1957-11-30
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2024-07-26

Quad Summary: Mecca (3311651), Valerie (3311652), Indio (3311662)

County Summary: Riverside

Lat/Long:	33.62278 / -116.12876	**Accuracy:**	non-specific area
UTM:	Zone-11 N3720672 E580812	**Elevation (ft):**	-145
PLSS:	T06S, R08E, Sec. 26, W (S)	**Acres:**	221.0

Location: COACHELLA DRAINAGE DITCH, ~1.5 MI SSE OF THERMAL.

Detailed Location: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB TO INCLUDE HABITAT ALONG THE COACHELLA VALLEY STORMWATER CHANNEL AROUND 1.5 MI SSE OF THERMAL.

Ecological: SUBMERSED IN SUN IN SWIFT WATER.

General: ABUNDANT IN CLUMPS IN 1957. ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1957 COLLECTION BY WHEELER. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (West Berdoo Canyon (3311672))

Perognathus longimembris bangsi **Element Code:** AMAFD01043

Palm Springs pocket mouse

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	None		**State:**	S1
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern			
Habitat:	**General:**	DESERT RIPARIAN, DESERT SCRUB, DESERT WASH AND SAGEBRUSH HABITATS. MOST COMMON IN CREOSOTE-DOMINATED DESERT SCRUB.			
	Micro:	RARELY FOUND ON ROCKY SITES. OCCURS IN ALL CANOPY COVERAGE CLASSES.			

Occurrence No.	2	**Map Index:**	51787	**EO Index:**	51787	**Element Last Seen:**	1997-07-02
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-07-02
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-07-16

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.76714 / -116.17167	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3736645 E576702	**Elevation (ft):**	210
PLSS:	T05S, R08E, Sec. 05, NE (S)	**Acres:**	0.0

Location:	EAST OF DILLON ROAD, 4 MILES NE OF INDIO.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF CREOSOTE BUSH SCRUB, ON SANDY SOILS.
General:	2 ADULTS OBSERVED ON 2 JUL 1997.
Owner/Manager:	UNKNOWN

Occurrence No.	5	**Map Index:**	51793	**EO Index:**	51793	**Element Last Seen:**	1999-06-XX
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1999-06-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-07-17

Quad Summary:	Indio (3311662), West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.75099 / -116.19132	**Accuracy:**	non-specific area
UTM:	Zone-11 N3734841 E574897	**Elevation (ft):**	75
PLSS:	T05S, R08E, Sec. 07 (S)	**Acres:**	942.3

Location:	AT THE BASE OF THE SOUTHERN END OF THE INDIO HILLS, NE OF INDIO.
Detailed Location:	TRAPLINES SET ON BOTH THE EAST AND WEST SIDES OF INDIO HILLS.
Ecological:	HABITAT CONSISTS OF DESERT SCRUB AND RIPARIAN, DOMINATED BY C. LINEARIS, LARREA TRIDENTATA, E. FARINOSA, A. DUMOSA, AND H. SALSOLA. SITE HAS ~15% SHRUB COVER ON SANDY/GRAVELLY SOILS (LEVEL).
General:	4 ADULTS CAPTURED DURING JUN 1999 SURVEYS.
Owner/Manager:	UNKNOWN

Neotoma lepida intermedia **Element Code:** AMAFF08041

San Diego desert woodrat

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G5T3T4
	State:	None		**State:**	S3S4
	Other:				
Habitat:	**General:**	COASTAL SCRUB OF SOUTHERN CALIFORNIA FROM SAN DIEGO COUNTY TO SAN LUIS OBISPO COUNTY.			
	Micro:	MODERATE TO DENSE CANOPIES PREFERRED. THEY ARE PARTICULARLY ABUNDANT IN ROCK OUTCROPS, ROCKY CLIFFS, AND SLOPES.			

Occurrence No.	91	**Map Index:** 73821	**EO Index:** 74813	**Element Last Seen:**	1995-06-10
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1995-06-10
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2009-03-09

Quad Summary: West Berdoo Canyon (3311672)

County Summary: Riverside

Lat/Long:	33.84956 / -116.24626	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3745731 E569728	**Elevation (ft):**	1110
PLSS:	T04S, R07E, Sec. 03, SW (S)	**Acres:**	0.0

Location: NORTH OF DILLON RD, ABOUT 3.6 MI SE OF DILLON RD AT THOUSAND PALMS RD, SKY VALLEY ER.

Detailed Location: TRAPLINE 8 (100 TRAPS) AND DENSITY PLOT 5 (128 TRAPS). MAPPED TO TRAPLINE LOCATION FROM PROVIDED MAP.

Ecological: HABITAT DOMINATED BY LARREA TRIDENTATA & AMBROSIA DUMOSA. SOIL IS CARRIZO STONY SAND. AVERAGE SHRUB HEIGHT IS 1-3 M. UNDRSTORY IS MOSTLY BARE GROUND/HERBS.

General: TRANSECT 8: 6 INDIVIDUALS CAPTURED ON 25 APR, 6 ON 26 APR, AND 2 ON 27 APR 1995. DENSITY PLOT 5: 6 CAPTURED ON 6 JUN, 5 ON 7 JUN, 7 ON 8 JUN, 6 ON 9 JUN, AND 4 ON 10 JUN 1995.

Owner/Manager: DFG-SKY VALLEY ER

Occurrence No.	92	**Map Index:** 73824	**EO Index:** 74816	**Element Last Seen:**	1995-04-27
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1995-04-27
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2009-03-09

Quad Summary: West Berdoo Canyon (3311672)

County Summary: Riverside

Lat/Long:	33.85484 / -116.21573	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3746338 E572548	**Elevation (ft):**	1570
PLSS:	T04S, R07E, Sec. 02, NE (S)	**Acres:**	0.0

Location: ABOUT 1.7 MI NNE OF INDIO HILLS (TOWN), AT SE BASE OF LITTLE SAN BERNARDINO MTS.

Detailed Location: TRAPLINE 7 (100 TRAPS). MAPPED TO TRAPLINE LOCATION FROM PROVIDED MAP.

Ecological: HABITAT DOMINATED BY LORREA TRIDENTATA & HYMENOCLEA SALSOLA. SOIL IS CARRIZO STONY SAND. AVERAGE SHRUB HEIGHT IS 0.5-2 M. UNDERSTORY IS BARE GROUND/HERBS.

General: 5 INDIVIDUALS CAPTURED ON 15 APR, 6 ON 16 APR, AND 6 ON 17 APR 1995.

Owner/Manager: UNKNOWN

Ovis canadensis nelsoni **Element Code:** AMALE04013

desert bighorn sheep

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G4T3
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_FP-Fully Protected, USFS_S-Sensitive			
Habitat:	**General:**	WIDELY DISTRIBUTED FROM THE WHITE MTNS IN MONO CO. TO THE CHOCOLATE MTS IN IMPERIAL CO.			
	Micro:	OPEN, ROCKY, STEEP AREAS WITH AVAILABLE WATER AND HERBACEOUS FORAGE.			

Occurrence No.	14	**Map Index:** 05686	**EO Index:** 12417	**Element Last Seen:**	1986-XX-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1986-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1995-10-24

Quad Summary: Thermal Canyon (3311661), Rockhouse Canyon (3311671), West Berdoo Canyon (3311672), Malapai Hill (3311681), Keys View (3311682), East Deception Canyon (3311683), Seven Palms Valley (3311684), Desert Hot Springs (3311685), Joshua Tree South (3411613), Yucca Valley South (3411614), Morongo Valley (3411615)

County Summary: Riverside, San Bernardino

Lat/Long:	33.90296 / -116.29325	**Accuracy:**	specific area
UTM:	Zone-11 N3751621 E565341	**Elevation (ft):**	
PLSS:	T03S, R07E, Sec. 19 (S)	**Acres:**	140891.3

Location: LITTLE SAN BERNARDINO MOUNTAINS.

Detailed Location: THIS RANGE BECOMES MORE ARID TO THE EAST AND THE SHEEP POPULATION BECOMES LESS DENSE AND IS USED LESS FREQUENTLY THAN THE WESTERN PORTION.

Ecological:

General: POPULATION ESTIMATE OF 100 INDIVIDUALS; RECENT INCREASES IN POPULATION NUMBERS.

Owner/Manager: NPS-JOSHUA TREE NP

Gopherus agassizii **Element Code:** ARAAF01012

Mojave desert tortoise

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G2G3
	State:	Endangered		**State:**	S2S3
	Other:	IUCN_CR-Critically Endangered			
Habitat:	**General:**	MOST COMMON IN DESERT SCRUB, DESERT WASH, AND JOSHUA TREE HABITATS; OCCURS IN ALMOST EVERY DESERT HABITAT.			
	Micro:	REQUIRE FRIABLE SOIL FOR BURROW AND NEST CONSTRUCTION. CREOSOTE BUSH HABITAT WITH LARGE ANNUAL WILDFLOWER BLOOMS PREFERRED.			

Occurrence No.	272	**Map Index:** 73516	**EO Index:** 74486	**Element Last Seen:**	2002-04-XX
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	2002-04-XX
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2009-01-30

Quad Summary: West Berdoo Canyon (3311672), Keys View (3311682), East Deception Canyon (3311683)

County Summary: Riverside

Lat/Long:	33.87786 / -116.24975	**Accuracy:**	specific area
UTM:	Zone-11 N3748867 E569383	**Elevation (ft):**	1550
PLSS:	T03S, R07E, Sec. 28 (S)	**Acres:**	15.0

Location: SW OF THE INTERSECTION OF JOSHUA TREE NATIONAL PARK RD & FAN HILL RD, 0.55-1.25 MI SE OF FAN HILL.

Detailed Location: LOCATIONS MAPPED ARE THE 3 LOCATIONS WHERE TORTOISES/BURROWS OBSERVED.

Ecological: 3 LIVE TORTOISES WERE FOUND IN BURROWS WITHIN THE 11 SQUARE MILES OF THE PROJECT AREA, WHICH TRANSLATES INTO AN AVERAGE DENSITY OF LESS THAN 1 TORTOISE/3 SQUARE MILES.

General: 3 BURROWS/3 TORTOISES OBS DURING APRIL & MAY 2002 SURVEYS. TORTOISES OBS: SMALL SUBADULT INSIDE A BURROW, NO HEALTH PROBLEMS SEEN; SMALL ADULT RESTING INSIDE A BURROW IN TALL WASH BANK; HATCHLING PLATES CLEARLY PRESENT, UNDER INDIGO BUSH.

Owner/Manager: NPS-JOSHUA TREE NP

Phrynosoma mcallii

Element Code: ARACF12040

flat-tailed horned lizard

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3
	Other:	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened			
Habitat:	**General:**	RESTRICTED TO DESERT WASHES AND DESERT FLATS IN CENTRAL RIVERSIDE, EASTERN SAN DIEGO, AND IMPERIAL COUNTIES.			
	Micro:	CRITICAL HABITAT ELEMENT IS FINE SAND, INTO WHICH LIZARDS BURROW TO AVOID TEMPERATURE EXTREMES; REQUIRES VEGETATIVE COVER AND ANTS.			

Occurrence No.	384	**Map Index:** 96979	**EO Index:** 98212	**Element Last Seen:**	1995-06-15
Occ. Rank:	Unknown		**Presence:** Presumed Extant	**Site Last Seen:**	1995-06-15
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2015-07-24

Quad Summary: Indio (3311662), West Berdoo Canyon (3311672)

County Summary: Riverside

Lat/Long:	33.75314 / -116.17390	**Accuracy:**	3/5 mile
UTM:	Zone-11 N3735092 E576509	**Elevation (ft):**	200
PLSS:	T05S, R08E, Sec. 08 (S)	**Acres:**	0.0

Location: SE END OF INDIO HILLS, NW OF INTERSECTION OF DILLON ROAD AND FARGO CANYON ROAD, NE OF INDIO.

Detailed Location: MAPPED BY CNDDB CENTERED ON COORDINATES PROVIDED BY COACHELLA VALLEY ASSOCIATION OF GOVERNMENTS GIS DATA. LOCATION DESCRIBED AS "E END OF INDIO HILLS; S OF ORCHARD, NEAR ROAD, N BASE OF HILLS."

Ecological:

General: DETECTED ON 15 JUN 1995.

Owner/Manager: UNKNOWN

Uma inornata

Element Code: ARACF15010

Coachella Valley fringe-toed lizard

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	IUCN_EN-Endangered			
Habitat:	**General:**	LIMITED TO SANDY AREAS IN THE COACHELLA VALLEY, RIVERSIDE COUNTY.			
	Micro:	REQUIRES FINE, LOOSE, WINDBLOWN SAND (FOR BURROWING), INTERSPERSED WITH HARDPAN AND WIDELY-SPACED DESERT SHRUBS.			

Occurrence No.	103	**Map Index:** 31526	**EO Index:**	2536	**Element Last Seen:**	2008-XX-XX
Occ. Rank:	None		**Presence:**	Possibly Extirpated	**Site Last Seen:**	2008-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2025-05-02

Quad Summary: Indio (3311662), West Berdoo Canyon (3311672)

County Summary: Riverside

Lat/Long:	33.74535 / -116.17076	**Accuracy:**	non-specific area
UTM:	Zone-11 N3734230 E576807	**Elevation (ft):**	90
PLSS:	T05S, R08E, Sec. 08 (S)	**Acres:**	121.5

Location: ABOUT 1.3 MILES NNE OF COACHELLA CANAL AT DILLON RD, ABOUT 3.1 MILE NE OF CENTRAL INDIO, SOUTHERN END OF INDIO HILLS.

Detailed Location: MAPPED NON-SPECIFICALLY TO 1/4 1/4 SECTIONS STATED AS SECTION 17 NENE (DAVIS), SECTION 8 NESW (ENGLAND & NELSON), AND SW 1/4 OF SE 1/4 SECTION 8 (MUTH). UNCLEAR IF THIS POPULATION SURVIVED THE PROLONG DROUGHT OF 2000-2004; NEEDS RESEARCH.

Ecological: SCATTERED PATCHES CREOSOTE SCRUB AND AEOLIAN SAND. LAND USE NOTED IN 1994 WAS AGRICULTURAL AND MINING (SAND & GRAVEL). PARTIAL SOUTHERN CALIFORNIA EDISON RIGHT OF WAY. AREA APPEARS UNDEVELOPED IN 2022-2025 AERIAL IMAGES.

General: DRAFT & FINAL RECOVERY PLANS REPORT PRESENT BY DAVIS CIRCA 1969-1975 AND BY ENGLAND & NELSON JUL 1975. 7 DETECTED, 5 CAPTURED/RELEASED 28 AUG 1994. BARROWS, VANDERGAST SUGGEST ETIRPATED BY 2008. PRESUMED EXTANT BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	175	**Map Index:** 50006	**EO Index:**	50006	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown	**Record Last Updated:**	2025-05-09

Quad Summary: West Berdoo Canyon (3311672)

County Summary: Riverside

Lat/Long:	33.75660 / -116.23648	**Accuracy:**	non-specific area
UTM:	Zone-11 N3735430 E570710	**Elevation (ft):**	40
PLSS:	T05S, R07E, Sec. 10, NE (S)	**Acres:**	39.9

Location: SOUTH SIDE OF THE COACHELLA CANAL ABOUT 1.2 MILES N OF I-10 AT MONROE ST, 2.75 MILES NNW OF DOWNTOWN INDIO.

Detailed Location: MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R7E SECTION 10 NENE ALONG THE SOUTH SIDE OF THE COACHELLA CANAL.

Ecological: UNCLEAR HOW DETECTION WAS MADE OR IF LOCATION IS IN ERROR. BY 1965 MOST OF SEC 10 WAS AGRICULTURE, & SEC 10 NENE WAS SPECIFICALLY DEVELOPED AS AG (MOST OF THE AREA S OF THE CANAL WAS AG). DEVELOPED AS RESIDENTAL GOLF COURSE BY 2005.

General: ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. CONSIDERED EXTIRPATED BY USFWS (2023).

Owner/Manager: PVT

Occurrence No.	176	**Map Index:**	50007	**EO Index:**	50007	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-08

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.75654 / -116.21892	**Accuracy:**	non-specific area
UTM:	Zone-11 N3735436 E572337	**Elevation (ft):**	40
PLSS:	T05S, R07E, Sec. 11, NE (S)	**Acres:**	39.4

Location:	VICINITY OF COACHELLA CANAL, ~1.25 MI N OF I-10 AT JACKSON ST, JUST S OF THE INDIO HILLS, 2.5 MI N OF DOWNTOWN INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R7E SECTION 11 NENE.
Ecological:	THIS AREA WAS PRIMARILY UNDEVELOPED NATURAL HABITAT IN 1968. THE SOUTH SIDE OF THE COACHELLA CANAL WAS GRADED FOR DEVELOPMENT BY 2006. THE NORTH SIDE OF THE CANAL IS STILL UNDEVELOPED (2025) BUT PARCEL DATA SUGGESTS IMMINENT DEVELOPMENT.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. CONSIDERED PRESUMED EXTANT BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	192	**Map Index:**	50050	**EO Index:**	50050	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-02

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.77082 / -116.19697	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3737035 E574358	**Elevation (ft):**	520
PLSS:	T05S, R08E, Sec. 6, NW (S)	**Acres:**	70.0

Location:	NE SLOPE OF SOUTHERN INDIO HILLS, 2 MI SSW OF BERDOO CYN RD AT DILLON RD, 3.6 MI N OF DOWNTOWN INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS SECTION 6 NWNW.
Ecological:	AREA APPEARS UNDEVELOPED IN 2020 AERIALS. NEEDS MODERN SURVEYING AND REPORTING.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. CONSIDERED PRESUMED EXTANT BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	193	**Map Index:**	50052	**EO Index:**	50052	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-02

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.76734 / -116.17508	**Accuracy:**	non-specific area
UTM:	Zone-11 N3736665 E576387	**Elevation (ft):**	240
PLSS:	T05S, R08E, Sec. 05, NW (S)	**Acres:**	40.9

Location:	W SIDE OF DILLON RD ABOUT 2.3 MILES S OF BERDOO CYN RD AND 3.8 MILES N OF COACHELLA CANAL, 4 MI NE OF DOWNTOWN INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS SECTION 5 SENW.
Ecological:	AREA APPEARS UNDEVELOPED NATURAL HABITAT IN 1968 AERIAL. 1981 AERIAL SHOWS A LOCAL DEVELOPMENT AND SUBSEQUENT AERIALS INDICATE AND AGRICULTURE DEVELOPMENT, NOW DERELICT (SINCE 2023 OR EALIER).
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. CONSIDERED PRESUMED EXTANT BY USFWS (2023).
Owner/Manager:	PVT

Occurrence No.	194	**Map Index:**	50055	**EO Index:**	50055	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-02

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.7565 / -116.19715	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3735447 E574354	**Elevation (ft):**	132
PLSS:	T05S, R08E, Sec. 7, NW (S)	**Acres:**	70.0

Location:	SW SLOPE OF SOUTHERN INDIO HILLS, 2.8 MI NW OF DILLON RD AT COACHELLA CANA, 2.7 MI NNE OF DOWNTOWN INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS SECTION 7 NWNW.
Ecological:	ALONG COACHELLA VALLEY WATER DISTRICT (CVWD) PIPELINE CORRIDOR AND TRANSMISSION LINE RIGHT OF WAY. AREA APPEARS UNDEVELOPED IN 2020 AERIALS. NEEDS MODERN SURVEYING AND REPORTING.
General:	ACCORDING TO DRAFT RECOVERY PLAN AND FINAL RECOVERY PLAN, REPORTED PRESENT BY DAVIS DURING SURVEYS BETWEEN 1969-1975. CONSIDERED PRESUMED EXTANT BY USFWS (2023).
Owner/Manager:	CVWD, PVT

Occurrence No.	195	**Map Index:**	50058	**EO Index:**	50058	**Element Last Seen:**	1975-XX-XX
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1975-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-05-02

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.75657 / -116.16651	**Accuracy:**	non-specific area
UTM:	Zone-11 N3735477 E577190	**Elevation (ft):**	200
PLSS:	T05S, R08E, Sec. 08, NE (S)	**Acres:**	147.5

Location:	BETWEEN INDIO HILLS & THE LITTLE SAN BERNARDINO MTNS, 3 MILES NE OF INTERSECTION OF JACKSON ST & I-10; NE OF INDIO.
Detailed Location:	MAPPED NON-SPECIFICALLY TO LOCATION STATED AS T5S R8E SECTION 8 NENE AND TO RECOVERY PLAN MAPS.
Ecological:	APPROPRIATE HABITAT APPEARS TO HAVE EXISTED HERE TILL THE EARLY 1980S. AREA IMPACTED BY AGRICULTURAL DEVELOPMENT BY EARLY 1990S, NOW DERELICT (SINCE 2023 OR EALIER). BARROWS AND VANDERGAST SUGGEST EXTIRPATED IN THIS AREA DUE TO DROUGHT.
General:	DRAFT & FINAL RECOVERY PLANS NOTED PRESENT BY DAVIS CIRCA 1969-1975, WITH ADDITIONAL POINTS ON PLAN MAPS (1982, 1984). THOUGH USFWS (2023) LAST NOTED PRESUMED EXTANT, BARROWS (2007, 2010, 2025) & VANDERGAST (2016, 2019) SUGGEST EXTIRPATED.
Owner/Manager:	PVT

Occurrence No.	238	**Map Index:**	C3023	**EO Index:**	135326	**Element Last Seen:**	2022-11-07
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2022-11-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2025-09-05

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.8047 / -116.22459	**Accuracy:**	3/5 mile
UTM:	Zone-11 N3740772 E571772	**Elevation (ft):**	1410
PLSS:	T04S, R07E, Sec. 23 (S)	**Acres:**	776.0

Location:	VICINITY OF RADIO TOWERS, ABOUT 1.75 MI NE OF BISKRA PALMS AND 2.25 MI WNW OF DILLON RD AT BERDOO CYN RD, E INDIO HILLS.
Detailed Location:	MAPPED GENERALLY TO SITE #6, EASTERN INDIO HILLS, SHOWN ON FIGURE 1 MAP, AND TO C. BARROWS (EXPERT) INATURALIST DETECTION FROM 2022.
Ecological:	
General:	5 WERE CAPTURED AND SAMPLED FOR A GENETICS STUDY IN THIS AREA, PRESUMABLY AFTER 2004 AND BEFORE PUBLICATION IN DEC 2007. 1 FOUND AND PHOTOGRAPHED IN THIS GENERAL AREA ON 7 NOV 2022.
Owner/Manager:	UNKNOWN, BLM

Desert Fan Palm Oasis Woodland

Element Code: CTT62300CA

Desert Fan Palm Oasis Woodland

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G3
	State:	None		**State:**	S3.2
	Other:				
Habitat:	**General:**	□			
	Micro:	□			

Occurrence No.	56	**Map Index:**	05840	**EO Index:**	13143	**Element Last Seen:**	1975-11-XX
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1988-09-24
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1998-07-23

Quad Summary: West Berdoo Canyon (3311672)

County Summary: Riverside

Lat/Long:	33.76973 / -116.22362	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3736895 E571890	**Elevation (ft):**	200
PLSS:	T05S, R07E, Sec. 02 (S)	**Acres:**	0.0

Location: INDIO HILLS NATIVE PALMS NATURAL AREA. BADLAND TOPOGRAPHY OF INDIO HILLS IS TO THE NORTH.

Detailed Location: WASHINGTONIA FILIFERA ALONG SAN ANDREAS FAULT W/23 TREES. 80 TO 320 FEET. 20 ACRES. ONE OF THE INDIO HILLS FAULTS GROUP OF OASES.

Ecological: SANDSTONE BANKS WITH LOOSE SAND IN THE WASHES. OVER 100 WASHINGTONIA FILIFERA GROWING IN ARROYOS. ASSOC. INCLUDE PROSOPIS GLANDULOSA TORREYANA, PHORADENDRON CALIFORNICUM, ATRIPLEX HYMENELYTRA AND CHORIZANTHE RIGIDA.

General: SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: UNKNOWN, BLM

Occurrence No.	59	**Map Index:**	05805	**EO Index:**	28838	**Element Last Seen:**	1976-09-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1976-09-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1997-04-16

Quad Summary: West Berdoo Canyon (3311672), Myoma (3311673)

County Summary: Riverside

Lat/Long:	33.79113 / -116.25251	**Accuracy:**	1/5 mile
UTM:	Zone-11 N3739248 E569198	**Elevation (ft):**	460
PLSS:	T04S, R07E, Sec. 28, SE (S)	**Acres:**	0.0

Location: BISKRA PALMS OASIS, INDIO HILLS.

Detailed Location: WASHINGTONIA FILIFERA OASIS AT POINT OF FRACTURE OF SAN ANDREAS FAULT INTO TWO BRANCHES. 215 PALMS COUNTED 1966, ALL MATURE.

Ecological: BOTH SEEP AND WASH OASIS CHARACTERISTICS.

General: IN INDIO HILLS PALMS STATE PARK. SEE HTTPS://WILDLIFE.CA.GOV/DATA/VEGCAMP/NATURAL-COMMUNITIES TO INTERPRET AND ADDRESS THE PRESENCE OF RARE COMMUNITIES.

Owner/Manager: RIV COUNTY

Xylorhiza cognata

Element Code: PDASTA1010

Mecca-aster

Listing Status:	**Federal:**	None	**CNDDB Element Ranks:**	**Global:**	G2
	State:	None		**State:**	S2
	Other:	Rare Plant Rank - 1B.2, BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden			

Habitat:	**General:**	SONORAN DESERT SCRUB.
	Micro:	STEEP CANYON SLOPES, IN SANDSTONE AND CLAY. 20-305 M.

Occurrence No.	14	**Map Index:**	36090	**EO Index:**	31087	**Element Last Seen:**	2006-01-26
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-01-26
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2011-11-23

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.76957 / -116.20312	**Accuracy:**	specific area
UTM:	Zone-11 N3736892 E573788	**Elevation (ft):**	300
PLSS:	T05S, R07E, Sec. 01, NE (S)	**Acres:**	2.0

Location:	NNE OF INDIO; CANYON ACCESS VIA A POWERLINE ROAD 2.5 MI W OF DILLON RD, INDIO HILLS.
Detailed Location:	MAPPED ACCORDING TO 2006 BENIGNO COORDINATES. A 1984 STEWART FIELD SURVEY FORM FROM SE1/4 OF THE NE1/4 OF SECTION 1 IS ALSO ATTRIBUTED TO THIS SITE.
Ecological:	BASE OF NORTH-FACING SANDSTONE CLIFF ON GYPSUM CLAY. ASSOCIATED WITH HAPPLOPAPPUS ACRADENIUS, LARREA TRIDENTATA, HOFFMANSEGGIA MICROPHYLLA, AND HYMENOCLEA SALSOLA.
General:	7 PLANTS OBSERVED IN 1985. 12 PLANTS OBSERVED IN SOUTHERN POLYGON IN 2005. 28 PLANTS OBSERVED THROUGHOUT OCCURRENCE IN 2006.
Owner/Manager:	BLM

Occurrence No.	15	**Map Index:**	36091	**EO Index:**	31088	**Element Last Seen:**	2006-01-26
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-01-26
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2012-01-23

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.77020 / -116.21379	**Accuracy:**	non-specific area
UTM:	Zone-11 N3736955 E572799	**Elevation (ft):**	300
PLSS:	T05S, R07E, Sec. 01, NW (S)	**Acres:**	199.0

Location:	NNE OF INDIO; APPROXIMATELY 2.3 MILES SOUTHEAST OF BISKRA PALMS, INDIO HILLS.
Detailed Location:	SE POLY MAPPED ACCORDING TO 2006 BENIGNO COORDS. NW POLY MAPPED ACCORDING TO 1984 TRS FROM STEWART: T05S R7E NE1/4 OF NE1/4 SEC 2 AND SE1/4 OF NE1/4 SEC 2; NW1/4 OF NW1/4 SEC 1; T04S R7E SE1/4 OF SE1/4 SEC 35 AND SW1/4 OF SW1/4 SEC 36.
Ecological:	ON GYPSUM CLAY. ASSOCIATED WITH HYMENOCLEA SALSOLA, PEUCEPHYLLUM SCHOTTII, ATRIPLEX POLYCARPA, DALEA SPINOSA, COLDENIA PALMERI, & ATRIPLEX CANESCENS.
General:	200 PLANTS OBSERVED IN 1984. 2006: 1 PLANT SEEN IN THE SE1/4 OF THE NE1/4 OF SECTION 2 AND 17 PLANTS SEEN IN SOUTHEAST POLYGON. INCLUDES FORMER OCCURRENCE #33.
Owner/Manager:	BLM

Occurrence No.	16	**Map Index:**	36092	**EO Index:**	31089	**Element Last Seen:**	1997-05-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1997-05-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-02-22

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.78199 / -116.23340	**Accuracy:**	non-specific area
UTM:	Zone-11 N3738248 E570974	**Elevation (ft):**	400
PLSS:	T04S, R07E, Sec. 34, NE (S)	**Acres:**	52.0

Location:	NORTH OF INDIO; ABOUT 1 MILE SOUTHEAST OF BISKRA PALMS NEAR GRAVEL PIT, INDIO HILLS.
Detailed Location:	2 POLYGONS MAPPED BASED ON T-R-S PROVIDED BY STEWART: T04S R7E SE 1/4 OF NE 1/4 SECTION 34; AND NON-SPECIFIC DIGITAL DATA PROVIDED BY THE COACHELLA VALLEY MSHCP, "IN PALM OASIS JUST N OF GRANITE CONSTRUCTION CO. QUARRY".
Ecological:	ASSOCIATED WITH LARREA TRIDENTATA, AMBROSIA DUMOSA, BEBBIA JUNCEA, AND ENCELIA.
General:	7 PLANTS OBSERVED IN E POLY IN 1984. W POLY: 1 PLANT REPORTED BY BILL HAVERT IN 1997 IN THE COACHELLA VALLEY MSHCP, BUT POINT PROVIDED FOR SITE IS NOT LOCATED "IN A PALM OASIS"; MAPPED TO INCLUDE PALM OASIS CLOSEST TO (SOUTH OF) THE POINT.
Owner/Manager:	UNKNOWN

Occurrence No.	17	**Map Index:**	36093	**EO Index:**	31090	**Element Last Seen:**	2005-04-21
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-04-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-02-27

Quad Summary:	West Berdoo Canyon (3311672), Myoma (3311673)
County Summary:	Riverside

Lat/Long:	33.80363 / -116.26136	**Accuracy:**	non-specific area
UTM:	Zone-11 N3740629 E568368	**Elevation (ft):**	600
PLSS:	T04S, R07E, Sec. 21, SW (S)	**Acres:**	161.0

Location:	VICINITY OF MACOMBER PALMS OASIS, INDIO HILLS.
Detailed Location:	2 N-MOST POLYGONS ARE SPECIFIC AND BASED ON 2005 MCGLAUGHLIN COORDINATES. THE REST OF THE OCCURRENCE IS BASED ON TRS INFORMATION FROM 1984 STEWART FIELD SURVEY FORMS. IN THE SW 1/4 OF SECTION 21 AND THE NORTH 1/2 OF SECTION 28.
Ecological:	PLANTS GROWING IN SANDY SOILS AT BASE OF CANYON WALL. ASSOCIATED WITH ENCELIA FARINOSA AND LARREA TRIDENTATA.
General:	660 PLANTS OBSERVED IN THIS AREA IN 1984. 300+ PLANTS SEEN IN THE 2 N-MOST POLYGONS IN 2005; MOST LIKELY MORE IN THE AREA.
Owner/Manager:	DPR-INDIO HILLS PALMS, PVT

Occurrence No.	18	**Map Index:**	36094	**EO Index:**	31091	**Element Last Seen:**	2005-04-21
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-04-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-02-27

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.79044 / -116.24762	**Accuracy:**	specific area
UTM:	Zone-11 N3739175 E569651	**Elevation (ft):**	400
PLSS:	T04S, R07E, Sec. 27, SW (S)	**Acres:**	1.0

Location:	JUST SOUTHEAST OF BISKRA PALMS, INDIO HILLS.
Detailed Location:	SITE MAPPED BY CNDDB AS A SMALL POLYGON ACCORDING TO 2005 MCGLAUGHLIN COORDINATES IN THE SW1/4 OF THE SW1/4 OF SECTION 27. A 1984 STEWART FIELD SURVEY FORM FROM SE1/4 OF SE1/4 OF SEC 28 IS ALSO ATTRIB HERE; MAY BE FURTHER TO THE WEST.
Ecological:	STEEP SLOPES OF CANYONS, FROM NEAR BOTTOM TO RIDGETOP. UPLIFTED ROCKY SEDIMENTS AND ALKALI CLAY WITH PEUCEPHYLLUM, ATRIPLEX CANESCENS, A. HYMENELYTRA, TIDESTROMIA, BEBBIA, AND ENCELIA.
General:	250 PLANTS SEEN IN 1984 IN THE SE1/4 OF THE SE1/4 OF SECTION 28. 180+ PLANTS SEEN IN 2005.
Owner/Manager:	DPR-INDIO HILLS PALMS

Occurrence No.	32	**Map Index:**	78207	**EO Index:**	79102	**Element Last Seen:**	2005-08-01
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-08-01
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-02-23

Quad Summary:	West Berdoo Canyon (3311672)
County Summary:	Riverside

Lat/Long:	33.75139 / -116.18097	**Accuracy:**	1/10 mile
UTM:	Zone-11 N3734892 E575855	**Elevation (ft):**	200
PLSS:	T05S, R08E, Sec. 08, W (S)	**Acres:**	0.0

Location:	EAST OF INDIO; ABOUT 1.1 AIR MILES NW OF THE JUNCTION OF DILLON RD AND FARGO CANYON RD, EXTREME SE END OF INDIO HILLS.
Detailed Location:	MAPPED BY CNDDB ACCORDING TO COORDINATES FROM A 2005 RADO COLLECTION LABEL; DATUM UNKNOWN, MAPPED AROUND BOTH DATUMS.
Ecological:	CANYON SLOPE ON SOUTH SIDE.
General:	ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 2005 RADO COLLECTION.
Owner/Manager:	UNKNOWN

APPENDIX G

CALIFORNIA NATIVE PLANT SOCIETY
INVENTORY OF RARE PLANTS QUADRANGLE SEARCHES

ScientificN	CommonN	Family	Lifeform	CRPR	GRank	SRank	OtherStatu	CESA	FESA	BloomingF	Habitat	Microhabit
Abronia vil	chaparral	Nyctagina	annual her	1B.1	G5T2?	S2	BLM_S; SI	None	None	(Jan)Mar-S	Chaparral, Coastal s	
Ambrosia	singlewhor	Asteracea	perennial	2B.2	G5	S2	SB_CRES	None	None	Aug-Nov	Chaparral, Sonoran	
Astragalus	San Berna	Fabaceae	perennial h	1B.2	G3	S3	BLM_S; SI	None	None	Apr-Jun	Joshua tree "woodla	
Astragalus	Borrego m	Fabaceae	annual her	4.3	G5T5?	S4		None	None	Feb-May	Mojavean desert scru	
Astragalus	Coachella	Fabaceae	annual/per	1B.2	G5T1	S1		None	FE	Feb-May	Desert dunes, Sonor	
Astragalus	Lancaster	Fabaceae	perennial h	1B.1	G4T2	S1		None	None	Mar-May	Chenopod scrub	
Astragalus	gravel milk	Fabaceae	annual/per	2B.2	G4G5	S2		None	None	Feb-Jun	Desert dunes, Mojav	
Astragalus	triple-ribbe	Fabaceae	perennial h	1B.2	G2	S2	SB_CalBG	None	FE	Feb-May	Joshua tree "woodla	
Ayenia cor	California	Malvaceae	perennial h	2B.3	G4	S3	SB_CalBG	None	None	Mar-Apr	Mojavean desert scru	
Bursera m	little-leaf e	Burserace	perennial	2B.3	G4	S2	IUCN_LC;	None	None	Jun-Jul	Sonoran desert scrub	
Chorizanth	Peninsular	Polygonac	annual her	4.2	G3	S3		None	None	May-Aug	Chaparral alluvial fan	
Ditaxis cla	glandular	Euphorbia	perennial h	2B.2	G3G4	S2		None	None	Oct-Mar	Mojavean desert scru	
Ditaxis ser	California	Euphorbia	perennial h	3.2	G5T3T4	S2?		None	None	Mar-Dec	Sonoran desert scrub	
Eremother	Booth's ev	Onagracea	annual her	2B.3	G5T4	S3		None	None	Apr-Sep	Joshua tree "woodla	
Eriastrum	Harwood's	Polemonia	annual her	1B.2	G2	S2	BLM_S; SI	None	None	Mar-Jun	Desert dunes	
Eschschol	Joshua Tr	Papaverac	annual her	4.3	G3	S3		None	None	Feb-May(J	Joshua tre	Desert wa
Euphorbia	Abrams' sp	Euphorbia	annual her	2B.2	G4	S2	SB_CalBG	None	None	(Aug)Sep-	Mojavean desert scru	
Euphorbia	Arizona sp	Euphorbia	perennial h	2B.3	G5	S3		None	None	Mar-Apr	Sonoran desert scrub	
Euphorbia	flat-seede	Euphorbia	annual her	1B.2	G3	S1	BLM_S; SI	None	None	Feb-Sep	Desert dunes, Sonor	
Funastrum	wavyleaf t	Apocynac	perennial h	2B.2	G4	S1	SB_CalBG	None	None	May-Aug	Chaparral, Pinyon ar	
Horsfordia	pink velvet	Malvaceae	perennial	4.3	G5	S4	SB_CalBG	None	None	Feb-Dec	Sonoran desert scrub	
Horsfordia	Newberry's	Malvaceae	perennial	4.3	G5	S4	SB_CalBG	None	None	Feb-Dec	Sonoran desert scrub	
Jaffueliobr	Rau's jaffu	Grimmiace	moss	2B.3	G4	S2		None	None		Alpine dwarf scrub,	
Johnstone	ribbed cry	Boraginac	annual her	4.3	G4G5	S4	SB_CalBG	None	None	Feb-May	Desert dunes, Mojav	
Johnstone	winged cry	Boraginac	annual her	4.3	G4G5	S4		None	None	Mar-Apr	Mojavean desert scru	
Juncus ac	southwest	Juncaceae	perennial r	4.2	G5T5	S4	SB_CalBG	None	None	(Mar)May-	Coastal dunes (mesi	
Juncus co	Cooper's r	Juncaceae	perennial h	4.3	G4	S3	SB_CalBG	None	None	Apr-May(A	Meadows and seeps	
Leptosiph	Santa Ros	Polemonia	perennial h	1B.3	G4T1T2	S1S2	BLM_S; U	None	None	May-Jul(N	Pinyon and juniper w	
Lycium tor	Torrey's b	Solanacea	perennial	4.2	G4G5	S3		None	None	(Jan-Feb)M	Mojavean desert vall	
Marina orc	California	Fabaceae	perennial h	1B.3	G2G3T1T	S1	SB_CalBG	None	None	May-Oct	Chaparral, Pinyon ar	
Matelea pa	spear-leaf	Apocynac	perennial h	2B.3	G5	S3	USFS_S	None	None	Mar-May(J	Mojavean desert scru	
Mirabilis te	slender-lol	Nyctagina	perennial h	4.3	G5	S4	SB_CRES	None	None	(Feb)Mar-I	Sonoran desert scrub	
Nemacauli	slender co	Polygonac	annual her	2B.2	G3G4T3?	S2		None	None	(Mar)Apr-M	Coastal dunes, Dese	
Petalonyx	narrow-lea	Loasaceae	perennial	2B.3	G4	S3?		None	None	(Jan-Feb)M	Mojavean Canyons	
Phaseolus	slender-ste	Fabaceae	annual her	2B.1	G5	S1	IUCN_LC	None	None	Apr	Sonoran desert scrub	

Pseudoror	Deep Can	Plantagina	annual her	2B.3	G4G5	S1		None	None	Feb-Apr	Sonoran desert scrub
Saltugilia l	Latimer's v	Polemonia	annual her	1B.2	G3	S3	BLM_S; SI	None	None	Mar-Jun	Chaparral, Mojavean
Selaginella	desert spik	Selaginella	perennial r	2B.2	G4	S2S3		None	None	(May)Jun((	Chaparral, Sonoran d
Senna cov	Cove's cas	Fabaceae	perennial h	2B.2	G5	S3	SB_CalBG	None	None	Mar-Jun(A	Sonoran d	Dry, sandy
Stemodia (	purple ster	Plantagina	perennial h	2B.1	G5	S2	SB_CRES	None	None	(Jan)Apr-D	Sonoran desert scrub
Stuckenia	broadleaf p	Potamoge	perennial r	2B.3	G4G5	S2S3		None	None	(Jun)Jul-A	Marshes a	lakes, pon
Xylorhiza (	Mecca-ast	Asteracea	perennial h	1B.2	G2	S2	BLM_S; SI	None	None	Jan-Jun	Sonoran desert scrub

Microhabit	ElevationL	ElevationL	ElevationH	ElevationH	CAEndem	States	Counties	Quads	EOTotal	EOA	EOB	EOC	
Sandy	75	245	1600	5250	FALSE	AZ, BA, C/	IMP, ORA	Agua Calie	98	0	7	9	
Sandy	10	35	500	1640	FALSE	AZ, BA, C/	RIV, SBD,	Cuyamaca	30	0	2	4	
Carbonate	900	2955	2000	6560	TRUE	CA	RIV, SBD	Big Bear C	42	0	0	0	
Sandy	30	100	895	2935	FALSE	AZ, BA, C/	IMP, INY,	Grays We	0	0	0	0	
an desert s	40	130	655	2150	TRUE	CA	RIV	Beaumont	69	0	10	14	
	700	2295	700	2295	FALSE	AZ, CA, N	KRN, LAX	Indio (331	5	0	0	0	
Flats, Gra	-60	-195	930	3050	FALSE	AZ, CA, N	IMP, INY,	Borrego P	19	2	1	3	
Gravelly (	450	1475	1190	3905	TRUE	CA	RIV, SBD	Catclaw Fl	53	1	8	7	
Rocky	150	490	1095	3595	FALSE	AZ, BA, C/	IMP, RIV,	Agua Calie	74	2	3	0	
ɔ (rocky)	200	655	700	2295	FALSE	AZ, BA, C/	IMP, RIV,	Agua Calie	18	1	1	1	
Granitic	300	985	1900	6235	FALSE	BA, CA	KRN, LAX	Aguanga (	0	0	0	0	
Sandy	0	0	465	1525	FALSE	AZ, CA, S	IMP, RIV,	Amboy (34	26	0	0	5	
ɔ	30	100	1000	3280	TRUE	CA, SO	RIV, SDG	Arica Mou	24	1	1	1	
ɪd", Pinyor	815	2675	2400	7875	FALSE	AZ, CA, N	INY, MNO	Apple Vall	31	0	0	3	
	125	410	915	3000	TRUE	CA	IMP, RIV,	Arica Mou	80	4	19	9	
Flats, Gra	585	1920	1685	5530	FALSE	CA	RIV, SBD	Barstow S	0	0	0	0	
Sandy	-5	-15	1310	4300	FALSE	AZ, BA, C/	IMP, RIV,	Bonds Co	109	9	31	34	
ɔ (sandy)	50	165	300	985	FALSE	AZ, BA, C/	RIV, SDG	Borrego P	10	1	2	0	
an desert s	65	215	100	330	FALSE	AZ, CA, S	IMP, RIV,	Cathedral	3	0	0	0	
ɪd juniper v	1165	3820	1840	6035	FALSE	AZ, BA, C/	RIV	Martinez M	5	0	0	1	
ɔ (rocky)	100	330	500	1640	FALSE	AZ, BA, C/	IMP, RIV,	Agua Calie	0	0	0	0	
ɔ (rocky)	3	10	800	2625	FALSE	AZ, BA, C/	IMP, RIV,	Agua Calie	0	0	0	0	
Carbonate	490	1610	2100	6890	FALSE	AZ, CA, C	INY, MEN,	Butterfly P	7	0	0	1	
Sandy	-60	-195	500	1640	FALSE	AZ, BA, C/	IMP, INY,	Grays We	0	0	0	0	
ɹb, Sonora	100	330	1690	5545	FALSE	AZ, BA, C/	IMP, INY,	Grays We	0	0	0	0	
c), Coastal	3	10	900	2955	FALSE	AZ, BA, C/	IMP, LAX,	Agua Calie	0	0	0	0	
(mesic, all	-260	-855	1770	5805	FALSE	CA, NV	IMP, INY,	Badwater (	0	0	0	0	
oodland, S	1000	3280	2000	6560	TRUE	CA	RIV, SDG	Bucksnort	6	0	0	0	
Rocky, Sa	-50	-165	1220	4005	FALSE	AZ, CA, N	IMP, INY,	Yuma Eas	0	0	0	0	
Rocky	1050	3445	1160	3805	FALSE	BA, CA	RIV	La Quinta	3	0	0	0	
Rocky	440	1445	1095	3595	FALSE	AZ, BA, C/	IMP, RIV,	Agua Calie	68	1	1	2	
ɔ	230	755	1095	3595	FALSE	AZ, BA, C/	IMP, RIV,	Coyote We	0	0	0	0	
rt dunes, S	-50	-165	400	1310	FALSE	AZ, BA, C/	IMP, RIV,	Acolita (33	24	1	1	0	
Rocky (sc	-25	-80	1115	3660	FALSE	AZ, BA, C/	IMP, RIV,	Agua Calie	26	0	0	0	
ɔ	125	410	125	410	FALSE	AZ, BA, C/	RIV	Valerie (33	1	0	0	0	

ɔ (rocky)	0	0	800	2625	FALSE	AZ, BA, C/	IMP, RIV,	Carrizo Mt	3	0	0	0
Granitic (c	400	1310	1900	6235	TRUE	CA	INY, KRN,	Big Bear C	60	3	4	0
desert scru	200	655	1295	4250	FALSE	AZ, BA, C/	IMP, RIV,	Agua Calie	75	1	6	1
Dry, Sand	225	740	1295	4250	FALSE	AZ, BA, C/	IMP, KRN,	Augustine	55	8	6	6
ɔ (often me	180	590	300	985	FALSE	AZ, BA, C/	RIV, SDG	Cathedral	21	0	2	0
ds, rivers, a	-70	-230	2135	7005	FALSE	CA	CCA, GLE	Antioch Nc	21	0	0	0
ɔ	20	65	400	1310	TRUE	CA	RIV	Mecca (33	36	0	6	11

EOD	EOX	EOU	EOHistoric	EORecent	EOExtant	EOPossibl	EOExtirpa	EOThreatI	ThreatList	ThreatList	Notes	Threats
	8	7	67	54	44	91	1	6	41	16	Agricultur	See Flora	Threatene
	0	0	24	16	14	30	0	0	6	4	Grazing, I	Possibly threatened b	
	0	0	42	26	16	42	0	0	1	1	Other	Historic re	Potentially
	0	0	0	0	0	0	0	0		0		See Memoirs of the N	
	7	2	36	32	37	67	1	1	40	12	Altered flo	Protected	Threatene
	0	2	3	5	0	3	2	0	1	1	Developm	Known in CA only fro	
	0	1	12	13	6	18	0	1	8	5	Agricultur	Threatened by solar e	
	10	0	27	14	39	53	0	0	5	4	Foot traffi	Possibly threatened b	
	0	0	69	38	36	74	0	0	3	4	Foot traffic/trampling, Mining, O		
	0	0	15	13	5	18	0	0	1	3	Foot traffi	Known in CA from fev	
	0	0	0	0	0	0	0	0		0		Much habitat already	
	0	1	20	17	9	25	1	0	4	4	Foot traffi	Possibly threatened b	
	0	0	21	13	11	24	0	0	10	4	Development, ORV a	Threatene	
	1	0	27	24	7	31	0	0	4	6	Developm	Potentially threatened	
	1	0	47	7	73	80	0	0	39	8	Developm	Threatened by mining	
	0	0	0	0	0	0	0	0		0		Potentially threatened	
	10	1	24	10	99	108	1	0	67	8	Agricultur	Threatened by vehicle	
	0	0	7	6	4	10	0	0	1	1	Foot traffi	Undocumented in IMF	
	0	0	3	3	0	3	0	0	0	0		See Geological Surve	
	0	0	4	0	5	5	0	0	3	6	Altered flo	Discovered in CA in 2	
	0	0	0	0	0	0	0	0		0		See Proceedings of tl	
	0	0	0	0	0	0	0	0		0		See Proceedings of tl	
	0	0	6	7	0	7	0	0	1	2	ORV activ	Discovered	Potentially
	0	0	0	0	0	0	0	0		0		Possibly threatened b	
	0	0	0	0	0	0	0	0		0		Potentially threatened	
	0	0	0	0	0	0	0	0		0		Threatened by urbani	
	0	0	0	0	0	0	0	0		0		Possibly threatened b	
	0	0	6	6	0	6	0	0	0	0		Known only from the	
	0	0	0	0	0	0	0	0		0		Plants in CA outside	
	0	0	3	3	0	3	0	0	0	0		Known in CA only fro	
	0	0	64	20	48	68	0	0	2	4	Foot traffi	Possibly threatened b	
	0	0	0	0	0	0	0	0		0		See Madrono 40(3):1	
	0	6	16	14	10	18	5	1	6	4	Developm	Threatened by urbani	
	0	1	25	19	7	25	1	0	0	0		See Bulletin of the Ca	
	0	0	1	1	0	1	0	0	0	0		Known in CA from on	

0	0	3	1	2	3	0	0	0	0		
1	0	52	22	38	60	0	0	15	8	Developm	Known from fewer tha
0	0	67	32	43	75	0	0	8	5	Developm	Known in CA from ap
1	0	34	23	32	55	0	0	13	5	Erosion/ru	Need quads for IMP (
0	0	19	15	6	21	0	0	1	3	Foot traffi	Very few recent collec
0	0	21	17	4	21	0	0	0	0		Possibly th
0	0	19	25	11	36	0	0	25	8	Developm	Known mo Threatene

Taxonomy	FullScienti	Synonyms	ElementCo	USDAPlan	CBRReas	DateAdde	LastUpdat	CRPRChangeDate
d by non-n	Abronia villosa var. a		PDNYC01	ABVIA		1/1/2001	########	
y trail mair	Ambrosia monogyra		PDAST50010			2/21/2007	########	6/12/2013
threatenec	Astragalus bernardin		PDFAB0F	ASBE4		2/16/2011	11/4/2025	2/16/2011
lew York B	Astragalus lentiginos		PDFAB0F	ASLEB		1/1/1974	6/10/2026	
d by urban	Astragalus lentiginos		PDFAB0F	ASLEC2		1/1/1984	6/10/2026	
m near Lar	Astragalus preussii v		PDFAB0F	ASPRL2		1/1/1988	5/26/2021	
energy dev	Astragalus sabulonur		PDFAB0F	ASSA2		########	########	6/12/2013
y pipeline	Astragalus tricarinatu		PDFAB0F	ASTR5		1/1/1974	########	
RV activity	Ayenia compacta		PDSTE01	AYCO		1/1/1974	########	6/12/2013
ver than tw	Bursera microphylla		PDBUR01	BUMI		1/1/1980	7/14/2021	6/12/2013
lost to dev	Chorizanthe leptothe		PDPGN04	CHLE6		1/1/1994	########	
y vehicles,	Ditaxis cla	Ditaxis ad	PDEUP080L0			1/1/1974	########	6/12/2013
See	Ditaxis ser	Ditaxis ca	PDEUP08050			1/1/1974	2/3/2026	
d by develo	Eremother	Camisson	PDONA03052			1/1/1980	5/26/2021	6/12/2013
g, non-nativ	Eriastrum harwoodii		PDPLM03	ERHA5		7/22/2008	5/26/2021	7/22/2008
d by urbani	Eschscholzia androu		PDPAP0A0E0			########	########	########
es, solar er	Euphorbia	Chamaes	PDEUP0D010			1/1/2001	########	6/12/2013
P Co.; neec	Euphorbia	Chamaes	PDEUP0D060			1/1/1980	5/26/2021	6/12/2013
ey of Califo	Euphorbia	Chamaes	PDEUP0D1X0			1/1/1980	11/5/2024	
006 by Jor	Funastrum crispum		PDASC0F	FUCR		########	########	########
ne America	Horsfordia alata		PDMAL0J	HOAL		1/1/2001	########	
ne America	Horsfordia newberryi		PDMAL0J	HONE		1/1/2001	########	
Similar to8	Jaffueliobryum raui		NBMUS97	JARA		5/15/2014	########	5/15/2014
y developr	Johnstone	Cryptanth	PDBOR0A0M0			1/1/1974	########	
d by vehicle	Johnstone	Cryptanth	PDBOR0A180			1/1/1980	########	
zation and	Juncus ac	Juncus ac	PMJUN01	JUACL		1/1/1988	########	
y hydrolog	Juncus cooperi		PMJUN01	JUCO3		1/1/1974	########	
Santa Ros	Leptosiph	Linanthus	PDPLM090J3			1/1/1988	########	
vicinity of C	Lycium torreyi		PDSOL0G	LYTO		5/5/2015	########	5/5/2015
m Deep Ca	Marina orcuttii var. or		PDFAB2F031			1/1/1984	########	
y recreatio	Matelea parvifolia		PDASC0A	MAPA9		1/1/1974	########	6/12/2013
78 (1993) f	Mirabilis tenuiloba		PDNYC0A	MITE		1/1/1974	12/6/2022	
zation nea	Nemacaulis denudata		PDPGN0C	NEDEG		1/1/1994	5/26/2021	6/12/2013
alifornia Ac	Petalonyx linearis		PDLOA04	PELI5		9/16/2016	########	########
ly one occ	Phaseolus	Phaseolus	PDFAB33	PHFI3		1/1/1984	7/14/2021	6/12/2013

	Pseudoror	Antirrhinu	PDSCR2R	PSCY2	1/1/1980	########	6/12/2013
an 20 occu	Saltugilia latimeri		PDPLM0H	SALA26	1/1/2004	########	5/13/2004
proximatel	Selaginella eremophi		PPSEL01(	SEER	1/1/1994	5/26/2021	6/12/2013
Co. and oc	Senna cov	Cassia co	PDFAB49	SECO10	1/1/1980	########	6/12/2013
ctions; nee	Stemodia durantifolia		PDSCR1U	STDU	1/1/2001	5/26/2021	6/12/2013
Treated as	Stuckenia striata		PMPOT03	STST20	1/30/2024	2/3/2026	1/30/2024
See	Xylorhiza (	Machaera	PDASTA1	XYCO2	1/1/1980	########	

APPENDIX H
USFWS INFORMATION FOR PLANNING AND CONSULTATION (IPaC) REPORT

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Riverside County, California



Local office

Carlsbad Fish And Wildlife Office

(760) 431-9440
(760) 431-5901

2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Peninsular Bighorn Sheep Ovis canadensis nelsoni There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4970	Endangered

Birds

NAME	STATUS
Least Bell's Vireo Vireo bellii pusillus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher Empidonax traillii extimus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6749	Endangered
Yuma Ridgway"s Rail Rallus obsoletus yumanensis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3505	Endangered

NOT FOR CONSULTATION

Reptiles

NAME	STATUS
Coachella Valley Fringe-toed Lizard Uma inornata Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2069	Threatened
Desert Tortoise Gopherus agassizii There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4481	Threatened

Fishes

NAME	STATUS
Desert Pupfish Cyprinodon macularius Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7003	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Flowering Plants

NAME	STATUS
Coachella Valley Milk-vetch Astragalus lentiginosus var. coachellae Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7426	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds

NOT FOR CONSULTATION

- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management

NOT FOR CONSULTATION

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
American Avocet Recurvirostra americana This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 21 to Aug 10
Costa's Hummingbird Calypte costae This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9470	Breeds Jan 15 to Jun 10

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

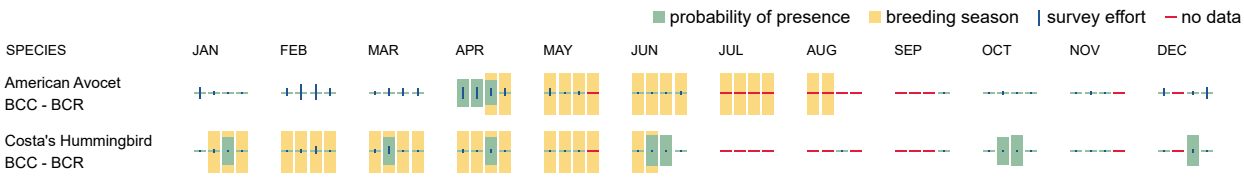
Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

NOT FOR CONSULTATION

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

NOT FOR CONSULTATION

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

APPENDIX I

CNDDB CALIFORNIA NATIVE SPECIES FIELD SURVEY FORMS

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 06/09/2026

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Athene cunicularia*

Common Name: Burrowing Owl

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 2 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Michael D. Wilcox
Address: 862 E. Hospitality Lane, $350
San Bernardino, CA 92408
E-mail Address: michael.wilcox@wsp.com
Phone: (951) 634-9765

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

2 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

At existing burrows located adjacent to (SE of) Coachella Water Authority's (CWA's) Well 11, immediately NE of the Dillon Rd. overpass of the railroad easement and SR-111 in the City of Coachella.

County: Riverside Landowner / Mgr: Private

Quad Name: Indio Elevation: -60

T 5S R 8E Sec 31 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( )

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( )

DATUM: **NAD27** ( ) **NAD83** ( ) **WGS84** ( )

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) (●)

Coordinates: 33.700115°N, 116.190195°W

Source of Coordinates (GPS, topo. map & type): Field Maps

GPS Make & Model: iPhone 12 Mini with Field Maps app.

Horizontal Accuracy: 10 meters/feet

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Habitat where individual was two owls were observed was at two existing burrows located adjacent to one another on the north-facing slope on the west-bound approach to the Dillion Road Bridge over the Southern Pacific Railroad easement and Grapefruit Boulevard/State Route 111 in the City of Coachella, Riverside Co., CA. The site is located adjacent to (NE of) the existing, fenced CWA Well 111. Adjacent lands are mostly developed (commercial, industrial) with vacant disturbed lands intermittently present to the east and south.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent ( ) Good (●) Fair ( ) Poor

Immediate AND surrounding land use: Developed and disturbed.

Visible disturbances: Entire area is largely disturbed and located inbetween Dillion Road to the S and existing development to the N.

Threats: Traffic collisions on Dillon Rd., the adjacent railroad easement and SR-111. An existing utility pipeline easement is also present.

Comments: At least wo (2) owls observed behaving naturally (perching at burrows) adj. to CWA Well 11 and the Dillon Road Bridge over the railroad easement and Grapefruit Blvd./SR-111. There was an existing pipeline crew working on the utility (gas) line easement located adjacent to the burrows. Owls did not appear to be disturbed by that activity.

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☒ Other: Observer very familiar with Califoria bird species.

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? (●) yes ( ) no

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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

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Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 06/09/2026

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Calypte costae*

Common Name: Costa's hummingbird

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Michael D. Wilcox
Address: 862 E. Hospitality Lane, $350
San Bernardino, CA 92408
E-mail Address: michael.wilcox@wsp.com
Phone: (951) 634-9765

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

1 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☒ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

At SW corner of Coachella Water Authority's (CWA's) existing Well 12 and the adjacent landscaping around the atheletic fields at Bagdouma Park. Bagdouma Park is N of Bagdad Ave., W of Mecca Ave., S of Ave. 51 and E of Frederick St.

County: Riverside Landowner / Mgr: Private

Quad Name: Indio Elevation: -60

T 6S R 8E Sec 6 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): Field Maps

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: iPhone 12 Mini with Field Maps app.

DATUM: **NAD27** ( ) **NAD83** ( ) **WGS84** ( ) Horizontal Accuracy: 10 meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) (●)

Coordinates: 33.676379°N, 116.186839°W

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Habitat is developed. Location is within the existing developed/landscaped Bagdouma Park in Coachella. Adult male displaying, perching and foraging among the landscaped trees and shrubs present around the perimeter of the Coachella Water Authority's (CWA) existing Well 12 and the existing atheletic (soccer?) fields at Bagdouma Park in Coachella.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent ( ) Good (●) Fair ( ) Poor

Immediate AND surrounding land use: Entirely developed: Bagdouma Park, Coachella Water Authority Well 12, residential, etc.

Visible disturbances: None. Entire area is developed.

Threats: Human activities at Bagdouma Park

Comments: Individual is apparently acclimated to whatever activities routinely occur at Bagdouma Park, CWA Well 12 and the adjacent residential areas. Ample nesting habitat present in landscaped trees and shrubs.

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☒ Other: Observer very familiar with California bird species

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ( ) yes (●) no

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Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

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Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 06/09/2026

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Empidonax traillii*

Common Name: Willow Flycatcher

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Michael D. Wilcox
Address: 862 E. Hospitality Lane, $350
San Bernardino, CA 92408
E-mail Address: michael.wilcox@wsp.com
Phone: (951) 634-9765

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

1 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

In dense mesquite hummock immediately adjacent to Coachella Water Authority's (CWA's) Well 16 with is directly south of the eastern end of the cul-de-sac of Tyler Lane in Coachella.

County: Riverside Landowner / Mgr: Private

Quad Name: Indio Elevation: -60

T 6S R 8E Sec 9 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): Field Maps

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: iPhone 12 Mini with Field Maps app.

DATUM: **NAD27** ( ) **NAD83** ( ) **WGS84** ( ) Horizontal Accuracy: 10 meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) (●)

Coordinates: 33.658851°N, 116.161018°W

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Habitat where individual was visually observed and heard calling was a dense mesquite (mostly) thicket located along the outside eastern perimeter of an industrial facility and immediately adjacent to (N of) the existing, fenced CWA Well 16. Adjacent lands are mostly developed (similar industrial uses) with semi-natural quailbush scrub habitat to the east. Adult bird perching and calling from among the mesquite thicket.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent ( ) Good ( ) Fair (●) Poor

Immediate AND surrounding land use: Mostly developed (industrial). Semi-natural, disturbed open space (quailbush scrub) to the east.

Visible disturbances: Entire area is largely developed (industrial) and/or disturbed.

Threats: None

Comments: This individual is assumed to be either a very late migrant or lost/disoriented as there is no riparian habitats anywhere adjacent to this mesquite hummock.

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☒ Other: Observer very familiar with Califoria bird species. Call confirmed by Merlin.

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ( ) yes (●) no

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California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 06/09/2026

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Pyrocephalus rubinus*

Common Name: Vermilion Flycatcher

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 2 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Michael D. Wilcox
Address: 862 E. Hospitality Lane, $350
San Bernardino, CA 92408
E-mail Address: michael.wilcox@wsp.com
Phone: (951) 634-9765

Plant Information
Phenology:
_____ % vegetative _____ % flowering _____ % fruiting

Animal Information
2 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
At Rancho Las Flores Park immediately adjacent to Coachella Water Authority's (CWA's) Well 17 which is generally east of Van Buren St., south of Ave. 48, north of Ave. 49 and west of Grapefruit Blvd. in Coachella.

County: Riverside Landowner / Mgr: Private
Quad Name: Indio Elevation: -60
T 5S R 8E Sec 31 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): Field Maps
T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: iPhone 12 Mini with Field Maps app.
DATUM: **NAD27** ( ) **NAD83** ( ) **WGS84** ( ) Horizontal Accuracy: 10 meters/feet
Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) (●)
Coordinates: 33.696844°N, 116.198309°W

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Habitat where individual was adult pair were observed and heard calling was within the existing trees, shrubs and chain link fences located in the entirely developed Rancho Las Flores Park in the City of Coachella, Riverside Co., CA. Rancho Las Flores Park is located adjacent to (N and E of) the existing, fenced CWA Well 17. Adjacent lands are mostly developed (residential) with disturbed non-native grassland to the west (across Van Buren) and cleared, graded and heavily distubed vacant lands to the south. Adult birds observed perching and calling from various areas of the park.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent ( ) Good ( ) Fair (●) Poor
Immediate AND surrounding land use: Mostly eveloped (City park, residential) with heavily disturbed open space to the west and south
Visible disturbances: Entire area is largely developed (City park, residential) and/or heavily disturbed.
Threats: Routine tree and vegetation trimming during the nesting season within Rancho Las Flores Park
Comments: This pair observed behaving naturally (perching, calling, etc.) at Rancho Las Flores Park. It is assumed that this species is nesting at the park. Several inactive stick nests observed in trees and shrubbery at the park and immediatley adjacent to CWA's Well 17 (species that built nests undetermined).

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☒ Other: Observer very familiar with Califoria bird species. Calls confirmed by Merlin.

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ( ) yes (●) no

APPENDIX C.

Identification and Evaluation of Historic Properties
Chromium-6 Well Retrofit Project, City of Coachella
August 2026

and Addendum
September 2, 2026

Prepared by
CRM TECH
1016 E. Cooley Drive, Suite A & B
Colton, CA 92324

CONFIDENTIAL REPORT

This document contains information that is considered to be confidential due to the sensitivity of historical and archaeological resources. Therefore, this document is not included in published versions of the Technical Appendices for this IS/MND.

APPENDIX D.

Coachella Water Authority
Hexavalent Chromium Compliance Study

March 10, 2026

Prepared by
Corona Environmental Consulting, LLC
In collaboration with
Water Works Engineers, LLC

Coachella Water Authority

Hexavalent Chromium Compliance Study

Hexavalent Chromium Treatment
Preliminary Design Report

March 10, 2026

Prepared by Corona Environmental Consulting, LLC
in collaboration with Water Works Engineers, LLC

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Acronyms and Abbreviations

AACE	Association for the Advancement of Cost Engineering
AKEL	Akel Engineering Group
ATEC	ATEC Water Systems
BAT	Best Available Treatment Technology
Corona	Corona Environmental Consulting, LLC
Cr(III)	Trivalent Chromium
CrO_4^{2-}	Chromate
$Cr(OH)_3$	Chromium Hydroxide
Cr(VI)	Hexavalent Chromium
CSD	Coachella Sanitary District
CSMR	Chloride-to-Sulfate Mass Ratio
CVWD	Coachella Valley Water District
CWA	Coachella Water Authority
DDW	California State Water Resources Control Board Division of Drinking Water
EBCT	Empty Bed Contact Time
Fe	Iron
$FeCl_2$	Ferrous Chloride
$Fe(OH)_3$	Ferric Hydroxide
$FeSO_4$	Ferrous Sulfate
FTE	Full Time Equivalent
ft^3	cubic feet
gpm	gallon per minute
HLR	Hydraulic Loading Rate
kWh	kilowatt-hour
LOPREST	Loprest Water Treatment Company - WRT
Max	Maximum
MCL	Maximum Contaminant Level
MG	Million Gallons
MGD	Million Gallons per Day
Min	Minimum
O&M	Operations and Maintenance
PFAS	Per- and Polyfluoroalkyl Substances
PWS	Public Water System
RCF	Reduction Coagulation Filtration
RAA	Running Annual Average
RCRA	Resource Conservation and Recovery Act
SBA-IX	Strong Base Anion Exchange
SMCL	Secondary Maximum Contaminant Level
$SnCl_2$	Stannous Chloride
TDS	Total Dissolved Solids
TSDF	Treatment, Storage, and Disposal Facility
VSD	Valley Sanitation District
WWE	Water Works Engineers, LLC

Executive Summary

Coachella Water Authority (CWA) identified all six of their groundwater sources (Well 11, Well 12, Well 16, Well 17, Well 18, and Well 19), in addition to the future Well 20, as needing treatment to maintain compliance with California State Water Resources Control Board Department of Drinking Water's (DDW) newly adopted hexavalent chromium (Cr(VI)) Maximum Contaminant Level (MCL) of 10 µg/L. As part of the compliance planning, CWA engaged Corona Environmental Consulting, LLC (Corona) and Water Works Engineers, LLC (WWE) to complete the preliminary design of each of the well sites using reduction coagulation filtration (RCF) treatment based on the *Hexavalent Chromium Treatment Technology Evaluation* (2025), and results from the bench and pilot-scale testing completed by Corona.

The RCF treatment process includes ferrous iron chemical injection to reduce Cr(VI) to less soluble trivalent chromium (Cr(III)) through reduction contact vessels. The water is then injected with sodium hypochlorite (SHC) to oxidize residual ferrous iron to ferric iron in the solid form of ferric hydroxide. Water is then sent to filtration vessels to remove the Cr(III) and ferric hydroxide particles. Based on pilot testing at Well 19, the recommended ferrous dose is 0.5 mg/L to obtain Cr(VI) concentrations below the 8 µg/L water quality goal with a 2-minute reduction contact time and a filter hydraulic loading rate (HLR) between 5-10 gpm/ft^2. The recommended filter backwash time of at least 5 minutes at a loading rate of 19.9 gpm/ft^2 every 24 hours to remove accumulated particulate.

WWE evaluated backwash water management alternatives with hydraulic sewer analysis provided by Akel Engineering Group, Inc. (AKEL). To minimize sewer deficiencies, backwash equalization tanks are recommended at Well 12, Well 16, Well 17, and Well 20. Even with backwash equalization tanks, three sewer line segments were identified as deficient based on the sewer pipeline depth:diameter ratios. Well 11 and Well 18 backwash water can be discharged directly to sewer without requiring sewer pipeline upsizing. Well 19 does not have nearby access to the Coachella Sanitation District (CSD) collection system. Onsite backwash recycling with approximately weekly solids off hauling is recommended at Well 19. Environmental considerations are provided for backwash solid waste and media disposal.

WWE developed two alternative site layouts for each well site based on the recommended backwash water management alternative. Site layout Alternative No. 1 utilized a filter HLR of 5-5.5 gpm/ft^2 and Alternative No. 2 utilized a filter HLR of 7-7.5 gpm/ft^2. Cost estimates were developed from the site layouts, with Alternative No. 2 being less expensive due to reduction in equipment required. It is recommended that CWA proceed with final design of Alternative No. 2 (7-7.5 gpm/ft^2) for each well site based on the pilot test results and anticipated well flowrates at each site.

Conceptual level cost estimates of the recommended project ranged from $6.3 million to $7.2 million per site, with new Well 20 estimated to cost $8.8 million. The total project cost for all well sites, excluding any sewer line upgrades, is estimated to be $49.2 million. Upgrades to the three deficient sewer lines are estimated to be an additional $5.6 million providing a total project cost of approximately $55 million. Anticipated permits are listed within the report along with additional design considerations and recommended next steps.

1 Introduction

The California State Water Resources Control Board Division of Drinking Water's (DDW) maximum contaminant level (MCL) of 10 µg/L for hexavalent chromium [Cr(VI)] came into effect on October 1, 2024. Coachella Water Authority (CWA) has identified all six of their active groundwater wells, as well as a seventh soon to be developed well, as requiring treatment to achieve Cr(VI) compliance. With 9,363 service connections, CWA falls between the regulation's 1,000 and 9,999 category, resulting in a compliance deadline of October 1, 2027. Since the implementation of the regulation, *Senate Bill 466: Drinking water: primary standard for hexavalent chromium: exemption* has been enacted which prohibits a public water system from being determined, held, considered, or deemed in violation with the Cr(VI) MCL while implementing a state board approved compliance plan. CWA's compliance plan was accepted by DDW on November 3, 2025, extending their compliance deadline to July 3, 2031, for 100% completion of construction for all impacted wellsites.

Based on the *Hexavalent Chromium Treatment Technology Evaluation* (2025) and supported by bench and pilot-scale testing completed by Corona Environmental Consulting, LLC (Corona), reduction coagulation filtration (RCF) was selected as the preferred treatment option at each of the Cr(VI) impacted wellsites. This document provides the preliminary design at each of the active Cr(VI) impacted wellsites, prepared by Water Works Engineers, LLC (WWE), in collaboration with Corona. The intent of this preliminary design report (PDR) is to develop design and operational parameters, layouts, conceptual life cycle cost estimates, including capital and operation and maintenance (O&M) costs, and next steps for RCF treatment systems at each of the impacted wellsites. This report also provides alternatives for backwash residuals management at each of the sites. Preliminary designs for future Well 20 will be further developed once the well is constructed and the water quality matrix is confirmed.

2 System Operations Overview

CWA is currently served by six groundwater wells: Well 11, Well 12, Well 16, Well 17, Well 18, and Well 19, which all obtain water from the East Whitewater River Subbasin in the Coachella Valley Groundwater Basin shared among Coachella Valley Water District (CVWD), CWA, Indio Water Authority, and numerous other private groundwater producers (TKE 2017). There are two pressure zones in the CWA distribution system, designated as 'Low Zone' and '150 Zone'. All active wells serve the Low Zone, except for Well 18, which serves the 150 Zone. Three storage reservoirs are used by CWA, Mecca Reservoir at a 3.6-million-gallon (MG) capacity located near Well 12, which serves the Low Zone. The Dillon Road reservoir at a 1.5 MG capacity serves the 150 Zone and is only supplied by Well 18, with an emergency connection to Well 11. The Well 18 reservoir at a 5.0 MG capacity serves both the Low and 150 pressure zones and is only

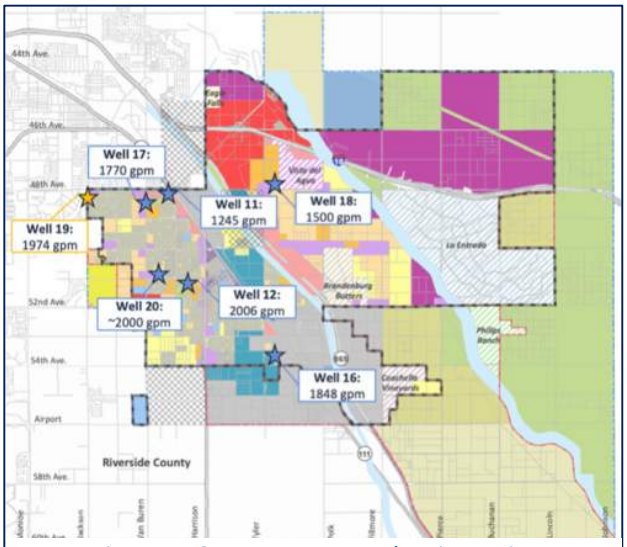


Figure 1. CWA system map showing active and planned wells and their corresponding pump rates.

supplied by Well 18 (TKE 2017). Current treatment is limited to sodium hypochlorite addition for disinfection at the individual wellsites before entering the distribution system. An overview of the CWA system and pilot location is shown in Figure 1.

A summary of CWA's active and planned wells with their respective production details are provided in Table 1, based on production data provided from 2019 to 2024. Utilization was determined based on average annual production and the maximum annual production 24 hours a day 365 days a year using 2024 pump test rates. Well 17 and Well 19 are the highest utilized wells, comprising nearly 70% of the average annual contribution to total production.

Note that Well 16 has not been used for production over the period of record due to corrosion of the column pipe and pump capacity issues. Well rehabilitation is ongoing with the intent that Well 16 can reliably achieve 1,500 gpm into the future. While not yet developed, Well 20 is expected to be constructed in 2026 and is anticipated to require treatment for Cr(VI) due to its proximity to other impacted wellsites. Well 20 will serve the Low Zone with a proposed location at the Pyramid Ranch planned community (City of Coachella, 2025). The treatment alternatives analysis and preliminary design will be re-evaluated for Well 20 once it is developed. The proposed Well 20 will be located at the intersection of 51st Avenue and Van Buren Street, west of Well 12 and south of Well 11 and Well 17.

It is anticipated that the utilization rates of Well 17 and Well 19 will decrease from what is identified in Table 1, as Well 16 and Well 20 come online.

Table 1. Well capacity and production details.

Well	Pressure Zone	Design Capacity (gpm)	2024 Pump Rate[1] (gpm)	Maximum Month[3]	Maximum Month Average Production (MG)	Maximum Month Maximum Production (MG)	Maximum Month Average Utilization	Average Annual Production (MG)	Maximum Annual Production (MG)	Average Annual Utilization	Average Annual Contribution to Total
Well 11	Low	2,000	1,245	June	33.1	53.8	62%	161	654	25%	7%
Well 12	Low	2,000	2,006	August	37.3	65.2	42%	251	1,054	24%	10%
Well 16[4]	Low	2,000	1,848[2]	August	0.2	0.9	0.2%	0.75[3]	971	0.1%	0%
Well 17	Low	2,200	1,770	August	68.5	77.8	87%	704	930	76%	29%
Well 18	150	2,000	1,500	August	48.9	60.6	73%	378	788	48%	16%
Well 19	Low	2,000	1,974	May	86.0	93.9	98%	935	1,038	90%	38%
Well 20 (future)	Low	2,000	-	-	-	-	-	-	-	-	-
Total		**14,200**	**10,343**	**-**	**-**	**-**	**-**	**2,430**	**5,435**	-	-

[1] Based on pump check hydraulic test reports representing normal operations.
[2] Value from 2013 pump check report.
[3] Month with the highest production based on monthly average production (2019-2024)
[4] Well 16 has not been used for production during the period reviewed. This value is based on production during Aug 2020 and Jun 2023.

Monthly production (2019-2024) for each of the CWA wells is shown in Figure 2 as a time series scatter plot and in Figure 3 as a stacked bar chart to summarize total system production. Total monthly system production peaks in the summer at about 260 to 270 MG and decreases in the winter to approximately 140 to 150 MG. Well 17 and Well 19 have relatively consistent production throughout the year, while other wells exhibit more seasonal use with higher production observed in the warmer months. As previously shown, Well 19 is the highest producing well year-round, followed by Well 17 with average monthly productions of 77.9 and 58.7 MG, respectively. Well 18, Well 11, and Well 12 show seasonal variability with higher production values during the summer with average monthly production of 31.5 MG, 32.3 MG, and 20.9 MG, respectively. Note that the Well 11 average monthly production was calculated for periods of use only, as it is often offline. Well 16, as mentioned above, has been rarely in production for the last five years, with less than 1 MG produced in August 2020 and June 2023.

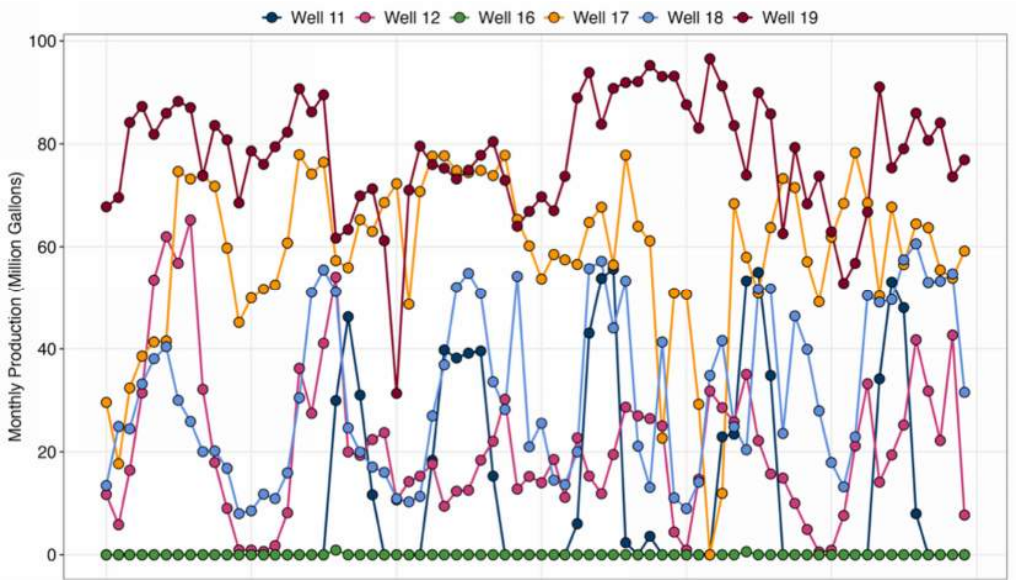


Figure 2. Time Series Scatter Plot, Monthly Production of CWS Wells (2019 to 2024)

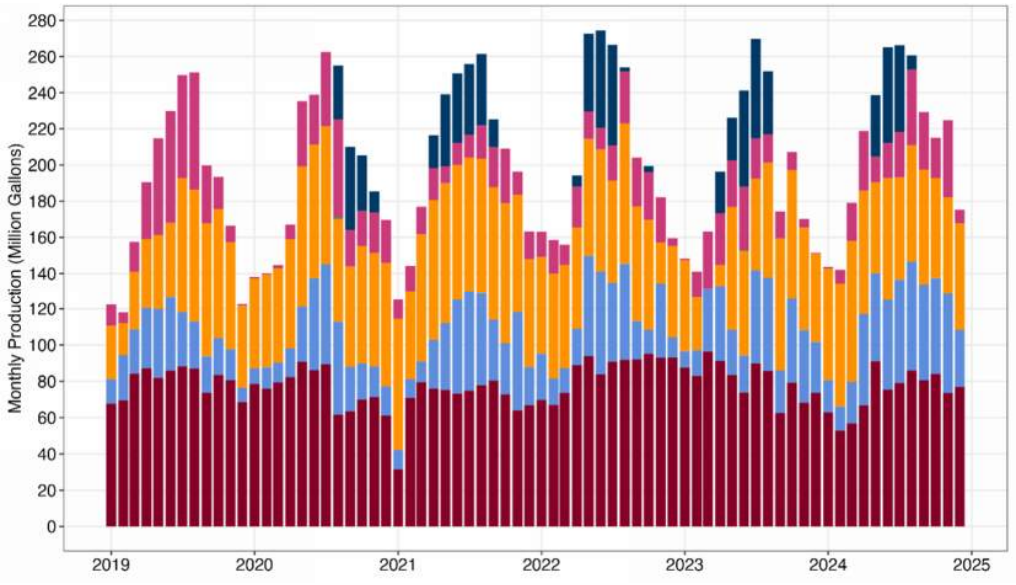


Figure 3. Stacked Bar Chart, Monthly Production of CWA Wells (2019 to 2024)

3 Water Quality Summary

Source water quality can impact RCF Cr(VI) treatment performance and may not be suitable for the removal of certain contaminants such as per- and polyfluoroalkyl substances (PFAS). To evaluate the extent of these impacts, historical raw water quality data provided by CWA and extracted from DDW's Safe Drinking Water Information System (SDWIS) database has been compiled and analyzed. Table 2 summarizes the water quality parameters that may impact Cr(VI) treatment performance, as well as future potential contaminants of concern, and those that may impact corrosion in the distribution system. A complete summary of source water quality is presented in Appendix A for reference.

The CWA wells have similar buffer capacities, are generally considered to be soft water (41–68 mg/L as $CaCO_3$), with low total dissolved solids (TDS) concentrations (<300 mg/L), and low turbidity (<0.4 NTU). Cr(VI) appears to be the only contaminant of concern, with all the wells having or non-detect arsenic and iron, low nitrate, and non-detect manganese, selenium and vanadium. Uranium is detectable in all wells at concentrations well below the MCL of 20 pCi/L. High concentrations of iron were detected in Well 16; however, this well is currently not operational. The 2,200 µg/L result was collected with the use of a test pump following many years of being offline. All samples collected for PFAS have been non-detect to date. A time series of total chromium and Cr(VI) is provided in Figure 4, with data ranging from 2012 to 2025. Cr(VI) concentrations range from 10-25 µg/L with Well 18 having the lowest average concentration at 13 µg/L and Well 17 the highest at 22 µg/L. All six wells have an average Cr(VI) concentration above the 10 µg/L MCL and will require treatment to achieve Cr(VI) compliance.

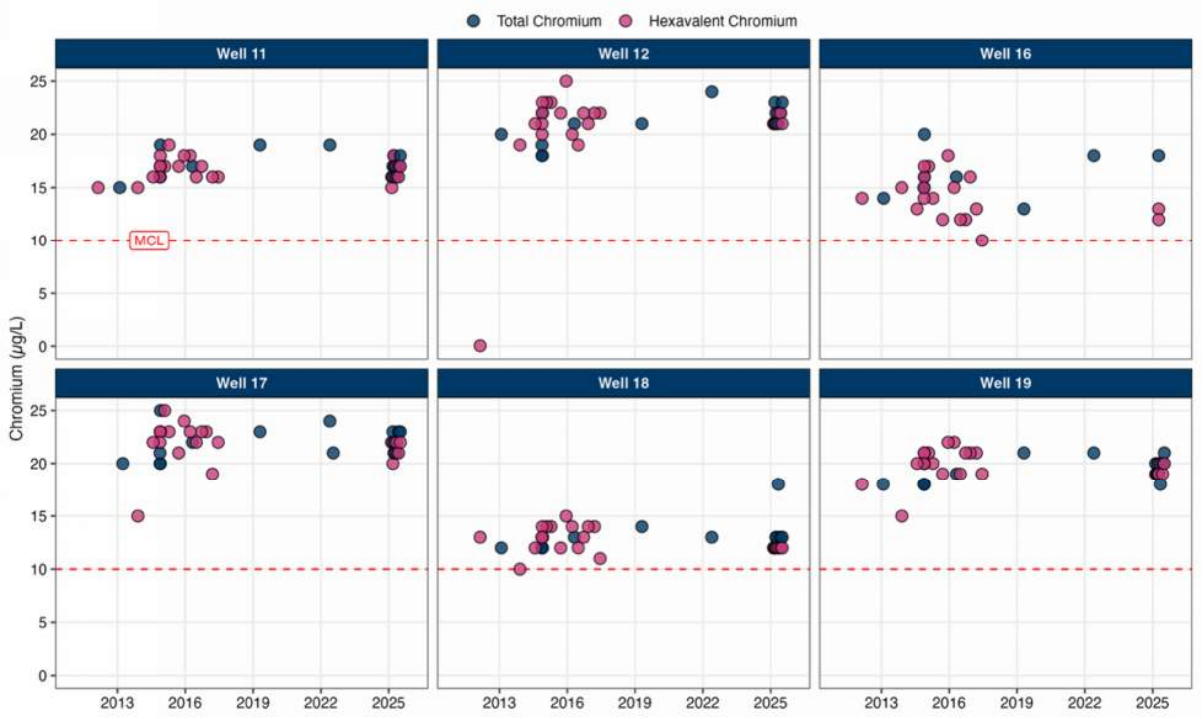


Figure 4. Raw water total chromium and hexavalent chromium time series (2012-2025).

Table 2. Well production and water quality summary [minimum – maximum (mean)]

Parameter	Well 11		Well 12		Well 16		Well 17		Well 18		Well 19	
Chromium												
Total Chromium (µg/L)	15-19	(17.1)	18-24	(20.8)	13-32	(17.7)	20-25	(21.9)	12-14	(12.6)	18-21	(19.3)
Hexavalent Chromium (µg/L)	15-19	(16.7)	0-25	(20.4)	10-18	(14.1)	15-25	(21.9)	10-15	(12.8)	15-22	(19.8)
General Water Quality												
Alkalinity (mg/L)	86-100	(93.3)	80-100	(86.3)	80-90	(82.8)	79-96	(85.0)	76-93	(81.0)	91-100	(95.3)
Color (CU)	ND		ND		ND		ND		ND		ND	
Conductivity (µmhos/cm)	260-290	(277)	280-330	(312)	260-360	(302)	280-300	(285)	310-370	(345)	250-290	(273)
Hardness (mg/L as $CaCO_3$)	56-69	(63)	57-77	(68)	42-51	(46)	52-62	(54)	39-43	(41)	54-60	(57)
Odor (TON)	ND		ND		ND		ND		ND		ND	
pH (SU)	7.7-8.2	(8.1)	7.8-8.2	(8.0)	7.9-8.3	(8.2)	7.7-8.3	(8.1)	7.2-8.3	(8.1)	7.0-8.3	(8.0)
Total Dissolved Solids (mg/L)	110-240	(174)	170-240	(203)	160-240	(187)	110-190	(162)	190-230	(210)	140-220	(169)
Turbidity (NTU)	ND-8.5	(1.9)	ND-0.7	(0.2)	0.2-3.8	(1.2)	ND-0.7	(0.2)	ND-0.3	(0.1)	ND-0.3	(0.1)
Major Anions												
Bicarbonate (mg/L)	92-120	(108)	84-110	(100)	80-110	(97)	87-110	(99)	82-99	(95)	99-120	(114)
Chloride (mg/L)	6.9-19	(8.9)	9.4-20	(17.0)	8.0-13	(9.4)	9.7-13	(11.4)	8.1-14	(11.6)	8.2-14	(9.5)
Nitrate (mg/L as N)	ND-0.7	(0.5)	0.6-1.0	(0.8)	ND-0.6	(0.4)	0.5-0.9	(0.7)	ND-0.4	(0.3)	0.4-0.8	(0.6)
Sulfate (mg/L)	26-32	(30)	23-49	(42)	31-72	(44)	28-34	(31)	49-76	(65)	21-42	(25)
Major Cations												
Calcium (mg/L)	19-23	(21)	20-28	(24)	14-18	(16)	18-22	(19)	13-14	(13)	17-19	(18)
Magnesium (mg/L)	2.3-2.8	(2.5)	1.6-1.8	(1.7)	1.3-2.1	(1.7)	1.6-2.0	(1.9)	1.8-2.1	(2.0)	2.6-2.8	(2.7)
Potassium (mg/L)	3.9-4.2	(4.1)	3.7-4.3	(4.0)	3.5-4.2	(3.7)	3.7-4.0	(3.9)	4.0-4.4	(4.2)	3.8-4.1	(3.9)
Sodium (mg/L)	31-34	(32)	36-38	(37)	39-59	(44)	35-37	(36)	52-59	(56)	34-37	(35)

Parameter	Well 11		Well 12		Well 16		Well 17		Well 18		Well 19	
Additional Analytes of Concern												
Arsenic (µg/L)	ND-2.1	(1.2)	ND-2.0	(1.2)	ND-3.0	(2.4)	ND-2.5	(1.3)	2.4-3.3	(2.9)	ND-2.0	(1.1)
Iron (µg/L)	ND-160	(ND)	ND-50	(ND)	50-2200	(488)	ND-130	(ND)	ND	ND	ND	ND
Manganese (µg/L)	ND	(ND)	ND	(ND)	ND-29	(ND)	ND	(ND)	ND	(ND)	ND	(ND)
Selenium (µg/L)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)
Silica (mg/L)	16-17	(17)	15-17	(16)	20	(20)	14-15	(15)	12-13	(13)	14-15	(15)
Uranium (pCi/L)	3.3-4.4	(3.8)	3.2-4.0	(3.6)	3.6-4.7	(4.2)	2.2-4.0	(3.0)	2.7-4.3	(3.6)	3.0-4.6	(3.7)
Vanadium (µg/L)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)

[1]Non-detect as reported in California Drinking Water Watch Database or District provided data

3.1 Treatment Water Quality Goals

The finished water quality goals for the active wellsites are limited to Cr(VI) and total chromium, each of which are removed through the RCF process, and iron which is added during treatment as ferrous iron. Cr(VI) is regulated based on a quarterly running annual average of 10 µg/L, with samples collected at the entry point to the distributions (EPDS). Accordingly, a Cr(VI) goal of ≤ 8 µg/L was selected at the EPDS to provide confidence in the finished water quality. While total chromium is regulated at the EPDS with a 50 µg/L MCL, a conservative goal to match Cr(VI) was selected, to ensure that even if maximum re-oxidation were to occur within the distribution system, the Cr(VI) goals would still be achieved. If raw water bypass and blending is being considered, a post filter Cr(VI) of ≤ 2 µg/L is required to achieve reliable finished water concentrations ≤ 8 µg/L. With full flow and raw water bypass treatment, the finished water total iron goal is ≤ 0.1 mg/L to limit the potential for aesthetic concerns at customer taps. A summary of the treatment water quality goals is provided in Table 3.

Table 3. Summary of treated water quality goals

Parameter	Location	Goal	Maximum Contaminant Level
Full Flow Treatment			
Hexavalent Chromium	EPDS	≤ 8 µg/L	10 µg/L
Total Chromium	EPDS	≤ 8 µg/L	50 µg/L
Total Iron	EPDS	≤ 0.1 mg/L	0.3 mg/L
Optional Raw Water Bypass			
Hexavalent Chromium	Post-filter	≤ 2 µg/L	10 µg/L
Hexavalent Chromium	EPDS	≤ 8 µg/L	10 µg/L
Total Chromium	Post-filter	≤ 2 µg/L	50 µg/L
Total Chromium	EPDS	≤ 8 µg/L	10 µg/L
Total Iron	EPDS	≤ 0.1 mg/L	0.3 mg/L

4 Bench- and Pilot-scale Testing

As part of the current Cr(VI) compliance planning study, Corona completed initial RCF dose response testing in 2025 to evaluate Cr(VI) reduction for all six of the active Cr(VI) impacted wells. Results from this initial screening were used to inform a comprehensive pilot-scale study at Well 19 between August 4, 2025, and September 30, 2025.

Key findings of these efforts identified the following operational conditions, with full bench- and pilot-scale testing results presented in Appendix B: Bench- and Pilot-scale Testing Results.

- Ferrous doses > 0.5 mg/L-Fe coupled with 2-minute reduction times achieved the finished Cr(VI) goal of water ≤ 8 µg/L at all wellsites
- Under the above conditions, sand and anthracite filters successfully operated for up to 48 hours with hydraulic loading rates (HLRs) ranging from 5 gpm/ft^2 to 10 gpm/ft^2
- A backwash loading rate of 19.9 gpm/ft^2 achieved 25% media expansion for the sand and anthracite filters
- Backwash water was effectively recycled ahead of the reduction contactor at a flowrate ≤ 10% of the treated water rate

5 Preliminary Design

The following sections provide preliminary design details for seven RCF treatment systems (6 existing sites; 1 future site - Well 20). The purpose of these treatment systems would be to reduce and remove Cr(VI) to acceptable concentrations in drinking water while minimizing impacts on other water quality parameters.

5.1 Process Description

The RCF treatment process removes chromium by first reducing Cr(VI) to the less soluble trivalent chromium [Cr(III)] species, as chromium hydroxide [$Cr(OH)_3$], with the addition of a chemical reductant, typically ferrous iron [Fe(II)] which is provided as a bulk liquid chemical as either ferrous chloride ($FeCl_2$) or ferrous sulfate ($FeSO_4$). Both reductants are equally effective in this approach at the equivalent dose as iron (i.e., mg/L as Fe). The reduction of Cr(VI) as chromate (CrO_4^{2-}) to Cr(III) as chromium hydroxide [$Cr(OH)_3(s)$] is assumed to proceed according to the following equation:

$$3Fe^{2+} + CrO_4^{2-} + 8H_2O \rightarrow 3Fe(OH)_3(s) + Cr(OH)_3(s) + 4H^+ \quad (Eq. 1)$$

where $Fe(OH)_3(s)$ is ferric hydroxide, a typical form of ferric iron. Since Fe(II) is typically dosed in excess of the stoichiometric ratio, chlorine is injected following the requisite reduction time to facilitate oxidation of residual Fe(II) to Fe(III) and form $Fe(OH)_3$ particles. It is assumed that Cr(III) is adsorbed to $Fe(OH)_3$ particles, which are subsequently removed through filtration. Periodically, the filters require backwashing to remove the accumulated particulate and restore hydraulic capacity. A simplified schematic of the RCF treatment process is presented in Figure 5.

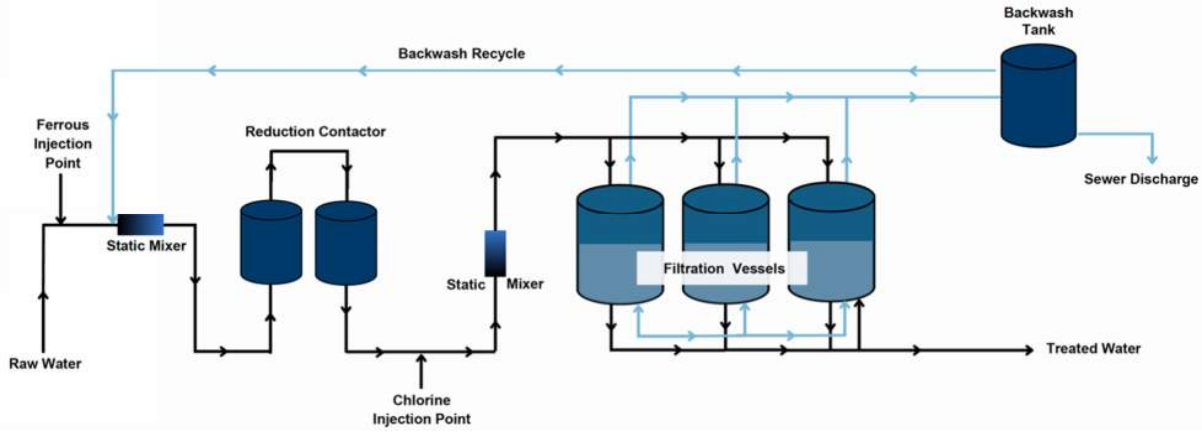


Figure 5. Simplified RCF treatment process schematic.

Backwash residuals can be discharged directly to sewer if water quality meets local discharge limits and sewer capacity is able to accommodate the additional flow. Residuals can also be directed to a storage tank to facilitate solids settling and backwash recycling. Backwash recycling improves overall water efficiency of the treatment process; settled backwash solids would be periodically removed from the bottom of the tank and discharged to sewer. If settled backwash solids cannot be discharged to sewer then solids must be managed on-site by 1) allowing backwash solids to accumulate in a storage tank until sufficient volume has been generated for off-site disposal, 2) directing the settled solids to a dewatering and drying container, or 3) mechanically dewatering the solids with a belt filter press or centrifuge, note mechanical dewatering is not typically implemented, but is feasible, especially for larger consolidated treatment facilities. These approaches will concentrate Cr(VI) and other co-precipitated metals (i.e.,

arsenic, manganese) and decrease the water content of the material for disposal, both of which can impact hazard classification and ultimate disposal. Regardless of offsite disposal approach, waste will require characterization prior to selecting the appropriate disposal facility.

Apart from Well 19, all wells have direct sewer connections or can reasonably be connected to the Coachella Sanitary District (CSD) collection system, which is owned and operated by the City of Coachella. While CSD does not currently have sanitary sewer discharge requirements, the water must be acceptable for receipt and treatment through the CSD wastewater treatment plant (WWTP) to meet its permitted discharge limits. If the backwash water quality is deemed to be acceptable for treatment at the WWTP, direct discharge to sewer is preferred if the system can accommodate the flows. A hydraulic sewer analysis was performed by Akel Engineering Group, Inc. which is further described in Section 5.3.2.

5.2 Preliminary Design Parameters

The following sections provide RCF treatment and backwash water processing system preliminary design parameters for each of CWA's active Cr(VI) impacted wells. Process design parameters for the treatment equipment were informed by the recently completed pilot testing for Well 19 and are summarized in Table 4.

Table 4. Summary of RCF Design Parameters

Design Parameter	Value or Range	Notes
Ferrous Dose (as iron)	0.5 mg/L-Fe to 1.0 mg/L-Fe	Pilot- and bench-scale testing demonstrated a 0.5 mg/L-Fe ferrous dose resulted in filtered water Cr(VI) the 8 µg/L water quality goal. A dose of 1.0 mg/L-Fe resulted in filtered water Cr(VI) concentrations ≤ 2 µg/L.
Reduction Time	Minimum 2-minutes inclusive of baffling factor	Reduction times greater than 2-minutes were not reflective of improved chromium reduction. A 1-minute reduction time was tested at pilot-scale and demonstrated the water quality goals could be achieved; however, filter performance was diminished. Reduction times < 2-minutes should only be considered when dictated by site constraints.
Filter HLR	5 to 10 gpm/ft^2	The pilot-scale testing demonstrated the water quality goals could be achieved over the range of HLRs from 5 to 10 gpm/ft^2 for the sand and anthracite media configuration. These ranges were selected to afford CWA with flexibility and cost saving opportunities in the design.
Filter Media	6" anthracite over 24" sand	The pilot-scale testing utilized a media design of 6" anthracite over 24" sand, reflective of a typical media configuration for groundwater treatment. The pilot-scale testing also demonstrated a proprietary media, Ceraclear-50, was also effective at a HLR up to 10 gpm/ft^2. Ceraclear-50 allows for lower backwash loading rates (< 10 gpm/ft^2), however this media demonstrated comparatively higher head loss and has limited use in groundwater treatment applications. Use of this media should only be considered if dictated by site constraints or local sewer discharge limitations.
Backwash Loading Rate	19.9 gpm/ft^2	A backwash loading rate of 19.9 gpm/ft^2 was shown to provide ≥ 25% media expansion for the sand and anthracite media. Manufacturer recommendations for backwash will be considered as the design progresses.
Backwash Duration	5 minutes or per manufacturer	A 7-minute backwash was necessary at pilot-scale to expel backwash water from the pilot -scale columns. These columns are longer than the small diameter vertical vessels described further in Section 5 which require 5-minutes for an adequate backwash according to manufacturer literature. Backwash duration for the vertical vessels should be as per manufacturer recommendations.
Backwash Recycle Flow	≤ 10% of treated water flow	If necessary, backwash water can be recycled ahead of the reduction contactors at a rate ≤ 10% of the treated water flow. This approach increases water efficiency and decreases the volume of backwash water requiring off-site disposal.
Backwash Frequency	≥ 24 hours	All conditions tested at pilot-scale achieved filter run times ≥ 24 hours. A 0.5 mg/L-Fe dose and 2-minute reduction time resulted in filter runs ≥ 48 hours for the sand and anthracite filters at the range of HLRs (5 to 10 gpm/ft^2) tested.

For each of CWA's Cr(VI) impacted wells multiple preliminary design concepts were explored for the primary treatment equipment including the reduction contactors and filtration vessels. This was done to provide an understanding of the implications of these decisions with respect to available site footprint and associated capital cost and allow CWA to select treatment approaches for each wellsite that best meet their long-term needs. Specifically, both small diameter (4-ft) vertical vessels and large diameter

horizontal vessels were considered for both the reduction contactors and filtration vessels. Additionally, HLRs of approximately 5 gpm/ft^2 and 10 gpm/ft^2 were considered for the horizontal and vertical filter vessels. The following sections summarize the specific details for the various configurations.

5.2.1 Reduction Vessels

Reduction vessels are sized to achieve a 2-min reaction time. Reduction vessels may be provided as (1) a number of small vertical pressure vessels in series or as (2) a single larger horizontal baffled pressure vessel. Design parameters for both configurations are provided in Table 5 and Table 6. The design parameters are based on the well design flowrate. If the wells are operated at a lower flowrate, the reaction time or hydraulic retention time (HRT) would increase.

Table 5. Small Diameter Vertical Reduction Vessel Design Parameters (4-ft diameter x 7-ft side shell)

Parameter	Units	Well No.						
		W11	W12	W16	W17	W18	W19	W20
Number of Vessels	no.	8	8	8	8	8	8	8
Flowrate, per Vessel	gpm	263	263	263	262	263	263	263
HRT[a]	min	2	2	2	2	2	2	2

[a]Based on side shell height

Table 6. Horizontal Reduction Vessel Design Parameters (8-ft diameter)

Parameter	Units	Well No.						
		W11	W12	W16	W17	W18	W19	W20
Number of Vessels	no.	1	1	1	1	1	1	1
Flowrate, per Vessel	gpm	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Vessel Side Shell	ft	18	18	18	20	18	18	18
Total Length[a]	ft	21	21	21	23	21	21	21
HRT[b]	min	2	2	2	2	2	2	2

[a]Includes elliptical heads
[b]Based on side shell length

5.2.2 Filter Vessels

Filtration vessels are sized to achieve a 5 to 7.5 gpm/ft^2 HLR. While 10 gpm/ft^2 was successful at pilot-scale, the equipment sized for the lower HLRs were found to fit on each wellsite and would provide more operational flexibility with a relatively small increase in cost. Filtration may be provided as (1) a number of small vertical pressure vessels in parallel (similar to ATEC Water Systems - Cadiz (ATEC) units) or as (2) a single larger horizontal multi-cell pressure vessel (similar to Loprest Water Treatment Co. - WRT (Loprest) unit). Design parameters for small diameter vertical filtration vessels are provided for 5 and 7.5 gpm/ft^2 HLRs in Table 7 and Table 8, respectively. Design parameters for the larger diameter horizontal multi-cell filtration vessel is provided for 5 and 7.5 gpm/ft^2 HLRs in Table 9 and Table 10, respectively.

Table 7. Small Diameter Filtration Vessel Design Parameters (~5-gpm/ft^2)

Parameter	Units	Well No.						
		W11	W12	W16	W17	W18	W19	W20
Number								
Vessel	# Vessels	32	32	32	32	32	32	32
Dimensions								
Diameter	in	48	48	48	48	48	48	48
Height (side shell)	ft	5	5	5	5	5	5	5
Height (maximum)	ft	10	10	10	10	10	10	10
Equipment Pad (L x W)	ft x ft	34 x 21	34 x 21	34 x 21	34 x 21	34 x 21	34 x 21	34 x 21
Filter Operation								
Well Design Flowrate	gpm	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Flowrate/Vessel	gpm	62.5	62.5	62.5	68.8	62.5	62.5	62.5
Hydraulic Loading Rate	gpm/ft^2	5.0	5.0	5.0	5.5	5.0	5.0	5.0
Backwash Operation								
BW Loading Rate	gpm/ft^2	20	20	20	20	20	20	20
Inst. BW Flowrate	gpm/vessel	251	251	251	251	251	251	251
Duration per Vessel[a]	min/vessel	7	7	7	7	7	7	7
Total BW Duration	hours	3.7	3.7	3.7	3.7	3.7	3.7	3.7
BW Volume	gal/vessel	1,759	1,759	1,759	1,759	1,759	1,759	1,759
Total BW Volume	gallons	56,297	56,297	56,297	56,297	56,297	56,297	56,297

[a]ATEC recommends a duration of 5 minutes. However, a duration of 7 minutes was used for the pilot scale testing due to limitations of the pilot testing column height.

Table 8. Small Diameter Filtration Vessel Design Parameters (~7.5-gpm/ft2)

Parameter	Units	Well No.						
		W11	W12	W16	W17	W18	W19	W20
Number								
Vessel	# Vessels	24	24	24	24	24	24	24
Dimensions								
Diameter	in	48	48	48	48	48	48	48
Height (side shell)	ft	5	5	5	5	5	5	5
Height (maximum)	ft	10	10	10	10	10	10	10
Equipment Pad (L x W)	ft x ft	28 x 22	28 x 22	28 x 22	28 x 22	28 x 22	28 x 22	28 x 22
Filter Operation								
Well Design Flowrate	gpm	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Flowrate/Vessel	gpm	83.3	83.3	83.3	91.7	83.3	83.3	83.3
Hydraulic Loading Rate	gpm/ft^2	6.6	6.6	6.6	7.3	6.6	6.6	6.6
Backwash Operation								
BW Loading Rate	gpm/ft^2	20	20	20	20	20	20	20
Inst. BW Flowrate	gpm/vessel	251	251	251	251	251	251	251
Duration per Vessel[a]	min/vessel	7	7	7	7	7	7	7
Total BW Duration	hours	2.8	2.8	2.8	2.8	2.8	2.8	2.8
BW Volume	gal/vessel	1,759	1,759	1,759	1,759	1,759	1,759	1,759
Total BW Volume	gallons	42,223	42,223	42,223	42,223	42,223	42,223	42,223

[a]ATEC recommends a duration of 5 minutes. However, a duration of 7 minutes was used for the pilot scale testing due to limitations of the pilot testing column height.

Table 9. Horizontal Filtration Vessel Design Parameters (~5-gpm/ft2)

Parameter	Units	Well No.						
		W11	W12	W16	W17	W18	W19	W20
Number								
Vessel	# Vessels	1	1	1	1	1	1	1
Cells	Cells/Vessel	4	4	4	4	4	4	4
Dimensions								
Diameter	ft	12	12	12	12	12	12	12
Length (side shell)	ft	34	34	34	36	34	34	34
Cell	ft^2	102	102	102	108	102	102	102
Height (maximum)	ft	12	12	12	12	12	12	12
Equipment Pad (L x W)	ft x ft	13 x 35	13 x 35	13 x 35	13 x 37	13 x 35	13 x 35	13 x 35
Filter Operation								
Vessel Flowrate	gpm	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Cell Flowrate	gpm/cell	500	500	500	550	500	500	500
Hydraulic Loading Rate	gpm/ft^2	4.9	4.9	4.9	5.1	4.9	4.9	4.9
Backwash Operation								
BW Loading Rate	gpm/ft^2	19.6	19.6	19.6	20.4	19.6	19.6	19.6
Inst. BW Flowrate	gpm/cell	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Duration per Cell[a]	min/cell	10	10	10	10	10	10	10
Total BW Duration	minutes	40	40	40	40	40	40	40
BW Volume	gal/cell	20,000	20,000	20,000	22,000	20,000	20,000	20,000
Total BW Volume	gallons	80,000	80,000	80,000	88,000	80,000	80,000	80,000

[a]Loprest recommends a duration of 4-5 minutes for backwash followed by a 5 minute downflow rinse.

Table 10. Horizontal Filtration Vessel Design Parameters (~7.5-gpm/ft2)

Parameter	Units	Well No.						
		W11	W12	W16	W17	W18	W19	W20
Number								
Vessel	# Vessels	1	1	1	1	1	1	1
Cells	Cells/Vessel	3	3	3	3	3	3	3
Dimensions								
Diameter	ft	8	8	8	10	8	8	8
Length (side shell)	ft	34	34	34	36	34	34	34
Cell	ft^2	91	91	91	100	91	91	91
Height (maximum)	ft	8	8	8	10	8	8	8
Equipment Pad (L x W)	ft x ft	9 x 35	9 x 35	9 x 35	11x 31	9 x 35	9 x 35	9 x 35
Filter Operation								
Vessel Flowrate	gpm	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Cell Flowrate	gpm/cell	667	667	667	733	667	667	667
Hydraulic Loading Rate	gpm/ft^2	7.4	7.4	7.4	7.3	7.4	7.4	7.4
Backwash Operation								
BW Loading Rate	gpm/ft^2	22.1	22.1	22.1	22.0	22.1	22.1	22.1
Inst. BW Flowrate	gpm/cell	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Duration per Cell[a]	min/cell	10	10	10	10	10	10	10
Total BW Duration	minutes	30	30	30	30	30	30	30
BW Volume	gal/cell	20,000	20,000	20,000	22,000	20,000	20,000	20,000
Total BW Volume	gallons	60,000	60,000	60,000	66,000	60,000	60,000	60,000

[a]Loprest recommends a duration of 4-5 minutes for backwash followed by a 5 minute downflow rinse.

5.2.2.1 Vertical Filtration Vessel

Multiple vertical filtration vessels are one of two orientations evaluated for the Project, similar to that manufactured by ATEC. The ATEC configuration consists of multiple small-diameter (approximately 4-ft diameter by ~10-ft height) vertical pressure vessels operating in parallel. For a typical 2,000-gpm flowrate, this requires 24-32 vessels operating in parallel (HLRs of 5- to 7-gpm/ft^2).



Figure 6. ATEC small diameter vertical pressure vessel (ATEC)

Influent flow is distributed from a common manifold to the top of multiple vertical pressure vessels. Water flows downward through the filter media, where chromium precipitate is removed, and treated effluent is collected at the vessel outlet. Each vessel functions as an independent pressure filter with dedicated media and underdrain components. A three-way control valve located at the top of each vessel allows automated operation between filtration, backwash, standby, and offline modes.

During normal treatment, vessels operate simultaneously to treat raw water. While this increases the number of vessels, valves, and external manifolds relative to a single horizontal vessel, it provides operational flexibility by allowing individual vessels to be isolated for backwashing or maintenance without interrupting overall system operation.

Backwashing is recommended every 24 hours, or when the pressure differential exceeds approximately 5-psi. Backwash is performed on one vessel at a time using raw water at a HLR of approximately 20-gpm/ft^2 for approximately 7-minutes per vessel, resulting in a backwash flowrate of approximately 250-gpm per vessel. The relatively low backwash flowrate leads to relatively low sewer flowrates or small equalization tanks, if needed to reduce the flowrate to the sewer further. During a vessel backwash, the remaining vessels continue treating influent water providing continuous operation of the plant, with the remaining treated water being directed to the distribution system.

5.2.2.2 Horizontal Filtration Vessel

Horizontal filtration vessels are also evaluated for this Project, similar to that manufactured by Loprest. Loprest's horizontal multi-cell filtration vessel is a pressure filtration system consisting of a single horizontal pressure shell subdivided into multiple internal filtration cells. Based on the selected HLR and well flow rate, the system would require one vessel approximately 8- to 12-ft in diameter, containing 3 to 4 internal cells. The overall vessel length ranges from approximately 20- to 34-ft.

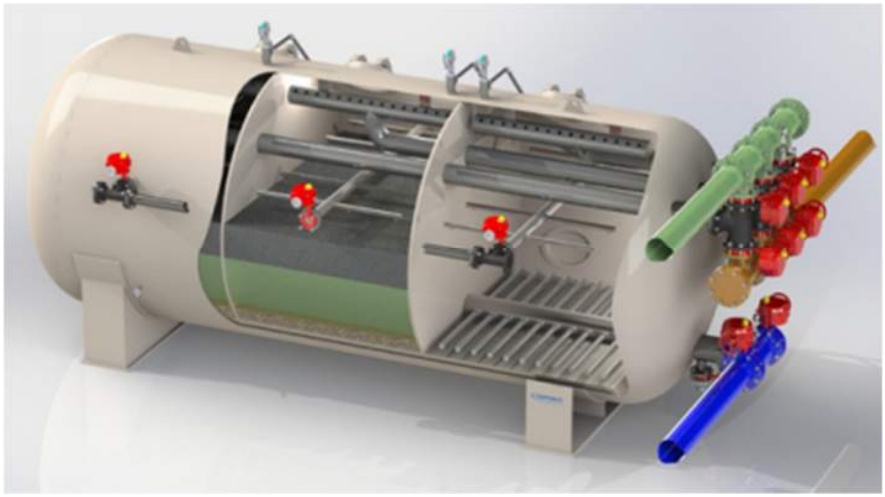


Figure 7. Loprest multi-cell horizontal pressure filter, 3-cell system shown (Loprest)

Influent flow is distributed to the internal cells in parallel, passes through the filter media, and is collected by the underdrain system prior to discharge. Each cell contains filter media and an underdrain system and operates as an individual filter within the shared vessel, though each cell is hydraulically connected. The filter has motorized butterfly valves on the head to allow automatic control of the filter in filtration, backwash, standby, and offline modes.

During normal treatment, water flows through down the media in each cell in parallel and collect in the internal outlet head prior to leaving the vessel. During backwash, one cell is backwashed at a time; water flows down through the non-backwashing cells into the outlet head supplying backwash water for the single cell in backwash. Excess water that is not required for backwash will go to the system. Supplemental water may be needed for backwashing if the well pump is offline or operating at less than the required backwash flow of ~2,000 gpm/cell. During a vessel backwash of all cells (approx. 30 to 40 mins.), effectively no water is supplied to the distribution system.

The horizontal configuration provides multiple filtration "cells" to be housed within a single vessel, reducing the total number of standalone pressure vessels required.

5.2.2.3 Vessel Orientation Comparison

Vessel orientation alternatives were compared to each other using cost and non-cost parameters in Table 11.

Table 11. Vessel orientation alternatives relative advantages and disadvantages[a]

Vessel Orientation	Relative Advantages	Relative Disadvantages
Vertical small diameter vessels (typical, ATEC) *Capital Cost:* *~$1.1M at HLR of 7.0-7.5 gpm/ft²* *~$1.5 M at HLR of 5.0-5.5 gpm/ft²*	• Lower backwash/sewer flowrates (251-gpm) • Smaller EQ tanks, if needed • Inherent high redundancy • Continuous operation • Operational flexibility • Shorter lead time • No surface wash required	• 3-way valve supply critical to operation • Larger footprint (approx. +15%) • More vessels • More valves (approx. 2X)
Horizontal multi-cell vessel (typical, Loprest) *Capital Cost:* *~$1.3M at HLR of 7.0-7.5 gpm/ft²* *~$1.4M at HLR of 5.0-5.5 gpm/ft²*	• Fewer valves (approx. 50%) • Single pressure vessel • Fabricated as a single unit, reducing field installation time • Smaller footprint (approx. -15%)	• High backwash/sewer flowrates (2,000-gpm) • May need supplemental water source for backwashing • Filter production stops during backwash • No redundancy (operate as 1 unit) • Low operational flexibility

[a]Based on a filter design flowrate of 2,000-gpm.

Based on the above relative advantages and disadvantages for the vessel orientation alternatives in Table 11, vertical small diameters vessels were chosen. While this orientation requires more vessels and space, the benefits of higher redundancy and lower backwash/sewer flowrates were prioritized.

5.2.3 Chemical Feed Systems

RCF treatment requires a ferrous iron source and an oxidant. Ferrous iron will be provided through the use of ferrous chloride (14% as iron) and the existing 12.5% sodium hypochlorite, used as a disinfection residual, will be used by the RCF system as the oxidant. The RCF treatment chemical operational parameters are provided in Table 12.

Table 12. Estimated RCF treatment chemical operational parameters

Parameter[a]	Units	Well No.						
		W11	W12	W16	W17	W18	W19	W20
Dose and Utilization								
Ferrous Iron (typical)	mg/L as Fe	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Sodium Hypochlorite	mg/L as Cl_2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Well Utilization[b]	-	62%	42%	98%	87%	73%	98%	98%
Consumption								
Ferrous Chloride	gal/day	5.0	3.4	7.8	7.7	5.8	7.8	7.8
Sodium Hypochlorite	gal/day	22.5	15.3	35.6	34.8	26.5	35.6	35.6
Proposed Storage Volume[c]								
Ferrous Chloride	gal	220	220	220	220	220	220	220
Sodium Hypochlorite	gal	500	200[d]	500	400[d]	500	400[d]	500
Storage Time[e]								
Ferrous Chloride	days	31.0	45.8	19.6	20.1	26.3	19.6	19.6
Sodium Hypochlorite	days	15.5	9.2	9.8	8.1	13.2	7.9	9.8

[a]Ferrous chloride: Kemira PIX-411, 14% as Fe, sodium hypochlorite: Hasa Bleach 12.5%, 12.5% as NaOCl, sodium hydroxide: Brenntag Sodium Hydroxide 50% MEM NSF, 50% as NaOH.
[b]Well utilization is based on maximum month average utilization (2019-2024). For wells with limited data during the evaluation period (Wells 16 and 20), the maximum value was assumed.
[c]Typical storage volumes less than 500 gal were targeted, where applicable.
[d]Utilize existing SHC storage tanks. No additional storage proposed.
[e]Assuming 70% use of storage volume and 30 days was targeted assuming continuous use, where applicable.

5.2.4 Existing Well Pump and Motor Evaluations

Existing well pumps for the six facilities (excluding future Well 20) are shown in Table 13, summarized from pump curves and tests provided by CWA. Wells 11, 16, 17, and 19 have one (1) pump that would feed the RCF treatment system before directly entering the distribution system. Well 12 and 18 send treated water to onsite water storage tanks before entering the distribution system via on site booster pumps. With the implementation of RCF treatment, head loss was estimated to increase to a maximum of 23 ft (10 psi) across the filters prior to a backwash event and 12 ft (5.0 psi) across additional static mixers, piping, valves and reduction vessels at each HLR. Table 13 shows a comparison of current operating conditions, versus the estimated future operating conditions, but it should be noted that any number of factors (reservoir levels, distribution system pressure, well water levels, RCF treatment system head loss, etc.) can change the well pump operating points.

Table 13. Well pump and motor evaluation.

Parameters	Units	Well No.					
		W11	W12	W16	W17	W18	W19
Existing Conditions							
Original Pump Design Parameters							
Design Flowrate	gpm	2,000	2,000	2,000	2,200	2,000	2,000
Total Dyn. Head (TDH)	ft	N/A[b]	N/A[b]	N/A[b]	280	160	300
Motor	hp	250	150	N/A[b]	250	150	250
Current Pump Operating Parameters							
Actual Flowrate	gpm	1,245	2,006	900	1,770	1,500	1,974
Total Dyn. Head (TDH)	ft	290	145	N/A[b]	275	160	285
Oper/Design Flowrate	%	62%	100%	N/A[b]	81%	75%	99%
Pump and Motor Replacement							
Design Flowrate	gpm	2,000	2,000	2,000	2,200	2,000	2,000
Total Dyn. Head (TDH)	ft	325	180	N/A[b]	315	195	335
Required Motor[a]	hp	250	150	250[c]	250	150	250
Pump Replacement?	-	Yes	Yes	Yes	Yes	Yes	Yes
Motor Replacement?	-	Yes	Yes	Yes	Yes	Yes	Yes

[a]Assumes 70% wire-to-water efficiency.
[b]Data not available or not provided.
[c]Data assumed based on other well pump motor sizes. TDH and required motor sizing should be confirmed during final design.

With the implementation of RCF treatment, two options were considered regarding each well pump and motor:

- Option 1: Keep existing pump and motor, operating at a reduced flowrate
- Option 2: Replace existing pump and motor

Option 2 was chosen when any of the following criteria applied for each well site:

- Existing well is operating <20% its design capacity (W11, W17, and W18)
- Existing well has an onsite storage tank (W12 and W18)
- Existing well cannot continue operating at the estimated reduced flowrate
- Existing well is currently being rehabilitated. No data at this time (W16)

As shown in Table 13, all pumps and motors are recommended to be replaced. Wells 11, 17, and 18 are each currently operating at flowrates more than 20% below their respective design capacities. This under-performance is likely attributed to impeller wear or sanding over time. Replacing these pumps is recommended to restore proper hydraulic efficiency and increase system output, especially considering the high utilization rate of many of the wells. While Well 12 operates roughly around the design flow, with an actual tested flow at 2,006 gpm, versus a design flow of 2,000 gpm, this well pump will require replacement because the water is pumped into an onsite storage tank rather than straight to distribution. The same applies to Well 18, which also requires replacement due to its low operating efficiency. Since no data was provided for Well 16, it was assumed that this well pump also needed to be replaced. The existing well pump at Well 19 should be able to accommodate an additional 35 ft (15 psi) of head loss estimated for the RCF treatment, but at a reduced flowrate of approximately 1,400 gpm. This well was reported as the highest utilized well, with an average utilization rate of 90%. Since the well currently operates at 2,000 gpm, the reduced flowrate will not be sufficient to keep up the average utilization rate

of 90%. It is recommended that the pump and motor is replaced at Well 19 unless other wells feeding the distribution system can make up for this demand.

The replacement pump and motor parameters can be seen in Table 14 below. The Well 16 and 20 well pump motors were assumed to be 250 hp. The motor power was calculated using an assumed wire-to-water efficiency of 70% to be conservative.

Table 14. Recommended Pump Upgrades/Installations

Parameter	Units	Well No.						
		W11	W12	W16	W17	W18	W19	W20
Required Motor Power[a]	hp	250	150	250[b]	250	150	250	250
Design Flowrate	gpm	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Design Head	ft	325	180	TBD	315	195	335	TBD

[a]Assumes 70% wire-to-water efficiency.

[b]Motor size assumed based on other well pump sizes. Design head and required motor size should be confirmed in final design.

An electrical evaluation of the existing electrical equipment, and future equipment for Well 20 was performed for each site. From the evaluation, it was found that the motor control centers (MCC) can handle additional loads from the RCF treatment system with minor modifications for all existing of the wells.

5.3 Residual Management

As described in Section 5.2 – Preliminary Design Parameters, backwash wastewater and the associated solids residuals from the filter operation must be accounted for in the design and operation of the RCF System. This section of the PDR will present residual management alternatives, alternatives analysis, and recommendations for each of the sites.

5.3.1 Residual Management Alternatives Development

There are many ways to manage the wastewater produced during a filter backwash, each with its own volumes of waste requiring disposal and operational complexity. Within the RCF treatment process, granular media would collect solids (primarily ferric oxyhydroxides) which would need to be periodically backwashed. All filtration vessels would backwash in a sequential process approximately every 24-hours. WWE and Corona have developed the following alternatives for backwash water and residual processing:

- Alternative No. 1 – Discharge Backwash Water Directly to Sewer
- Alternative No. 2 – Discharge Equalized Backwash Water to Sewer
- Alternative No. 3 – Solids Settling
  - 3A – Offsite Hauling of Settled Solids
  - 3B – Onsite Solids Dewatering
- Alternative No. 4 – Solids Settling and Reclaim
  - 4A – Backwash Reclamation, Settled Solids to Sewer
  - 4B – Backwash Reclamation, Offsite Hauling of Settled Solids
  - 4C – Backwash Reclamation, Onsite Solids Dewatering

Figure *8* presents the feasible backwash residual management options for CWA, in order of increasing complexity.

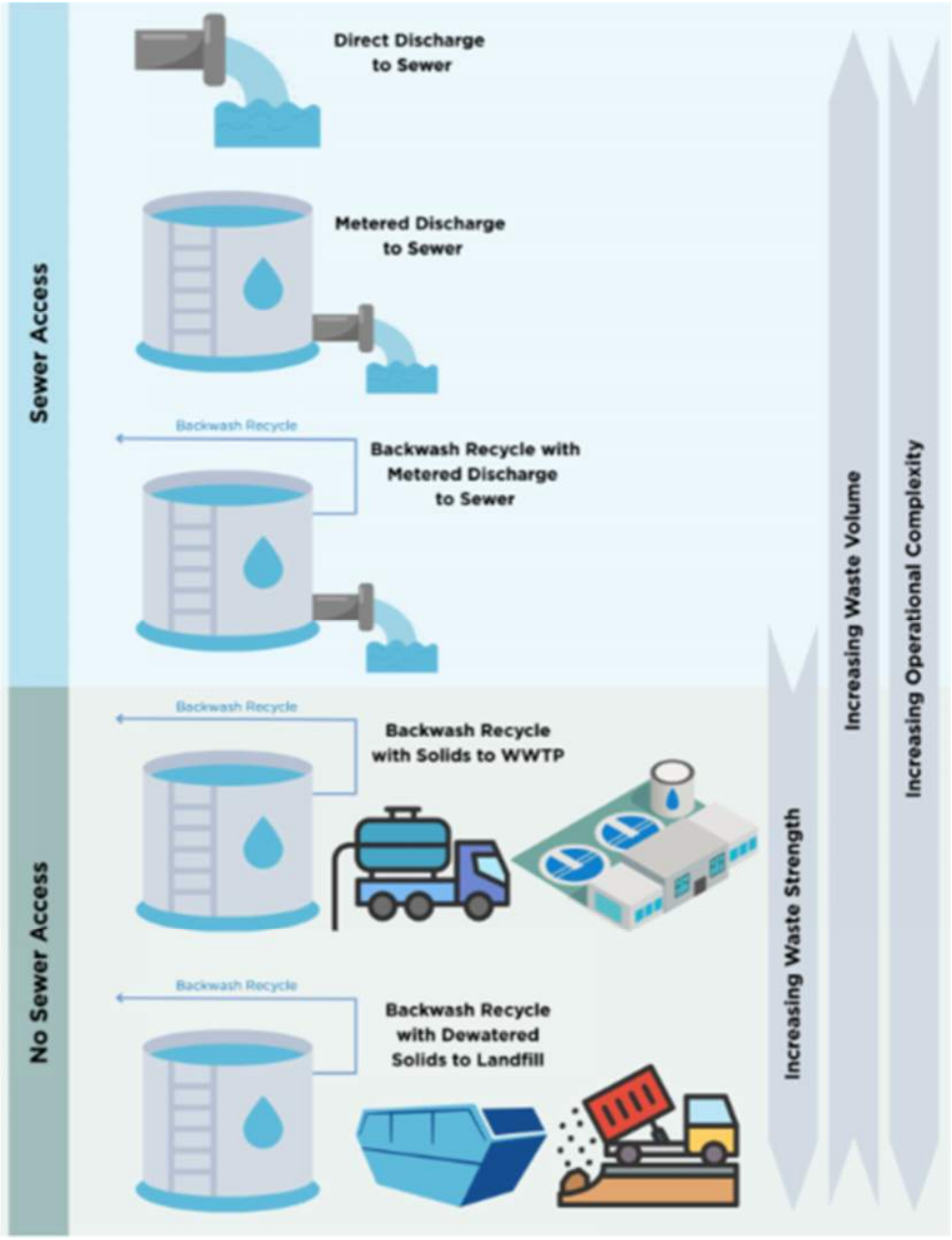


Figure 8. Backwash management options with and without sewer access

The backwash and residual processing alternatives were developed to provide multiple options for the designer and CWA to consider for each well site. The alternatives generally require more equipment, larger footprint, operation and maintenance effort, in order of alternative numbers. A summary description and simplified process flow diagram for each of the alternatives is provided below.

5.3.1.1 Alternative No. 1 – Discharge Backwash Water Directly to Sewer

Alternative No. 1 would consist of discharging backwash water directly to sewer during a backwash event, as shown with the RCF treatment process in Figure 9. Backwash events would be scheduled by operations to occur once every 24-hours. Assuming the use of 4-ft diameter vertical filters, the maximum backwash (BW) flowrate to sewer would be 251-gpm. The total filter system BW volume and duration ranges from 42,000 to 56,000 gallons and 2.8 to 3.7-hours, respectively depending on the number of vertical filter vessels. Direct to sewer discharge of BW requires the local sewer system to have adequate capacity to accommodate the additional flowrates from the site. BW flowrates to sewer would be measured and recorded for the receiving sewer's agency (CSD) use.

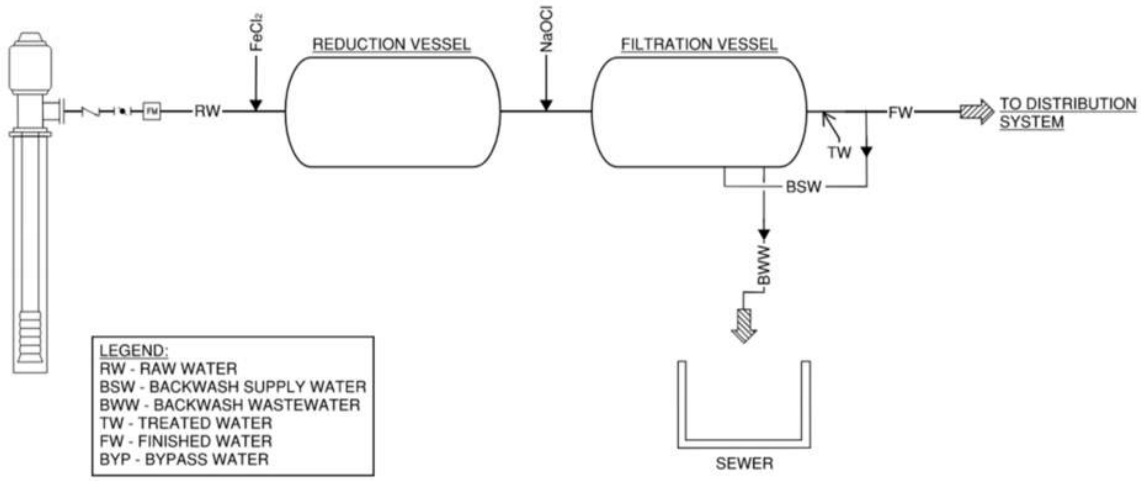


Figure 9. Simplified process flow diagram for Alternative 1.

5.3.1.2 Alternative No. 2 – Discharge Equalized Backwash Water to Sewer

Alternative No. 2 would consist of discharging backwash water to an onsite equalization tank prior to sewer, as shown with the RCF treatment process in Figure 10. Backwash events would be scheduled by operations to occur once every 24-hours. Assuming the use of 4-ft diameter vertical filters, the maximum BW flowrate to the equalization tank would be 251-gpm. The total filter system BW volume and duration ranges from 42,000 to 56,000 gallons and 2.8 to 3.7-hours, respectively depending on the number of vertical filter vessels.

The equalization tank serves to temporarily store BW from the filters prior to discharging to sewer at lower flowrate. This alternative allows BW discharge to sewer in cases in which the local sewer system does not have adequate capacity to accommodate the maximum BW flowrate from the filters. The equalization tank (BW EQ Tank) may be sized to contain the (1) total filter system BW volume or (2) a portion of the volume as required to minimize sanitary sewer capacity impacts. Sizing of the BW EQ Tank may also be influenced by the available footprint and height restrictions for the site and/or Operations preference. Metered BW flowrates from the bottom of the tank to sewer would be measured and recorded for the receiving sewer's agency (CSD) use.

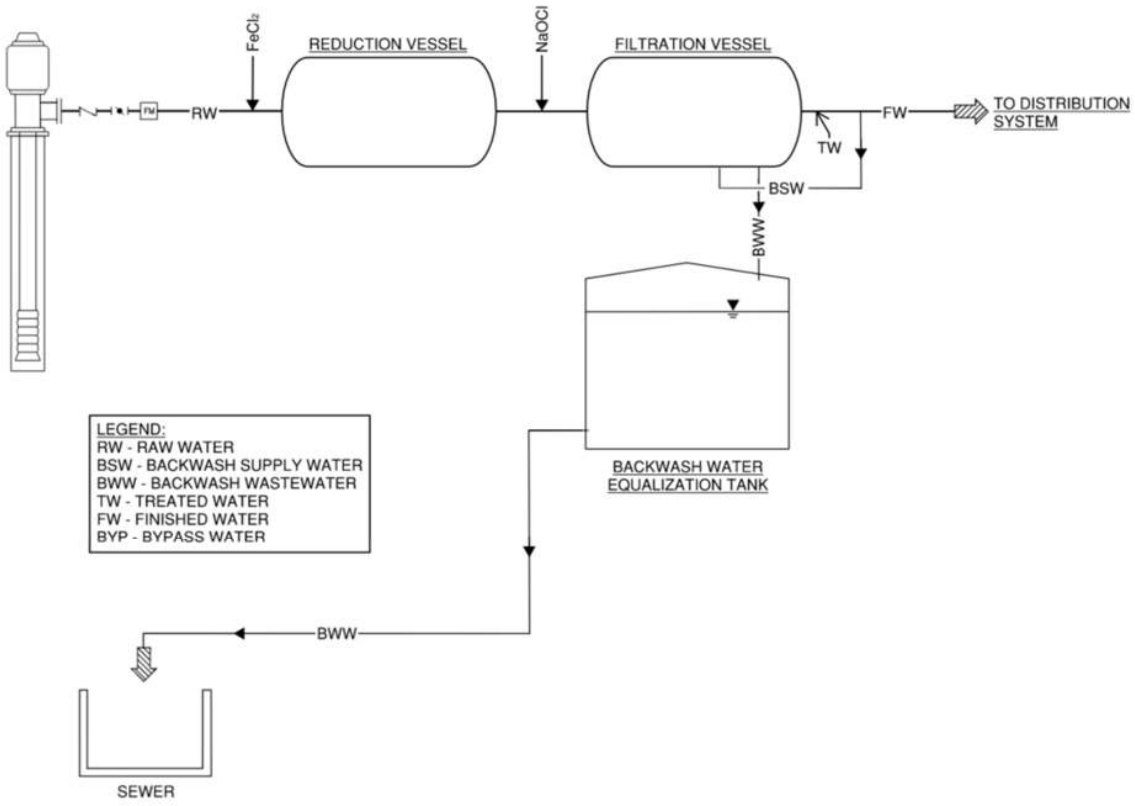


Figure 10. Simplified process flow diagram for Alternative 2.

5.3.1.3 Alternative No. 3A – Offsite Hauling of Settled Solids

Alternative No. 3A would consist of discharging backwash water to an onsite solids settling/equalization tank prior to discharging decanted BW water to sewer, as shown with the RCF treatment process in Figure 11. Backwash events would be scheduled by operations to occur once every 24-hours. Assuming the use of 4-ft diameter vertical filters, the maximum BW flowrate to the solids settling/equalization tank would be 251-gpm. The total filter system BW volume and duration ranges from 42,000 to 56,000 gallons and 2.8 to 3.7-hours, respectively depending on the number of vertical filter vessels.

The settling tank serves to temporarily store BW from the filters prior to discharging decanted BW waste to sewer and allow for solids BW solids to settle and thicken by gravity at the bottom of the tank. This alternative allows BW discharge to sewer in cases in which the local sewer system does not have adequate capacity to accommodate the maximum BW flowrate from the filters and condenses BW solids to approximately 0.9% solids by volume based on pilot test results from Well 19, reducing the TSS, ferrous iron, and total chromium loading to the sanitary sewer. BW solids would be periodically (approx. every 5 days) removed through the use of a 2,500-gallon septic pump truck. BW solids may be disposed of at a wastewater treatment plant (CSD). The settling tank would be sized to contain the total filter system BW volume. Metered decanted BW flowrates from the tank to sewer would be measured and recorded for the receiving sewer's agency (CSD) use.

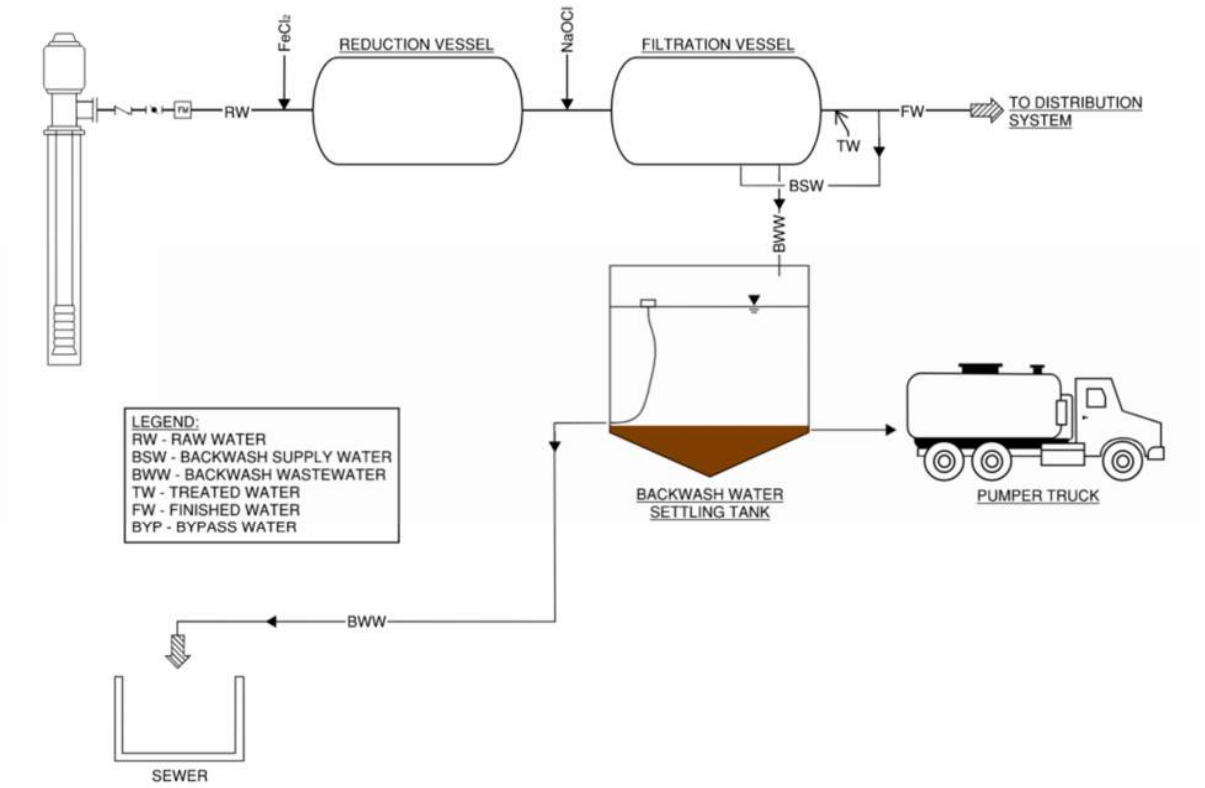


Figure 11. Simplified process flow diagram for Alternative 3A.

5.3.1.4 Alternative No. 3B – Onsite Solids Dewatering

Alternative No. 3B would consist of discharging backwash water to an onsite solids settling/equalization tank prior to discharging decanted BW water to sewer and dewatering solids onsite, as shown with the RCF treatment process in Figure 12. Backwash events would be scheduled by operations to occur once every 24-hours. Assuming the use of 4-ft diameter vertical filters, the maximum BW flowrate to the solids settling/equalization tank would be 251-gpm. The total filter system BW volume and duration ranges from 42,000 to 56,000 gallons and 2.8 to 3.7-hours, respectively depending on the number of vertical filter vessels.

The settling tank serves to temporarily store BW from the filters prior to discharging decanted BW waste to sewer and allow for solids BW solids to settle and thicken by gravity at the bottom of the tank. This alternative allows BW discharge to sewer in cases in which the local sewer system does not have adequate capacity to accommodate the maximum BW flowrate from the filters and condenses BW solids to approximately 0.9% solids by volume based on pilot test results from Well 19, reducing the TSS, ferrous iron, and total chromium loading to the sanitary sewer. Settled solids would be further dewatered using a roll-off type dewatering container (e.g., Flo Trend, Roll-off Sludge Mate). The Caltrans-approved roll-off dewatering container would have a reusable filter bottom. The filter bottom would retain most solids, contain mostly particulate iron and chromium, while allow filtrate to pass through and out drainage ports back to the backwash settling tank through the use of a small filtrate return pump. Experience at other facilities has shown a typical dewatered solids concentration of approximately 5 to 6% can be achieved, which would be expected to meet USEPA SW-846 Test Method 9095B: Paint Filter Liquids Test (paint filter test) for landfill disposal. Following dewatering, sludge would be considered solid waste and may qualify as hazardous waste based on California Department of Toxic Substances Control (CDTSC) landfill regulations including the limits set by the total threshold limit concentration (TTLC), soluble threshold limit concentration (STLC), toxicity characteristic leaching procedure (TCLP), and waste extraction test (WET) (see Section 5.8.1 for more information on waste disposal).

Pilot testing results suggest that the dewatered backwash waste would be classified as California hazardous waste, exceeding the limits with respect to chromium and vanadium for WET analyses per CDTSC regulations. The dewatered waste was found to be non-detect for all TCLP parameters, making it non-hazardous at the federal level, per the Resource Conservation and Recovery Act.

BW solids thickened in the roll-off dewatering container would be periodically (approx. every 6 to 12 months) hauled away to landfill. Metered decanted BW flowrates from the tank to sewer would be measured and recorded for the receiving sewer's agency (CSD) use.

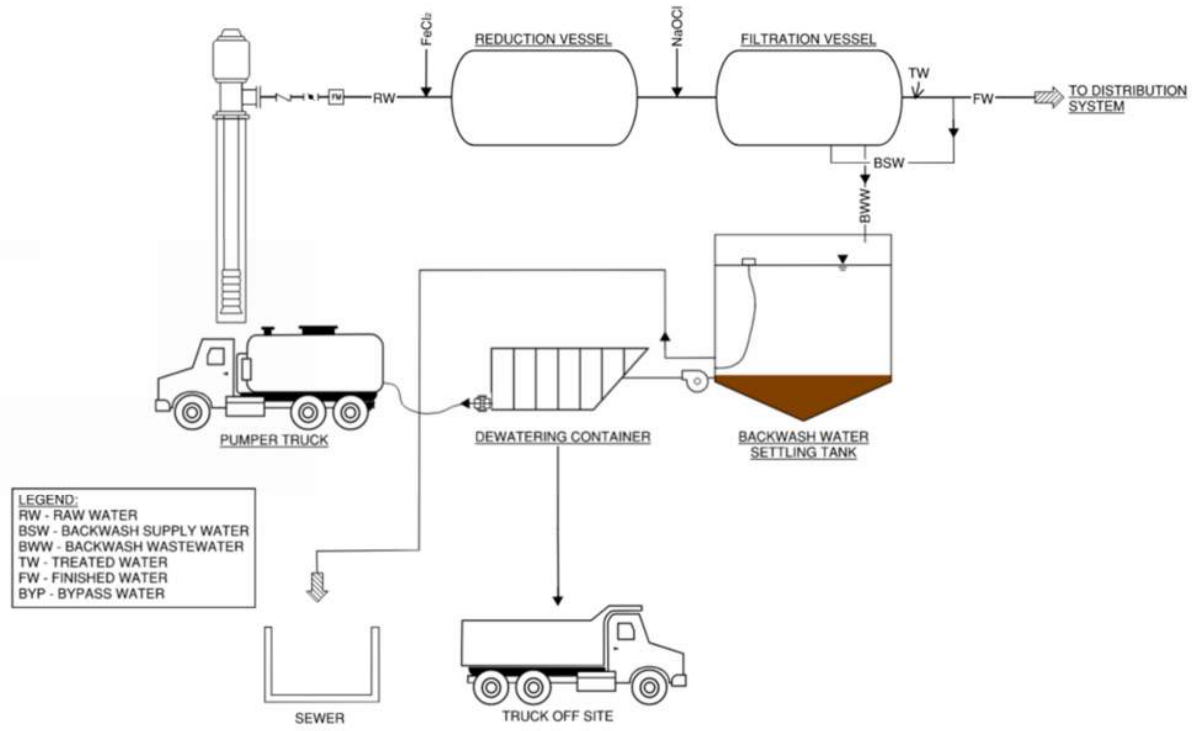


Figure 12. Simplified process flow diagram for Alternative 3B.

5.3.1.5 Alternative No. 4A – Backwash Reclamation, Settled Solids to Sewer

Alternative No. 4A would consist of discharging backwash water to an onsite BW reclaim tank prior to recycling decanted BW water to the head of the plant and routinely metering settled solids to sanitary sewer, as shown with the RCF treatment process in Figure 13. Backwash events would be scheduled by operations to occur once every 24-hours. Assuming the use of 4-ft diameter vertical filters, the maximum BW flowrate to the solids settling/equalization tank would be 251-gpm. The total filter system BW volume and duration ranges from 42,000 to 56,000 gallons and 2.8 to 3.7-hours, respectively depending on the number of vertical filter vessels.

The BW Reclaim Tank serves to temporarily store BW from the filters prior to returning decanted BW water to the head of the plant and allow for solids BW solids to settle and thicken by gravity at the bottom of the tank. This alternative allows the gross majority (~99.9%) of the BW water to go unwasted and returned to the treatment process at 10% of the well flowrate after a minimum 4 hour settling period. Solids settled in the period between filter system backwash events are anticipated to condense to approximately 0.9% by volume in the bottom of the BW Reclaim Tank prior to metered discharge to sewer. Metered settled solids from the tank to sewer would be measured and recorded for the receiving sewer's agency (CSD) use.

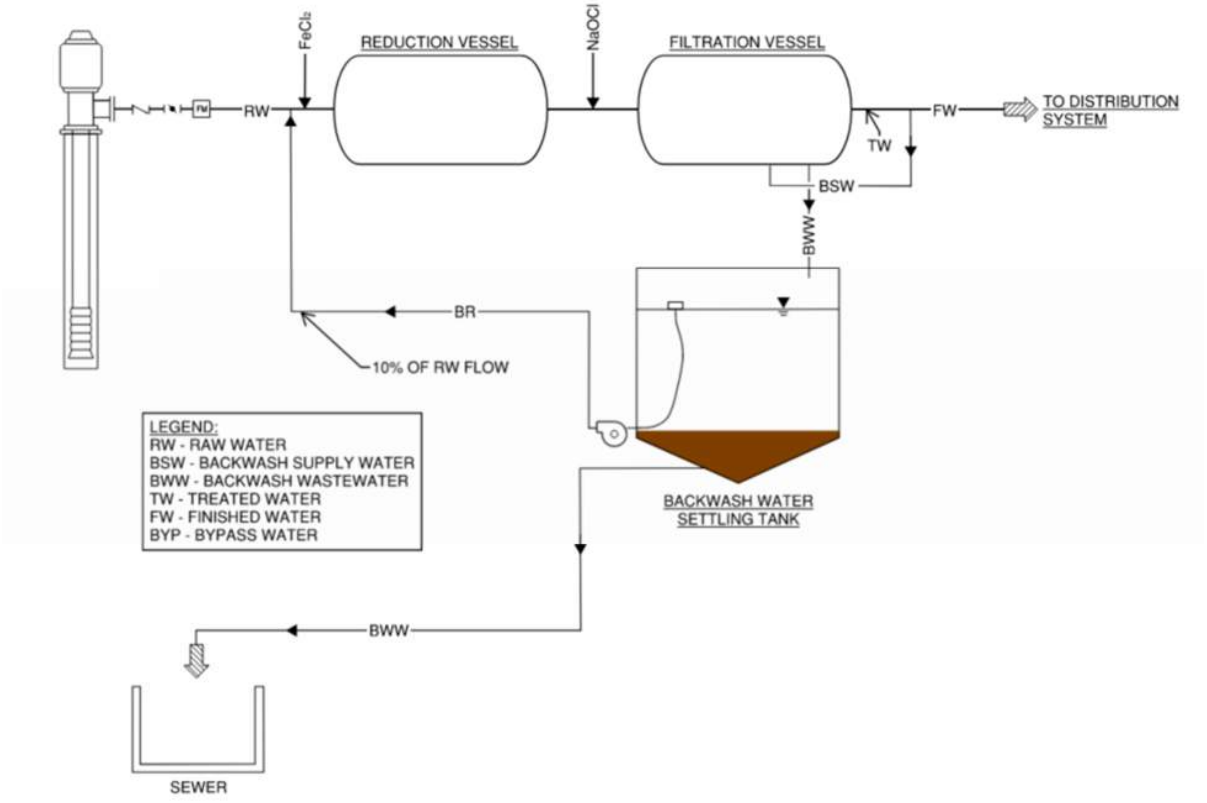


Figure 13. Simplified process flow diagram for Alternative 4A.

5.3.1.6 Alternative No. 4B – Backwash Reclamation, Offsite Hauling of Settled Solids

Alternative No. 4B would consist of discharging backwash water to an onsite BW reclaim tank prior to recycling decanted BW water to the head of the plant and routinely removing settled solids using a septic pump truck, as shown with the RCF treatment process in Figure 14. Backwash events would be scheduled by operations to occur once every 24-hours. Assuming the use of 4-ft diameter vertical filters, the maximum BW flowrate to the solids settling/equalization tank would be 251-gpm. The total filter system BW volume and duration ranges from 42,000 to 56,000 gallons and 2.8 to 3.7-hours, respectively depending on the number of vertical filter vessels.

The BW Reclaim Tank serves to temporarily store BW from the filters prior to returning decanted BW water to the head of the plant and allow for solids BW solids to settle and thicken by gravity at the bottom of the tank. This alternative allows the gross majority (~99.9%) of the BW water to go unwasted and returned to the treatment process at 10% of the well flowrate after a minimum 4 hour settling period. Solids settled in the period between filter system backwash events are anticipated to condense to approximately 0.9% by volume in the bottom of the BW Reclaim Tank. BW solids would be periodically (approx. every 5 days) removed through the use of a 2,500-gallon septic pump truck. BW solids may be disposed of at a wastewater treatment plant (CSD). The settling tank would be sized to contain the total filter system BW volume.

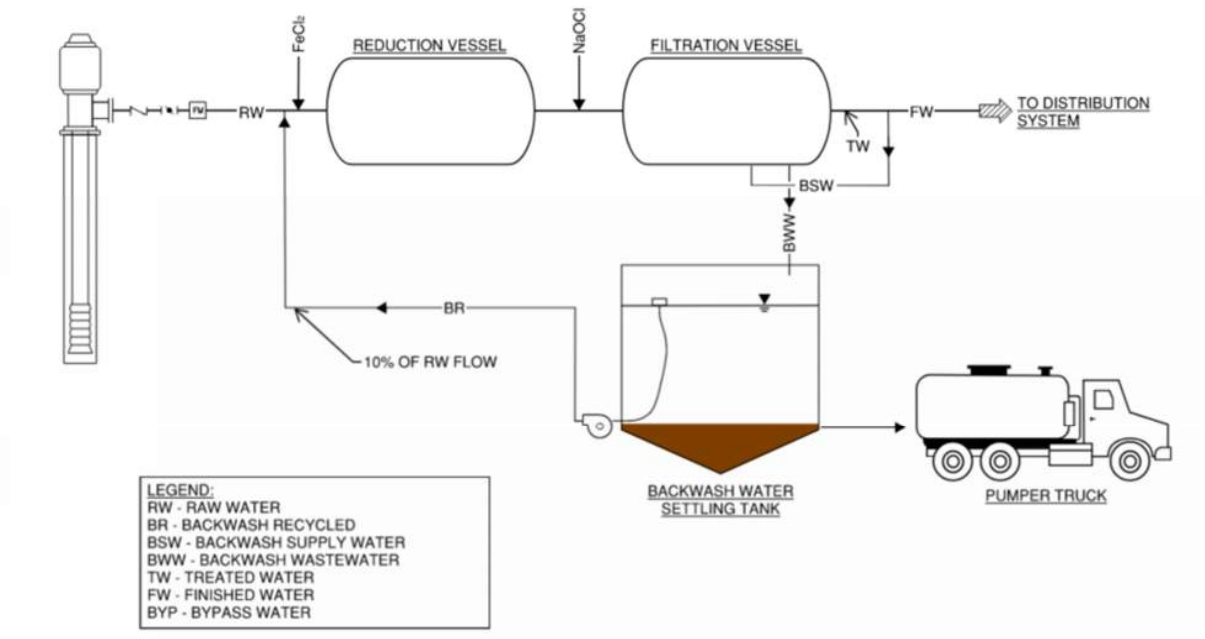


Figure 14. Simplified process flow diagram for Alternative 4B.

5.3.1.7 Alternative No. 4C – Backwash Reclamation, Onsite Solids Dewatering

Alternative No. 4C would consist of discharging backwash water to an onsite BW reclaim tank prior to recycling decanted BW water to the head of the plant and dewatering solids onsite, as shown with the RCF treatment process in Figure 15. Backwash events would be scheduled by operations to occur once every 24-hours. Assuming the use of 4-ft diameter vertical filters, the maximum BW flowrate to the solids settling/equalization tank would be 251-gpm. The total filter system BW volume and duration ranges from 42,000 to 56,000 gallons and 2.8 to 3.7-hours, respectively depending on the number of vertical filter vessels.

The BW Reclaim Tank serves to temporarily store BW from the filters prior to returning decanted BW water to the head of the plant and allow for solids BW solids to settle and thicken by gravity at the bottom of the tank. This alternative allows the gross majority (~99.9%) of the BW water to go unwasted and returned to the treatment process at 10% of the well flowrate after a minimum 4 hour settling period. Solids settled in the period between filter system backwash events are anticipated to condense to approximately 0.9% by volume in the bottom of the BW Reclaim Tank.

Settled solids would be further dewatered using a roll-off type dewatering container (e.g., Flo Trend, Roll-off Sludge Mate). The Caltrans-approved roll-off dewatering container would have a reusable filter bottom. The filter bottom would retain most solids, contain mostly particulate iron and chromium, while allow filtrate to pass through and out drainage ports back to the backwash settling tank through the use of a small filtrate return pump. Experience at other facilities has shown a typical dewatered solids concentration of approximately 5 to 6% can be achieved, which would be expected to meet USEPA SW-846 Test Method 9095B: Paint Filter Liquids Test (paint filter test) for landfill disposal. Following dewatering, sludge would be considered solid waste and may qualify as hazardous waste based on California Department of Toxic Substances Control landfill regulations including the limits set by the total threshold limit concentration (TTLC), soluble threshold limit concentration (STLC), toxicity characteristic leaching procedure (TCLP), and waste extraction test (WET) (see section 5.8.1 for more information on waste disposal).

BW solids thickened in the roll-off dewatering container would be periodically (approx. every 6 to 12 months) hauled away to landfill.

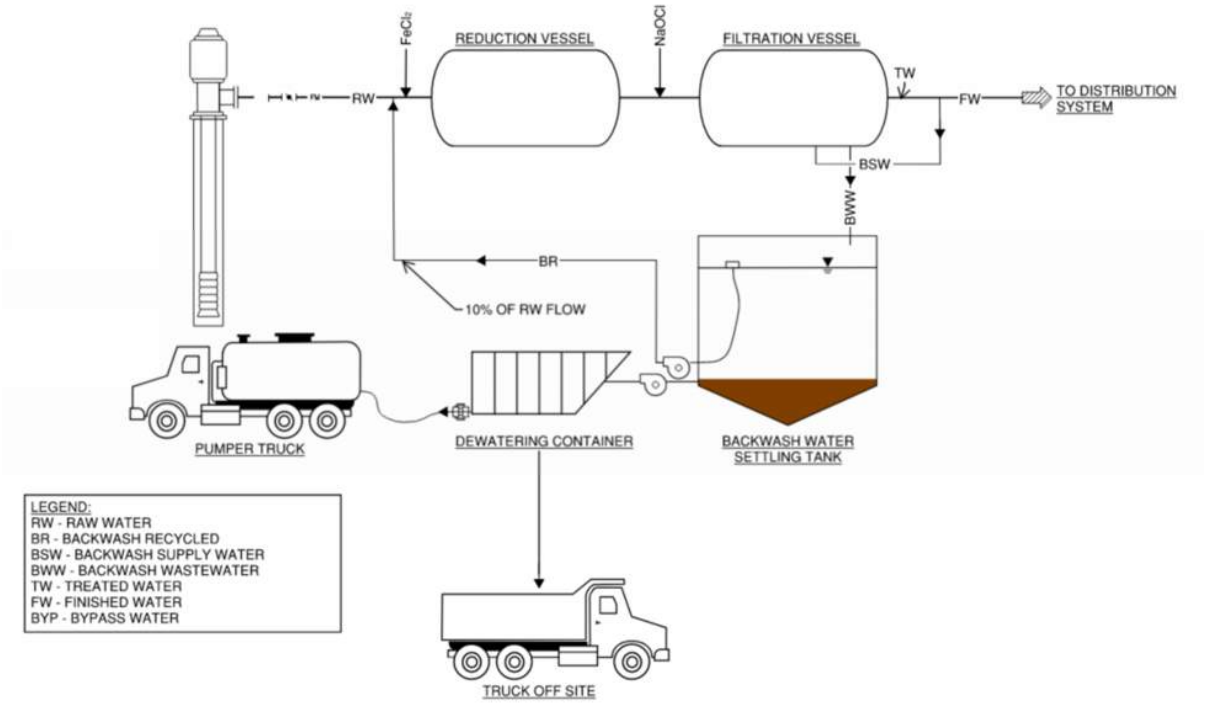


Figure 15. Simplified process flow diagram for Alternative 4C.

5.3.2 Sewer Hydraulic Modeling

Akel Engineering Group (AKEL) performed sewer hydraulic modeling for the CSD collection system. An initial assessment was performed that considered each well site discharging directly to sewer at the instantaneous flowrate for vertical filter vessels (~250-gpm) at a peak discharge period (6AM-10AM, determined by AKEL) during a typical operator workday (6AM-6PM, per CWA). AKEL's analysis identified deficient sewer line segments based on the City of Coachella design criteria, with a maximum depth-to-diameter (d/D) ratio not to exceed 0.5 for pipes 12-in or smaller and 0.75 for pipes 15-in or larger.

Based on this initial analysis, it was determined that BW EQ tanks should be considered at Well 12, Well 16, Well 17, and Well 20 to reduce the amount of deficient sewer line segments. Well 11 and Well 18 could discharge directly to sewer at the ~250-gpm flowrate without any identified deficient sewer line segments. Well 19 is outside of the CSD wastewater collection system boundary and therefore does not feasibly have access to sewer discharge. WWE evaluated the site constraints at Well 12, Well 16, Well 17, and Well 20 to determine the largest practical sized BW EQ tank that could fit on the wellsite. A summary of the BW EQ tank sizing and reduced flowrate at each site is shown in Table 15. The reduced flowrates with the BW EQ tank were provided to AKEL for further analysis.

Table 15. Equalization Tank Sizing Parameters

Parameter	Units	Well No.			
		W12	W16	W17	W20
Zoning Code Classification	-	S-N	M-W	U-N	S-N
Zoning Height Limit	ft	17	35	15	17
Tank Diameter	ft	20	22	26	22
Tank Sidewall Height	ft	12	20	12	12
Tank Freeboard Allowance	-	1.5	1.5	1.5	1.5
Nominal Tank Volume	gal	28,200	56,900	47,700	34,100
Est. Required Flowrate to Sewer[1]	gpm	139	26	62	116

[1]Required sewer flowrates are based on a vertical filter vessel with a filter loading rate of 7-gpm/ft^2 and a backwash frequency of once per day.

AKEL performed hydraulic sewer modeling with the reduced flowrates show in Table 15, and identified three deficient sewer line segments. AKEL also modeled the worst-case scenario of two wells discharging at the same time and identified the same three deficient sewer line segments. The deficient sewer line segments are show in Figure 16. As noted in Figure 16, the sewer lines are near the design criteria of d/D ratio of 0.5 for pipes 12-in and smaller and 0.75 for pipes 15-in or larger. The replacement of these lines should be considered. The linear feet (LF) and preliminary capital cost estimate of upgrading these sewer line segments is shown in Table 16.

Table 16. Deficient Sewer Line Upgrade Capital Cost Estimate

Segment	LF of Sewer Upgrade (ft)	Est. Cost of Upgrade[1]	Discharging Wells Requiring Upgrade
Segment 1	3,950	$2,610,000	Well 17
Segment 2	3,560	$2,350,000	Well 20
Segment 3	950	$630,000	Well 17 & Well 20
Total	**8,460**	**$5,590,000**	

[1]Estimated cost of sewer replacement is $600/LF plus 10% design cost.

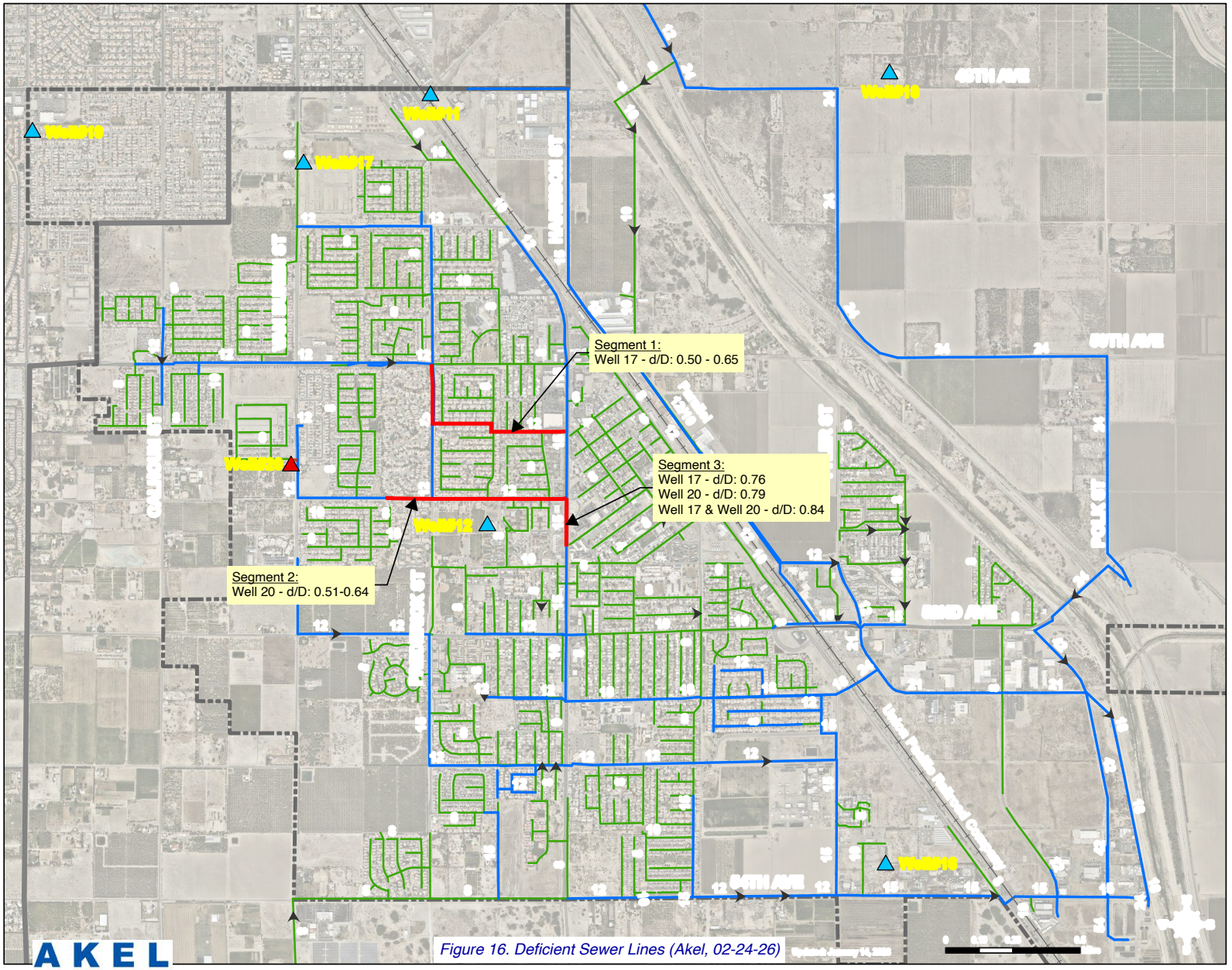


Figure 16. Deficient Sewer Lines (Akel, 02-24-26)

AKEL ENGINEERING GROUP, INC.

5.3.3 Residual Management Alternatives Analysis and Recommendations

Residual management alternatives were compared to each other using cost and non-cost parameters in Table 17.

Table 17. Residual Management Alternatives - Relative advantages and disadvantages.

Alternative	Relative Advantages	Relative Disadvantages
Alternative No. 1: BW to Sewer	• No sludge disposal equipment • Off-site sludge disposal not required • Limited footprint • Generally lowest cost alt. • Lowest operational cost alt.	• Sewer connection and discharge fee (CWA waived?) • Lower overall water recovery • Higher sewer flowrates
Alternative No. 2: EQ BW to Sewer	• Lower sewer flowrates • No sludge disposal equipment • Off-site sludge disposal not required • Generally lower cost alt.	• On-site EQ Tank required • Sewer connection and discharge fee (CWA waived?) • Lower overall water recovery
Alternative No. 3: Solids Settling 3A - Offsite Hauling of Settled Solids	• Min. sludge disposal equipment • Lower concentrations of TSS, chromium, and iron to sewer • On-site sludge dewatering equipment not required	• On-site Settling Tank required • Sewer connection and discharge fee (CWA waived?) • Lower overall water recovery • Off-site sludge hauling required (weekly)
Alternative No. 3: Solids Settling 3B - Onsite Solids Dewatering	• Concentrated waste disposal • Lower concentrations of TSS, chromium, and iron to sewer • Reduced sludge hauling • Lower sewer flowrates	• On-site Settling Tank required • On-site sludge dewatering equipment required • Sewer connection and discharge fee (CWA waived?) • Lower overall water recovery • Off-site dewatered sludge hauling required (bi-annually)
Alternative No. 4: Solids Settling 4A - BW Reclaim., Solids to Sewer	• Lower flow rate to sewer • On-site sludge dewatering equipment not required • Higher overall water recovery • Off-site sludge disposal not required	• On-site Reclaim Tank required • Sewer connection and discharge fee (CWA waived?)
Alternative No. 4: Solids Settling 4B - BW Reclaim., Solids Hauling	• Sewer connection not required • Discharge permit not required • Higher overall water recovery	• On-site Reclaim Tank required • Off-site sludge hauling required (weekly)
Alternative No. 4: Solids Settling 4C – BW Reclaim., Onsite Solids Dewater.	• Sewer connection not required • Discharge permit not required • Highest overall water recovery	• On-site Reclaim Tank required • On-site sludge dewatering equipment required • Off-site dewatered sludge hauling required (bi-annually) • Solids could be considered California hazardous waste

Table 18. Feasible residual management alternatives relative advantages and disadvantages[a]

Feasible Alternative	Well No.	Relative Advantages	Relative Disadvantages
Alternative No. 1: BW to Sewer	W11 W18	• No sludge disposal equipment • Off-site sludge disposal not required • Limited footprint • Generally lowest cost alt. Lowest operational cost alt.	• Sewer connection and discharge fee (CWA waived?) • Lower overall water recovery • Higher sewer flowrates
Alternative No. 2: EQ BW to SS	W12 W16 W17 W20	• Lower sewer flowrates • No sludge disposal equipment • Off-site sludge disposal not required Generally lower cost alt.	• On-site EQ Tank required • Sewer connection and discharge fee (CWA waived?) • Lower overall water recovery
Alternative No. 4: Solids Settling 4B - BW Reclaim., Solids Hauling	W11 W19	• Sewer connection not required • Discharge permit not required • Higher overall water recovery	• On-site Reclaim Tank required • Off-site sludge hauling required (weekly)

[a]Selected residual management alternative shown in red text.

As shown in Table 18, six of the seven sites have a clear feasible recommendation for their residual management alternative. Well 11 has two feasible alternatives, Alternative No. 1 and Alternative No. 4B, each of which are feasible and have comparable 20-year NPW costs (+/- 7%). Alternative No. 1 is the preferred and selected residual management alternative due to relatively minimal operation complexity and operation and maintenance requirements.

5.4 Preliminary Site Layouts

Conceptual site layouts were developed for each of the seven well sites for both 5/5.5- and 7/7.5-gpm/ft^2 vertical reduction vessel systems, including the recommended backwash waste and residuals handling approaches based on the RCF treatment system descriptions in section 5.3. for each site. Site layouts were developed to help conceptualize the treatment site improvements and to inform the conceptual level cost estimates.

WWE developed two site layout alternatives for each site. A brief summary of each of these alternatives is listed below:

Well 11
- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: Direct to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: Direct to Sewer

Well 12
- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: EQ to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: EQ to Sewer

Well 16
- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: EQ to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: EQ to Sewer

Well 17
- Alt. No. 1 Filter Hydraulic Loading Rate: 5.5-gpm/ft^2 Backwash Discharge: EQ to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7.5-gpm/ft^2 Backwash Discharge: EQ to Sewer

Well 18
- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: Direct to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: Direct to Sewer

Well 19
- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: BW Recycle with offsite solids disposal
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: BW Recycle with offsite solids disposal

Well 20
- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: EQ to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: EQ to Sewer

5.4.1 Well 11 Site Layout

Conceptual site layouts were developed based on the generic RCF treatment system described in Section 5.1. The following site improvements would be required to implement the RCF treatment strategy for the following two proposed layouts:

- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: Direct to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: Direct to Sewer

- Install New Well Pump
  - 2,000 gpm at 325 ft TDH (250 hp) constant speed well pump and motor
- Install Reduction Vessel:
  - One (1) 8.0 ft diameter by 21 ft side shell horizontal vessel (baffled)
- Install Filtration Vessels:
  - 32 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 34 ft x 21 ft conc slab (Alt. 1)
  - 24 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 28 ft x 22 ft conc slab (Alt. 2)
- Install major backwash water/sludge processing equipment:
  - 4 ft x 4 ft catch basin with air gap
  - 6" PVC SS – 740-LF
- Install major chemical feed and storage improvements:
  - Ferrous chloride chemical storage building (12 ft by 12 ft)
  - Four 55-gallon drum ferrous chloride storage pallet and chemical feed pump
  - Additional sodium hypochlorite feed pump, shelf spare
  - New 500-gal sodium hypochlorite storage tank (replace existing chemical drums)
  - Chemical conduit and injection points (2X)
  - Static mixer post ferrous chloride injection point
- Site Improvements:
  - Demolish existing fencing; Install new 8-ft tall concrete masonry unit (CMU) block wall around site footprint
  - Reroute existing watermain as needed for filter installation

Well 11 process flow would follow the description in Section 5.1 and backwash water processing Alternative 1 (per Section 5.3.1.1). Raw water would be pumped from a new 2,000 gpm well pump to the RCF Treatment System prior to entering the distribution system piping exiting the site to the east and west. The existing 150 gal 12.5% sodium hypochlorite storage tank at the site is sufficient (~8 days) with the added chemical demand from RCF. Well 11 RCF treatment system conceptual site layouts are shown on the following two pages for a horizontal reduction vessel and vertical filter vessels sized for a filter loading rate of 5 and 7 gpm/ft^2.

5.4.2 Well 12 Site Layout

Conceptual site layouts were developed based on the generic RCF treatment system described in Section 5.1. The following site improvements would be required to implement the RCF treatment strategy for the following two proposed layouts:

- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: EQ to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: EQ to Sewer

- Install New Well Pump
  - 2,000 gpm at 180 ft TDH (150 hp) constant speed well pump and motor
- Install Reduction Vessel:
  - One (1) 8.0 ft diameter by 21 ft side shell horizontal vessel (baffled)
- Install Filtration Vessels:
  - 32 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 34 ft x 21 ft conc slab (Alt. 1)
  - 24 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 28 ft x 22 ft conc slab (Alt. 2)
- Install major backwash water/sludge processing equipment:
  - One (1) 28,200-gal 20 ft diameter by 12 ft tall backwash tank
  - 4" PVC SS – 340-LF
- Install major chemical feed and storage improvements:
  - Ferrous chloride chemical storage building (12 ft by 12 ft)
  - Four 55-gallon drum ferrous chloride storage pallet and chemical feed pump
  - Additional sodium hypochlorite feed pump, shelf spare
  - Chemical conduit and injection points (2X)
  - Static mixer post ferrous chloride injection point

Well 12 process flow would follow the description in Section 5.1 and backwash water processing Alternative 2 (per Section 5.3.1.2). Raw water would be pumped from a new 2,000 gpm well pump to the RCF Treatment System prior to entering an on-site water storage tank that feeds the distribution system piping exiting the site to the east. The existing 230 gal 12.5% sodium hypochlorite storage tank at the site is sufficient (~18 days) with the added chemical demand from RCF. Well 12 RCF treatment system conceptual site layouts are shown on the following two pages for a horizontal reduction vessel and vertical filter vessels sized for a filter loading rate of 5 and 7 gpm/ft^2.

5.4.3 Well 16 Site Layout

Conceptual site layouts were developed based on the generic RCF treatment system described in Section 5.1. The following site improvements would be required to implement the RCF treatment strategy for the following two proposed layouts:

- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: EQ to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: EQ to Sewer

- Install New Well Pump
  - 2,000 gpm (250 hp) constant speed well pump and motor (TDH TBD)
- Install Reduction Vessel:
  - One (1) 8.0 ft diameter by 21 ft side shell horizontal vessel (baffled)
- Install Filtration Vessels:
  - 32 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 34 ft x 21 ft conc slab (Alt. 1)
  - 24 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 28 ft x 22 ft conc slab (Alt. 2)
- Install major backwash water/sludge processing equipment:
  - One (1) 56,900-gal 22 ft diameter by 20 ft tall backwash tank
  - 4" PVC SS – 355-LF
- Install major chemical feed and storage improvements:
  - Ferrous chloride chemical storage building (12 ft by 12 ft)
  - Four 55-gallon drum ferrous chloride storage pallet and chemical feed pump
  - Additional sodium hypochlorite feed pump, shelf spare
  - New 500-gal sodium hypochlorite storage tank (replace existing 200-gal tank)
  - Chemical conduit and injection points (2X)
  - Static mixer post ferrous chloride injection point
- Site Improvements:
  - Demolish existing fencing on east side of site; Install new 8-ft tall CMU block wall around proposed additional site footprint

Well 16 process flow would follow the description in Section 5.1 and backwash water processing Alternative 2 (per Section 5.3.1.2). Raw water would be pumped from a new 2,000 gpm well pump to the RCF Treatment System prior to entering the distribution system piping exiting the site to the north. The existing 12.5% sodium hypochlorite storage tank at the site is unknown but assumed to be about 200-gallons and sufficient (~7 days) with the added chemical demand from RCF. Well 16 RCF treatment system conceptual site layouts are shown on the following two pages for a horizontal reduction vessel and vertical filter vessels sized for a filter loading rate of 5 and 7 gpm/ft^2.

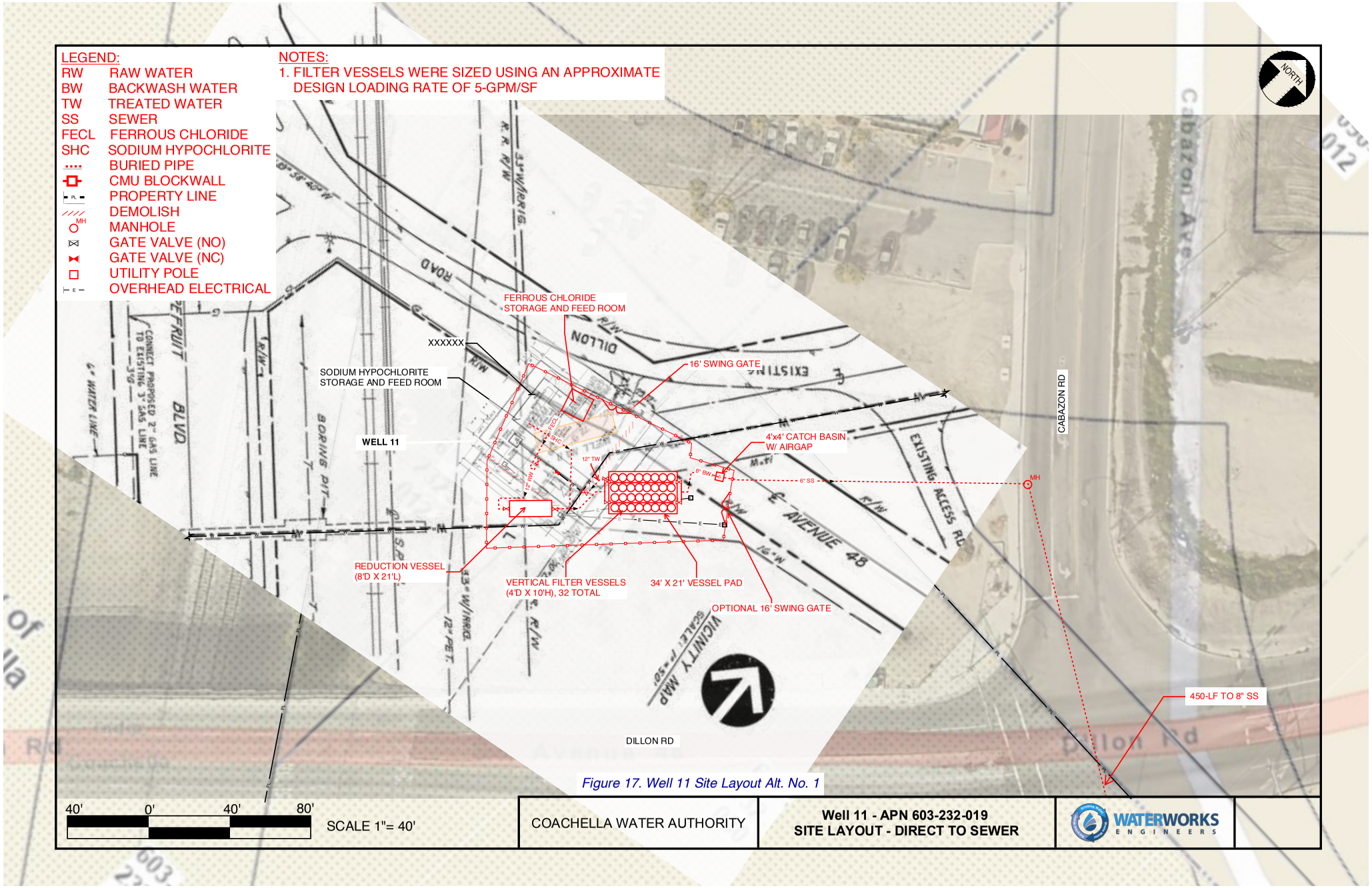


Figure 17. Well 11 Site Layout Alt. No. 1

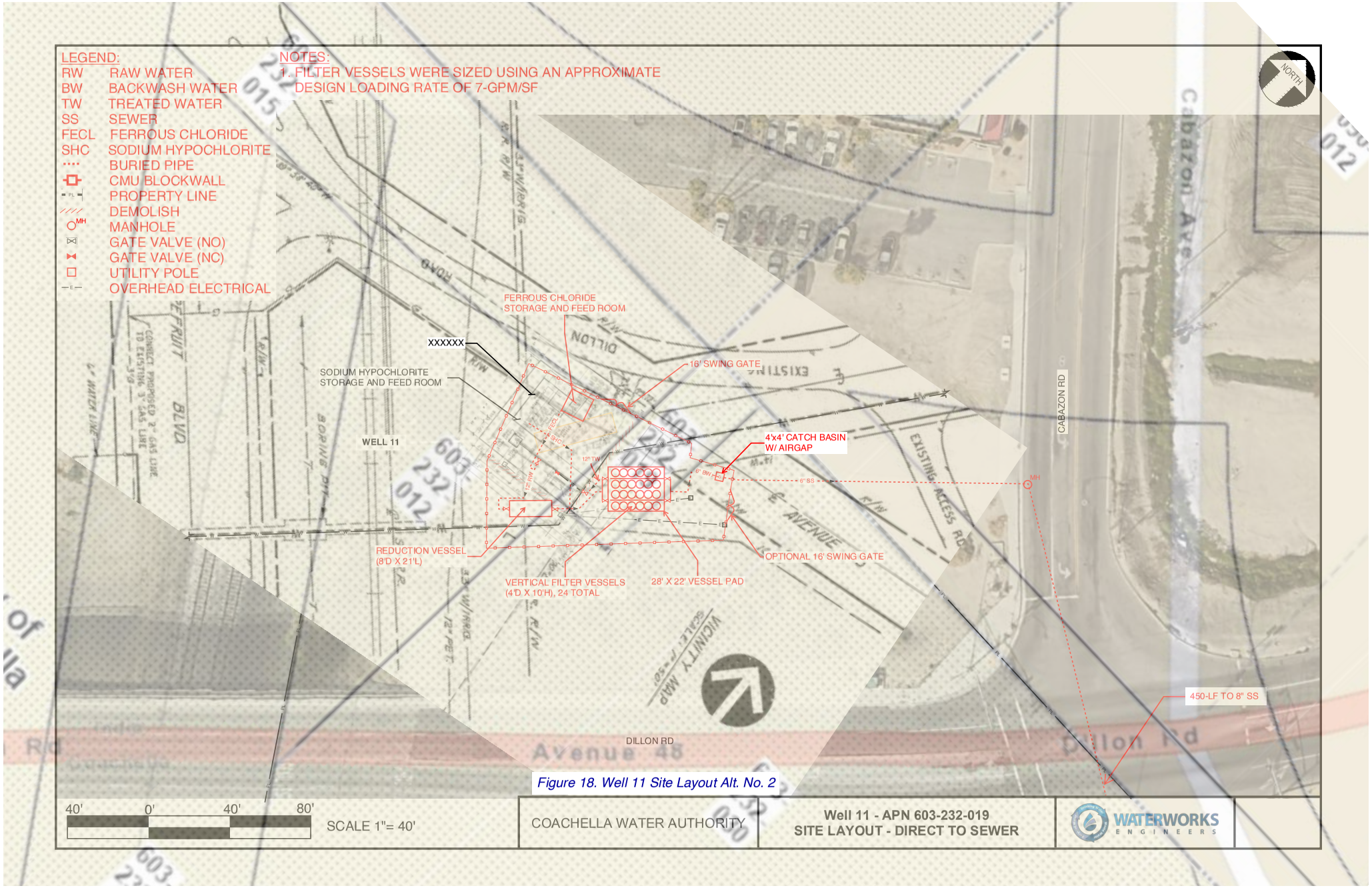


Figure 18. Well 11 Site Layout Alt. No. 2

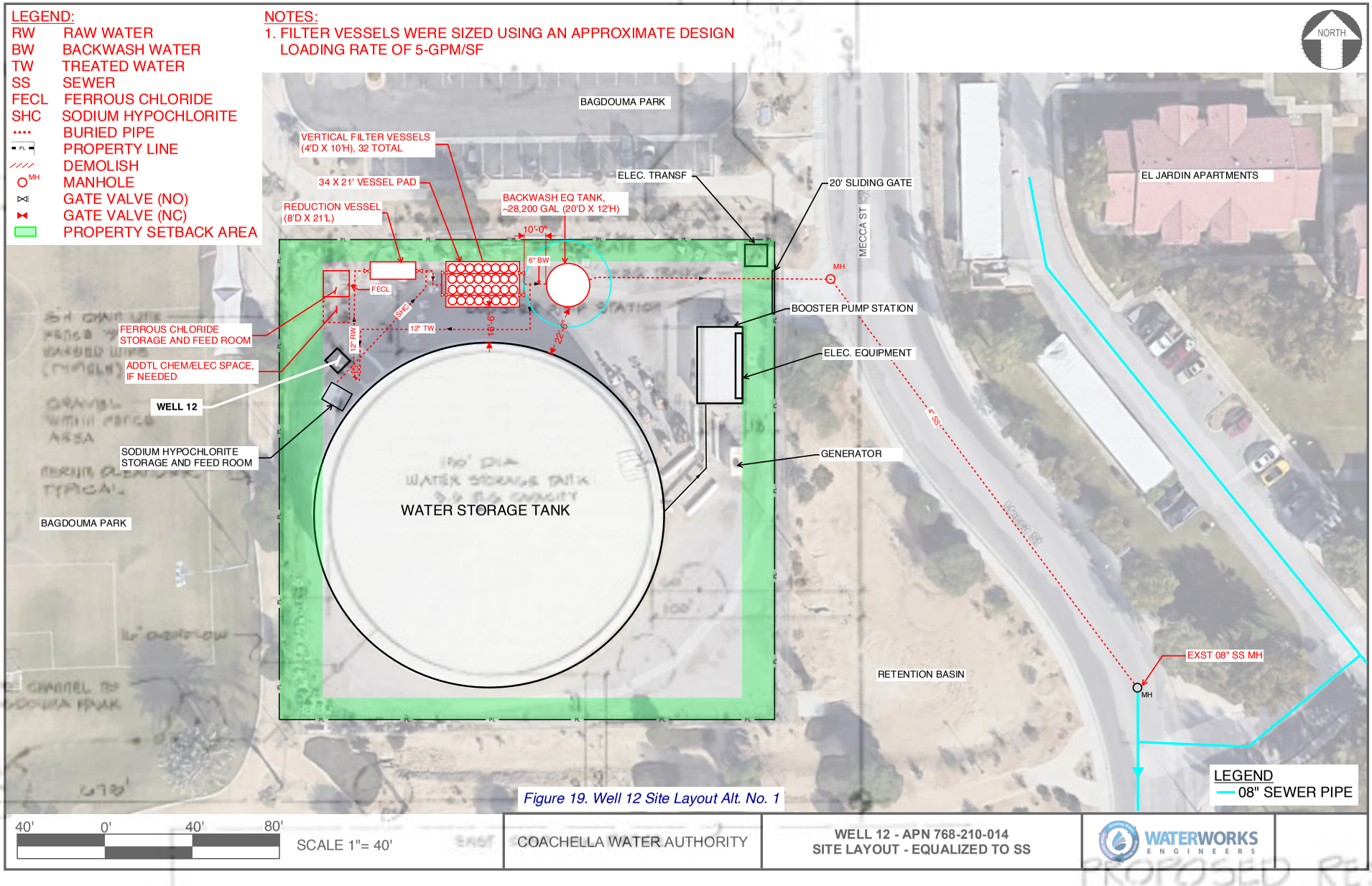


Figure 19. Well 12 Site Layout Alt. No. 1

LEGEND:

RW	RAW WATER
BW	BACKWASH WATER
TW	TREATED WATER
SS	SEWER
FECL	FERROUS CHLORIDE
SHC	SODIUM HYPOCHLORITE
····	BURIED PIPE
PL	PROPERTY LINE
////	DEMOLISH
MH	MANHOLE
⋈	GATE VALVE (NO)
⋈	GATE VALVE (NC)
	PROPERTY SETBACK AREA

NOTES:

1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 7-GPM/SF

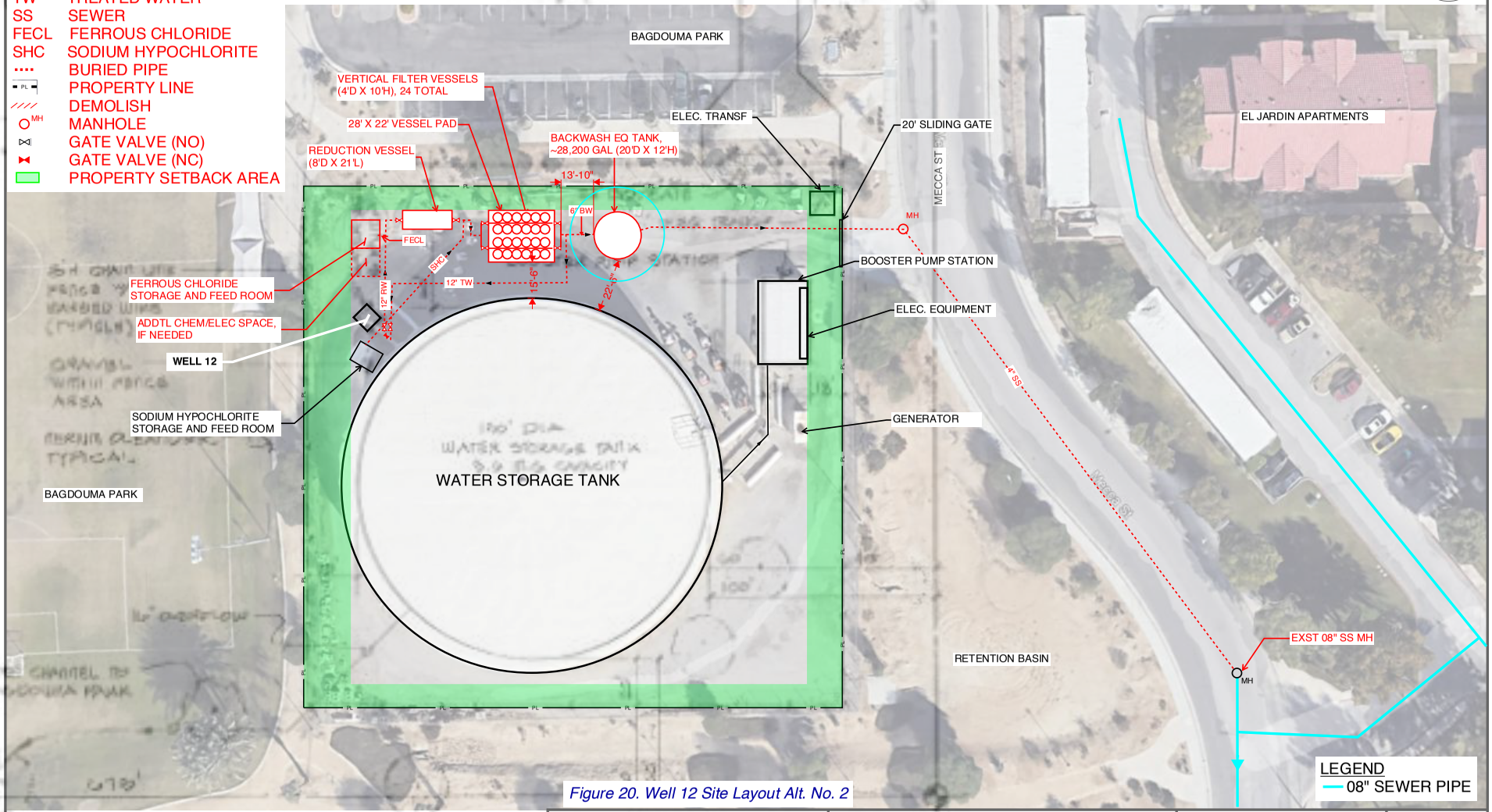


Figure 20. Well 12 Site Layout Alt. No. 2

40' 0' 40' 80'

SCALE 1"= 40'

COACHELLA WATER AUTHORITY

WELL 12 - APN 768-210-014
SITE LAYOUT - EQUALIZED TO SS

WATERWORKS ENGINEERS

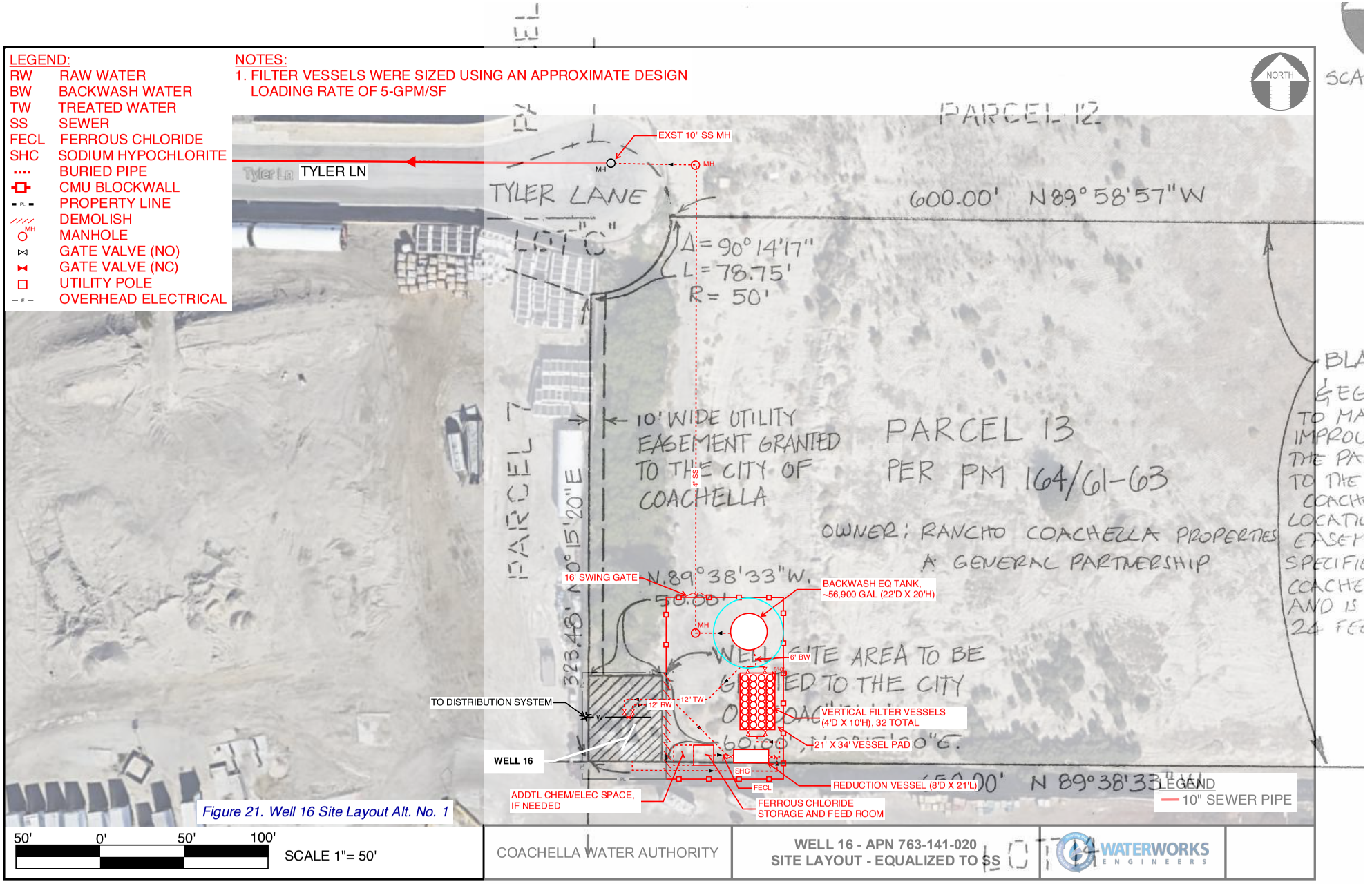


Figure 21. Well 16 Site Layout Alt. No. 1

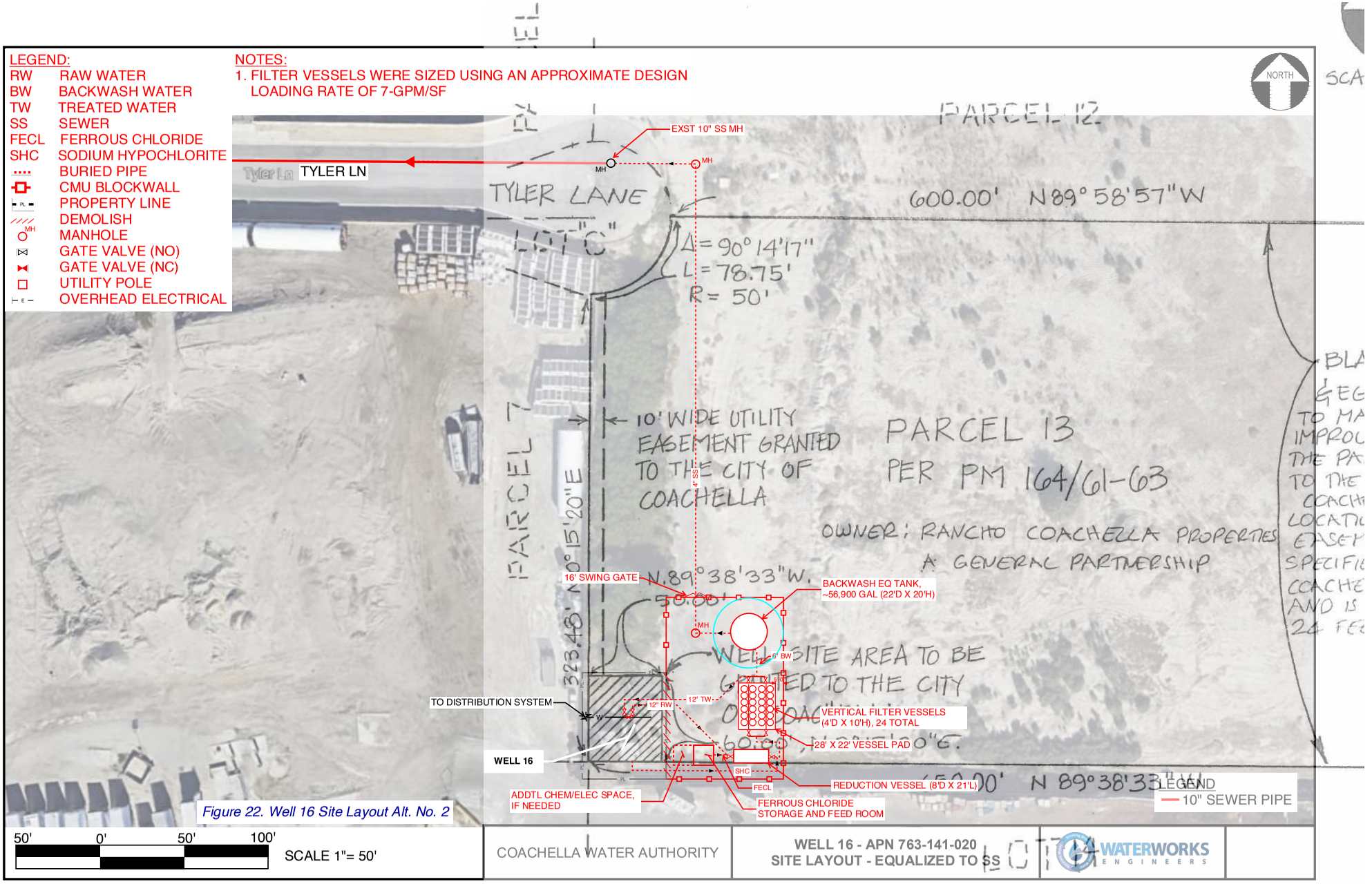


Figure 22. Well 16 Site Layout Alt. No. 2

5.4.4 Well 17 Site Layout

Conceptual site layouts were developed based on the generic RCF treatment system described in Section 5.1. The following site improvements would be required to implement the RCF treatment strategy for the following two proposed layouts:

- Alt. No. 1 Filter Hydraulic Loading Rate: 5.5-gpm/ft^2 Backwash Discharge: EQ to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7.5-gpm/ft^2 Backwash Discharge: EQ to Sewer

- Install New Well Pump
  - 2,200 gpm at 315 ft TDH (250 hp) constant speed well pump and motor
- Install Reduction Vessel:
  - One (1) 8.0 ft diameter by 23 ft side shell horizontal vessel (baffled)
- Install Filtration Vessels:
  - 32 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 34 ft x 21 ft conc slab (Alt. 1)
  - 24 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 28 ft x 22 ft conc slab (Alt. 2)
- Install major backwash water/sludge processing equipment:
  - One (1) 47,700-gal 26 ft diameter by 12 ft tall backwash tank
  - 4" PVC SS – 65-LF
- Install major chemical feed and storage improvements:
  - Ferrous chloride chemical storage building (12 ft by 12 ft)
  - Four 55-gallon drum ferrous chloride storage pallet and chemical feed pump
  - Additional sodium hypochlorite feed pump, shelf spare
  - Chemical conduit and injection points (2X)
  - Static mixer post ferrous chloride injection point
- Site Improvements:
  - Demolish existing fencing on north side of site; Install new 8-ft tall CMU block wall around proposed additional site footprint

Well 17 process flow would follow the description in Section 5.1 and backwash water processing Alternative 2 (per Section 5.3.1.2). Raw water would be pumped from a new 2,200 gpm well pump to the RCF Treatment System prior to entering the distribution system piping exiting the site to the west. The existing 400 gal 12.5% sodium hypochlorite storage tank at the site is sufficient (~14 days) with the added chemical demand from RCF. Well 17 RCF treatment system conceptual site layouts are shown on the following two pages for a horizontal reduction vessel and vertical filter vessels sized for a filter loading rate of 5 and 7 gpm/ft^2.

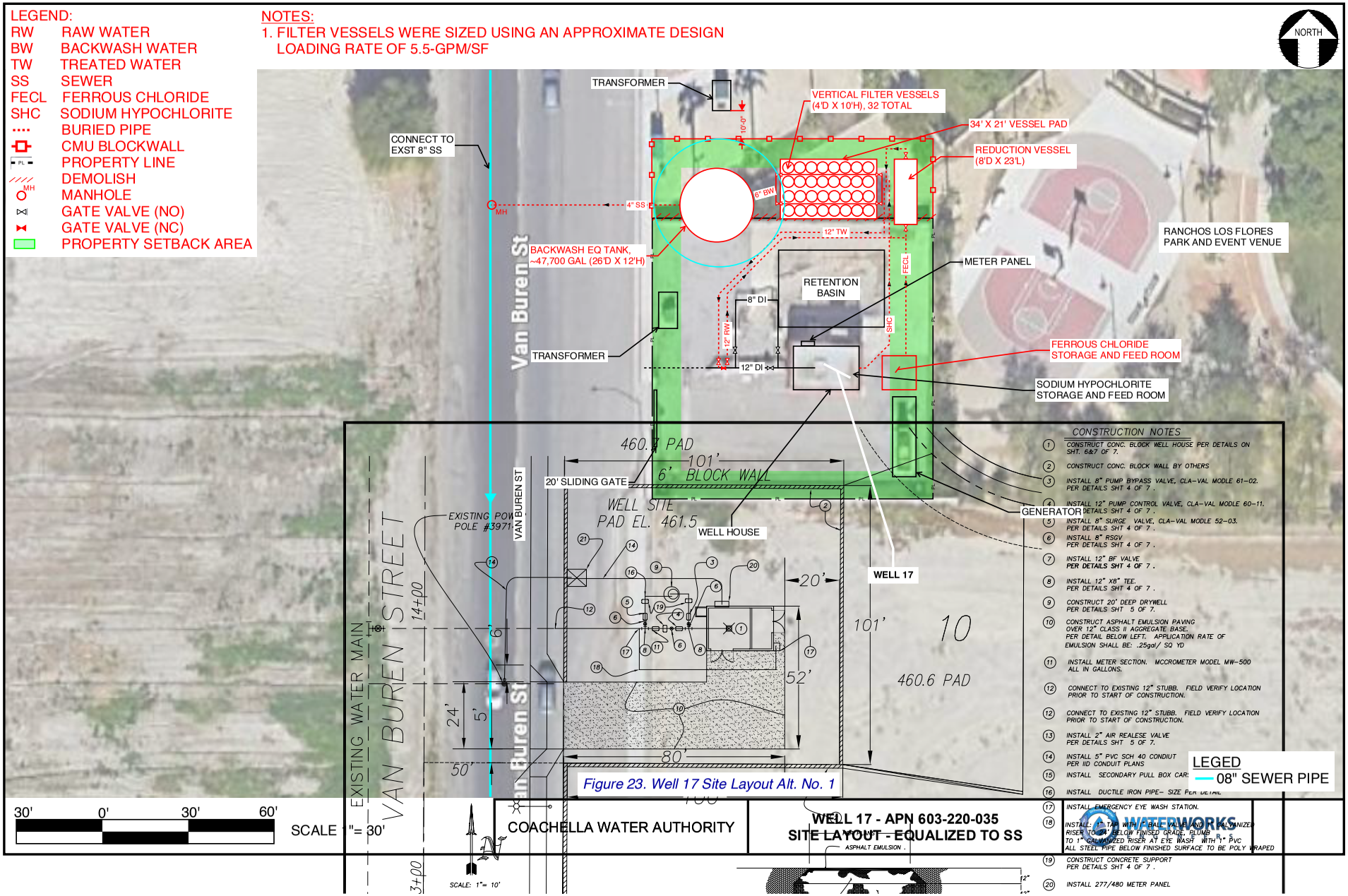


Figure 23. Well 17 Site Layout Alt. No. 1

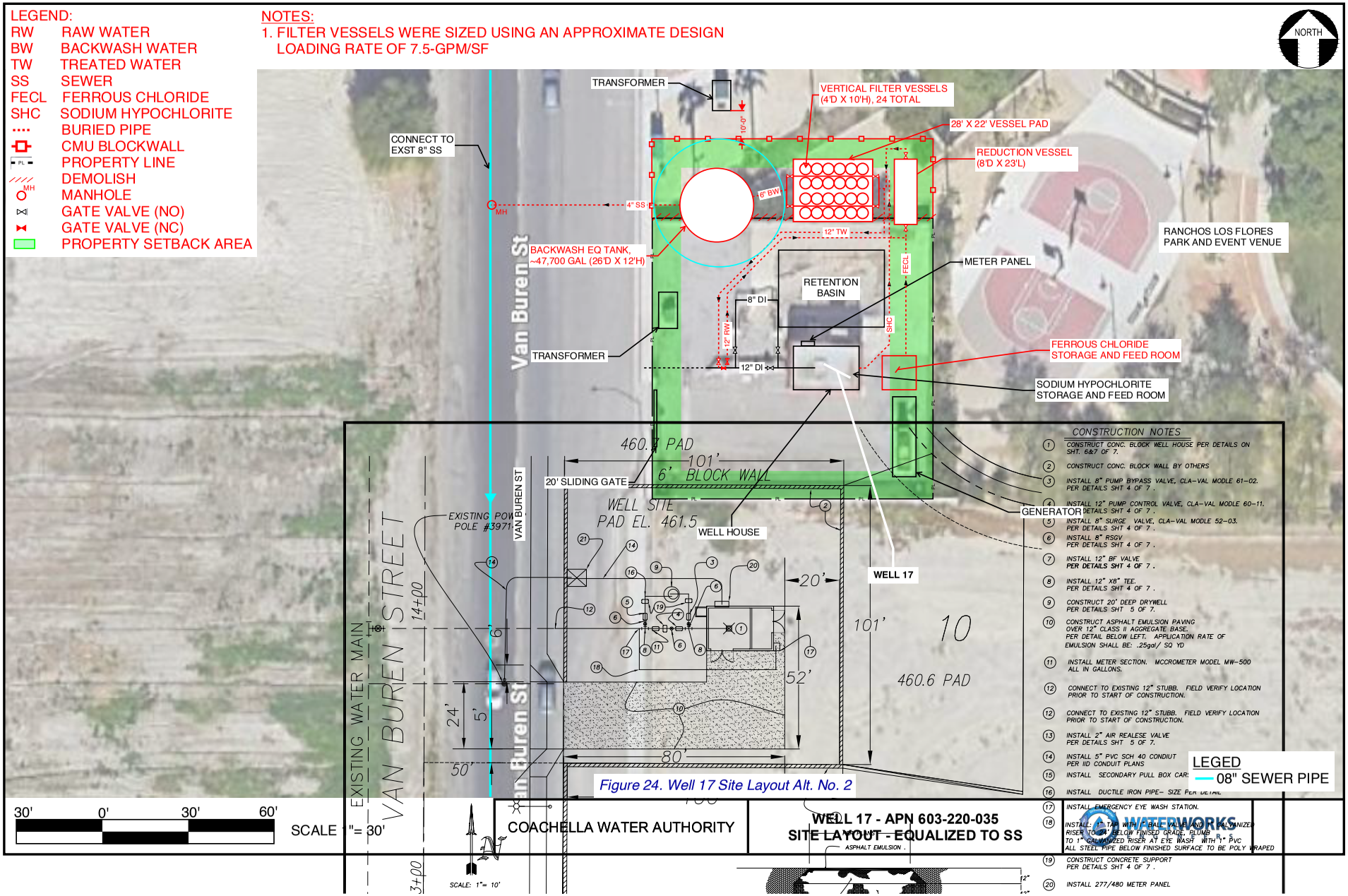


Figure 24. Well 17 Site Layout Alt. No. 2

5.4.5 Well 18 Site Layout

Conceptual site layouts were developed based on the generic RCF treatment system described in Section 5.1. The following site improvements would be required to implement the RCF treatment strategy for the following two proposed layouts:

- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: Direct to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: Direct to Sewer

- Install New Well Pump
  - 2,000 gpm at 195 ft TDH (150 hp) constant speed well pump and motor
- Install Reduction Vessel:
  - One (1) 8.0 ft diameter by 21 ft side shell horizontal vessel (baffled)
- Install Filtration Vessels:
  - 32 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 34 ft x 21 ft conc slab (Alt. 1)
  - 24 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 28 ft x 22 ft conc slab (Alt. 2)
- Install major backwash water/sludge processing equipment:
  - 4 ft x 4 ft catch basin with air gap
  - 6" PVC SS – 1,100-LF
- Install major chemical feed and storage improvements:
  - Ferrous chloride chemical storage building (12 ft by 12 ft)
  - Four 55-gallon drum ferrous chloride storage pallet and chemical feed pump
  - Additional sodium hypochlorite feed pump, shelf spare
  - New 500-gal sodium hypochlorite storage tank (replace existing 200-gal tank)
  - Chemical conduit and injection points (2X)
  - Static mixer post ferrous chloride injection point

Well 18 process flow would follow the description in Section 5.1 and backwash water processing Alternative 1 (per Section 5.3.1.1). Raw water would be pumped from a new 2,000 gpm well pump to the RCF Treatment System prior to entering an on-site water storage tank that feeds the distribution system piping exiting the site to the south. The existing 200 gal 12.5% sodium hypochlorite storage tank at the site is sufficient (~9 days) with the added chemical demand from RCF. Well 18 RCF treatment system conceptual site layouts are shown on the following two pages for a horizontal reduction vessel and vertical filter vessels sized for a filter loading rate of 5 and 7 gpm/ft^2.

LEGEND:

RW	RAW WATER
BW	BACKWASH WATER
TW	TREATED WATER
SS	SEWER
FECL	FERROUS CHLORIDE
SHC	SODIUM HYPOCHLORITE
····	BURIED PIPE
PL	PROPERTY LINE
////	DEMOLISH
MH	MANHOLE
⋈	GATE VALVE (NO)
⋈	GATE VALVE (NC)
▭	PROPERTY SETBACK AREA

NOTES:

1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 5-GPM/SF

NORTH

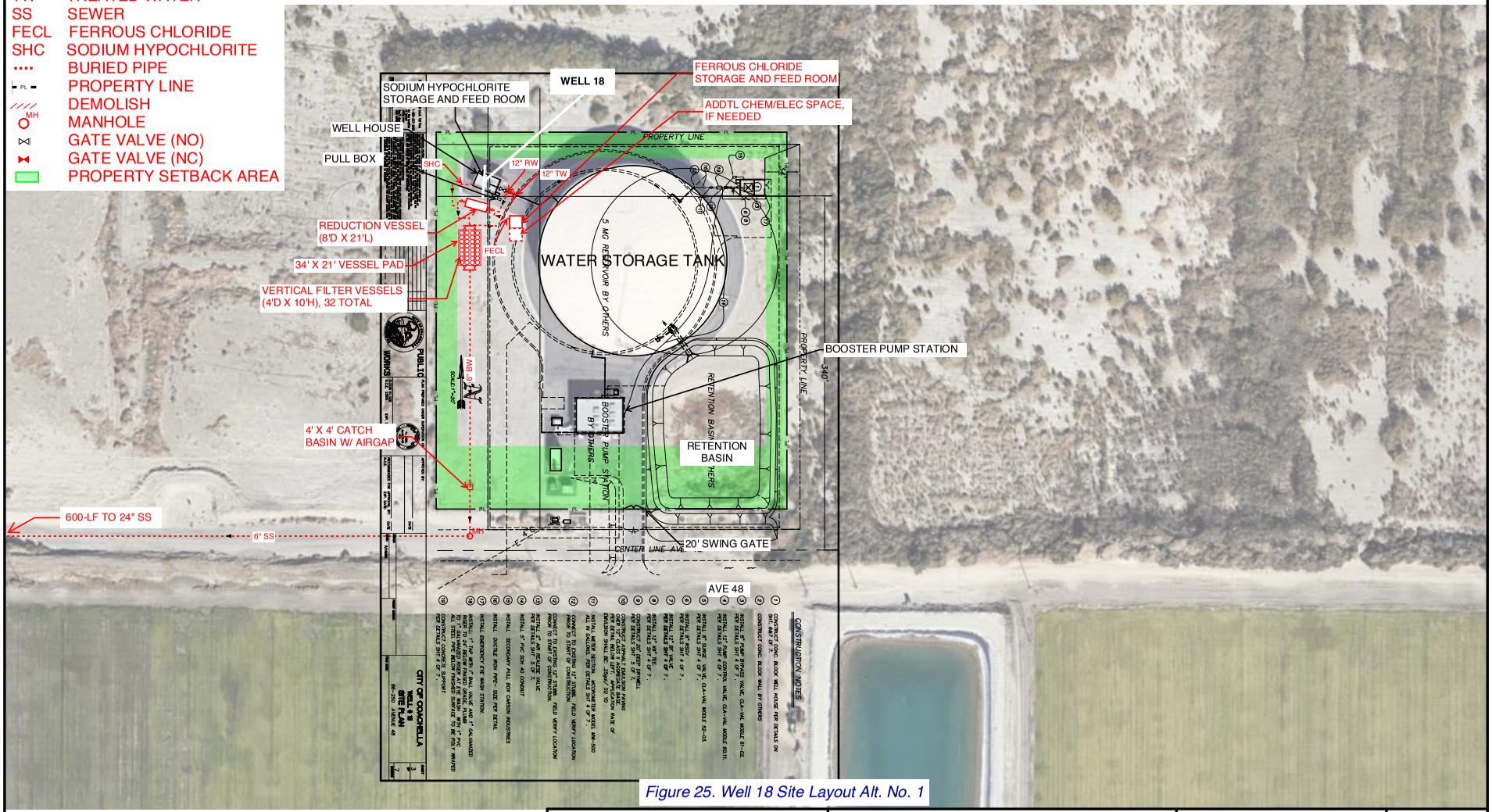


Figure 25. Well 18 Site Layout Alt. No. 1

90' 0' 90' 180'

SCALE 1"= 90'

COACHELLA WATER AUTHORITY	**WELL 18 - APN 603-150-017 SITE LAYOUT - DIRECT TO SS**	WATERWORKS ENGINEERS

LEGEND:

RW	RAW WATER
BW	BACKWASH WATER
TW	TREATED WATER
SS	SEWER
FECL	FERROUS CHLORIDE
SHC	SODIUM HYPOCHLORITE
····	BURIED PIPE
PL	PROPERTY LINE
////	DEMOLISH
MH	MANHOLE
⋈	GATE VALVE (NO)
⋈	GATE VALVE (NC)
▭	PROPERTY SETBACK AREA

NOTES:

1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 7-GPM/SF

NORTH

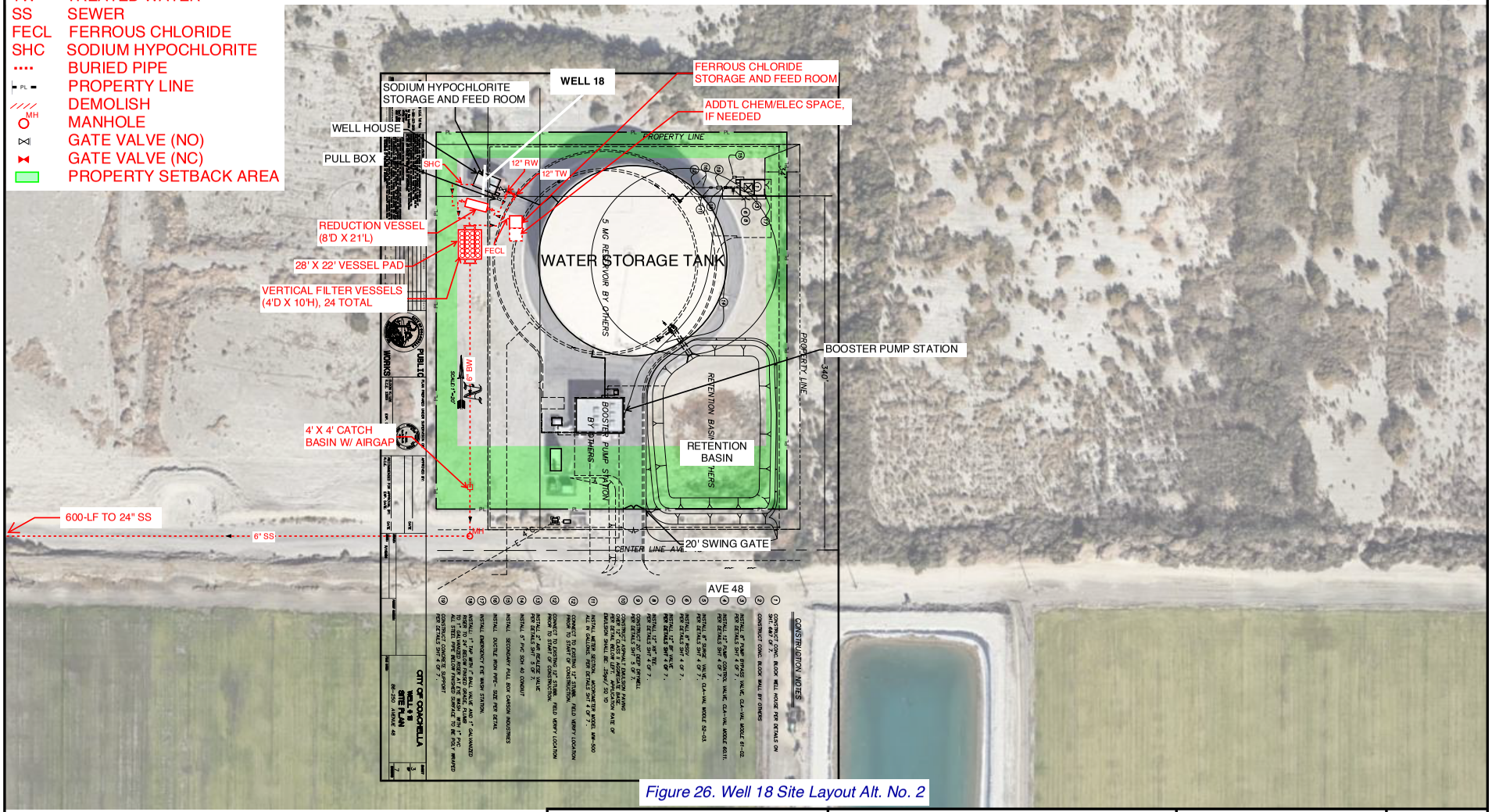


Figure 26. Well 18 Site Layout Alt. No. 2

90' 0' 90' 180'

SCALE 1"= 90'

COACHELLA WATER AUTHORITY	**WELL 18 - APN 603-150-017 SITE LAYOUT - DIRECT TO SS**	WATERWORKS ENGINEERS

5.4.6 Well 19 Site Layout

Conceptual site layouts were developed based on the generic RCF treatment system described in Section 5.1. The following site improvements would be required to implement the RCF treatment strategy for the following two proposed layouts:

- Alt. No. 1 Filter Hydraulic Loading Rate: 5 -gpm/ft^2 Backwash Discharge: BW Recycle
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: BW Recycle

- Install New Well Pump
  - 2,000 gpm at 335 ft TDH (250 hp) constant speed well pump and motor
- Install Reduction Vessel:
  - One (1) 8.0 ft diameter by 21 ft side shell horizontal vessel (baffled)
- Install Filtration Vessels:
  - 32 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 34 ft x 21 ft conc slab (Alt. 1)
  - 24 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 28 ft x 22 ft conc slab (Alt. 2)
- Install major backwash water/sludge processing equipment:
  - One (1) 90,000-gal 30.9 ft diameter by 16 ft tall backwash tank (Alt. 1)
  - One (1) 69,000-gal 27.1 ft diameter by 16 ft tall backwash tank (Alt. 2)
  - One (1) 20 hp backwash recycle pump skid
- Install major chemical feed and storage improvements:
  - Ferrous chloride chemical storage building (12 ft by 12 ft)
  - Four 55-gallon drum ferrous chloride storage pallet and chemical feed pump
  - Additional sodium hypochlorite feed pump, shelf spare
  - Chemical conduit and injection points (2X)
  - Static mixer post ferrous chloride injection point

Well 19 process flow would follow the description in Section 5.1 and backwash water processing Alternative 4B (per Section 5.3.1.6). Raw water would be pumped from a new 2,000 gpm well pump to the RCF Treatment System prior to entering the distribution system piping exiting the site to the east. The existing 400 gal 12.5% sodium hypochlorite storage tank at the site is sufficient (~14 days) with the added chemical demand from RCF. Well 19 RCF treatment system conceptual site layouts are shown on the following two pages for a horizontal reduction vessel and vertical filter vessels sized for a filter loading rate of 5 and 7 gpm/ft^2.

NOTES:
1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 5-GPM/SF

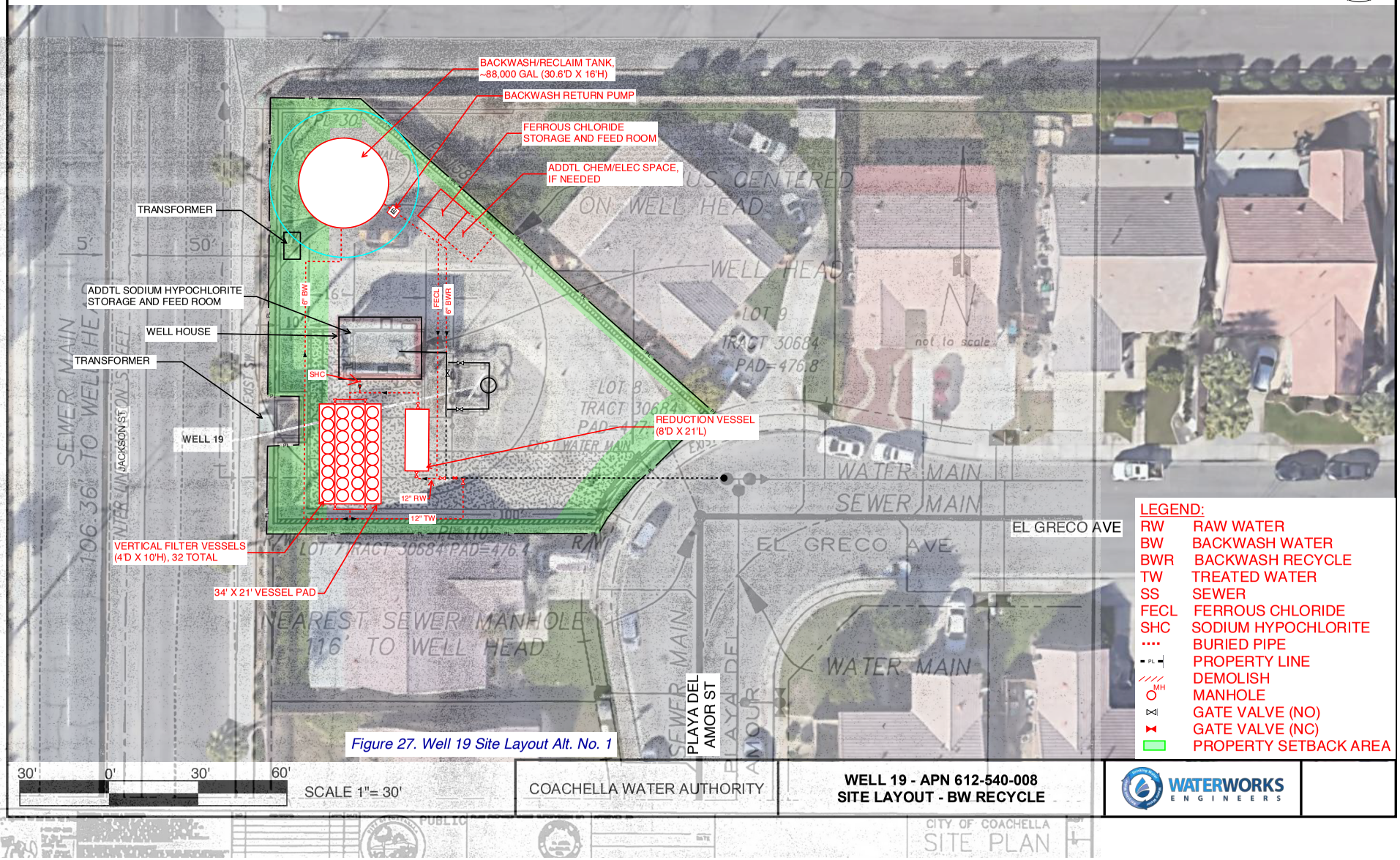


Figure 27. Well 19 Site Layout Alt. No. 1

30' 0' 30' 60'
SCALE 1"= 30'

COACHELLA WATER AUTHORITY

WELL 19 - APN 612-540-008
SITE LAYOUT - BW RECYCLE

WATERWORKS ENGINEERS

NOTES:
1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 7-GPM/SF

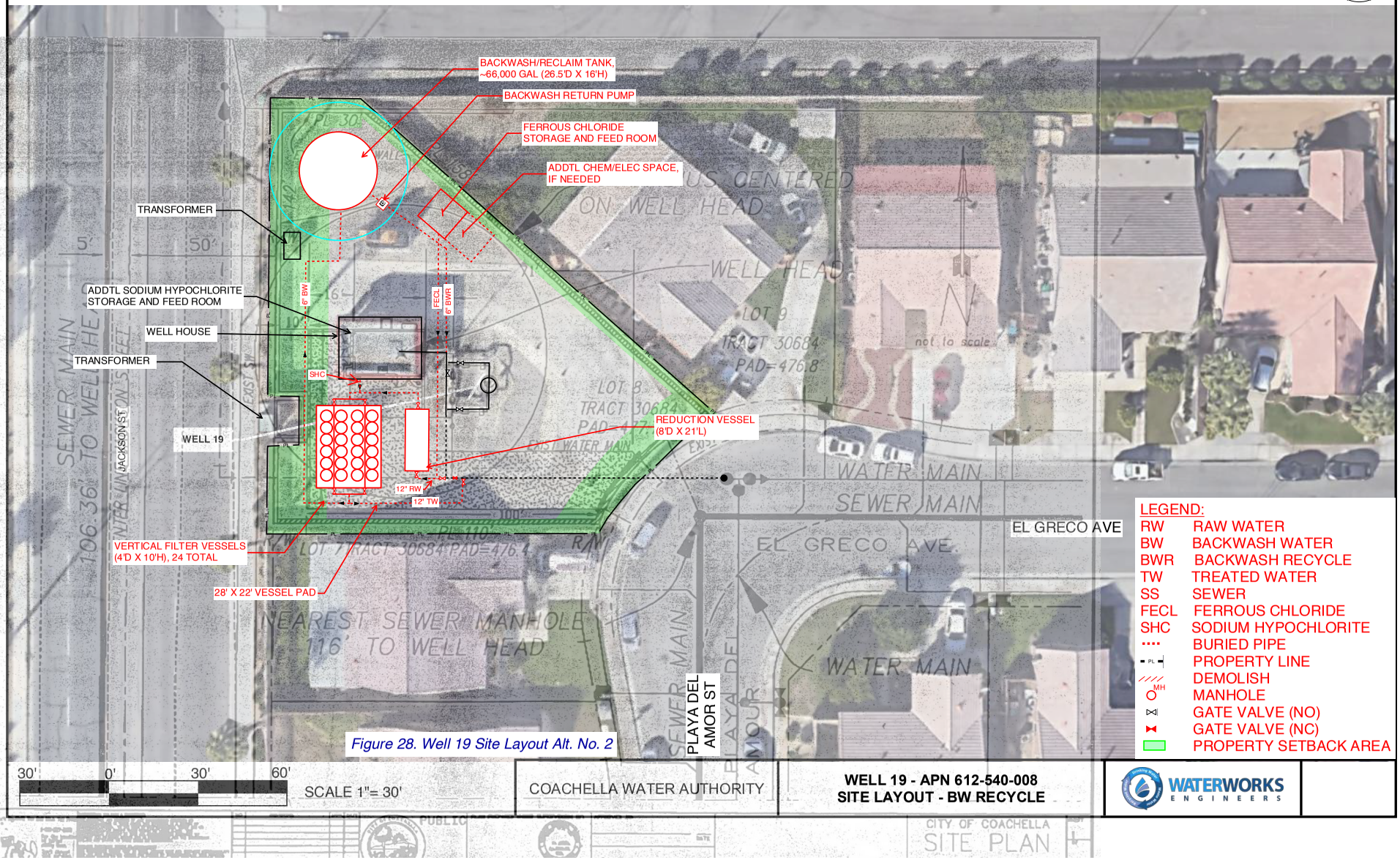


Figure 28. Well 19 Site Layout Alt. No. 2

5.4.7 Well 20 Site Layout (Future)

Conceptual site layouts were developed based on the generic RCF treatment system described in Section 5.1. The following site implementations would be required to implement the RCF treatment strategy for the following two proposed layouts:

- Alt. No. 1 Filter Hydraulic Loading Rate: 5-gpm/ft^2 Backwash Discharge: EQ to Sewer
- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: EQ to Sewer

- Install Well Pump
  - 2,000 gpm (250 hp) constant speed well pump and motor (TDH TBD)
- Install Reduction Vessel:
  - One (1) 8.0 ft diameter by 21 ft side shell horizontal vessel (baffled)
- Install Filtration Vessels:
  - 32 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 34 ft x 21 ft conc slab (Alt. 1)
  - 24 – 4 ft Dia. by 5 ft tall side shell vertical vessels, including 28 ft x 22 ft conc slab (Alt. 2)
- Install major backwash water/sludge processing equipment:
  - One (1) 34,100-gal 22 ft diameter by 12 ft tall backwash tank
  - 4" PVC SS – 135-LF
- Install major chemical feed and storage:
  - Four 55-gallon drum ferrous chloride storage pallet and chemical feed pump
  - 500-gal sodium hypochlorite storage tank and feed pump
  - Chemical conduit and injection points (2X)
  - Static mixer post ferrous chloride injection point
- Install building with storage and control rooms
  - Ferrous chloride chemical storage room (12 ft by 12 ft)
  - Sodium hypochlorite chemical storage room (12 ft by 12 ft)
  - Well pump room (18 ft by 12 ft)
  - Electrical control room (18 ft by 12 ft)
- Install infiltration basin:
  - 38 ft by 14 ft unlined infiltration basin in northwest corner of site
- Install site fencing
  - Install new 8-ft CMU block wall around site footprint with sliding gate on east side of site
- Install transformer
  - Install transformer on northeast side of site

Well 20 process flow would follow the description in Section 5.1 and backwash water processing Alternative 2 (per Section 5.3.1.2). Raw water would be pumped from a new 2,000 gpm well pump to the RCF Treatment System to the distribution system piping exiting the site to the east. Well 20 RCF treatment system conceptual site layouts are shown on the following two pages for a horizontal reduction vessel and vertical filter vessels sized for a filter loading rate of 5 and 7 gpm/ft^2.

LEGEND:

RW	RAW WATER
BW	BACKWASH WATER
BWR	BACKWASH RECYCLED
TW	TREATED WATER
SS	SEWER
FECL	FERROUS CHLORIDE
SHC	SODIUM HYPOCHLORITE
····	BURIED PIPE
	FENCE LINE
	PROPERTY LINE
	DEMOLISH
	MANHOLE
	GATE VALVE (NO)
	GATE VALVE (NC)
	PROPERTY SETBACK AREA

NOTES:
1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 5-GPM/SF

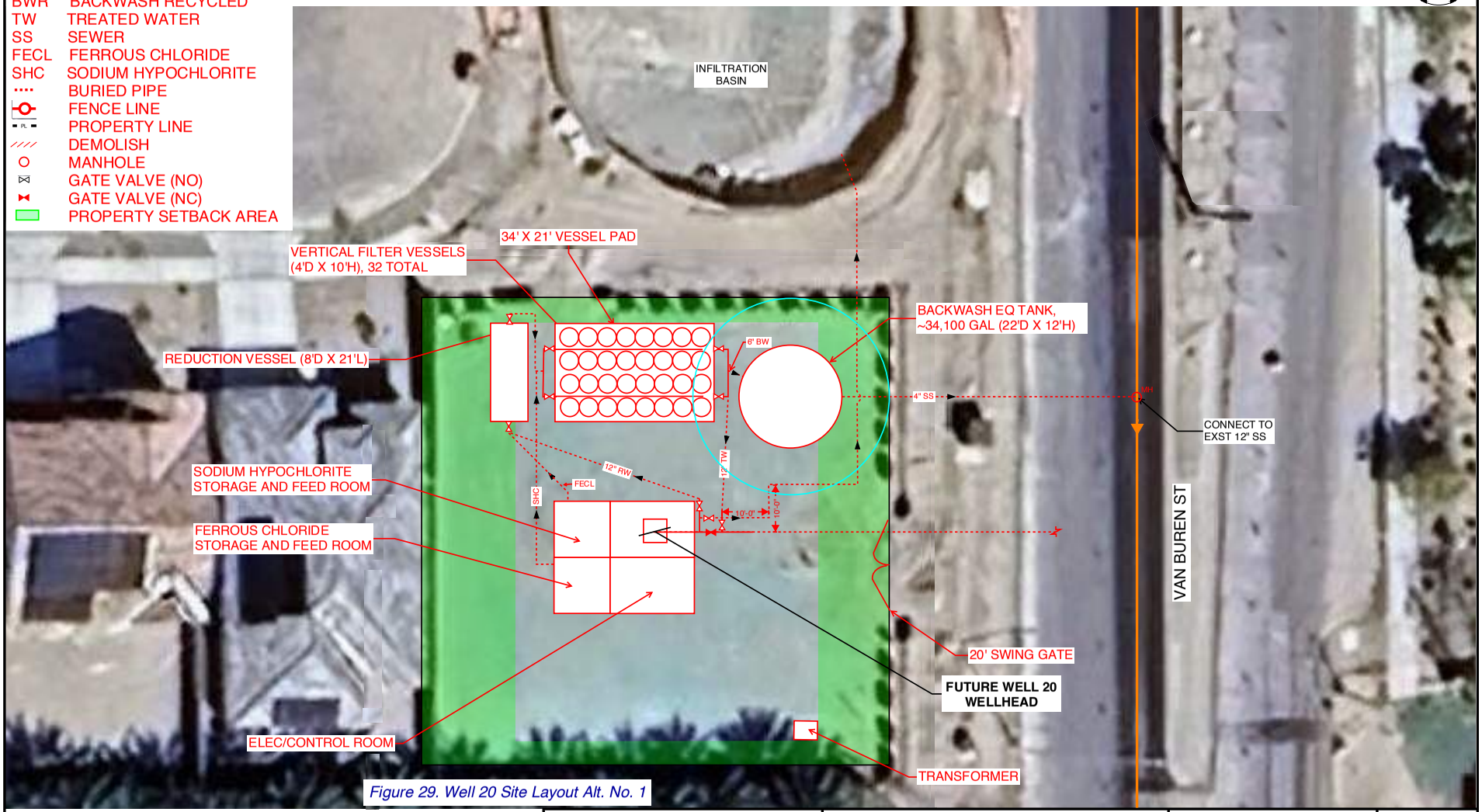


Figure 29. Well 20 Site Layout Alt. No. 1

20' 0' 20' 40'

SCALE 1"= 20'

COACHELLA WATER AUTHORITY

WELL 20 - APN 779-620-041
SITE LAYOUT - EQUALIZED TO SS

WATERWORKS ENGINEERS

LEGEND:

RW	RAW WATER
BW	BACKWASH WATER
BWR	BACKWASH RECYCLED
TW	TREATED WATER
SS	SEWER
FECL	FERROUS CHLORIDE
SHC	SODIUM HYPOCHLORITE
····	BURIED PIPE
	FENCE LINE
	PROPERTY LINE
	DEMOLISH
	MANHOLE
	GATE VALVE (NO)
	GATE VALVE (NC)
	PROPERTY SETBACK AREA

NOTES:
1. FILTER VESSELS WERE SIZED USING AN APPROXIMATE DESIGN LOADING RATE OF 7-GPM/SF

NORTH

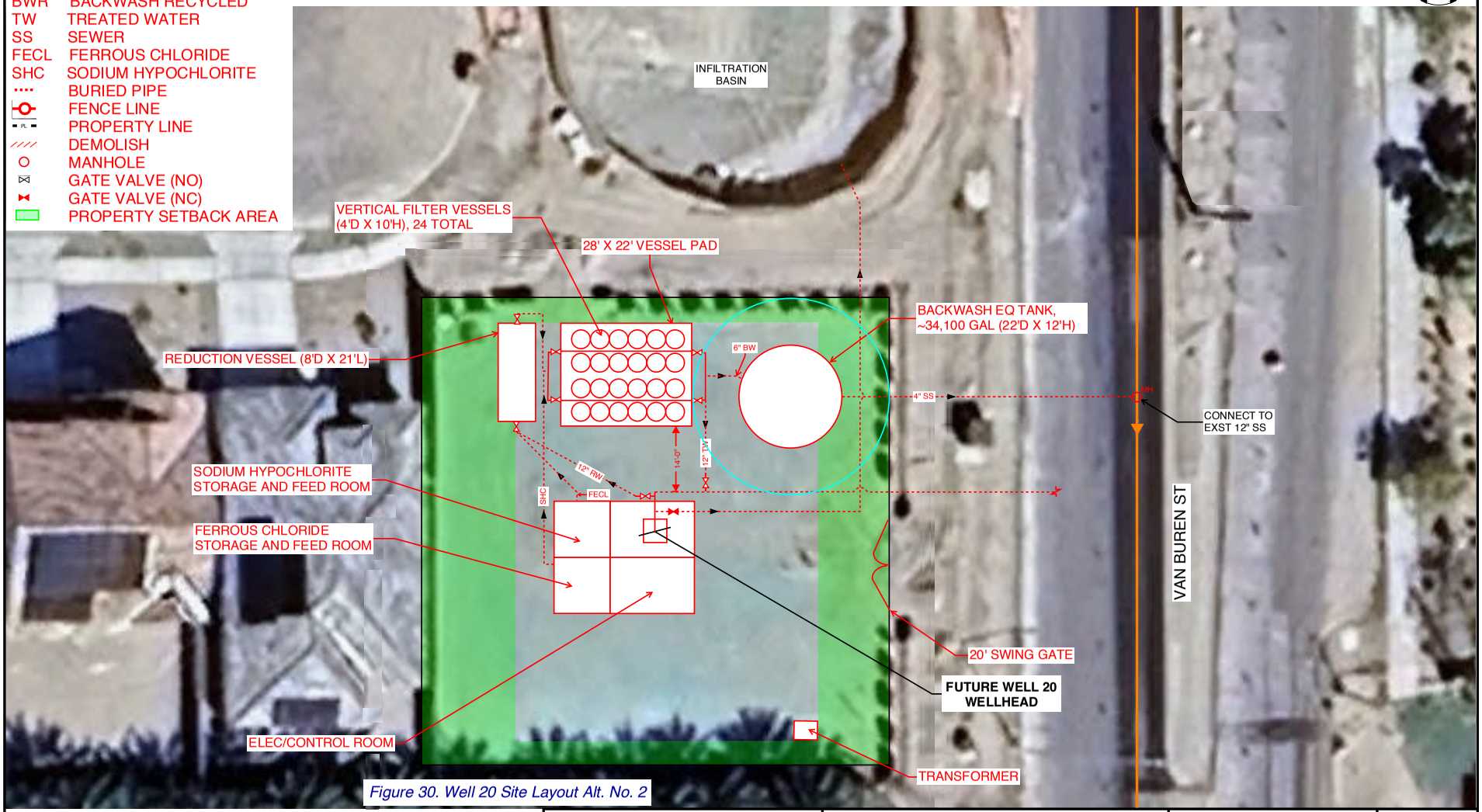


Figure 30. Well 20 Site Layout Alt. No. 2

20' 0' 20' 40'

SCALE 1"= 20'

COACHELLA WATER AUTHORITY

WELL 20 - APN 779-620-041
SITE LAYOUT - EQUALIZED TO SS

WATERWORKS ENGINEERS

5.5 Conceptual Level Cost Estimates

Conceptual level cost estimates for two alternatives at each of the 7 well sites were developed with a capital cost contingency of -30% to 50% (AACE International Class 4). The basis for the cost estimates can be found in Appendix D: Conceptual-level Cost Estimates. The following parameters were used for the conceptual level cost estimates:

- Contingencies:
  - Design: 50% (-30% to 50% per AACE International Class 4)
  - Material Escalation: 40%
  - Construction: 10%
- Cost of Electricity: $0.114 (CWA 2024-2025 elec. bills)
- Average Annual Well Utilization: Varies
- Net Present Worth Analysis:
  - Period: 20 years
  - Discount Rate: 5.0%
- Granular Filter Media:
  - Replacement frequency: 10 years for sand and anthracite
  - Unit cost:
    - Gravel: $20/CF
    - Sand: $30/CF
    - Anthracite: $50/CF
  - Disposal fee: $150/ton
- Chemicals:
  - Ferrous Chloride: $0.50/lb.
  - 12.5% Sodium Hypochlorite: $3/gal
- Sewer discharge fee: $0 (City of Coachella/CSD)

Major equipment capital costs (i.e., reduction vessel and filters) were based on budgetary numbers provided by ATEC and Loprest. O&M costs were developed based on the bullets shown above. Not shown above, additional pumping costs were evaluated based on estimated head loss through RCF treatment system filters, piping, and valves. A summary of the RCF conceptual level cost estimates for each facility, including 20-yr net present worth (NPW), are shown in Table 19.

Table 19. Estimated RCF treatment system conceptual level costs.

Feasible Alternative	Backwash Process			Capital Cost ($M)	O&M Cost ($K/yr)	20-yr NPW ($M)	Unit Cost ($/AF)
	Tank	Water	Sludge				
Well 11							
Alt. 1 - 5 gpm/ft^2	None	Sewer	Sewer	$7.5M	$118K	$9.0M	$560
Alt. 2 - 7 gpm/ft^2	None	Sewer	Sewer	$6.7M	$108K	$8.0M	$500
Well 12							
Alt. 1 - 5 gpm/ft^2	EQ	Sewer	Sewer	$7.2M	$120K	$8.7M	$560
Alt. 2 - 7 gpm/ft^2	EQ	Sewer	Sewer	$6.3M	$110K	$7.7M	$500
Well 16							
Alt. 1 - 5 gpm/ft^2	EQ	Sewer	Sewer	$8.0M	$135K	$9.7M	$300
Alt. 2 - 7 gpm/ft^2	EQ	Sewer	Sewer	$7.2M	$125K	$8.7M	$270
Well 17							
Alt. 1 – 5.5 gpm/ft^2	EQ	Sewer	Sewer	$7.5M	$146K	$9.3M	$170
Alt. 2 – 7.5 gpm/ft^2	EQ	Sewer	Sewer	$6.5M	$136K	$8.2M	$150
Well 18							
Alt. 1 - 5 gpm/ft^2	None	Sewer	Sewer	$7.9M	$126K	$9.4M	$300
Alt. 2 - 7 gpm/ft^2	None	Sewer	Sewer	$7.0M	$116K	$8.5M	$270
Well 19							
Alt. 1 - 5 gpm/ft^2	Recl.	Recycle	Haul	$7.9M	$186K	$10.2M	$170
Alt. 2 - 7 gpm/ft^2	Recl.	Recycle	Haul	$6.7M	$173K	$8.8M	$150
Well 20 (Future)							
Alt. 1 - 5 gpm/ft^2	EQ	Sewer	Sewer	$10.0M	$146K	$11.8M	$370
Alt. 2 - 7 gpm/ft^2	EQ	Sewer	Sewer	$8.8M	$134K	$10.5M	$320

In general, for each well site, Alternative 2 has a lower capital, O&M, and 20-year NPW cost. The 20-year NPW for Alternative 2 is on average ~11% lower than that for Alternative 1 due to the reduced number of filter vessels and reduced backwash volume handling required.

5.6 Alternatives Analysis and Recommendations

A summary of the Alternative 1 and 2 treatment alternatives, including average cost and non-cost considerations, is provided in Table 20, below.

Table 20. Summary of RCF Treatment Alternatives Comparison

Conceptual-Level Cost Estimate[a]	Relative Advantages and Disadvantages
RCF Alternative No. 1 *(5-gpm/ft²)* Avg. Capital Cost: $8.0M Avg. Annual O&M: $0.14M **Avg. 20-Year NPW: $9.7M**	Advantages • Ability to address higher Cr(VI) concentrations or well flowrates; conservative approach in allowable 5- to 10-gpm/ft² range Disadvantages • More vessels, valves, and piping • Larger equipment footprint (+100-ft²) • Larger backwash volume (increased BW Settling/EQ Tank sizing) • Higher cost alternative (+10% to 15%, Capital Cost) • Aesthetically less appealing; more vessels (32 vessels)
RCF Alternative No. 2 *(7-gpm/ft²)* Avg. Capital Cost: $7.0M Avg. Annual O&M: $0.13M **Avg. 20-Year NPW: $8.6M**	Advantages • Fewer vessels, valves, and piping • Smaller equipment footprint (-100-ft²) • Smaller backwash volume (reduced BW Settling/EQ Tank sizing) • Lowest cost alternative (-10% to 15%, Capital Cost) • Aesthetically more appealing; fewer vessels (24 vessels) Disadvantages • Limited ability to address higher Cr(VI) concentrations or well flowrates; less conservative approach in allowable (5- to 10-gpm/ft² range)

[a] Conceptual-level cost estimate assumes a +50% design contingency; 2025 US Dollars.

Based on the above relative advantages and disadvantages for RCF Treatment at 5- and 7-gpm/ft² and specific well and site constraints, the following alternatives for each site are recommended:

Well 11

- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft² Backwash Discharge: Direct to Sewer
  - Anticipated average sustained flowrate of ~1,500- to 1,700-gpm (less than peak design flowrate of 2,000-gpm), equates to effective loading rate nearer to 5-gpm/ft²
  - Less equipment, smaller footprint, and lower cost
  - CWA owns additional land outside of the current fenceline needed to construct additional facilities

Well 12

- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft² Backwash Discharge: EQ to Sewer
  - Anticipated average sustained flowrate of ~1,500- to 1,700-gpm (less than peak design flowrate of 2,000-gpm), equates to effective loading rate nearer to 5-gpm/ft²
  - Less equipment, smaller footprint, and lower cost
  - Large footprint available

Well 16

- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: EQ to Sewer
  - Anticipated average sustained flowrate of ~1,500- to 1,700-gpm (less than peak design flowrate of 2,000-gpm), equates to effective loading rate nearer to 5-gpm/ft^2
  - Less equipment, smaller footprint, and lower cost
  - CWA will need to obtain approximately 7,700-ft^2 to the east of the current parcel

Well 17

- Alt. No. 2 Filter Hydraulic Loading Rate: 7.5-gpm/ft^2 Backwash Discharge: EQ to Sewer
  - Anticipated average sustained flowrate of ~1,500- to 1,700-gpm (less than peak design flowrate of 2,000-gpm), equates to effective loading rate nearer to 5-gpm/ft^2
  - Less equipment, smaller footprint, and lower cost
  - High well utilization site
  - City owns additional land needed to construct additional facilities to the north of the site.

Well 18

- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: Direct to Sewer
  - Anticipated average sustained flowrate of ~1,500- to 1,700-gpm (less than peak design flowrate of 2,000-gpm), equates to effective loading rate nearer to 5-gpm/ft^2
  - Less equipment, smaller footprint, and lower cost
  - Large site footprint available

Well 19

- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: BW Recycle
  - Anticipated average sustained flowrate of ~1,500- to 1,700-gpm (less than peak design flowrate of 2,000-gpm), equates to effective loading rate nearer to 5-gpm/ft^2
  - Small site footprint
  - Less equipment, smaller footprint, and lower cost
  - High well utilization site; other well sites may contribute to distribution system demand

Well 20 (Future)

- Alt. No. 2 Filter Hydraulic Loading Rate: 7-gpm/ft^2 Backwash Discharge: EQ to Sewer
  - Anticipated average sustained flowrate of ~1,500- to 1,700-gpm (less than peak design flowrate of 2,000-gpm), equates to effective loading rate nearer to 5-gpm/ft^2
  - Less equipment, smaller footprint, and lower cost
  - Large site footprint available

5.7 Permitting

The anticipated permitting requirements and timelines for RCF treatment system are summarized in Table 21.

Table 21. Anticipated permitting requirements.

Agency/ Department	Authorization Required/Permit Type	Typical Timeline	Notes
City of Coachella			
Utilities Department (Planning)	Planning approvals	2-4 weeks	
	CEQA, Notice of Determination	8-16 weeks	Assumed categorical exemption
Utilities Department (Building)	Building permits	8-12 weeks	Potential exemption for Public Service Agencies under California Building Code (CBC) 105.2.2
	Construction permit	4-6 weeks	General Construction Permit
	Temporary Construction Easement	4-6 weeks	Within Public Right of Way (ROW)
Utilities Department (CSD)	Sewer plan check	2-4 weeks	Only applicable if sewer connection is required for backwash water processing
	Industrial discharge	4-6 weeks	
Riverside County			
Fire Department	Construction permit	8-12 weeks	Additional Haz. Chem. – FeCl2
State Water Resources Control Board (SWRCB)			
Division of Drinking Water (DDW)	Amendments to existing permits	8-16 weeks	Treatment

5.8 Environmental Constraints

5.8.1 Backwash Sludge

For Well 19, where a sewer connection is not available, settled backwash sludge would likely be disposed of via septic pump truck to a CSD wastewater treatment facility. However, if disposal at a wastewater treatment facility via septic pump truck is not available, the solids would need to be disposed of at a landfill following dewatering. Based on pilot testing results, additional dewatering is likely needed to meet the paint filter test for landfill disposal as solid waste. The following tests need to be completed to classify the sludge as USEPA Resource Conservation and Recovery Act (RCRA) hazardous waste or not:

- Total Threshold Limit Concentration (TTLC):
  - Non-hazardous waste if TTLC <500 mg hexavalent chromium/kg sludge
  - Non-hazardous waste if TTLC <2,500 mg total chromium/kg wet sludge
  - If TTLC >50 mg hexavalent or total chromium/kg sludge, STLC and WET tests would be performed
- Soluble Threshold Limit Concentration (STLC):
  - Non-hazardous waste if STLC <5 mg total chromium/L leachate
- Toxicity Characteristic Leaching Procedure (TCLP):
  - Non-hazardous waste if TCLP <5 mg total chromium/L leachate and STLC <560 mg total chromium

Results from the pilot test showed that dewatered solids would be non-hazardous based on the federal TCLP test. However, solids were considered hazardous for the state of California based on WET test for chromium and vanadium. Therefore, sludge would be classified as hazardous waste in the state of California and could be disposed of at Clean Harbors, Inc. Buttonwillow Landfill Facility in Buttonwillow California, approximately 265 miles from the City of Coachella, California. This landfill also accepts non-hazardous waste, in which case transportation costs would not change, only the disposal fees. The waste could also be disposed of at an out of state (i.e., Arizona) Class D landfill as non-hazardous waste based on pilot testing results for federal hazardous waste classification; this option would also reduce transportation costs, with the closest Class D landfill being Republic Services La Paz County Landfill, approximately 140 miles from the City of Coachella, California.

5.8.2 Granular Filter Media Disposal

Pending periodic inspections and evaluations of particle removal performance, granular filter media may be removed from the pressure vessels to Caltrans approved containers for dewatering and disposal by CWA. If the granular filter media is transferred onto another Caltrans approved container other than the transport vehicle, dewatering may not be required. Landfill disposal would likely be subject to the same requirements as dewatered backwash sludge discussed in section 5.8.2. For this PDR, the disposal cost for granular filter media was estimated using a conservative replacement frequency of 10 years and assumed disposal costs of $56K, assuming non-hazardous characterization. The media service provider typically handles the media waste characterization and disposal.

5.9 Additional Design Considerations

The following are additional design considerations and actions that should be completed prior to the start of final design:

- Perform environmental studies, as required for project permitting and project funding
- Procure project funding (e.g., Drinking Water State Revolving Fund)
- Verify planned well flowrates and utilizations with CWA prior to final design
- Well 20 (Future)
    - Design, drill, and install new well.
    - Perform well capacity testing and reporting
    - Sample and test groundwater quality; Confirm applicability of treatment selection and sizing relative to the conceptual design for the well site in this report
- Procure additional land for Well 16
- Perform site surveys
- Prepare site-specific geotechnical reports
- Perform additional analysis to determine if the existing generator is sized sufficiently to run the existing and new treatment system loads.
- Hold stakeholder meetings:
    - Coachella Water Authority
        - Operations
        - Water quality
        - Engineering (civil/mechanical, electrical, controls)
        - Supervisory control and data acquisition (SCADA)
        - Management
    - Treatment equipment suppliers
        - Civil site design coordination for crane/truck access
        - Startup/operation procedures coordination
    - City of Coachella
        - Zoning Department – project notification, setback coordination, and height restrictions
        - Building Department – seek public service agency exemption to permitting
    - State Water Resources Control Board, Division of Drinking Water (DDW)
        - Notification of change to treatment process
        - Permit revisions
        - Startup and commissioning coordination

5.9.1 Treat to Waste Consideration

During the periods when the well is turned off, a short treat to waste period should be considered to prevent a spike in Cr(VI) concentration (Cr(III) on the filter may oxidize back to Cr(VI) in the presence of free chlorine) upon the well starting up again. Previous pilot studies found that this spike is observed for 1 bed volume, after which the oxidized chromium is expelled from the filter. For the recommended 7 to 7.5 gpm/ft^2 loading rate (24-filter vessels) system, it is estimated that the system would need to be run to waste for approximately 3-5 minutes at the design flowrate to remove the possible Cr(VI) build-up in the filter (based on approximately one bed volume, 330 gallons/vessel).

There are several options for handling treat to waste volumes that should be further considered on a site-by-site basis during final design. Initial alternatives reviewed by WWE include:

- Dilution of Cr(VI) within finish water storage tanks,
- Conveyance of water to empty BW EQ tank or settling tank, or
- Backwashing filters with distribution water prior to a planned shutdown.

Because Cr(VI) is not considered an acute contaminant, it could be argued that a treat to waste flush is not necessary. However, this would need to be discussed with the design engineer, CWA stakeholders, and DDW.

WWE performed a preliminary analysis of the initial alternatives for each site. The conclusions from this analysis are provided below:

- Well 11:
  - With no BW EQ tank or finish water storage tank on-site, it is recommended that the filters be backwashed with distribution water prior to well shut down. While the system is backwashing with distribution water, the well would be required to be offline for the duration of the backwash.

- Well 12:
  - The 3.6 MG on-site finish water storage tank is estimated to be sufficient to dilute the small volume of high Cr(VI) water below 10 µg/L of Cr(VI).

- Well 16:
  - The proposed BW EQ tank has a working volume that is greater than the proposed treat to waste volume. The treat to waste flush could be sent to the proposed BW EQ tank and discharged to sewer prior to an operational backwash. However, the treat to waste flush would need to be coordinated with the BW EQ tank level at the time of the treat to waste flush to ensure sufficient volume is available in the tank. If there is not enough volume within the BW EQ tank at the time of the treat to waste, a shorter treat to waste duration could be considered. Because Cr(VI) is not considered an acute contaminant, this potential spike in Cr(VI) to the distribution system may be considered acceptable. However, this should be confirmed with the design engineer, CWA stakeholders, and DDW.

  - An alternative to sending the treat to waste water to the BW EQ tank and distribution system, is to backwash the filters with distribution water prior to a well shut down period.

This backwash would need to be coordinated with the BW EQ tank level to ensure the tank was empty prior to the backwash. While the system is backwashing with distribution water, the well would be required to be offline for the duration of the backwash.

- Well 17:
    - The proposed BW EQ tank has a working volume that is greater than the proposed treat to waste volume. The treat to waste flush could be sent to the proposed BW EQ tank and discharged to sewer prior to an operational backwash. However, the treat to waste flush would need to be coordinated with the BW EQ tank level at the time of the treat to waste flush to ensure sufficient volume is available in the tank. If there is not enough volume within the BW EQ tank at the time of the treat to waste, a shorter treat to waste duration could be considered. Because Cr(VI) is not considered an acute contaminant, this potential spike in Cr(VI) to the distribution system may be considered acceptable. However, this should be confirmed with the design engineer, CWA stakeholders, and DDW.
    - An alternative to sending the treat to waste water to the BW EQ tank and distribution system, is to backwash the filters with distribution water prior to a well shut down period. This backwash would need to be coordinated with the BW EQ tank level as well to ensure the tank was empty prior to the backwash. While the system is backwashing with distribution water, the well would be required to be offline for the duration of the backwash.

- Well 18:
    - The 5 MG on-site finish water storage tank is estimated to be sufficient to dilute the small volume of high Cr(VI) water below 10 µg/L of Cr(VI).

- Well 19:
    - Treat to waste water could be sent to the proposed BW settling tank and recycled similarly to BW water. However, further consideration needs to be given to operational parameters to confirm the volume of water that could be sent to the BW settling tank based on the limited recycle rate to ensure that the BW settling tank is sufficiently drained prior to an operational backwash.
    - An alternative to sending the treat to waste water to the BW settling tank and distribution system, is to backwash the filters with distribution water prior to a well shut down period. This backwash would also need to be coordinated with the BW settling tank level as well to ensure the tank is empty prior to the backwash. While the system is backwashing with distribution water, the well would be required to be offline for the duration of the backwash.

- Well 20:
    - The proposed BW EQ tank has a working volume that is greater than the proposed treat to waste volume. The treat to waste flush could be sent to the proposed BW EQ tank and discharged to sewer prior to an operational backwash. However, the treat to waste flush would need to be coordinated with the BW EQ tank level at the time of the treat to waste flush to ensure sufficient volume is available in the tank. If there is not enough volume

within the BW EQ tank at the time of the treat to waste, a shorter treat to waste duration could be considered. Because Cr(VI) is not considered an acute contaminant, this potential spike in Cr(VI) to the distribution system may be considered acceptable. However, this should be confirmed with the design engineer, CWA stakeholders, and DDW.

- An alternative to sending the treat to waste water to the BW EQ tank and distribution system, is to backwash the filters with distribution water prior to a well shut down period. This backwash would need to be coordinated with the BW EQ tank level as well to ensure the tank was empty prior to the backwash. While the system is backwashing with distribution water, the well would be required to be offline for the duration of the backwash.

6 Appendices

Appendix A: Water Quality Summary Table

Additional water quality parameters including and in addition to those discussed in Section 3: Water Quality Summary are summarized in Table A-1 below. Count indicates the total number of observances and ND is the number of non-detect values.

Table A-1. Well raw water quality summary.

Parameter (Units)	Location	Minimum	Median	Average	Maximum	Count	ND
General Water Quality							
pH (SU)	Well 11	7.7	8.1	8.1	8.2	10	0
	Well 12	7.8	8	8.0	8.2	10	0
	Well 16	7.9	8.2	8.2	8.3	10	0
	Well 17	7.7	8.1	8.1	8.3	11	0
	Well 18	7.2	8.2	8.1	8.3	10	0
	Well 19	7.0	8.0	8.0	8.3	10	0
Total Alkalinity (mg/L as $CaCO_3$)	Well 11	86	93	93	100	9	0
	Well 12	80	84	86	100	9	0
	Well 16	80	81	83	90	9	0
	Well 17	79	84	85	96	9	0
	Well 18	76	80	81	93	9	0
	Well 19	91	95	95	100	9	0
Turbidity (NTU)	Well 11	<0.2	0.26	1.9	8.5	5	1
	Well 12	<0.2	<0.2	0.2	0.7	5	3
	Well 16	0.21	0.78	1.22	3.8	5	0
	Well 17	<0.2	<0.2	0.23	0.73	6	3
	Well 18	<0.2	<0.2	<0.2	0.27	5	3
	Well 19	<0.2	<0.2	<0.2	0.27	5	4
Color (CU)	Well 11	<3	<3	<3	3	5	4
	Well 12	<3	<3	<3	3	5	5
	Well 16	<3	<3	<3	5	5	4
	Well 17	<3	<3	<3	3	5	5
	Well 18	<3	<3	<3	3	5	5
	Well 19	<3	<3	<3	3	5	5
TDS (mg/L)	Well 11	110	170	174	240	10	0
	Well 12	170	205	203	240	10	0
	Well 16	160	180	187	240	11	0
	Well 17	110	170	162	190	10	0
	Well 18	190	210	209	230	11	0
	Well 19	140	170	169	220	11	0
Specific Conductance (µmhos/cm)	Well 11	260	280	277	290	6	0
	Well 12	280	320	312	330	5	0
	Well 16	260	295	302	360	6	0
	Well 17	280	280	285	300	6	0
	Well 18	310	350	345	370	6	0

Parameter (Units)	Location	Minimum	Median	Average	Maximum	Count	ND
	Well 19	250	275	273	290	6	0
Major Anions							
Bicarbonate (mg/L)	Well 11	98	98	98	98	1	0
	Well 12	84	84	84	84	1	0
	Well 16	82	82	82	82	1	0
	Well 17	87	87	87	87	1	0
	Well 18	83	83	83	83	1	0
	Well 19	100	100	100	100	1	0
Chloride (mg/L)	Well 11	6.9	8.2	8.9	19	13	0
	Well 12	9.4	18	17	20	13	0
	Well 16	8	8.9	9.4	13	11	0
	Well 17	9.7	12	11.4	13	13	0
	Well 18	8.1	11	11.6	14	13	0
	Well 19	8.2	9.4	9.5	14	13	0
Sulfate (mg/L)	Well 11	26	30	29.9	32	14	0
	Well 12	23	45	42.1	49	13	0
	Well 16	31	41	43.6	72	11	0
	Well 17	28	31	31.5	34	13	0
	Well 18	49	63	65.1	76	13	0
	Well 19	21	23	24.8	42	14	0
Nitrate (mg/L as N)	Well 11	<0.4	0.5	0.5	0.7	21	2
	Well 12	0.6	0.8	0.8	1.0	21	0
	Well 16	<0.4	0.4	0.4	0.6	20	1
	Well 17	0.5	0.7	0.7	0.9	19	0
	Well 18	<0.4	<0.4	<0.4	0.4	22	7
	Well 19	0.4	0.6	0.6	0.8	22	0
Arsenic (µg/L)	Well 11	<2.0	<2.0	<2.0	2.1	9	7
	Well 12	<2.0	<2.0	<2.0	2.0	9	8
	Well 16	<2.0	2.5	2.4	3.0	9	1
	Well 17	<2.0	<2.0	<2.0	2.5	9	7
	Well 18	2.4	2.8	2.9	3.3	9	0
	Well 19	<2.0	<2.0	<2.0	2	9	8
Boron (µg/L)	Well 11	<100	<100	<100	<100	3	3
	Well 12	<100	<100	<100	<100	3	3
	Well 16	<100	<100	<100	<100	3	3
	Well 17	NA	NA	NA	NA	0	0
	Well 18	NA	NA	NA	NA	0	0
	Well 19	NA	NA	NA	NA	0	0
Chromium, Total	Well 11	15	17	17.1	19	12	0
	Well 12	18	21	20.8	24	12	0
	Well 16	13	16	17.7	32	10	0
	Well 17	20	22	21.9	25	13	0
	Well 18	12	12.5	12.6	14	12	0

Parameter (Units)	Location	Minimum	Median	Average	Maximum	Count	ND
	Well 19	18	19	19.3	21	12	0
Chromium, Hex	Well 11	15	16.5	16.7	19	20	0
	Well 12	<0.1	21	20.4	25	21	1
	Well 16	10	14	14.1	18	19	0
	Well 17	15	22	21.9	25	20	0
	Well 18	10	13	12.8	15	21	0
	Well 19	15	20	19.8	22	21	0
Fluoride (mg/L)	Well 11	0.05	0.7	0.63	1	9	1
	Well 12	0.35	0.6	0.56	0.8	9	0
	Well 16	0.48	0.9	0.9	1.2	9	0
	Well 17	0.5	0.6	0.61	0.7	9	0
	Well 18	0.88	1.2	1.25	1.9	9	0
	Well 19	<0.1	0.6	0.56	0.8	9	1
Silica (mg/L)	Well 11	16	17	16.7	17	3	0
	Well 12	15	16	16	17	3	0
	Well 16	20	20	20	20	1	0
	Well 17	14	15	14.7	15	3	0
	Well 18	12	13	12.7	13	3	0
	Well 19	14	15	14.7	15	3	0
Vanadium (µg/L)	Well 11	20	21	21	23	5	0
	Well 12	16	18	19.6	27	5	0
	Well 16	22	24	23.6	26	5	0
	Well 17	23	25	25.2	28	5	0
	Well 18	26	27	27.8	31	5	0
	Well 19	23	23	23.8	26	5	0
Selenium (µg/L)	Well 11	<2.5	<2.5	<2.5	<2.5	5	5
	Well 12	<2.5	<2.5	<2.5	<2.5	5	5
	Well 16	<2.5	<2.5	<2.5	<2.5	5	5
	Well 17	<2.5	<2.5	<2.5	<2.5	5	5
	Well 18	<2.5	<2.5	<2.5	<2.5	5	5
	Well 19	<2.5	<2.5	<2.5	<2.5	5	5
Major Cations							
Calcium (mg/L)	Well 11	19	21.5	21	23	6	0
	Well 12	20	25.5	24.3	28	6	0
	Well 16	14	16	15.8	18	6	0
	Well 17	18	18	18.7	22	6	0
	Well 18	13	13	13.2	14	6	0
	Well 19	17	18	18	19	6	0
Magnesium (mg/L)	Well 11	2.3	2.6	2.5	2.8	6	0
	Well 12	1.6	1.7	1.7	1.8	6	0
	Well 16	1.3	1.7	1.7	2.1	6	0
	Well 17	1.6	1.9	1.9	2.0	6	0
	Well 18	1.8	2.0	2.0	2.1	6	0

Parameter (Units)	Location	Minimum	Median	Average	Maximum	Count	ND
	Well 19	2.6	2.7	2.7	2.8	6	0
Total Hardness (mg/L as CaCO3)	Well 11	56	64.5	63	69	6	0
	Well 12	57	71	67.8	77	6	0
	Well 16	42	46.5	46.3	51	6	0
	Well 17	52	53	54.3	62	6	0
	Well 18	39	41	41	43	6	0
	Well 19	54	57	56.8	60	6	0
Iron (µg/L)	Well 11	<100	<100	<100	160	6	5
	Well 12	<100	<100	<100	<100	6	6
	Well 16	<100	120	488	2200	6	2
	Well 17	<100	<100	<100	130	6	5
	Well 18	<100	<100	<100	<100	6	6
	Well 19	<100	<100	<100	<100	6	6
Manganese (µg/L)	Well 11	<20	<20	<20	<20	6	6
	Well 12	<20	<20	<20	<20	6	6
	Well 16	<20	<20	<20	29	6	5
	Well 17	<20	<20	<20	<20	6	6
	Well 18	<20	<20	<20	<20	6	6
	Well 19	<20	<20	<20	<20	6	6
Potassium (mg/L)	Well 11	3.9	4.1	4.1	4.2	6	0
	Well 12	3.7	4.0	4.0	4.3	6	0
	Well 16	3.5	3.7	3.7	4.2	6	0
	Well 17	3.7	3.9	3.9	40	6	0
	Well 18	4	4.1	4.2	4.4	6	0
	Well 19	3.8	3.9	3.9	4.1	6	0
Sodium (mg/L)	Well 11	31	31.5	31.8	34	6	0
	Well 12	36	36	36.7	38	6	0
	Well 16	39	40	43.8	59	6	0
	Well 17	35	36	36	37	6	0
	Well 18	52	56	55.8	59	6	0
	Well 19	34	35	35.2	37	6	0
Radiochemistry							
Gross Alpha Activity (pCi/L)	Well 11	1.35	3.95	3.82	5.28	11	0
	Well 12	1.12	3.41	3.32	5.93	11	0
	Well 16	1.80	3.55	3.54	5.38	11	0
	Well 17	1.41	2.96	3.00	5.37	8	0
	Well 18	1.33	3.16	3.34	4.86	11	0
	Well 19	2.67	3.75	3.79	5.55	11	0
Combined Uranium (pCi/L)	Well 11	3.34	3.85	3.83	4.38	5	0
	Well 12	3.23	3.51	3.6	3.95	5	0
	Well 16	3.56	3.95	4.16	4.68	5	0
	Well 17	2.17	2.9	2.99	3.99	4	0
	Well 18	2.73	3.73	3.62	4.26	5	0

Parameter (Units)	Location	Minimum	Median	Average	Maximum	Count	ND
	Well 19	2.96	3.59	3.65	4.61	5	0
Combined Radium (pCi/L)	Well 11	0.03	0.1	0.18	0.5	4	1
	Well 12	0.06	0.19	0.19	0.31	4	0
	Well 16	0.07	0.3	0.29	0.5	4	2
	Well 17	0.01	0.24	0.25	0.5	4	1
	Well 18	0.17	0.59	0.59	1	2	1
	Well 19	0.05	0.12	0.12	0.2	4	0

Appendix B: Bench- and Pilot-scale Testing Results

Coachella Water Authority

Hexavalent Chromium Compliance Study

DRAFT Well 19 Reduction Coagulation Filtration Pilot Testing Report

Prepared by Corona Environmental Consulting, LLC

December 1, 2025

CORONA ENVIRONMENTAL CONSULTING

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Acronyms and Abbreviations

AI	Aggressive Index
AKEL	AKEL Engineering Group, LLC
Babcock	Babcock Laboratories, Inc
BWLR	Backwash Loading Rate
Ceraclear	Ceraclear-Ceracap Dual Media Configuration
Corona	Corona Environmental Consulting, LLC
Cr(III)	Trivalent Chromium
CrO_4^{2-}	Chromate
$Cr(OH)_3$	Chromium Hydroxide
Cr(T)	Total Chromium
Cr(VI)	Hexavalent Chromium
CSMR	Chloride-to-Sulfate Mass Ratio
CWA	Coachella Water Authority
DDW	California State Water Resources Control Board Division of Drinking Water
DTSC	California EPA's Department of Toxic Substances Control
Fe	Iron
Fe(II)	Ferrous Iron
$FeCl_2$	Ferrous Chloride
$Fe(OH)_3$	Ferric Hydroxide
ft^2	Square Feet
ft^3	Cubic Feet
gpm	Gallon Per Minute
Hazen	Hazen and Sawyer
HLR	Hydraulic Loading Rate
LCRR	Lead and Copper Rule Revisions
LI	Larson-Skold Index
LLRW	Low-Level Radioactive Waste
LSI	Langelier Saturation Index
Max	Maximum
MCL	Maximum Contaminant Level
MG	Million Gallons
MGD	Million Gallons per Day
Min	Minimum
ND	Non-detect
OCCT	Optimal Corrosion Control Treatment
O&M	Operations and Maintenance
PLC	Programmable Logic Controller
psi	Pound Per Square Inch
PWS	Public Water System

RCF	Reduction Coagulation Filtration
RCRA	Resource Conservation and Recovery Act
RI	Ryznar Index
Sand	Sand-Anthracite Dual Media Configuration
SMCL	Secondary Maximum Contaminant Level
TCLP	Toxic Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UFRV	Unit Filter Run Volume
VSD	Valley Sanitation District
Wateropolis	Wateropolis Corporation
WET	Waste Extraction Test
WWE	Water Works Engineers, LLC
WWTP	Wastewater Treatment Plant

Executive Summary

Coachella Water Authority (CWA) has identified all six of their groundwater sources (Well 11, Well 12, Well 16, Well 17, Well 18, and Well 19), in addition to the future Well 20, as needing treatment to maintain compliance with California State Water Resources Control Board Department of Drinking Water's (DDW) newly adopted hexavalent chromium [Cr(VI)] Maximum Contaminant Level (MCL) of 10 µg/L. As part of the compliance planning, CWA engaged Corona Environmental Consulting, LLC (Corona) and Water Works Engineers, LLC (WWE) to complete a treatment technology evaluation, summarized in *Hexavalent Chromium Treatment Technology Evaluation* (Corona, 2025), and to complete the preliminary design of the selected treatment technology for each of the impacted wellsites.

The treatment technology evaluation identified reduction coagulation filtration (RCF) as the most appropriate treatment technology at each of the Cr(VI) impacted wells based on its relative ease of operation, operatational familiarity and substantially lower conceptual 20-year net present worth cost estimates. RCF was then studied at pilot-scale between August 4, 2025, and September 30, 2025, to confirm the RCF treatment process performance, advise backwash wastewater management, and to inform the preliminary treatment design. Table ES1 summarizes the pilot study's objectives, and respective findings.

Table ES1: Summary of the pilot study objectives and findings

Objective		Pilot Findings
1	Confirm ferrous dose, reduction time, and filter runtimes required to achieve Cr(VI) finished water goal.	A 0.5 mg-Fe/L ferrous chloride dose with a 2-minute reduction time was shown to consistently achieve Cr(VI) concentrations below the 8 µg/L goal for all evaluated filter conditions including varying media types (Sand-Anthracite (Sand) and Ceraclear-Ceracap (Ceraclear)), hydraulic loading rates (5 – 10 gpm/ft^2), and backwash recycle conditions (no recycle or 10% influent flow recycled).
		Sand conditions at 5-, 7.5-, and 10-gpm/ft^2 hydraulic loading rates (HLR) achieved 48 hours of runtime while meeting filter effluent Cr(VI), total chromium [Cr(T)], and iron (Fe) goals. Ceraclear achieved 36 hours of runtime with backwashes triggered due to pilot pressure limitations; longer runtimes can likely be accommodated at full-scale while maintaining Cr(VI) and Fe goals.
		Headloss increased with increasing HLRs for Sand conditions. Compared to Sand at the same HLR, headloss was substantially higher for the Ceraclear media, which would result in increased pumping requirements and electrical costs at full-scale.
		Backwash recycle was not shown to substantially impact filter effluent Cr(VI) concentrations or filter operations in terms of headloss or runtime.
2	Explore backwash wastewater management options.	At the temperatures observed during the pilot study (72-80°F), a backwash loading rate (BWLR) of 19.9 gpm/ft^2 for sand media and 7.6 gpm/ft^2 for Ceraclear media was required to achieve 25% media expansion. These rates are expected to decrease at lower operational temperatures.
		At a ferrous dose of 0.5 mg-Fe/L, all Sand filters successfully operated for a 48-hour period. This resulted in unit filter run volumes (UFRV) ranging from 14,400 gal/ft^2 (HLR of 5 gpm/ft^2) to 28,800 gal/ft^2 (HLR of 10 gpm/ft^2) and filter recovery between 99.0 and 99.5%, respectively, well above the recommended minimum of 95%. Ceraclear media also achieved filter recovery greater than 99%.
		CWA does not currently have water quality discharge limits to the sewer system; therefore, backwash characterization was completed to inform potential contaminant loadings to the wastewater treatment plant (WWTP)

Objective		Pilot Findings
		due to backwash wastewater discharge. Fe and Cr(T) recovery in the wastewater was highly predictable for the Sand filters, ranging from 91-95% and 95-103%, respectively. The maximum volume of backwash settleable solids was observed after 3-hours for Sand, operated at an HLR of 5 gpm/ft^2 (13 mL/L), and 1-hour for Sand operated at an HLR 10 gpm/ft^2 (25 mL/L), suggesting there is a minimum settling time required for each operational condition, prior to initiating a backwash recycle stream. Sampling of the decant water showed a decrease in Cr(T), Fe and arsenic concentrations as solids settled with time and an increase in Cr(VI) as Cr(III) re-oxidized with free chlorine. All wells with possible connection to the CWA sewer system could potentially discharge directly to sewer, depending on the selected filter media and with consideration of peak or non-peak hours for discharge. Metered discharge could also be considered for each of these wellsites.
		If solids are to be managed on-site, the dewatered solids will likely be classified as non-Resource Conservation and Recovery Act (RCRA) California hazardous waste, which will require disposal at an appropriate waste receiving facility.
3	Evaluate the impact of backwash wastewater recycling on filter operations.	Backwash recycle introduced at 10% of the filter flow rate prior to the reduction contactors increased the filter UFRV by 10% while still achieving the filter effluent Fe, Cr(T) and Cr(VI) water quality goals. When conservatively estimating a backwash recycle rate of 80% of the backwash volume, the volume directed to sewer for Sand filters decreases from 139 gal/ft^2 to 28 gal/ft^2. The observed increased variability in concentrations were expected due to the operational conditions of the backwash recycle stream and is expected to improve at full-scale with more efficient backwash wastewater settling and the ability to increase the ferrous reduction time and ferrous iron dose to accommodate the additional 10% flow.
4	Evaluate the potential for RCF treatment with raw water blending.	A 1 mg-Fe/L ferrous chloride dose with 1- and 2-minute reduction times was shown to consistently achieve filter effluent Cr(VI) concentrations below the raw water bypass goal of 2 µg/L for all filter conditions.
		The Sand condition at a 5 gpm/ft^2 HLR, 1 mg-Fe/L dose, and 2-minute reduction time achieved 48-hours of runtime while meeting Cr(VI) and Fe goals. The Sand condition at a 10 gpm/ft^2 HLR, 1 mg-Fe/L dose, and 2-minute reduction resulted in a shortened runtime of 40-hours based on Fe breakthrough. The Ceraclear condition at a 10 gpm/ft^2 HLR, 1 mg-Fe/L dose, and 2-minute reduction, resulted in a shortened runtime of 28-hours based on headloss. Sand operated at a 10 gpm/ft^2 HLR, 1 mg-Fe/L dose, and 1-minute reduction with raw water treatment bypass, represents the smallest feasible treatment equipment footprint for CWA wells. Runtimes associated with this condition were significantly shorter at 24-hours due to Fe breakthrough.
		More rapid Cr(T) and Fe breakthrough, and headloss accumulation was observed at the 1 mg-Fe/L dose when compared to 0.5 mg-Fe/L. The 1-minute reduction time condition showed the fastest Cr(T) and Fe breakthrough.
		Calculated raw water treatment bypass rates varied from 26% to 46% at CWA

Objective		Pilot Findings
		wells based on each well's raw water Cr(VI) and a treated water concentration of 2 µg/L.
5	Assess the fate of Cr(VI) within the drinking water and sanitary sewer distribution system.	Little to no re-oxidation was observed in filtered water held for up to 7 days. Targeting Cr(T) concentrations less than the Cr(VI) goal in finished water is a conservative treatment approach to meeting the MCL.
		Wastewater influent and backwash blended water Cr(VI) was non-detect at 5% and 15% volume of backwash water. Cr(T) and Fe concentrations were elevated compared to historical wastewater influent data corresponding to the concentrations and amount of backwash water added.

Introduction

Coachella Water Authority (CWA) has identified all six of their active groundwater wells: Well 11, Well 12, Well 16, Well 17, Well 18, and Well 19, in addition to the planned Well 20, as requiring treatment to achieve compliance with the California State Water Resources Control Board Division of Drinking Water's (DDW) maximum contaminant level (MCL) of 10 µg/L for hexavalent chromium [Cr(VI)]. CWA engaged Corona Environmental Consulting, LLC (Corona) and Water Works Engineers, LLC (WWE) to complete their Cr(VI) compliance planning for these impacted wells. This planning commenced with a treatment technology evaluation, summarized in *Hexavalent Chromium Treatment Technology Evaluation* (Corona, 2025), which identified reduction coagulation filtration (RCF) as the most appropriate treatment technology at each of the Cr(VI) impacted wells based on its relative ease of operation, operator familiarity and substantially lower conceptual 20-year net present worth cost estimates.

With RCF selected as the preferred treatment technology for the CWA system, a pilot-scale study was then conducted at Well 19 between August 4, 2025, and September 30, 2025, to confirm the RCF treatment process performance, advise backwash wastewater management, and to inform the preliminary treatment design being completed by WWE. The following report provides an overview of the impacted source waters, RCF treatment process, pilot testing objectives, pilot design, pilot results, desktop corrosion analysis, and conclusions.

Source Water Summary

Each of the Cr(VI) impacted wells have comparable water quality matrices and are expected to receive individual RCF treatment due to their geographical distance from each other (Figure 1). Bench-scale dose response testing, further described in *Section: Previous Pilot- and Bench-scale RCF Testing*, confirmed the similarities in water quality with comparable treatment outcomes observed for each of these wells. Accordingly, the pilot-scale study was completed at the most utilized wellsite, Well 19, with the results being used to inform the preliminary design of all wellsites.

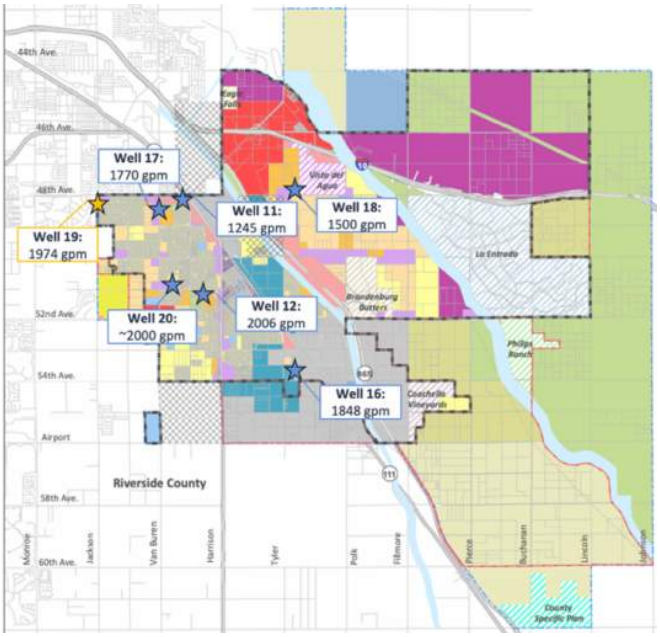


Figure 1. System map showing active and planned wells and their corresponding pump rates.

A summary of individual well design capacities, average annual utilization and historical water quality are provided in Table 1, with the pilot location (Well 19) bolded for reference. Production data was provided for 2021 to 2024, and water quality data represent samples collected between 2011 and 2025, with non-detect (ND) values evaluated as half the reporting limit to calculate average concentrations. Note that Well 16 has not been used for production over the period of record and is anticipated to return online at a 1,500-gpm flow rate following rehabilitation. Well 20 is planned to be developed in 2025 with a design capacity of 2,000 gpm.

Table 1. Well production and water quality summary [minimum – maximum (mean)]

Parameter	Well 11		Well 12		Well 16		Well 17		Well 18		Well 19	
Well Details												
Design Capacity (gpm)	2,000		2,000		2,000[1]		2,200		2,000		**2,000**	
2024 Pump Rate (gpm)	1,245		2,006		1,848		1,770		1,500		**1,974**	
Utilization (%)	25%		24%		0.1%		76%		48%		**90%**	
Chromium												
Total Chromium (µg/L)	15-19	(17.1)	18-24	(20.8)	13-32	(17.7)	20-25	(21.9)	12-14	(12.6)	**18-21**	**(19.3)**
Hexavalent Chromium (µg/L)	15-19	(16.7)	0-25	(20.4)	10-18	(14.1)	15-25	(21.9)	10-15	(12.8)	**15-22**	**(19.8)**
General Water Quality												
Alkalinity (mg/L)	86-100	(93.3)	80-100	(86.3)	80-90	(82.8)	79-96	(85.0)	76-93	(81.0)	**91-100**	**(95.3)**
Color (CU)	ND[2]		ND		ND		ND		ND		**ND**	
Conductivity (µmhos/cm)	260-290	(277)	280-330	(312)	260-360	(302)	280-300	(285)	310-370	(345)	**250-290**	**(273)**
Hardness (mg/L as $CaCO_3$)	56-69	(63)	57-77	(68)	42-51	(46)	52-62	(54)	39-43	(41)	**54-60**	**(57)**
Odor (TON)	ND		ND		ND		ND		ND		**ND**	
pH (SU)	7.7-8.2	(8.1)	7.8-8.2	(8.0)	7.9-8.3	(8.2)	7.7-8.3	(8.1)	7.2-8.3	(8.1)	**7.0-8.3**	**(8.0)**
Total Dissolved Solids (mg/L)	110-240	(174)	170-240	(203)	160-240	(187)	110-190	(162)	190-230	(210)	**140-220**	**(169)**
Turbidity (NTU)	ND-8.5	(1.9)	ND-0.7	(0.2)	0.2-3.8	(1.2)	ND-0.7	(0.2)	ND-0.3	(0.1)	**ND-0.3**	**(0.1)**
Additional Analytes of Concern												
Arsenic (µg/L)	ND-2.1	(1.2)	ND-2.0	(1.2)	ND-3.0	(2.4)	ND-2.5	(1.3)	2.4-3.3	(2.9)	**ND-2.0**	**(1.1)**
Iron (µg/L)	ND-160	(ND)	ND-50	(ND)	50-2200	(488)	ND-130	(ND)	ND	ND	**ND**	**ND**
Manganese (µg/L)	ND	(ND)	ND	(ND)	ND-29	(ND)	ND	(ND)	ND	(ND)	**ND**	**(ND)**
Selenium (µg/L)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	**ND**	**(ND)**
Silica (mg/L)	16-17	(17)	15-17	(16)	20	(20)	14-15	(15)	12-13	(13)	**14-15**	**(15)**
Uranium (pCi/L)	3.3-4.4	(3.8)	3.2-4.0	(3.6)	3.6-4.7	(4.2)	2.2-4.0	(3.0)	2.7-4.3	(3.6)	**3.0-4.6**	**(3.7)**
Vanadium (µg/L)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	**23-26**	**(24)**

[1]1,500 gpm flow rate expected for Well 16 after rehabilitation

[2]Non-detect as reported in California Drinking Water Watch Database or CWA provided data

Reduction Coagulation Filtration Process Description

The RCF treatment process removes chromium by first reducing Cr(VI) to the less soluble trivalent chromium [Cr(III)] species, as chromium hydroxide [$Cr(OH)_3$]. This is completed with the addition of a chemical reductant, such as ferrous iron [Fe(II)] in the case of this pilot study. The reduction of Cr(VI) as chromate (CrO_4^{2-}) to Cr(III) as $Cr(OH)_3(s)$ is assumed to proceed according to the following equation:

$$3Fe^{2+} + CrO_4^{2-} + 8H_2O \rightarrow 3Fe(OH)_3(s) + Cr(OH)_3(s) + 4H^+ \qquad \text{Equation 1}$$

where $Fe(OH)_3(s)$ is ferric hydroxide, a typical form of ferric iron. This ferrous reduction time can be as little as 1 to 2 minutes, with the equivalent Cr(VI) reduction being achievable with longer reduction times at a lower Fe(II) dose. Since iron (Fe) is dosed in excess of the stoichiometric ratio, chlorine is injected following the requisite reduction time to aid in the oxidation of the residual Fe to form $Fe(OH)_3$ particles. It is assumed that Cr(III) is adsorbed to the $Fe(OH)_3$ particles along with other metals, namely arsenic, which are subsequently removed through filtration. Periodically, these filters are backwashed to remove the accumulated particles and restore hydraulic capacity. A simplified schematic of the RCF treatment process is presented in Figure 2.

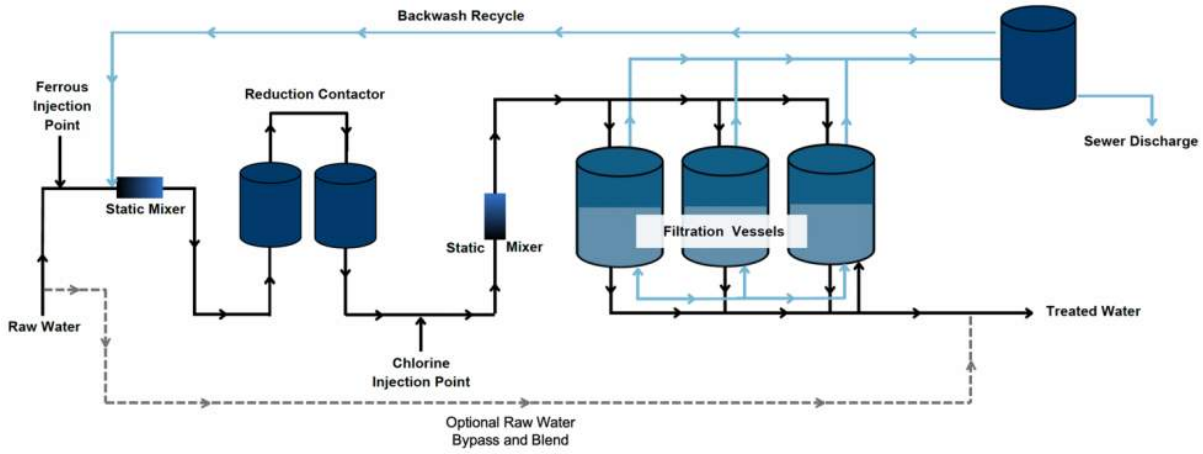


Figure 2. Simplified RCF treatment process schematic

The process wastewater produced during a backwash can be managed in a variety of ways. Backwash wastewater can be discharged directly to sewer given the sewer capacity is able to support the additional flow and the wastewater treatment plant (WWTP) can effectively treat the additional backwash contaminant loadings to achieve their permitted discharge limits. The backwash can also be directed to a storage tank to facilitate solids settling and allow for backwash recycling, improving the overall water efficiency of the treatment process. The settled backwash solids within the storage tank would then be periodically removed from the bottom of the tank to the sewer. If the solids cannot be discharged to sewer, the solids must be removed for offsite disposal or dewatered onsite. Dewatering incrementally increases the concentration of Cr(VI) and other co-precipitated metals, which can impact the material's disposal options. Regardless of the disposal approach, the waste will require characterization prior to selecting the appropriate disposal option.

Previous Pilot- and Bench-scale RCF Testing

Hazen and Sawyer (Hazen) and Corona collaboratively completed bench- and pilot-scale RCF testing for CWA during the initial Cr(VI) regulatory period, as described in *Coachella Water Authority Stannous Chloride and Ferrous Chloride Testing for Hexavalent Chromium Removal* (Hazen, 2017). Pilot-scale testing was completed at Well 12 and Well 19 using both traditional sand media and Wateropolis

Corporation's [Wateropolis Corporation (Mentor, OH)] Ceraflow-50 media. Fe(II) doses were tested at concentrations between 0.5 and 2 mg-Fe/L, at hydraulic loading rates (HLR) of 5 and 10 gpm/ft^2. The best performing treatment condition was identified as a Fe(II) dose of 0.5 mg-Fe/L with a 2-minute reduction time and a 10 gpm/ft^2 HLR. Traditional sand media was preferred over Ceraflow-50 due to its lower headloss accumulation. It is important to note that the study required the addition of polymer (Magnafloc E38) dosed at 0.1 mg/L to achieve 45 hours of operation prior to backwashing on headloss at 8.9 psi. The maximum total chromium [Cr(T)] concentration remained below 6 µg/L during this testing.

As part of the current Cr(VI) compliance planning study, Corona completed initial RCF ferrous dose response testing to evaluate Cr(VI) reduction for all six of the Cr(VI) impacted wells. The *RCF Ferrous Chloride Evaluation Bench-scale Study Test Plan* (Corona, 2025), is provided as Appendix A: Bench-scale Testing Protocol. The objectives of this study were to:

- Compare and validate the results of the 2017 Hazen study with current water quality
- Confirm the reduction time and Fe(II) dose combinations that will achieve CWA's finished water Cr(VI) goal of 8 µg/L for each source water
- Compare overall treatability between the impacted wells
- Identify a representative wellsite and the startup operational conditions for pilot testing

The chemical doses and reduction times tested at bench-scale for each well are summarized in Table 2, where the bolded conditions identify those that were previously tested by Hazen in 2017.

Table 2. Bench-scale ferrous dose response testing

Ferrous Iron Dose (mg-Fe/L)	**Ferrous Reduction Time** (min)	**Sodium Hypochlorite Dose** (mg-Cl_2/L)
0.3	2	0.80
	3	
0.5	**1**	
	2	
	3	
0.8	1	
	2	
1.0	**1**	
	2	

Results from this testing found that Fe(II) doses as low as 0.5 mg-Fe/L with a reduction time of 2 minutes, could achieve Cr(VI) concentrations below 8 µg/L, or 80% of the MCL, for all wellsites (Figure 3). At a 1-minute reduction time, Fe(II) doses between 0.5 and 0.8 mg-Fe/L would be required to achieve Cr(VI) concentrations below 8 µg/L at all wellsites. The 3-minute reduction time did not substantially improve Cr(VI) reduction and was not further considered due to the increased capital costs and footprint associated with the additional reduction time. Under equivalent conditions, treated water Cr(VI) was noticeably lower for Well 16 and Well 18 than those of the other wells, presumably due to lower raw water Cr(VI) concentrations. However, treated water Cr(VI) concentrations converge for all wells at the higher Fe(II) doses and reduction times.

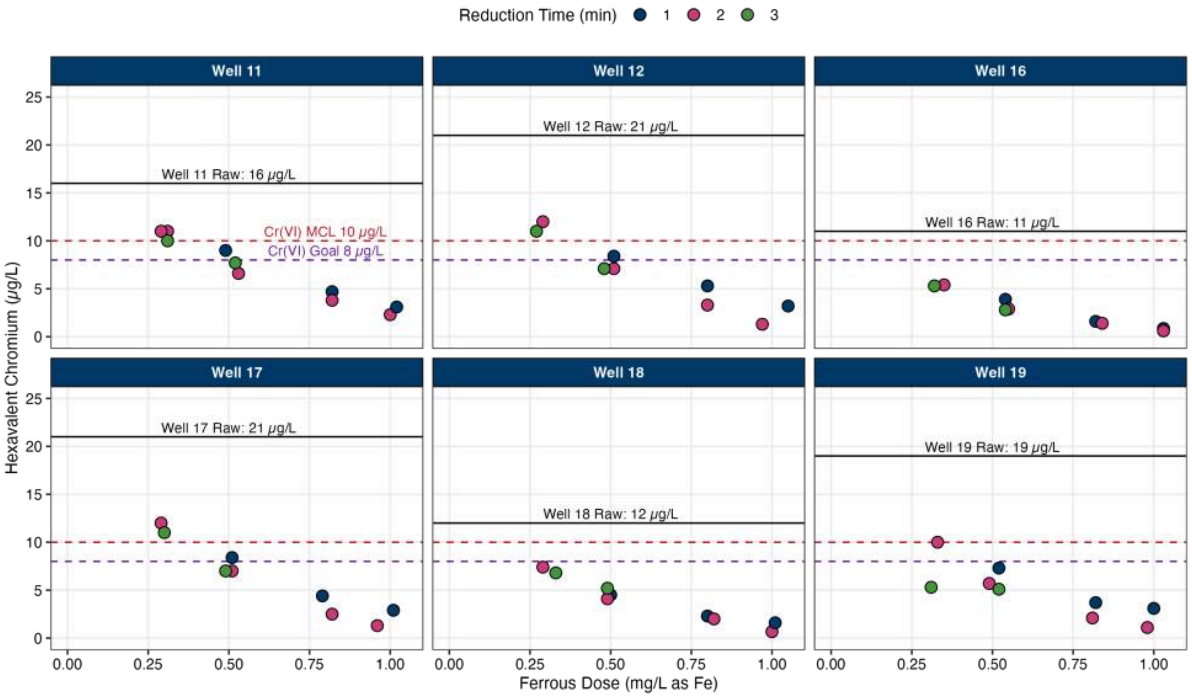


Figure 3. Bench-scale Cr(VI) results from the April 2025 ferrous dose response testing

A comparison of the maximum Cr(T) and Cr(VI) results obtained at Well 12 or Well 17 from the 2017 and 2025 studies are presented in Table 3. At a Fe(II) dose of 0.5 mg-Fe/L and a reduction time of 2 minutes, the maximum Cr(T) concentration from the 2025 bench-scale testing were greater than those observed during the 2017 pilot-scale testing. This may be the result of improved performance at pilot-scale, including the addition of polymer. However, at an increased dose of 1 mg-Fe/L and a reduction time of 2 minutes, the maximum Cr(T) and Cr(VI) concentrations from the 2025 bench-scale testing were comparable to those from 2017. These results indicate that the Hazen study results can still be referenced for the current water quality. As confirmed by both studies, a Fe(II) dose of 0.5 mg-Fe/L and a 2-minute reduction time was the recommended treatment condition to be carried forward during pilot-scale testing.

Table 3. Summary of 2017 pilot-scale testing and 2025 bench-scale testing results
Source (Well 12 or Well 19) for 2017 Results not known.

Testing Conditions		**Maximum Cr(T) [Maximum Cr(VI)] (µg/L)**		
Ferrous Iron Dose (mg-Fe/L)	**Reduction Time** (min)	**Hazen 2017 Pilot** Ceraflow Media	**Hazen 2017 Pilot** Sand Media	**Corona 2025** Bench Testing
0.5	2	5.6	3.3	8.3 [7.1]
1.0	2	3.6	1.4 [0.6]	1.5 [1.3]

Study Objectives

The primary objective of this pilot testing program was to verify RCF treatment performance at a representative CWA wellsite. Once treatment performance was confirmed, the pilot objectives were developed to expand on the 2017 Hazen study findings. This included identifying opportunities for capital and operational cost savings, evaluating raw water bypass and blending, and characterizing backwash wastewater to advise backwash wastewater management, with the goal of informing a full-

scale design that best fits the needs at each individual wellsite. Testing was completed at Well 19, with results being used to inform preliminary design for the remaining wellsites based on the pilot and bench-scale testing results. Table 4 summarizes the pilot study objectives and their respective operational plans as identified in the original test plan (Appendix B: RCF Pilot Test Plan). A more detailed description of each of the pilot objectives are provided below.

Table 4. Summary of the pilot study objectives and operations plan.

Objective		Operation Plan
1	Confirm ferrous dose, reduction time, and filter runtimes required to achieve Cr(VI) finished water goal.	Confirm that the selected bench-scale testing dose-time pair can reliably achieve the finished water Cr(VI) goal of ≤ 8 µg/L. Establish backwash trigger criteria (i.e., headloss, Cr(TI) or Fe breakthrough, runtime) through extended operations.
2	Explore backwash wastewater management options.	Confirm backwash hydraulic loading rates required to achieve minimum 25% media expansion for each media configuration.
		Compare water efficiency, instantaneous backwash volumes, and total backwash volumes for various filter media configurations and hydraulic loadings rates.
		Characterize backwash waste by collecting and analyzing: o bulk backwash samples to characterize backwash quantity and quality that may be discharged to the CWA sanitary sewer. o settled backwash decant and solids settling to evaluate opportunities to recycle backwash. o settleability of backwash solids to identify disposal options
		Evaluate the feasibility of on-site backwash solids dewatering using a pilot-scale system, and collect dewatered solids for characterization.
3	Evaluate the impact of backwash wastewater recycling on filter operations.	Recycle backwash decant at 10% of influent flow rate to assess the impact of backwash wastewater recycling on filter runtimes, headloss accumulation, and Fe and Cr(T) breakthrough.
4	Evaluate the potential for RCF treatment with raw water blending.	Operate at an increased Fe(II) dose to achieve low-level (<2 µg/L) finished water Cr(VI) concentrations. Evaluate the maximum allowable raw water bypass that can achieve a Cr(VI) finished water goal of 8 µg/L and the impact to UFRV.
5	Assess the fate of Cr(VI) within the drinking water and sanitary sewer distribution system.	Perform bottle hold tests on backwash wastewater and treated filter effluent to estimate the extent of Cr(VI) transformation within these systems.

Objective 1: Confirm ferrous dose, reduction time, and filter runtimes to achieve Cr(VI) goal

The recommended Fe(II) dose of 0.5 mg-Fe/L and reduction time of 2 minutes from bench-scale testing was the starting operational dose-time pair for Objective 1. Filter runs were extended past the anticipated operational runtime at startup to establish the backwash criteria for the remainder of the pilot study. Filter backwashes were initially triggered by 48 hours of operation based on runtimes achieved during the 2017 pilot study, or the pilot system's maximum allowable headloss of 8 psi (18.5 feet of head). Backwash triggers were then adjusted based on filter performance, such as finished water quality (Cr(T) ≤ 8 µg/L, Cr(VI) ≤ 8 µg/L, Fe ≤ 0.24 mg/L) and unmaintainable filter headloss development.

In addition to Cr(VI) and Cr(T) removal, Fe must also be reliably removed to achieve a finished water goal of 0.24 mg-Fe/L (80% of the secondary MCL). During operations, backwashes were manually initiated in the field based on filter effluent Fe breakthrough results, if necessary. Analytical samples of filter

effluent were collected throughout filter runs to identify Fe and Cr(T) breakthrough. At full-scale, runtimes may be shortened from those evaluated in this study to target lower Fe breakthrough concentrations in the finished water to reduce legacy Fe in the distribution system.

Objective 2: Explore backwash wastewater management options

Chromium loaded $Fe(OH)_3$ particles must be filtered through granular media to remove Fe and chromium hydroxides and achieve their respective finished water goals. The filters then require backwashing to remove the accumulated particulate and restore hydraulic capacity. This backwash water volume and quality are highly dependent on Fe(II) dose, unit filter run volume (UFRV), and the background water quality matrix. As each of the impacted wellsites have unique backwash management needs due to the variable sanitary sewer connections and capacities, this objective explores multiple backwash management options to understand the character of backwash wastewater under different conditions and identify opportunities to minimize backwash residuals requiring disposal.

The following sub-objectives are expected to provide the quantitative data needed to inform backwash wastewater management options at each of the impacted wellsites.

Confirm backwash hydraulic loading rates needed to achieve 25% media expansion

To minimize instantaneous and total backwash wastewater volumes, the backwash loading rate (BWLR) required to achieve 25% media expansion was confirmed and recorded during the pilot study. The BWLR were adjusted from the manufacturer's suggested specifications until 25% media expansion was achieved. By minimizing the BWLR, the total volume of backwash storage required on site and the overall volume of residuals requiring disposal may decrease.

Compare water efficiency, instantaneous backwash volumes and total backwash volumes for various filter media configurations and hydraulic loadings rates.

This objective evaluated the performance of various media configurations and HLRs for both finished water quality and filter performance metrics, such as backwash frequency, headloss accumulation, and UFRV, to determine the water efficiency of each filter media configuration. Outcomes from this objective were used to inform full-scale design, as operating at increased HLRs may allow for fewer filtration vessels at footprint constrained sites, while increased water efficiency will decrease the total volume of backwash residuals requiring management. The following filter media configurations were tested:

1. 6 inches of anthracite on top of 24 inches of silica sand; 5 gpm/ft^2
2. 6 inches of anthracite on top of 24 inches of silica sand; 7.5 gpm/ft^2
3. 6 inches of anthracite on top of 24 inches of silica sand; 10 gpm/ft^2
4. 6 inches of Ceracap on top of 24 inches of Ceraclear; 10 gpm/ft^2

Traditional sand media was operated at a typical HLR of 5 gpm/ft^2 and a BWLR of approximately 20 gpm/ft^2, and increased HLRs of 7.5 and 10 gpm/ft^2 to evaluate whether increased UFRVs can be achieved. These increased HRLs may reduce the requisite full-scale footprint, increase water efficiency, and limit the backwash volume requiring management. Note that traditional sand media at a HLR of 10 gpm/ft^2 with polymer addition was evaluated as the best performing operating condition in the 2017 Hazen study; however, it demonstrated decreased runtimes compared to 5 gpm/ft^2 without polymer. An anthracite cap was included in this study as it has been shown to increase filter runtimes by capturing larger floc particles ahead of the finer grained filter media.

The runtimes associated with Cr(T) and Fe breakthrough were then used to calculate the UFRV for a given operational configuration (Equation 2). UFRV normalizes the total volume of water treated between the different operating conditions for each media.

$$UFRV\left(\frac{gallons}{ft^2}\right) = \frac{Volume\ Treated\ (gallons)}{Filter\ Surface\ Area\ (ft^2)} \quad \text{(Equation 2)}$$

While still commercially available, Ceraflow-50 was not tested at pilot-scale due to the media vendor's (Wateropolis) exclusive agreement with a treatment system manufacturer. A similar ceramic filter media product, Ceraclear, was provided by Wateropolis and tested as it shares many of the benefits of Ceraflow-50: higher design operating HLR (10 gpm/ft^2) and lower BWLR (< 10 gpm/ft^2) compared with traditional sand media. The Ceraclear media was evaluated with a 6" cap of a different anthracite media provided by Wateropolis (Ceracap) to improve upon the Ceraflow-50 filter performance observed in the 2017 Hazen study, by potentially reducing the overall headloss accumulation.

Characterize backwash wastewater under various management options.

Given the variability in sewer capacities at each of the impacted wellsites, backwash wastewater was characterized under various backwash residual management options to provide flexibility for full-scale design. These options included:

- Direct sewer discharge, with and without metering:
- Backwash wastewater recycle and discharge of solids to sewer, and
- On-site solids management.

A summary of the preliminary maximum discharge rates for each of the Cr(VI) impacted wellsites, as developed by AKEL Engineering Group, Inc. (AKEL) are provided in Table 5. Note that Well 19 is not tributary to the CWA WWTP and is served by the Valley Sanitation District (VSD). To address this objective, the characterization of backwash volumes and water quality for instantaneous discharge to sewer, the analysis of backwash wastewater settling and decant water quality to evaluate opportunities to recycle backwash, and finally, the characterization of the dewatered settled backwash solids to identify disposal options were conducted.

Table 5. CWA wellsite modelled discharge rates (AKEL, 2025)

Well ID	Well Location	Discharge Location		Maximum Discharge Rate	
		Manhole ID	Pipe Diameter (in)	Off-peak Hour @ 5 A.M. (gpm)	Peak Hour @ 10 A.M. (gpm)
Tributary to City of Coachella Wastewater Treatment Plant					
11	Avenue 48 and Dillon Road	X1588	15	346	346
12	South of Avenue 51 and west of Mecca Street	X1099	8	215	197
16	West of Tyler Street and north of Avenue 54	H23-001	10	229	90
17	West of Van Buren Street, between Avenue 48 and Avenue 49	D16-020	8	171	166
18	West of Tyler Street and north of Avenue 48	G15-009	24	2,940	2,872
20 *(In-Progress)*	East of Van Buren Street, between Avenue 50 and Avenue 51	Sevilla II On-site MH#1	8	166	157
Tributary to Valley Sanitary District [4]					
19	West of Jackson Street, between Avenue 48 and Avenue 49	-		-	-

AKEL ENGINEERING GROUP INC.

4/24/2025

As backwash water volumes and quality are dependent on flow and chemical operating conditions, bulk backwash samples were collected and analyzed to capture a range of media configurations, Fe(II) doses, and HLRs tested during the pilot study. Characterizing these bulk backwash samples can inform the additional contaminant loadings to the CWA WWTP and allow adjustments to the treatment process, if necessary, to achieve the permit discharge limits to the receiving water (Coachella Valley Storm Water Channel).

Backwash wastewater was analyzed for parameters with effluent limitations in the CWA WWTP's waste discharge requirements Order (Order R7-2020-0008), in addition to parameters identified by CWA and the project team including total suspended solids (TSS), Cr(VI), free chlorine, Cr(T), total Fe, dissolved Fe, and arsenic. Paint filter liquids test, Toxic Characteristic Leaching Procedure (TCLP), and Waste Extraction Test (WET) were completed on dewatered backwash wastewater solids. The paint filter test was used to detect the presence of free liquids in the dewatered solids, to ensure acceptance for subsequent solids analysis. TCLP and WET testing were used to determine whether solids would be considered toxic hazardous waste in California. A summary of the parameters that were analyzed and their associated regulatory limits are provided with results in Table 15.

Evaluate the feasibility of on-site backwash solids dewatering using a pilot-scale system.

While discharging backwash wastewater either directly to sewer or indirectly to sewer with backwash storage and attenuation is generally the most straightforward residual management option; sites with sanitary sewer constraints or other sewer disposal challenges may require on-site residuals handling to manage the solids laden wastewater. On-site solids management may also provide operational cost savings by reducing the total volumes and associated costs of sewer discharge. On-site management options can include 1) accumulating backwash solids in a storage tank until sufficient volume has been generated for off-site disposal, 2) directing the settled solids to a dewatering and drying container, or 3) mechanically dewatering the solids with a belt filter press or centrifuge. These approaches will concentrate Cr(VI) and other co-precipitated metals in solids and decrease the water content of the material for disposal, both of which can impact hazard classification and ultimate disposal.

This objective was completed by collecting representative backwash wastewater and processing it through a bench-scale roll-off dewatering system. The system, constructed by Corona, was a pilot-scale version of "Roll-Off Sludge Mate" provided by Flo Trend (Houston, Texas), which has the potential to reduce the wastewater volume by 85-90%, depending on the percent solids and characteristics of the sludge, at full-scale.

Objective 3: Evaluate the impact of backwash wastewater recycling on filter operations

The sewer capacity at several wellsites cannot accommodate the anticipated instantaneous discharge of backwash wastewater from RCF treatment without substantial sewer upgrades. In these cases, on-site storage for backwash wastewater will be required. Backwash recycle would improve water efficiency and reduce overall backwash wastewater storage volume and discharge requirements. This objective addressed the impact of backwash recycling on filter performance. Backwash water was collected in a cone bottom settling tank and the decant was injected prior to a filter's reduction contactor, at a maximum flow rate of 10% of the influent filter flow. Impacts to be discussed include increased headloss accumulation and accelerated Fe or Cr(T) breakthrough, leading to shorter filter runs.

Objective 4: Evaluate the potential for RCF treatment with raw water blending

Partial raw water stream bypass and blending with treated water could provide capital cost and treatment footprint savings. To address this objective, the Fe(II) dose was increased to 1 mg-Fe/L to achieve a finished water Cr(VI) concentrations of less than 2 µg/L to facilitate a consistent and meaningful opportunity for raw water blending at full-scale. Filter profile sampling was completed for several filter runs at the increased Fe(II) dose to determine if filter effluent Cr(VI) concentrations were consistently low enough over the entirety of a filter run, without substantially impacting backwash frequency and volumes. The resulting Cr(VI) concentrations were used to calculate the maximum allowable raw water bypass that can achieve the Cr(VI) finished water quality goal of 8 µg/L.

Objective 5: Assess the fate of Cr(VI) within the drinking water and sanitary sewer distribution system

Cr(III) re-oxidation to Cr(VI) has been observed with the application of chlorine and is influenced by both chlorine residual concentration and chlorine contact time. The purpose of this objective it to quantify the magnitude of the Cr(VI) re-oxidation in both the filter effluent and backwash wastewater to estimate the extent of re-oxidation in the drinking water and sanitary sewer distribution systems. For the drinking water distribution system testing, effluent from a traditional sand media filter at 5 gpm/ft^2 HLR, 0.5 mg-Fe/L dose, 2-minute reduction time with no backwash recycle, was collected and stored headspace free in amber bottles. These bottles were sacrificially sampled for Cr(T), Cr(VI), and chlorine residual at times representative of typical distribution system water ages (one to seven days). For the sanitary sewer conveyance system testing, bulk backwash wastewater was mixed with CWA WWTP influent at 5 and 15% ratios, representative of conservative backwash wastewater loading rates to the sanitary sewer at full-scale. These combined waters were stored in amber bottles and sacrificially sampled for Cr(T) and Cr(VI) at times representative of the sanitary sewer distribution system (one to six days).

Pilot Design

While RCF treatment is planned to be implemented at each of the individual Cr(VI) wellsites, the pilot testing was completed at one representative wellsite, Well 19, with results being used to inform design at the remaining wellsites. Well 19 was selected as it has one of the higher raw water Cr(VI) concentrations, has the highest utilization to enable near constant operation of the pilot system, and is the most constrained in terms of backwash residual management options as the local sanitary sewer is not connected to the CWA WWTP. Figure 4 shows a satellite image of the Well 19 site.



Figure 4. Satellite image of the Well 19 wellsite (Google, 2025)

The pilot system consists of a *Granular Media Filter Module F400* (F400) pilot skid, constructed by Intuitech, Inc. (Salt Lake City, UT), with the addition of reduction contactor vessels to reduce Cr(VI) to Cr(III). A simplified schematic of the pilot design is shown in Figure 5 based on startup operating conditions. The pilot system has four, 6-inch diameter filter columns that are operated by a programmable logic controller (PLC) with automatic, remote manual, or manual modes. Five, 7-gallon chemical storage tanks and associated peristaltic pumps are included with the pilot equipment; one was used to dose ferrous chloride to the raw water from a common feed, and the remaining four chemical feeds were used for individual filter sodium hypochlorite injection.

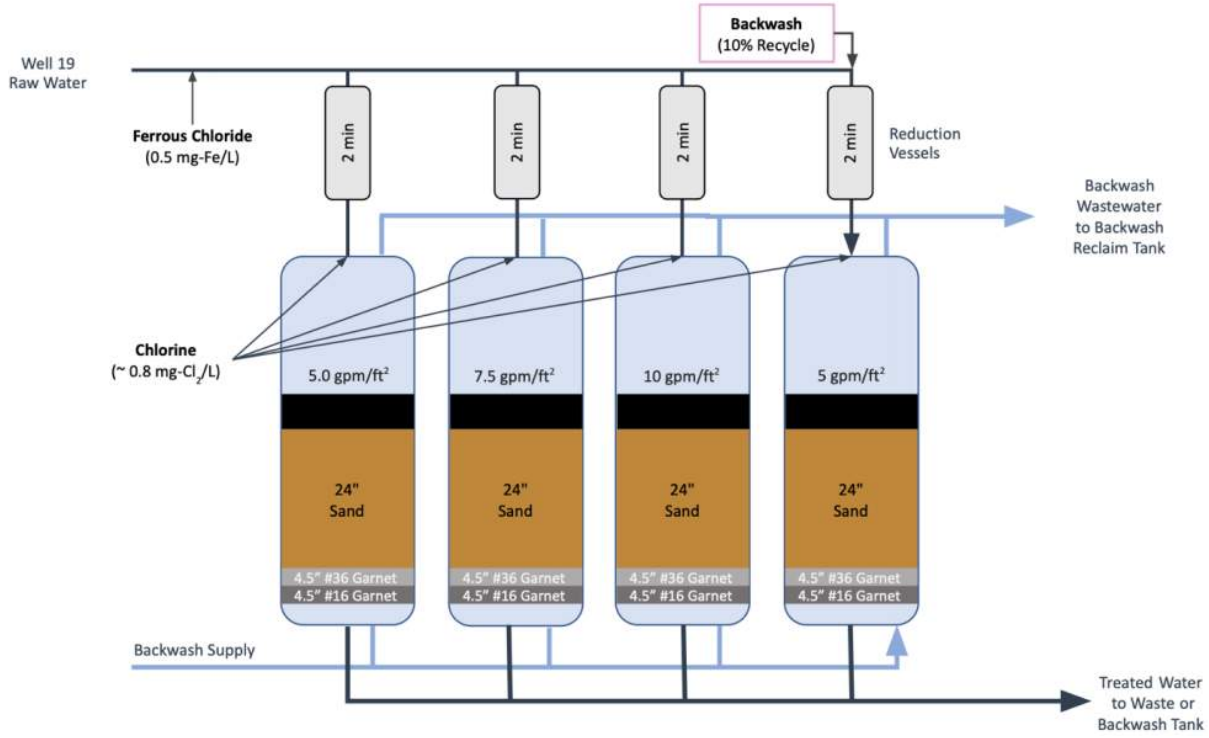


Figure 5. Conceptual pilot testing process flow diagram at start-up

Reduction contactors were fabricated using 4-inch diameter schedule 40 PVC piping to allow for a 2-minute reduction time with Fe(II) for each filter's operational HLRs. These contactors were installed on an upslope angle to reduce short-circuiting through and maintain water level in the contactor. Anthracite and sand were provided by Red Flint Sand and Gravel (Eau Claire, WI) and Ceracap and Ceraclear being provided by Wateropolis. Manufacturer media specifications are provided in Appendix C: Filter Media Specifications. Backwash wastewater was directed to a 200-gallon cone bottom tank on-site for collection and settling. Decant backwash water was recycled to a single filter from the tank to an injection point ahead of the filter's reduction contactor. Solids were collected periodically from the bottom of the cone bottom tank and dewatered for composite WET and TCLP analyses to determine its toxicity characterization.

A summary of the pilot operational conditions is provided in Table 6. The pilot commenced with sand media in all four columns. Subsequently, Filter 2 media was changed for the Ceraclear and Ceracap media configuration once it became available. Later in the study, the Fe(II) dose was increased to 1 mg-Fe/L with reduction times maintained at 2 minutes for Filters 1, 2, and 3 to evaluate opportunities for raw water bypass. At this time, Filter 4 operated with an increased HLR of 10 gpm/ft^2, resulting in a reduction time of 1 minute and backwash recycle was terminated. These changes to Filter 4 informed filter performance for the smallest tested full-scale equipment sizing with sand media. The BWLRs below represent the flow rates needed for 25% media expansion.

Table 6. Summary of pilot operational conditions.

Filter	Media	Media Specifications			Filter Operation			Backwash		
		Depth inch	ES[1] mm	UC[2] unitless	Flow gpm	HLR gpm/ft^2	EBCT[3] min	HLR gpm/ft^2	Time (min)	Recycle (gpm)
Initial Operating Conditions										
Filter 1	Anthracite	6	1.0-1.1	< 1.5	1.0	5	4.9	19.9	7	None
Filter 2	Sand	24	0.45-0.55	< 1.5	1.5	7.5	3.2	19.9	7	None
Filter 3	#36 Garnet	4.5	0.5-0.6	-	2.0	10	2.4	19.9	7	None
Filter 4	#16 Garnet	5.6	0.8-1.2	-	1.0	5	4.9	19.9	7	0.1
Filter 2: Media Changeout to Ceraclear (Week 4)										
Filter 2	Ceracap	6	0.5 - 0.6	< 1.4	2.0	10	2.4	7.6	13	None
	Ceraclear	24	0.3 - 0.4	< 1.4						
	#36 Garnet	4.5	0.5-0.6	-						
	#16 Garnet	5.6	0.8-1.2	-						
All Filters: Ferrous Dose Increase to 1 mg-Fe/L (Week 6) Filter 4: HLR increase to 10 gpm/ft^2, reduction time decrease to 1 minute, backwash recycle removed (Week 6)										
Filter 4	Anthracite	6	1.0-1.1	< 1.5	2.0	10	2.4	19.9	7	None
	Sand	24	0.45-0.55	< 1.5						
	#36 Garnet	4.5	0.5-0.6	-						
	#16 Garnet	5.6	0.8-1.2	-						

[1] Effective size, [2] Uniformity coefficient, [3] Empty bed contact time

Pilot influent water was supplied by redirecting a portion of Well 19's raw water through a backflow prevention device. As the well does not continuously operate, the pilot was fitted with a sensor on the overflow weir to automatically turn the pilot on and off based on the operation of the well. Raw water overflow, needed to ensure pumps remain flooded, and de-chlorinated treated water effluent were directed to the on-site basin. Backwash wastewater was directed to a 200-gallon cone bottom backwash tank for backwash recycling and solids collection, with overflow sent to the on-site basin. Pilot process water was removed from the basin with a vacuum truck daily by CWA staff. The pilot unit continuously monitored and recorded flow rate, treated volumes, and differential pressure (headloss). Chemical dose rates were flow paced and chemical flow for each feed filter was monitored and recorded on the PLC. A summary of the pilot system's instrumentation is provided in Table 7.

Table 7. Pilot system instrumentation.

Instrumentation	Location	Data Logging
Flow rate	Influent of each filter	Yes
Runtime	Each filter	
Chemical feed flow rate	After chemical feed pump	
Flow totalizer	Influent of each filter	
Differential pressure	Each filter	
Backwash flow rate	After backwash pump	

Data Collection

Routine water quality samples were collected each weekday to evaluate RCF process performance at the locations summarized in Table 8. Corona staff were on site Tuesday, Wednesday, and Thursday of each week to perform routine sampling, maintenance, change operating conditions, and collect additional samples as necessary. CWA staff collected samples on Mondays and Fridays, with remote support from Corona staff.

Table 8. Summary of pilot sampling locations

Sample	Sample Description	Sample Purpose
Raw	Raw well water to the pilot	Pre-treatment water quality
Contactor	Immediately after reduction contactor, prior to chlorine injection.	Measure Cr(VI) reduction without the influence of chlorine and ferrous dose confirmation.
F1-Eff to F4-Eff	Individual filter effluent sample taps	Total Fe, Cr(T) and Cr(VI) removal.

The pilot skid measures and records individual filter flow rates, run volumes, and differential pressure at a five-minute interval. All other measurements were manually collected and recorded. Cr(VI), Cr(T), and total Fe samples were stored on-site and picked up weekly at the CWA headquarters by Babcock Laboratories, Inc. (Babcock) for laboratory analysis. Laboratory samples were collected and paired with field samples to confirm chemical doses and filter effluent water quality. Free chlorine and total Fe were measured in the field with a Hach DR900 portable colorimeter using Hach Method 8021 and Hach Method 8146, respectively. A summary of the daily sampling conducted during this study, including parameters, locations and frequencies are provided in Table 9.

Table 9. Summary of daily operational sampling requirements

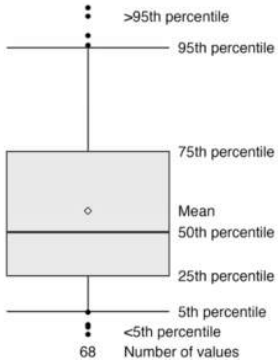
Parameter	Sample Location				Frequency	Method
	Raw Water	Contactor Effluent	Filter Influents	Filter Effluents[1]		
Intuitech Data Logging						
Flow Rate				X	5-minute interval	Data logger
Runtime				X		
Run Volume				X		
Headloss				X		
Babcock Laboratories Samples						
Hexavalent Chromium	X[2]	X[2]	X[2]	X	Daily	EPA 218.7
Cr(T)	X[2]			X		EPA 200.7
Total Iron	X[2]	X		X		EPA 200.7
Field Measurements						
Free Chlorine				X	Daily	Hach Method 8021
Total Iron		X		X		Hach Method 8146
pH	X[2]			X		Calibrated Probe

[1] Additional samples for profiling filter performance over the duration of a filter run collected by Corona staff. [2] Weekly

Additional data collection was completed by Corona staff, including filter profiling, backwash wastewater characterization, bottle hold tests, and corrosion indices sampling. Filter profiling consisted of time series sampling of filter effluent to evaluate total Fe, Cr(T) and Cr(VI) breakthrough over the duration of a filter run. During times series sampling, Fe results were obtained using the Hach Method 8146 with select Cr(T), Cr(VI), and Fe analyses also conducted by Babcock. As previously described, for bottle hold tests, filter effluent or backwash wastewater were stored in amber bottles and sacrificially sampled. Corrosion indices samples were collected for Well 19 raw water and for select filter effluents to evaluate future treatment impacts on distribution system corrosion. For select media configurations and operational conditions, backwash characterization was completed through the collection and analysis of bulk backwash water, settled decant water, and composite dewatered solids sampling.

Results

Pilot results are presented in the following sections by study objective. Many of these data are presented statistically as box and whisker plots, which graphically depict the range and distribution of the data. As shown in the box and whisker legend to the right, these plots consist of a box representing the interquartile range (i.e., 50% of the data between the 25th and 75th percentiles), a horizontal line within the box showing the 50th percentile (median) and the diamond symbol showing the average (mean). Whiskers extend to the 5th and 95th percentiles, with the remaining outlying data shown as points beyond the whiskers. Note that a wider distribution of data corresponds to a taller box, while a more compact box represents a tighter range of data.



Objective 1: Confirm ferrous dose, reduction time, and filter runtimes to achieve Cr(VI) goal

Based on the results of the previously described jar testing, a Fe(II) dose of 0.5 mg-Fe/L and a 2-minute reduction time was tested at pilot-scale to confirm that it could reliably achieve filter effluent Cr(VI) ≤ 8 µg/L, and Fe ≤ 0.24 mg-Fe/L. A statistical summary of Cr(VI) concentrations are shown in Figure 6 for each of the tested media, HLR, and backwash recycle conditions. Raw water concentrations ranged from 19 to 20 µg/L with Cr(VI) consistently removed to below 8 µg/L in all filter effluent samples. Average Cr(VI) concentrations were below 5 µg/L for all tested conditions, reaching as low as 1.7 µg/L. The highest filter effluent Cr(VI) concentration of 7.6 µg/L was observed under the backwash recycle condition, which may be attributable to the introduction of inadequately settled backwash water. Similar treatment performance was observed for the Sand-Anthracite (Sand) and Ceraclear-Ceracap (Ceraclear) media configurations, with further operational considerations to be discussed below.

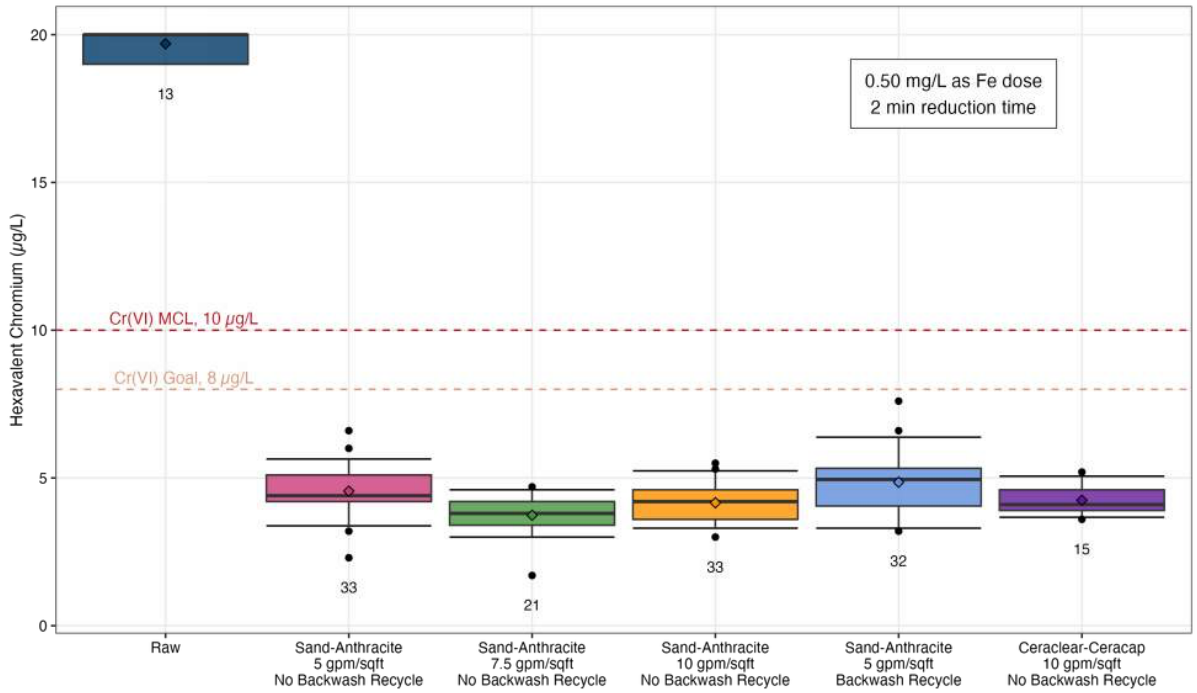


Figure 6. Raw and filter effluent Cr(VI) concentrations at 0.5 mg-Fe/L ferrous dose and 2-min reduction

Cr(VI), Cr(T), and Fe breakthrough are shown as a function of filter runtime in Figure 7, Figure 8, and Figure 9, respectively. Sand media filters at 5 and 10 gpm/ft^2 HLRs were consistently able to achieve 48 hours of runtime while maintaining all filter effluent goals, similar to the 44-hours observed during the 2017 Hazen study. The Sand 7.5 gpm/ft^2 HLR filter struggled to maintain sufficient water level due to a valve failure as pressure accumulated with time. This resulted in truncated runtimes at 32 hours; however, based on the performance of the other Sand conditions, the 7.5 gpm/ft^2 condition is also expected to be able to achieve 48 hours of runtime. Therefore, operational values, where relevant, are extrapolated to 48 hours for the Sand 7.5 gpm/ft^2 HLR condition. The Ceraclear filter consistently achieved 36-hour runtimes at an HLR of 10 gpm/ft^2, 0.5 mg-Fe/L dose, and 2-minute reduction time, while maintaining all filter effluent goals. The Ceraclear runtime was shorter than those observed with Sand due to pressure operational limitations at pilot-scale, not premature Cr(T) or Fe breakthrough. Accordingly, longer runtimes can likely be accommodated at full-scale while still maintaining Cr(VI) and Fe goals.

Filter effluent Cr(VI) breakthrough as a function of runtime is shown in Figure 7 for the 0.5 mg-Fe/L dose and 2-minute reduction time conditions. Overall, filter effluent Cr(VI) concentrations increase with runtime, corresponding to increased treated water throughput and reduced filter hydraulic capacity. Based on the lines of best fit shown in Figure 7, the backwash recycle condition exhibited the highest Cr(VI) concentrations throughout operations. Furthermore, backwash recycle filter effluent showed greater variability in Cr(VI) concentrations, likely attributable to the variability in recycled backwash water quality. The Sand 5 gpm/ft^2 HLR condition showed the second highest Cr(VI) concentrations, likely due to the increased contact time with free chlorine through the filter column, resulting in higher rates of re-oxidation compared to the 7.5 and 10 gpm/ft^2 HLR conditions.

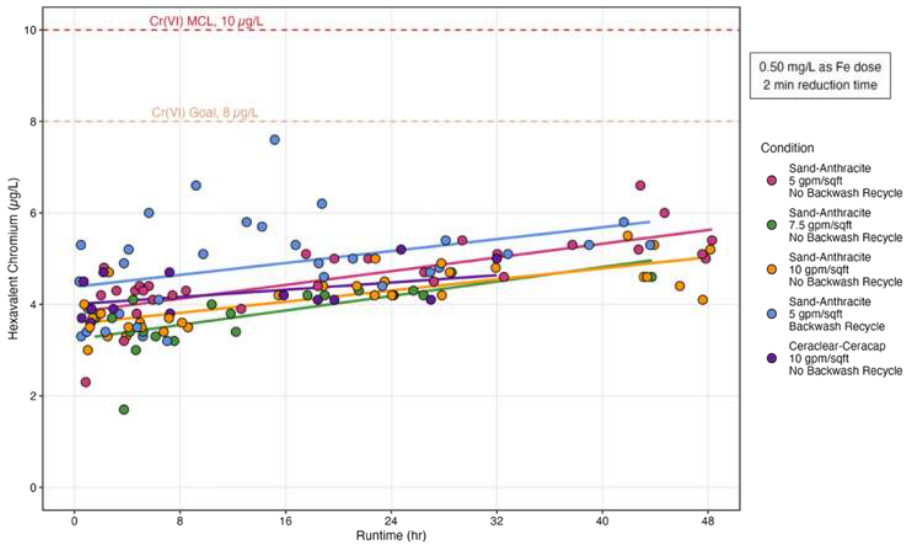


Figure 7. Cr(VI) breakthrough with runtime at 0.5 mg-Fe/L ferrous dose and 2-minute reduction time.

Filter effluent Cr(T) represents the highest possible concentration of Cr(VI) measured at the entry point to distribution system if complete re-oxidation of Cr(III) to Cr(VI) were to occur. Cr(T) breakthrough as a function of filter runtime is shown in Figure 8 with the backwash recycle condition removed for clarity due to its variability. As expected, the Sand 10 gpm/ft^2 HLR condition exhibited the highest filter effluent Cr(T) concentrations and rate of Cr(T) breakthrough due to increased particulate loading. In the case of Cr(T), the Ceraclear media outperformed Sand, showing the lowest concentrations of all testing conditions. All filter effluent Cr(T) concentrations remained below the Cr(VI) MCL of 10 µg/L with a small subset of samples (<2%) above the study's Cr(VI) goal of 8 µg/L, which corresponded to relatively high Fe concentrations (>0.08 mg-Fe/L).

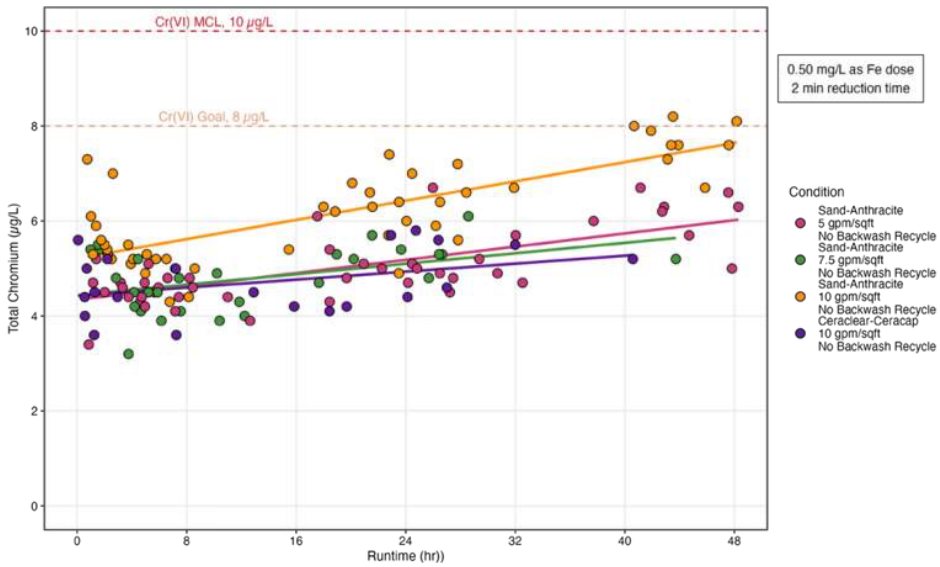


Figure 8. Cr(T) breakthrough with runtime at 0.5 mg-Fe/L ferrous dose and 2-minute reduction time.

Total Fe breakthrough as a function of filter runtime is shown in Figure 9 for the two 10 gpm/ft^2 HLR conditions at a 0.5 mg-Fe/L dose and 2-minute reduction time. These two conditions are presented to highlight the range of Fe breakthrough trends for the tested conditions. Like Cr(VI) and Cr(T), filter effluent Fe concentrations generally increased with runtime and Fe did not exceed the study's goal of 0.24 mg/L. Sand at a HLR of 10 gpm/ft^2 showed the overall highest Fe concentrations, while Ceraclear at the same HLR showed the overall lowest concentrations, again showing an improved particulate removal performance when compared to Sand.

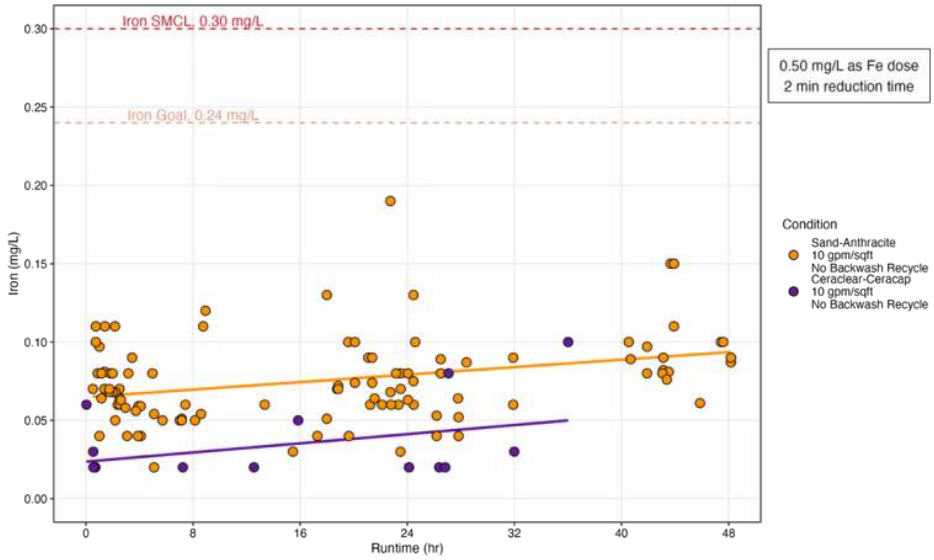


Figure 9. Fe breakthrough with runtime at 0.5 mg-Fe/L ferrous dose and 2-minute reduction time.

Headloss as a function of both runtime and UFRV for each of the tested conditions are shown in Figure 10. As expected, headloss for all conditions increased with runtime and UFRV as hydraulic capacity decreased. Both the starting headloss (clean bed) and headloss accumulation over time increased with increasing HLRs. No substantial difference in headloss was observed between the Sand at a 5 gpm/ft^2 HLR with and without backwash recycle. The Ceraclear media had markedly higher headloss than the Sand media a 10 gpm/ft^2 HLR, likely due to the smaller particle size and subsequent pore space. As

headloss directly corresponds to pumping requirements, higher headloss conditions will result in increased electrical consumption, O&M costs, and potential need for well pump upgrades at full-scale and would need to be considered during the design. The corresponding clean bed and maximum headloss for each of the tested conditions are summarized in Table 10.

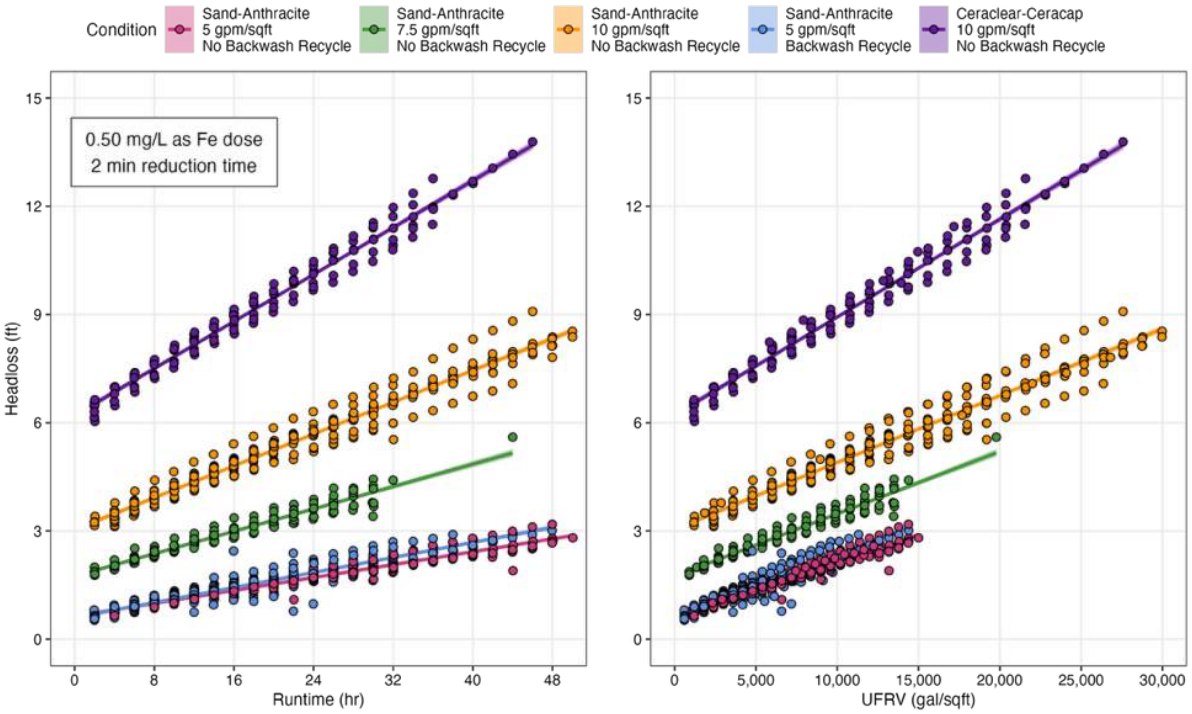


Figure 10. Headloss with runtime (left) or UFRV (right) at 0.5 mg-Fe/L Fe(II) dose and 2-minute reduction.

Table 10. Headloss summary at 0.5 mg-Fe/L and 2-minute reduction time.

Condition	Clean bed Headloss (ft/psi)	Max Headloss (ft/psi)
Sand-Anthracite: 5 gpm/ft^2 No Backwash Recycle	0.26/0.11	3.2/1.4
Sand-Anthracite :7.5 gpm/ft^2 No Backwash Recycle	1.5/0.64	5.6/2.4
Sand-Anthracite :10 gpm/ft^2 No Backwash Recycle	2.5/1.1	9.1/3.9
Sand-Anthracite: 5 gpm/ft^2 Backwash Recycle	0.31/0.13	3.0/1.3
Ceraclear-Ceracap: 10 gpm/ft^2 No Backwash Recycle	5.4/2.3	13.8/6.0

Objective 2: Explore backwash wastewater management options

There are many ways to manage the wastewater produced during a filter backwash, each with their own volumes of waste requiring disposal and operational complexity. In general, increasing the overall water efficiency of a filter by increasing the treated water volumes and decreasing the instantaneous and total backwash volumes is the simplest way to reduce the overall backwash management requirements at a given site. The backwash wastewater that is produced during operation can ultimately be disposed of in two ways: waste can be discharged to sewer or removed for offsite disposal. Figure 11 presents the five feasible backwash residual management options for CWA, in order of increasing complexity.

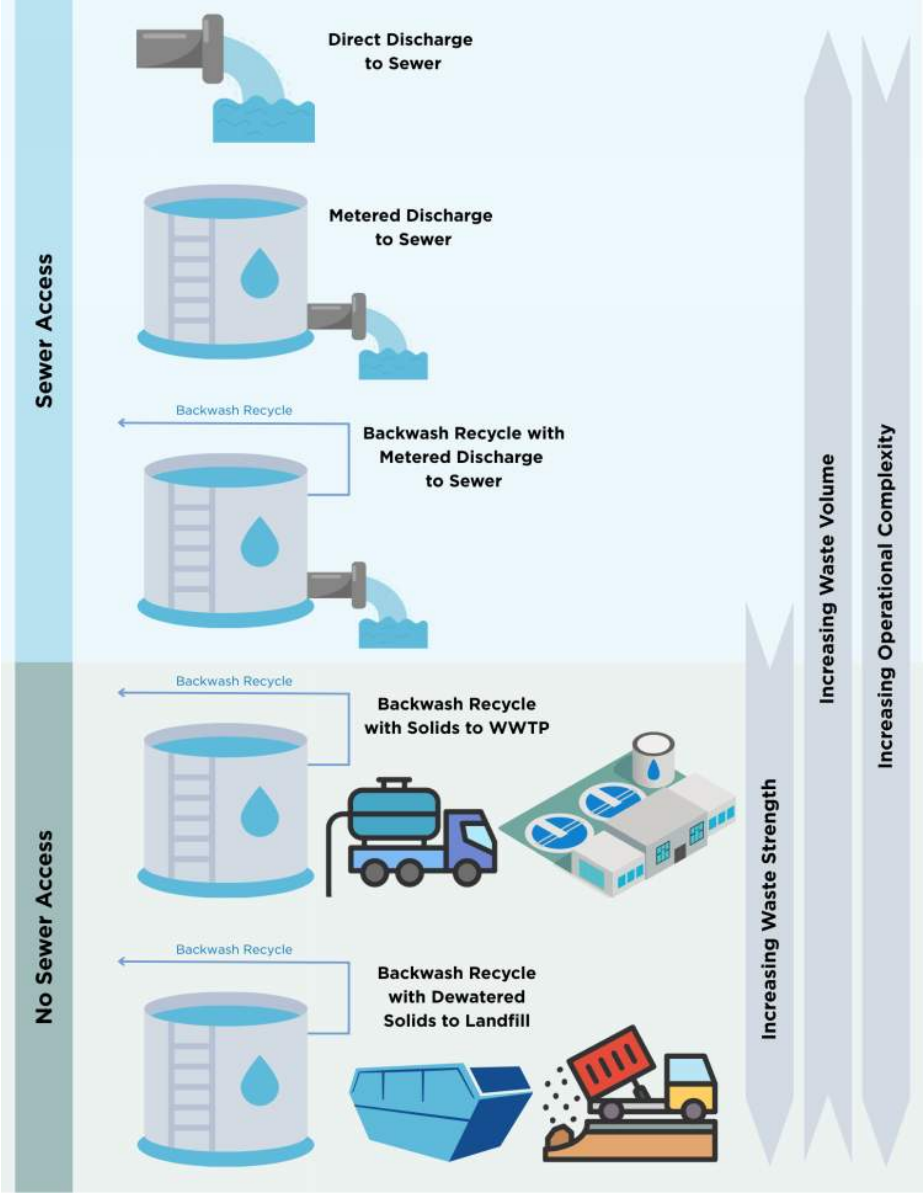


Figure 11. Backwash management options with and without sewer access

The simplest disposal option is discharging the wastewater directly to sewer if the water quality meets local discharge limits, the receiving WWTP can effectively treat the additional backwash contaminant loadings, and the sewer capacity can support the additional flow. If the system cannot support the additional flow, the backwash can be directed to a storage tank that can be used to meter the discharge

at a rate that can be supported by the sewer. This storage tank, if sized appropriately, can also be used to facilitate solids settling and allow for backwash recycling, improving the overall water efficiency of the treatment process, with settled backwash solids within the storage tank being metered to sewer. As a best practice, backwash water stored on site should be discharged promptly to prevent excessive Cr(III) re-oxidation to Cr(VI) and thus limiting high levels of Cr(VI) from entering the sewer or backwash recycle. If the site does not have access to sewer, the settled solids can be removed from the tank with a vacuum truck and transported offsite for disposal, or the settled solids can be dewatered onsite and later disposed of at an offsite facility. For each scenario, the waste will need to be characterized and directed to an appropriate waste receiving facility.

The following sections describe the results of the testing completed to identify backwash residual management options that will be suitable for each of the impacted wellsites. First, water efficiencies and backwash wastewater volumes between operational conditions are compared to evaluate opportunities to minimize backwash residual handling and determine the hydraulic feasibility of sewer discharge at each wellsite. The character of the backwash wastewater between different operational conditions is then discussed to understand solids settleability, opportunities for backwash recycle, and identify potential treatment impacts to the WWTP. Finally, the results of pilot-scale backwash solids dewatering will be presented to assess its hazard characterization and its ultimate disposal options.

Confirm backwash hydraulic loading rates needed to achieve 25% media expansion

During a filter backwash, it is standard practice to maintain a BWLR that can achieve a 20-40% bed expansion. This expansion allows both dual medias to be fluidized to remove captured particles, without losing media through the process. The minimum BWLR required to achieve 25% media expansion was confirmed during the pilot study and is summarized in Table 11 for both media types. By minimizing backwash volumes, the total volume of backwash storage required on site and the overall volume of residuals requiring disposal may decrease.

Table 11. Backwash operational conditions to achieve 25% media expansion

Media Configuration	Temperature Range	Backwash Flow Rate	Backwash Hydraulic Loading Rate	Duration
Anthracite (6-inch) Sand (24-inch)	72-80°F	3.9 gpm	19.9 gpm/ft^2	420 seconds
Ceracap (6-inch) Ceraclear (24-inch)	72-80°F	1.5 gpm	7.6 gpm/ft^2	800 seconds

The Sand's BWLR was as expected, requiring a 19.9 gpm/ft^2 BWLR to achieve 25% media expansion, compared to the recommended 20 gpm/ft^2. The Ceraclear's BWLR outperformed that of the Ceraflow-50 tested in 2017, decreasing the expected BWLR from 10 gpm/ft^2, to 7.6 gpm/ft^2. Backwash durations were not tested as a variable at pilot-scale, as water volume on the top of the media required extended backwash durations to ensure backwash wastewater was adequately removed from the filter column and are therefore not representative of full-scale operations. The BWLRs and durations identified in Table 11 will be carried forward throughout the report when calculating water efficiencies.

Note that water viscosity determines the media's achievable bed expansion. Colder water is more viscous, resulting in greater filter media expansion at a given flow rate. As this testing was completed during the summer months with backwash source water often reaching temperatures greater than 80°F, the BWLRs identified during pilot likely represent the higher range of the rates required at full-scale. Backwash source water temperatures should be measured at full-scale to determine if flow rates should be adjusted to account for changes in water viscosity.

Compare water efficiency, instantaneous backwash volumes and total backwash volumes for various filter media configurations and hydraulic loadings rates.

Filter efficiency is generally defined as the quantity of water that is treated through a filter between backwashes. Recovery considers the filter's unit backwash volume (UBWV), the volume of water required for filter backwash, and therefore can be used to directly compare the filter performance between the two media configurations. Filter recovery is defined as:

$$recovery = \frac{UFRV - UBWV}{UFRV}$$

Filters are typically designed to achieve a minimum recovery of 95%; however, by improving water efficiency and recovery, the total volume of backwash volume requiring management decreases. Table 12 summarizes the backwash conditions and filter performance for each of the tested conditions. At the typical Fe(II) dose of 0.5 mg-Fe/L, all Sand filters successfully operated for a 48-hour period. This resulted in UFRVs ranging from 14,400 gal/ft^2 (HLR of 5 gpm/ft^2) to 28,800 gal/ft^2 (HLR of 10 gpm/ft^2) and recoveries between 99.0 and 99.5%. The Ceraclear filter operated with a reduced runtime of 36-hours due to headloss accumulation that impacted operations. The 36-hour runtime resulted in a UFRV of 21,600 gal/ft^2 and a recovery of 99.5% due to the media's lower UBWV

Table 12. Backwash conditions and filter performance by operational condition

Operational Condition		Backwash Condition		Filter Run Details	
Fe Dose Reduction	Media: HLR	UBWV (gal/ft^2)	Backwash Trigger	UFRV (gal/ft^2)	Recovery
0.5 mg/L, 2-min	**Sand:** 5 gpm/ft^2	139	Runtime (48-hr)	14,400	99.0%
	Sand: 5 gpm/ft^2, Recycle		Runtime (48-hr)	15,840	99.1%
	Sand: 7.5 gpm/ft^2		Runtime (48-hr)	21,600	99.4%
	Sand: 10 gpm/ft^2		Runtime (48-hr)	28,800	99.5%
	Ceraclear: 10 gpm/ft^2	102	Headloss: 12 ft (36-hr)	21,600	99.5%
1.0 mg/L, 2-min	**Sand:** 5 gpm/ft^2	139	Runtime (48-hr)	14,400	99.0%
	Sand: 10 gpm/ft^2		Iron (40-hr)	24,000	99.4%
	Ceraclear: 10 gpm/ft^2	102	Headloss: 14 ft (28-hr)	16,800	99.4%
1.0 mg/L, 1-min	**Sand:** 10 gpm/ft^2	139	Iron (24-hr)	14,400	99.0%

At an increased Fe(II) dose of 1 mg-Fe/L, filter runtimes decreased at the 10 gpm/ft^2 HLR due to Fe breakthrough or headloss accumulation in the case of the Ceraclear media. This resulted in slightly lower UFRVs ranging from 14,400 gal/ft^2 to 24,000 gal/ft^2. These UFRVs still resulted in recoveries well above the 95% minimum and afford the opportunity for raw water bypass treatment. In general, any of the tested options are appropriate for full-scale operation, and selection should be based on specific site requirements. Due to the proprietary nature of the Ceraclear media and its associate headloss penalty, Ceraclear should only be considered in cases where it allows for direct discharge of the backwash wastewater to sewer.

Table 13 summarizes the modelled maximum allowable discharge rates at each wellsite (AKEL, 2025) and whether the instantaneous backwash rates of 4-ft diameter vessels will meet this discharge flow criteria. As previously recommended, Sand is selected as the preferred media type whenever its corresponding backwash flow rate can be accommodated by the local sewer (i.e., the available discharge is greater than 250 gpm). As "Peak Hour Maximum Discharge" is the limiting flow rate, if the media's estimated backwash flow rate is less than the modelled "Peak Hour", it is shown as the instantaneous discharge option, otherwise "Off-Peak Hour" is selected if its discharge criteria is met. Well 16 is the most limited wellsite, with only "Off-Peak Hour" discharge available with the use of Ceraclear media. In all cases, Sand can be considered with metered discharge to sewer, apart from Well 19, which does not have CWA sewer access.

Table 13. Wellsite modelled available discharge rates (see Table 5) and backwash discharge options

Wellsite	Off-Peak Hour Maximum Discharge (gpm)	Peak Hour Maximum Discharge (gpm)	Media Type	Backwash Flow Rate (gpm)	Discharge Option
11	346	**346**	Sand	250	Sand Peak Hour
12	**215**	**197**	Ceraclear	96	Ceraclear Peak Hour; Sand Metered
16	**229**	90	Ceraclear	96	Ceraclear Off-Peak; Sand Metered
17	171	**166**	Ceraclear	96	Ceraclear Peak Hour; Sand Metered
18	2,940	**2,872**	Sand	250	Sand Peak Hour
20	166	**157**	Ceraclear	96	Ceraclear Peak Hour; Sand Metered
19	Tributary to Valley Sanitary District				

Bold text indicates whether peak hour or off-peak hour discharge criteria is achievable

Characterize backwash wastewater under various management options.

The character of the backwash wastewater is another factor that will dictate the available management options. For instance, the water quality of the bulk sample collected over the duration of a single backwash is representative of the water quality of the water that would be discharged directly to sewer. Bulk sample results can also be used to understand the contaminant recovery during a backwash. When this water is allowed to settle, the water quality of the decant water can be representative of the water to be recycled to the head of the treatment process, or the water to be metered to sewer if the tank is not fitted with a mixer. The observed settling of the backwash solids can be used to determine backwash recycle operations and the volume of solids that may require disposal if there is no sewer access. This section summarizes the results of the backwash wastewater characterization testing as they relate to these management options.

For each of the filter runs for which backwash wastewater samples were collected, the hypothetical accumulation of Cr(T) and total Fe were calculated and compared to the measured results (Figure 12). From these results, the recovery of each parameter was calculated, with the Sand results at a 5 gpm/ft^2 HLR presenting the average of three backwash events. The recovery of Cr(T) ranged between 90-103%, with Fe recovery being slightly more variable ranging from 74-95%. Nonetheless, these results confirm the ability to accurately predict Cr(T) and Fe concentrations within a backwash through mass balance calculations. In general, the Sand filter columns showed improved recovery, compared to the Ceraclear media, perhaps indicating more effective backwashing for Cr(T) and Fe removal.

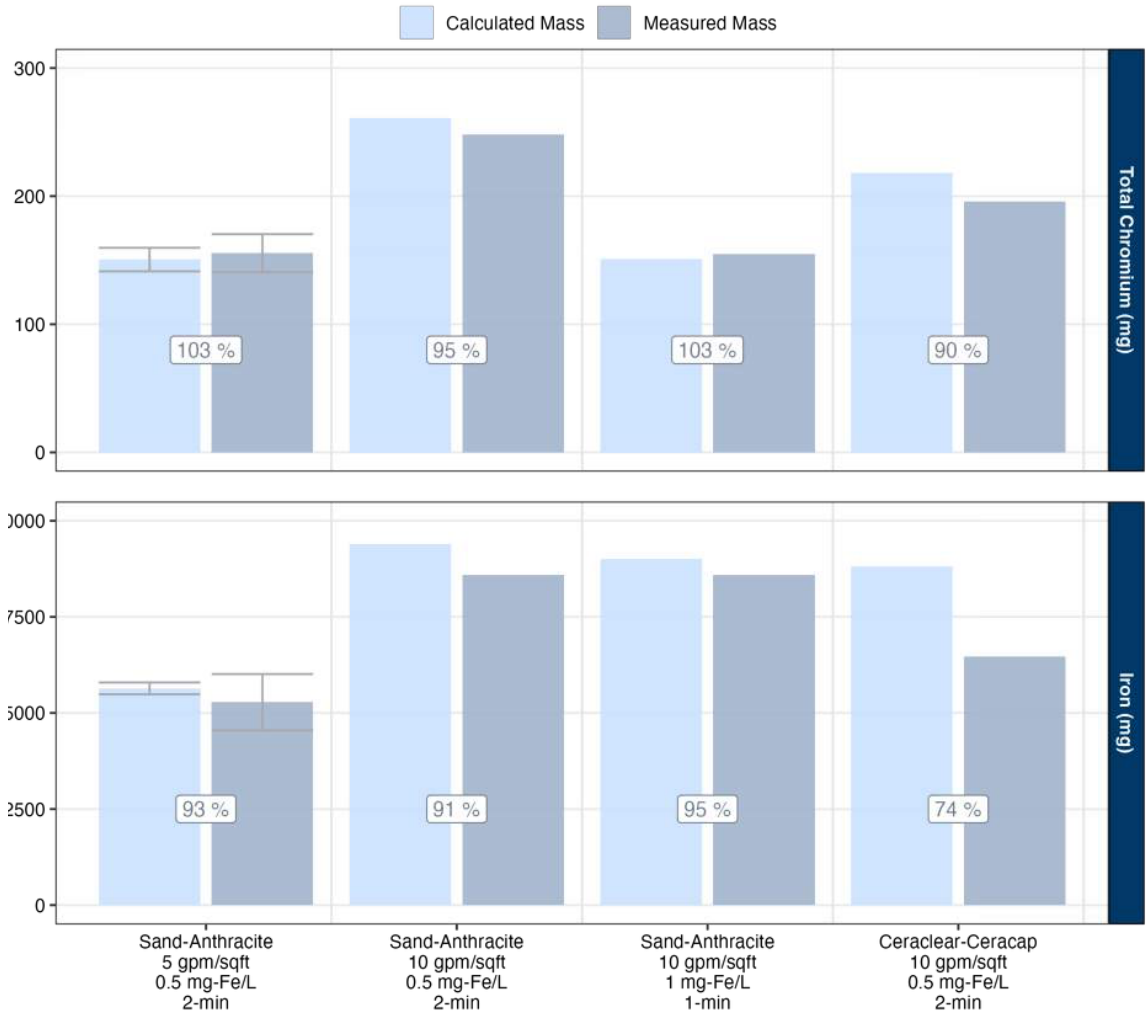


Figure 12. Calculated and measured mass of Cr(T) and Fe from bulk backwash samples, with recovery estimates

To compare the backwash water quality between operational conditions with differing treated volumes, each of the backwash sample results were normalized to UFRV. First, the hypothetical accumulation of Cr(T), and Fe were calculated for each condition at a UFRV of 14,400 gal/ft^2, the lowest UFRV amongst the tested conditions, and the measured concentrations were adjusted to achieve the backwash recoveries identified in Figure 12. The adjusted concentrations for each condition are presented Figure 13, where Cr(VI) concentrations are the measured results and dissolved Fe was adjusted to maintain the same ratio to total Fe as the original analytical results. A full summary of the bulk backwash water quality results can be referenced in Appendix D: Backwash Characterization Sample Results.

As expected, Cr(T), Fe and arsenic are equivalent between the two Sand conditions operating with the same Fe(II) dose and reduction time. If both conditions were to operate with equivalent runtimes, the 10 gpm/ft^2 HLR filter's expected accumulation of Cr(T), Fe, and arsenic would be double that of 5 gpm/ft^2 HLR filter. By doubling the Fe(II) dose, the accumulated total and dissolved Fe concentrations doubled as well. Cr(VI) was lower due the improved reduction at the higher Fe(II) dose, while arsenic concentrations increased likely due to the increased Fe improving its coprecipitation and subsequent filtration. Finally, the Ceraclear media had comparable water quality to the Sand media at equivalent operational conditions when the decreased UBWV is considered (102 gal/ft^2 versus 139 gal/ft^2).

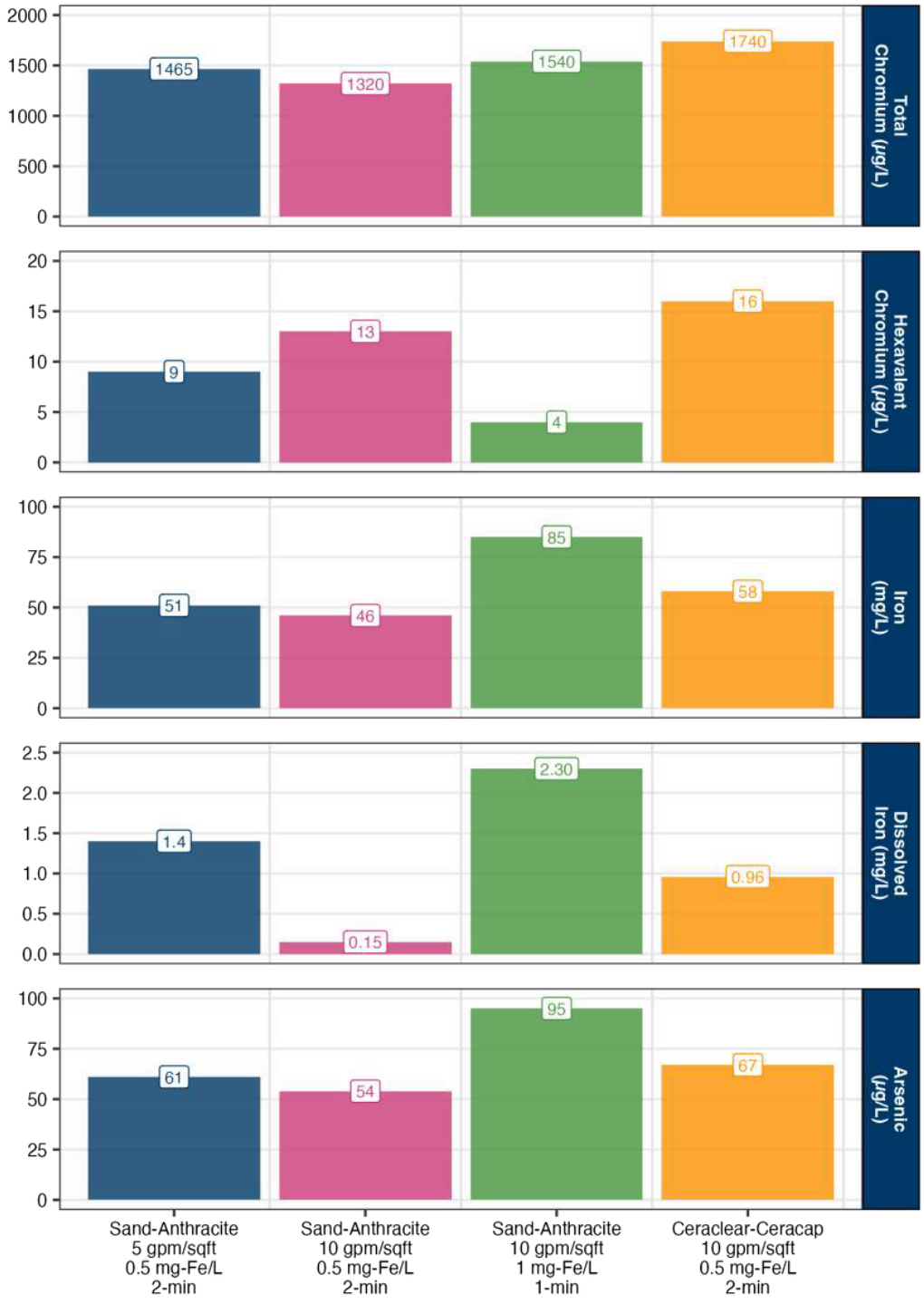


Figure 13. Bulk backwash water quality results, normalized to 14,440 UFRV

If water is not discharged directly to sewer, it can be stored in a backwash tank where the wastewater is allowed to settle. As solids accumulate, the decant water above the solids clarifies and can be recycled to the head of the treatment process. The remaining settled solids can be removed by metering them to sewer or can be periodically removed offsite with a vacuum truck. By recycling this backwash wastewater, the overall water efficiency is improved and the volume of waste requiring disposal

decreases. To understand the impact to water quality of storing backwash wastewater and evaluate opportunities for backwash recycle, bulk backwash wastewater was transferred to Imhoff cones to observe solids settleability over time and decant water was collected and analyzed.

The settleability of solids was observed for three operational conditions, Sand at a HLR of 5 and 10 gpm/ft^2, and Ceraclear at a HLR 10 gpm/ft^2, as summarized in Table 14. Each condition operated with a Fe(II) dose of 0.5 mg-Fe/L and a 2-minute reduction, with the Sand filters operating for 48-hours prior to backwashing and Ceraclear operating for 36-hours. As expected, the volume of settled solids for the 5 gpm/ft^2 HLR Sand filter were approximately half that of the 10 gpm/ft^2 HLR Sand filter. At a HLR of 5 gpm/ft^2, solids remained mostly suspended for the first hour, with the settled solids reaching a maximum observed value of 13 mL/L after 2.5 hours. At the 10 gpm/ft^2 HLR, the solids settled at a faster rate, reaching a maximum observed value of 25 mL/L after 1 hour. The Ceraclear backwash wastewater settled at an even faster rate, with 20 mL/L settling after 30-minutes, peaking at 25 mL/L after 1 hour. These results suggest that more than 90% of the backwash volume can be recycled.

Table 14. Backwash Imhoff cone solids settleability results

Settling Time (hours)	**Settled Solids Volume** [mL/L (% solids)]					
	Sand: 5 gpm/ft^2 (48-hours)		Sand: 10 gpm/ft^2 (48-hours)		Ceraclear: 10 gpm/ft^2 (36-hours)	
0.0	0	(0%)	0	(0%)	0	(0%)
0.5	0.1	(0.01%)	0.4	(0.04%)	20	(2.0%)
1.0	1	(0.1%)	25	(2.5%)	25	(2.5%)
1.5	12	(1.2%)	-	-	20	(2.0%)
2.0	12	(1.2%)	22	(2.2%)	20	(2.0%)
2.5	13	(1.3%)	18	(1.8%)	20	(2.0%)
3.0	10	(1.0%)	17	(1.7%)	20	(2.0%)
3.5	9	(0.9%)	-	-	20	(2.0%)
4.0	9	(0.9%)	17	(1.7%)	20	(2.0%)

These results show that there is a minimum solids settling time required for each operational condition, prior to initiating a recycle stream. For example, for Sand filters operating at a 5 gpm/ft^2 HLR, the backwash wastewater should settle for minimum of 3-hours following a backwash event, prior to operating with backwash recycle. This allows for proper clarification of the water and reduced the Fe and Cr(T) loading onto the filters. These results also provide insight on the total volume of settleable solids within a tank; however, the volumes presented in Table 14 would be expected to decrease with time as the solids continue to compact, especially under the weight of multiple backwashes.

During the solids settling testing, decant water was periodically collected and sent for laboratory analysis. A summary of the parameters of interest are presented in Figure 14, with the full summary of results provided in Appendix D: Backwash Characterization Sample Results. These results show the expected decrease in Cr(T), Fe and arsenic concentrations as they settle out of solution with time. Conversely, Cr(VI) is shown to re-oxidize with time as the Cr(III) interacts with residual free chlorine in the backwash water. For the 5-day samples, Cr(VI) was found to be equivalent to Cr(T) in the decant water. Accordingly, the removal of the stagnant backwash wastewater to sewer should be considered at wellsite with very low utilization or following extended periods filter of inoperation.

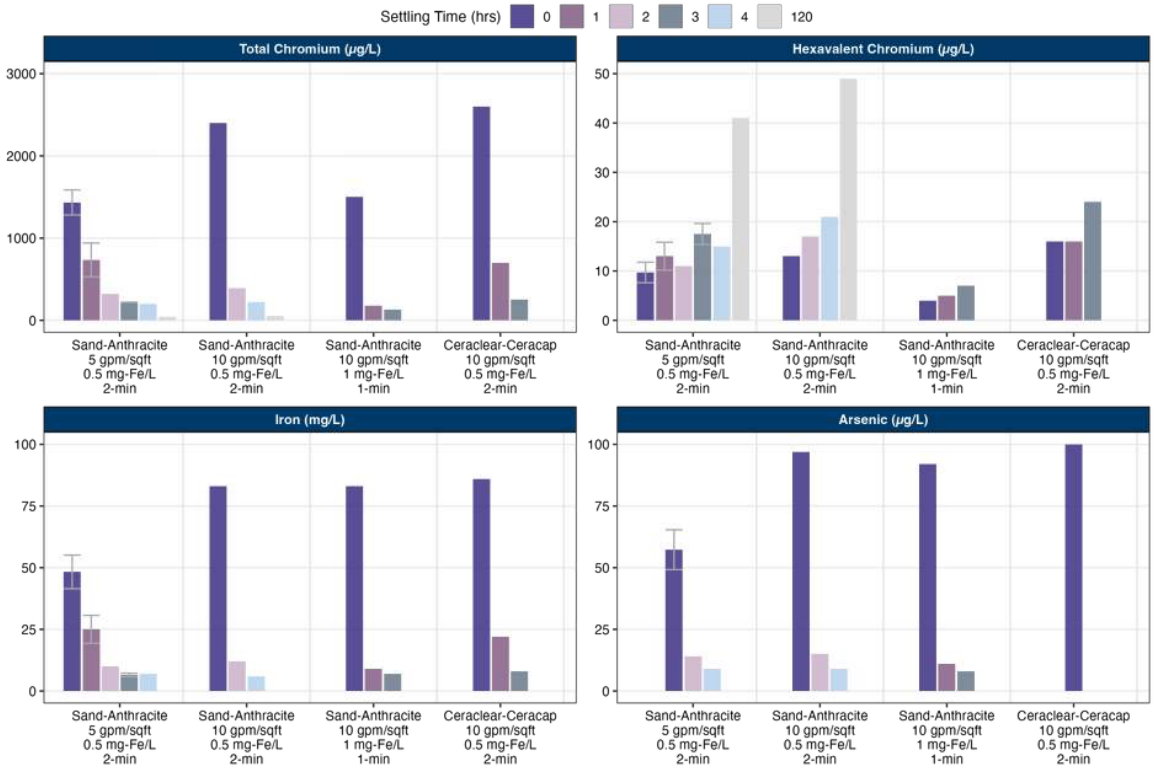


Figure 14. Bulk backwash and settled backwash decant water quality results

Following the previously suggested 3-hour settling period, the maximum concentrations between the tested conditions were 250 µg/L for Cr(T), 24 µg/L for Cr(VI), 8.0 mg/L for Fe, and 9 µg/L for arsenic. With backwash recycle typically operated as 10% of the raw water flow, these concentrations would result in a contribution of 23 µg/L, 2.2 µg/L, 0.7 mg/L, and 0.8 µg/L, respectively, for a 2,000 gpm well. The increased loading of these contaminants is expected to be manageable during treatment, as discussed in *Objective 3: Evaluate the impact of backwash wastewater recycling on filter operations.* When conservatively estimating a backwash recycle rate of 80% of the backwash volume, the volume directed to sewer for Sand filters decreases from 139 gal/ft^2 to 28 gal/ft^2.

Evaluate the feasibility of on-site backwash solids dewatering using a pilot-scale system.

In cases where discharge to sewer is not an option, the stored backwash residuals must be transported offsite for disposal. This can include the removal of liquid waste using a vacuum truck for disposal to an appropriate receiving facility, or on-site solids management which reduces the total volume of waste requiring disposal. The simplest on-site solids management option is to direct solids to a dewatering container, which concentrates Cr(T), Fe, and other co-precipitated metals, while decreasing the water content of the material for disposal, both of which can impact hazard classification and ultimate disposal. This management option was explored during the pilot study by collecting all solids generated during backwash events, allowing the solids to settle and transferring them to a pilot-scale version of "Roll-Off Sludge Mate" (Flo Trend [Houston, Texas]) for dewatering, as shown in Figure 15.

Dewatered samples were stored in glass jars and later mixed into a composite sample. The composite samples were further dewatered at Corona's Colorado laboratory at 50°C, to ensure the sludge would pass the EPA Paint Filter Test (Method 9095A). This test determines the presence of free liquids, which are forbidden from landfill disposal (40 CFR 264.314 and 40 CFR 265.314). Once the sludge was found to pass the EPA Paint Filter Test, it was shipped to Babcock for TCLP and WET analysis to determine its hazardous waste classification, and ultimate disposal options.

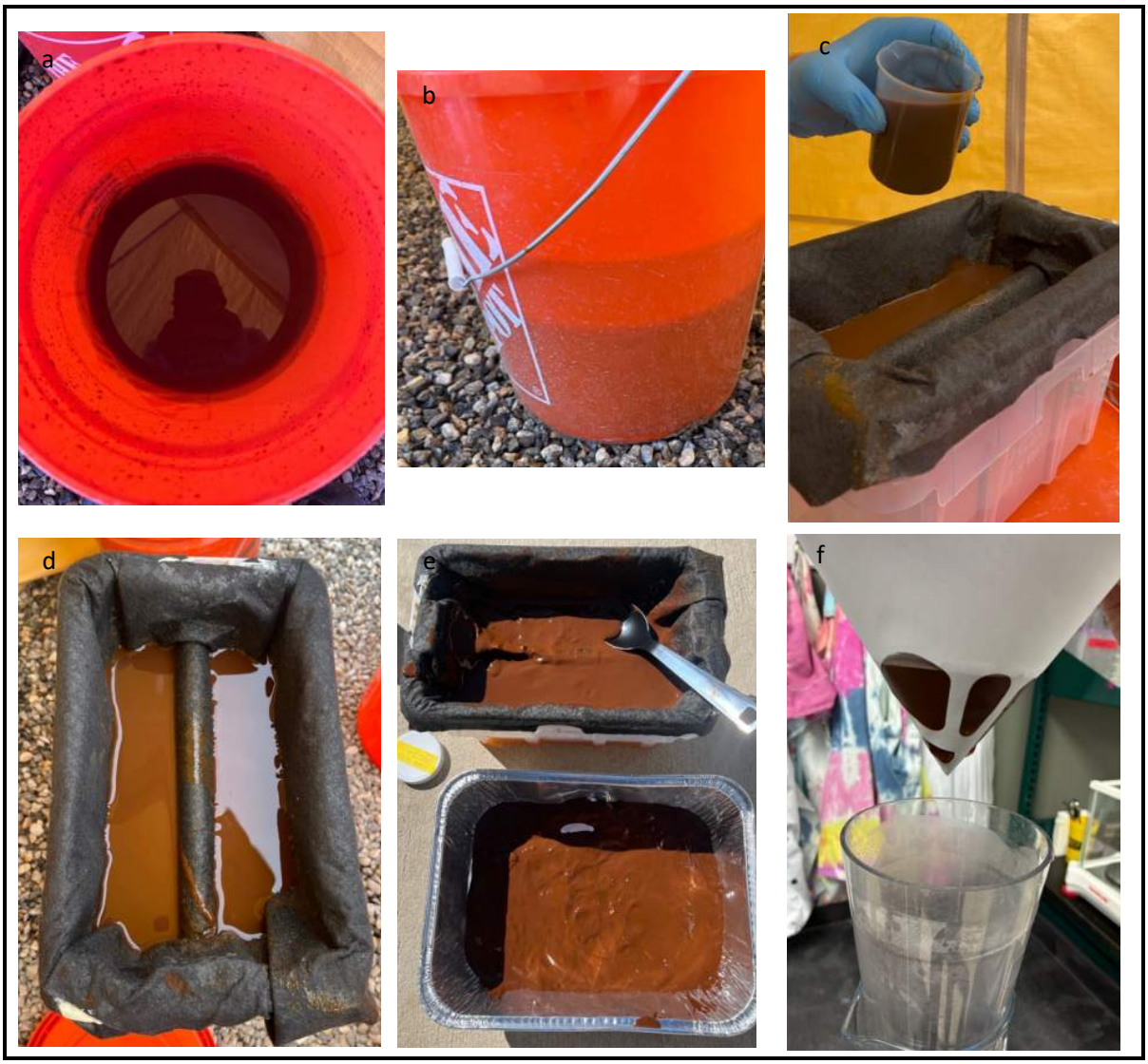


Figure 15. Pilot study backwash solids dewatering process consisting of solids settling decanting (a, b), dewatering with pilot-scale "Roll-Off Sludge Mate" (c, d), combining of stored dewatered solids for bulk sample, and passing the EPA Paint Filter Test (f).

There are two separate agencies that are responsible for regulating hazardous waste in California, the USEPA that enforces the federal hazardous waste rules (the Resource Conservation and Recovery Act or RCRA) and the California EPA's Department of Toxic Substances Control (DTSC). As both agencies have different hazardous waste regulations, a waste can be classified as a federal "RCRA hazardous waste" or "California hazardous waste". The difference between classifications is often the result of the analytical extraction procedure where TCLP analysis is used for federal classification and WET is used for California classification. A summary of the backwash dewatered sludge TCLP and WET results, along with their associated regulatory limits are provided Table 15. The dewatered sludge was analyzed to have 7.6% total solids and was non-detect for all TCLP parameters. For the WET analysis, the sludge was found to have detectable arsenic, chromium, copper, and vanadium, with concentrations that exceeded the regulatory limit for chromium and vanadium. This results in a non-RCRA California hazardous waste classification for disposal.

Table 15. Backwash dewatered sludge TCLP and WET results and their associated regulatory limits

Toxic Characteristic Leaching Procedure (TCLP)			Waste Extraction Test (WET)		
Parameter	Result (mg/L)	Regulatory Level (mg/L)	Parameter	Result (mg/L)	Regulatory Level (mg/L)
Arsenic	<0.50	5	Antimony	<1.5	15.0
Barium	<2.0	100	Arsenic	3.1	5.0
Benzene	<0.050	0.5	Barium	<10	100
Cadmium	<0.10	1	Beryllium	<0.075	0.75
Carbon Tetrachloride	<0.050	0.5	Cadmium	<0.10	1.0
Chlordane	<0.025	0.03	**Chromium**	**82**	**5.0**
Chlorobenzene	<0.0030	100	Cobalt	<8.0	80
Chloroform	<0.60	6	Copper	5.8	25
Chromium	<0.50	5	Lead	<0.50	5.0
o-Cresol	<20	200.0	Mercury	<0.010	0.2
m-Cresol	<20	200.0	Molybdenum	<35	350
p-Cresol	<20	200.0	Nickel	<2.0	20
Cresol	<20	200.0	Selenium	<0.10	1.0
2,4-D	<0.40	10	Silver	<0.50	5.0
1,4-Dichlorobenzene	<0.75	7.5	Thallium	<0.70	7.0
1,2-Dichloroethane	<0.050	0.5	**Vanadium**	**43**	**24**
1,1-Dichloroethylene	<0.070	0.7	Zinc	<25	250
2,4-Dinitrotoluene	<0.050	0.13			
Endrin	<0.0020	0.02			
Heptachlor(and epoxide)	<0.00080	0.008			
Hexachlorobenzene	<0.050	0.13			
Hexachlorobutadiene	<0.050	0.5			
Hexachloroethane	<0.30	3			
Lead	<0.50	5			
Lindane	<0.040	0.4			
Mercury	<0.010	0.2			
Methoxychlor	<1.0	10			
Methyl ethyl ketone	Not Reported	200			
Nitrobenzene	<0.20	2			
Pentachlorophenol	<0.17	100			
Pyridine	<0.50	5.0			
Selenium	<0.10	1			
Silver	<0.50	5			
Tetrachlorethylene	<0.070	0.7			
Toxaphene	<0.050	0.5			
Trichloroethylene	<0.050	0.5			
2,4,5-Trichlorophenol	<10	400			
2,4,6-Trichlorophenol	<0.20	2			
2,4,5-TP(Silver)	<0.040	1			
Vinyl Chloride	<0.20	0.2			

Backwash wastewater management option summary

Each of the impacted wellsites have variable sewer capacities, resulting in different backwash wastewater management requirements for full-scale design. The tested operational conditions resulted in UFRVs ranging from 14,400 gal/ft^2 to 28,800 gal/ft^2 and corresponding water recoveries of 99.0% to 99.5%. These results indicate any of the tested conditions are relatively water efficient, which reduces the total volume of backwash volume requiring management. For all wellsites that are tributary to the CWA sewer system and WWTP, direct discharge to sewer is the likely the least complex disposal option.

As CWA does not have sanitary sewer water quality discharge limits, the character of the backwash water is not of concern to the extent it does not substantially alter WWTP effluent water quality, which is subject to regulatory discharge limits. However, sewer capacity will impact discharge options. Except for Well 19, which is not connected to the CWA sewer system, all wells could consider direct discharge to sewer, depending on the selected filter media, with consideration of peak or non-peak hours for discharge (Table 16). Metered discharge could also be considered for each of the wellsites with sewer access.

Table 16. Backwash wastewater management options.

Wellsite	Off-Peak Hour Maximum Discharge (gpm)	Peak Hour Maximum Discharge (gpm)	Discharge Option
11	346	**346**	Sand: Peak Hour
12	215	**197**	Sand: Metered or Ceraclear: Peak Hour
16	**229**	90	Sand: Metered or Ceraclear: Off-Peak Hour
17	171	**166**	Sand: Metered or Ceraclear: Peak Hour
18	2,940	**2,872**	Sand: Peak Hour
20	166	**157**	Sand: Metered or Ceraclear: Peak Hour
19	Tributary to Valley Sanitary District: Off-site disposal only. Dewatered solids considered non-RCRA California hazardous waste		

If backwash wastewater storage tanks are required for a given wellsite, backwash recycle can be considered to improve water efficiency and reduce the overall volume of waste requiring disposal. Backwash tank sizing and backwash recycle operations should consider the time required to settle the solids and clarify the backwash water prior to introducing the wastewater to the head of the treatment process. Finally in the case of Well 19, if solids are to be managed on-site, the dewatered solids will likely be classified as non-RCRA California hazardous waste, which will require disposal at an appropriate waste receiving facility.

Objective 3: Evaluate the impact of backwash wastewater recycling on filter operations

As described in *Objective 2: Explore backwash wastewater management options,* recycling backwash wastewater following an appropriate settling period improves a filter's overall water efficiency and decreases the total volume of wastewater requiring disposal. The impact of backwash recycling on filter performance was evaluated by collecting backwash wastewater in a 200-gallon cone bottom tank and recycling the water to an injection point ahead of the selected filter's reduction contactor at a flow rate 10% of the filter flow rate. The injection point ahead of the reduction contactor was selected based on previous pilot studies that found bypassing the Fe(II) reduction process resulted in increased headloss and increased Cr(VI) concentrations when compared to the post reduction contactor location.

Note that backwash recycle pumps were not initially equipped with a time delay; therefore, backwash water was immediately fed to the head of the treatment process without the opportunity for solids to settle out of solution to clarify the water. This means the pilot process is not fully representative of full-scale implementation and likely results in higher Cr(VI) re-oxidation and inefficient settling of the recycle water; thus, the pilot results should be considered a conservative proof of concept, and the results are not indicative of future full-scale performance.

The impact of backwash recycle on filter performance was assessed at a 5 gpm/ft^2 HLR, 0.5 mg-Fe/L Fe(II) dose and 2-minute reduction time. At this HLR, a filter operating with backwash recycle for 48-hours will result in an increase in UFRV from 14,440 gal/ft^2 to 15,840 gal/ft^2 and a recovery increase from 99.0% to 99.1%. Furthermore, by conservatively recycling 80% of the backwash water, the volume

directed to sewer decreases from 139 gal/ft^2 to 28 gal/ft^2. Figure 16 presents the statistical summary of filter effluent Cr(VI), Cr(T) and total Fe with and without backwash recycle. Under the tested condition, the mean effluent Cr(VI) increases with the introduction of backwash recycling from 4.6 to 4.9 µg/L; however, Cr(VI) always remains below the finished water goal of 8 µg/L. The mean total Fe concentration increased from 0.018 mg/L to 0.034 mg/L with backwash recycling, and the mean effluent Cr(T) was shown to significantly increase from 5.0 µg/L to 6.0 µg/L.

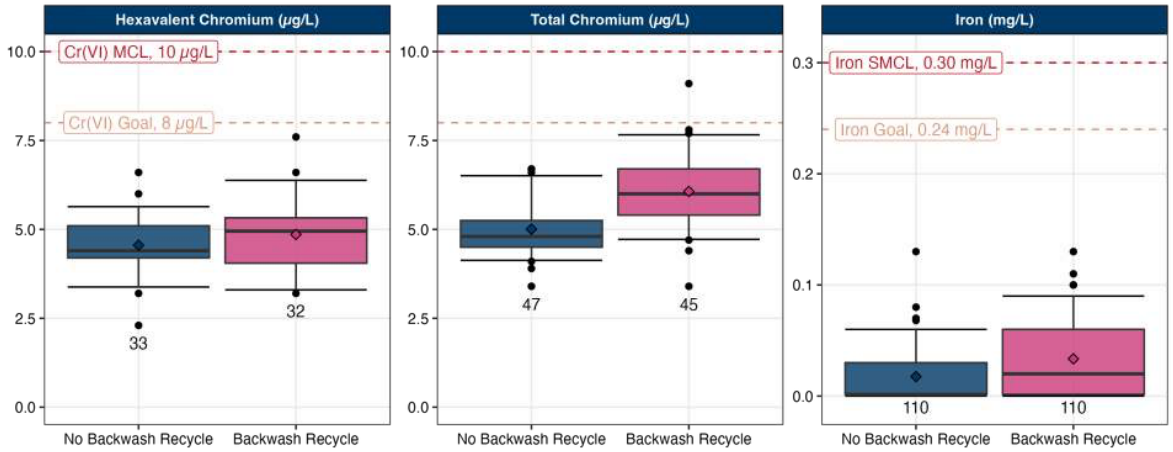


Figure 16. Statistical summary of filter effluent Cr(VI), Cr(T) and Fe with and without backwash recycle

The filter effluent Cr(VI), Cr(T) and total Fe achieved the study's water quality goals with backwash recycle. The observed variability in finished water quality was expected due to the operational conditions of the backwash recycle stream. The backwash recycle feed was only in operation when water was available following backwashes. When the feed is offline, concentrations would be expected to match the results of the filter without backwash recycle. Immediately following a backwash, the recycle stream was activated. This would cause unsettled backwash wastewater to load onto the filter, resulting in the elevated Cr(T) and total Fe concentrations observed in Figure 16. As solids settled, these concentrations would decrease. Cr(VI) concentrations remained more consistent due to the ability treat the backwash wastewater and reduce Cr(VI) to Cr(III) prior to filtration.

Although the pilot study operated with backwash recycle under non-ideal conditions, the filter effluent continued to achieve Cr(VI), Cr(T) and total Fe concentrations that met the study's water quality goals. At full-scale, the backwash recycle process is expected to outperform the pilot-study results due to more efficient backwash wastewater settling and the ability to increase the ferrous reduction time and Fe(II) dose to accommodate the additional 10% flow.

Objective 4: Evaluate the potential for RCF treatment with raw water blending

To evaluate the potential for partial raw water bypass and blending with RCF treated water, Fe(II) doses were increased from 0.5 to 1 mg-Fe/L with the goal to further reduce Cr(VI) to concentrations below 2 µg/L. The raw water and treated Cr(VI) concentrations for the four conditions evaluated at 1 mg-Fe/L are shown in Figure 17. During this period of testing, raw water Cr(VI) ranged from 17 to 19 µg/L. Cr(VI) was consistently reduced to below 2 µg/L in all filter conditions with respect to media type, HLR, and reduction time. The Sand at a HLR of 10 gpm/ft^2 and 1-minute reduction represents the smallest practical treatment equipment footprint evaluated in this testing, which may require consideration for constrained wellsites. Even at this lower reduction time of 1-minute, Cr(VI) concentrations still maintained the ≤ 2 µg/L filter effluent goal. Comparable Cr(VI) reduction ≤ 2 µg/L were observed for Sand and Ceraclear at a HLR of 10 gpm/ft^2 with a 2-minute reduction.

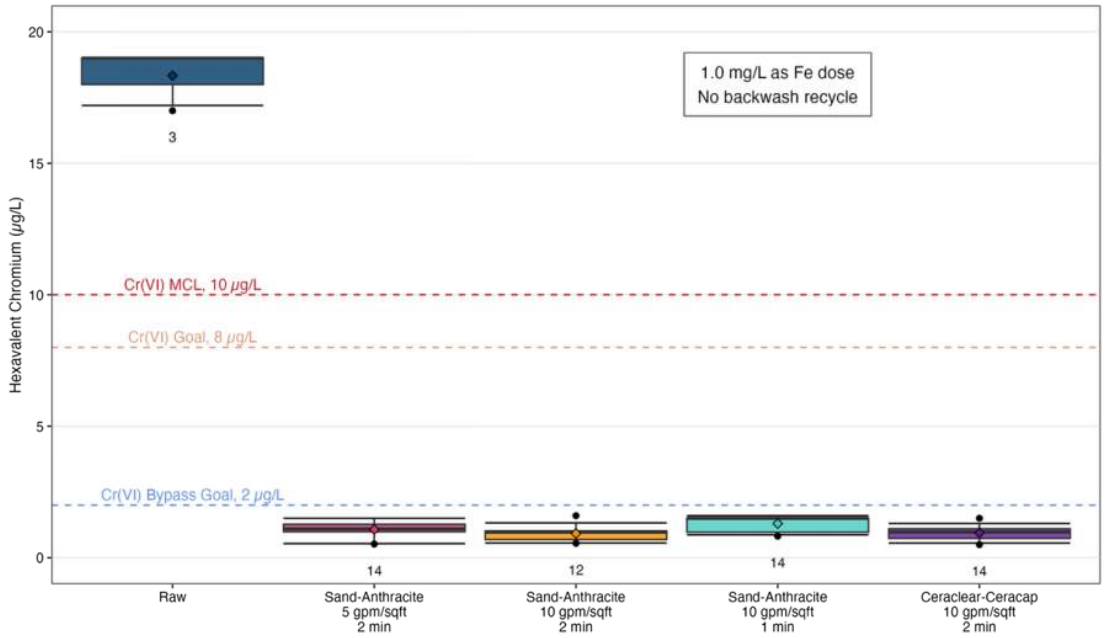


Figure 17. Raw and filter effluent Cr(VI) at 1 mg-Fe/L ferrous dose with no backwash recycle.

To further illustrate the improved Cr(VI) reduction observed at the increased Fe(II) dose, a statistical summary of filter effluent Cr(VI) for all tested conditions is presented in Figure 18. Cr(VI) concentrations were substantially lower with the increased Fe(II) dose; between conditions tested at both doses, Cr(VI) was approximately 75% lower at the 1 mg-Fe/L dose, consistent with the results observed at bench-scale (Figure 3). Note that the 0.5 mg-Fe/L dose effectively reduced Cr(VI) to achieve the study's goals of ≤ 8 µg/L. Due to increased chemical consumption and potential for decreased filter runtimes due to particle loading, the of 1 mg-Fe/L should only be considered if a lower finished water goal is desired or raw water bypass is to be implemented.

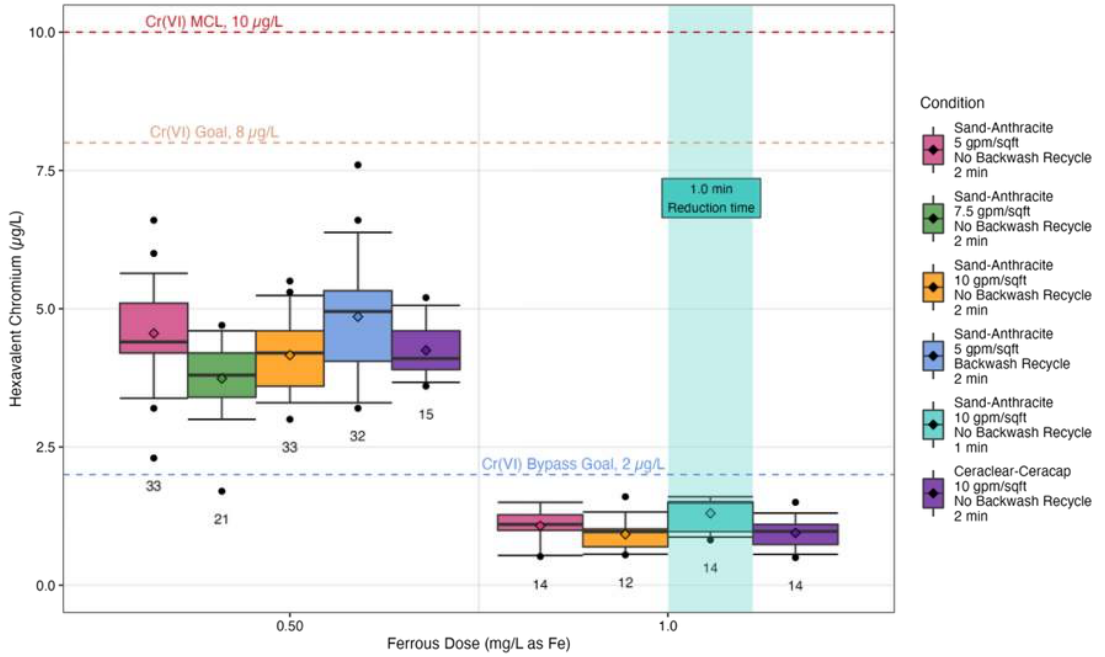


Figure 18. Cr(VI) reduction at 0.5 and 1 mg-Fe/L for each filter operating condition.

Theoretical treatment bypass rates were calculated based on the maximum observed filter effluent Cr(VI) concentrations for each of the Fe(II) dose and reduction time pairs evaluated during the pilot study, along with the maximum Well 19 raw water Cr(VI) concentration. A summary of the resulting bypass estimates are shown in Table 17. At a 0.5 mg-Fe/L Fe(II) dose, the maximum filter effluent Cr(VI) concentration of 7.6 µg/L indicates that bypass blending is not a feasible treatment approach. At a Fe(II) dose of 1 mg-Fe/L, the maximum filter effluent Cr(VI) concentrations were 1.6 and 1.5 µg/L at 1- and 2-minute reduction times, respectively, suggesting bypass blending is viable at Well 19 at a rate of approximately 26%.

Table 17. Raw water bypass options by operational condition for Well 19.

Ferrous Dose (mg-Fe/L)	Reduction Time (min)	Max Treated Cr(VI)	Max Well 19 Cr(VI)	Cr(VI) Treatment Goal	Bypass Rate	Treatment Rate	Bypass Flow (gpm)	Treated Flow (gpm)
0.50	2	7.6 µg/L n = 132	22 µg/L	8 µg/L	2.8%	98%	55	1,919
1.0	1	1.6 µg/L n = 14			31%	69%	619	1,355
	2	1.5 µg/L n = 40			32%	68%	626	1,348

This analysis was expanded to CWA's other Cr(VI) impacted wells at the same conservative filter effluent Cr(VI) concentration of 2 µg/L, and the maximum reported raw water Cr(VI) for each well. A summary of the resulting bypass estimates are shown in Table 18. In this analysis, each well's bypass rate directly corresponds to the raw water Cr(VI) concentration, where wells with lower raw water Cr(VI) can bypass more water. Bench-scale testing showed that wells with lower raw water Cr(VI) concentrations (i.e., Well 16 and Well 18) reached lower treated water Cr(VI) compared to Well 19. Thus, bypass blending is likely more beneficial at wellsites with lower raw water Cr(VI), which allows greater rates of treatment bypass.

Table 18. Raw water bypass options for each CWA well, assuming treated Cr(VI) of 2 µg/L.

Well	2024 Pump Rate (gpm)	Max Raw Cr(VI)	Max Treated Cr(VI)	Cr(VI) Treatment Goal	Bypass Rate	Treatment Rate	Bypass Flow (gpm)	Treated Flow (gpm)
11	1,245	19 µg/L	2 µg/L	8 µg/L	35%	65%	439	806
12	2,006	25 µg/L			26%	74%	523	1,483
16	1,848	18 µg/L			38%	63%	693	1,155
17	1,770	25 µg/L			26%	74%	462	1,308
18	1,500	15 µg/L			46%	54%	692	808
19	1,974	22 µg/L			30%	70%	592	1,382

Fe breakthrough as a function of runtime is shown in Figure 19 for the conditions evaluated at the 1 mg-Fe/L dose. The runtime backwash trigger for each of these conditions were determined based on filter effluent Fe concentrations. Sand at a 5 gpm/ft^2 HLR and 2-minute reduction maintained its 48-hour runtime with no observed increase in Fe breakthrough compared to the 0.5 mg-Fe/L dose. While Fe results for Sand at a 10 gpm/ft^2 HLR and 2-minute reduction shown in Figure 19 extends through 48 hours of operation, Fe was seen to approach or exceed the 0.24 mg/L goal after 40-hours of operation. Sand at a 10 gpm/ft^2 HLR and 1-minute reduction was backwashed after 24-hours of operation due to Fe concentrations exceeding 0.24 mg/L. The Ceraclear at a 10 gpm/ft^2 HLR and 2-minute reduction was backwashed at 28 hours based on headloss rather than Fe breakthrough with most results remaining below the Fe goal. In general, filter effluent Cr(VI) concentrations were higher and broke through more rapidly at the increased Fe(II) dose due to the higher Fe loading rate.

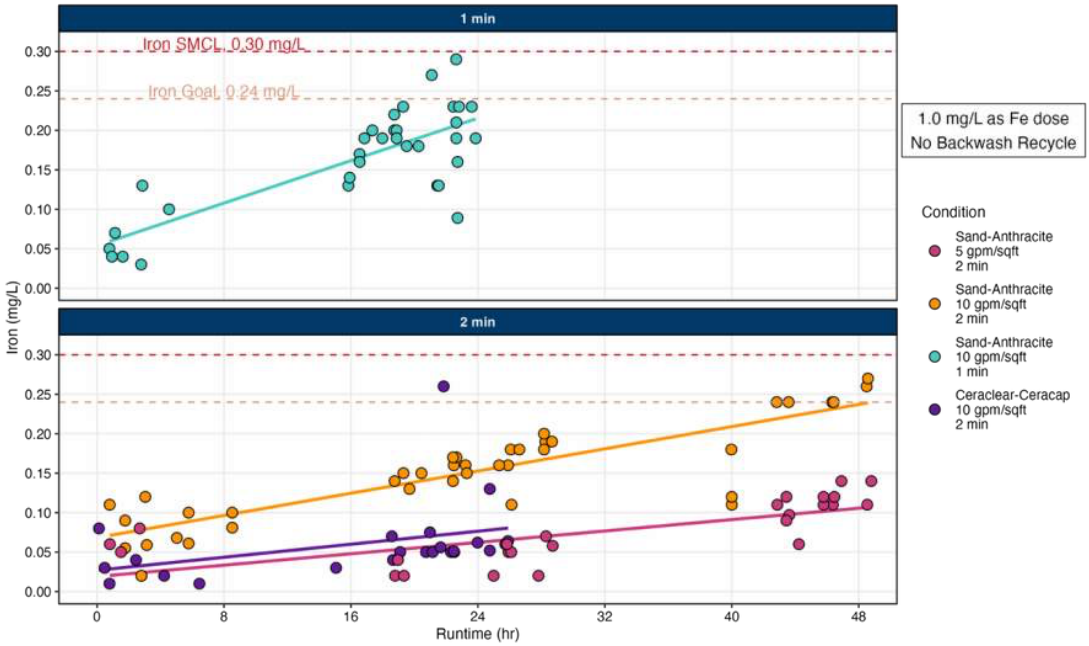


Figure 19. Fe breakthrough with runtime at 1 mg-Fe/L ferrous dose.

Cr(VI) breakthrough as a function of runtime is shown in Figure 20 for the conditions evaluated at the 1 mg-Fe/L dose. The Sand at a 10 gpm/ft^2 HLR and 1 minute reduction had the highest Cr(VI) concentrations throughout each filter run and a higher rate of breakthrough compared to the same condition with a 2-minute reduction time. These results suggest that the lower reduction time decreased Cr(VI) reduction, similar to the observed outcomes at bench-scale. While the 1-minute reduction time still met the bypass goal of ≤ 2 µg/L, the filter runtime decreased by 40% due to earlier Fe breakthrough compared to the 2-minute reduction time condition. The Sand at a 5 gpm/ft^2 HLR and 2-minute reduction and Sand at a 10 gpm/ft^2 HLR and 2-minute reduction showed similar Cr(VI) breakthrough trends, with marginally higher Cr(VI) concentrations in the 5 gpm/ft^2 condition.

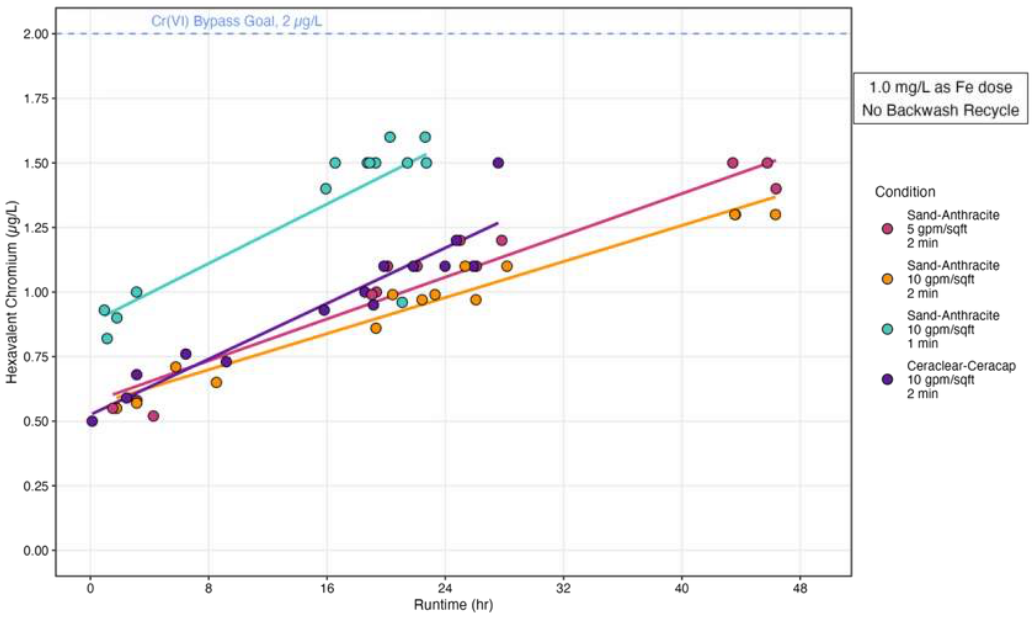


Figure 20. Cr(VI) breakthrough with runtime at 1 mg-Fe/L ferrous dose.

Cr(T) breakthrough results, shown in Figure 21, were similar to those of Fe. While Cr(VI) remained below the bypass goal during each filter run, Cr(T) did exceed 2 µg/L after 8 hours of runtime for the Sand at a 10 gpm/ft^2 HLR and after 16 hours for Sand at a 5 gpm/ft^2 HLR and Ceraclear at a 10 gpm/ft^2 HLR. The Sand at a 10 gpm/ft^2 HLR and 1-minute reduction showed the highest Cr(T) breakthrough with a maximum Cr(T) concentration of 9.4 µg/L. Cr(T) removal performance was improved with the higher reduction time at the same HLR. The Sand at a 5 gpm/ft^2 HLR and Ceraclear at a 10 gpm/ft^2 HLR showed similar Cr(T) trends with the lowest maximum concentrations of 4.1 and 2.6 µg/L, respectively, with lower Ceraclear concentrations likely occurring due to shorter runtimes.

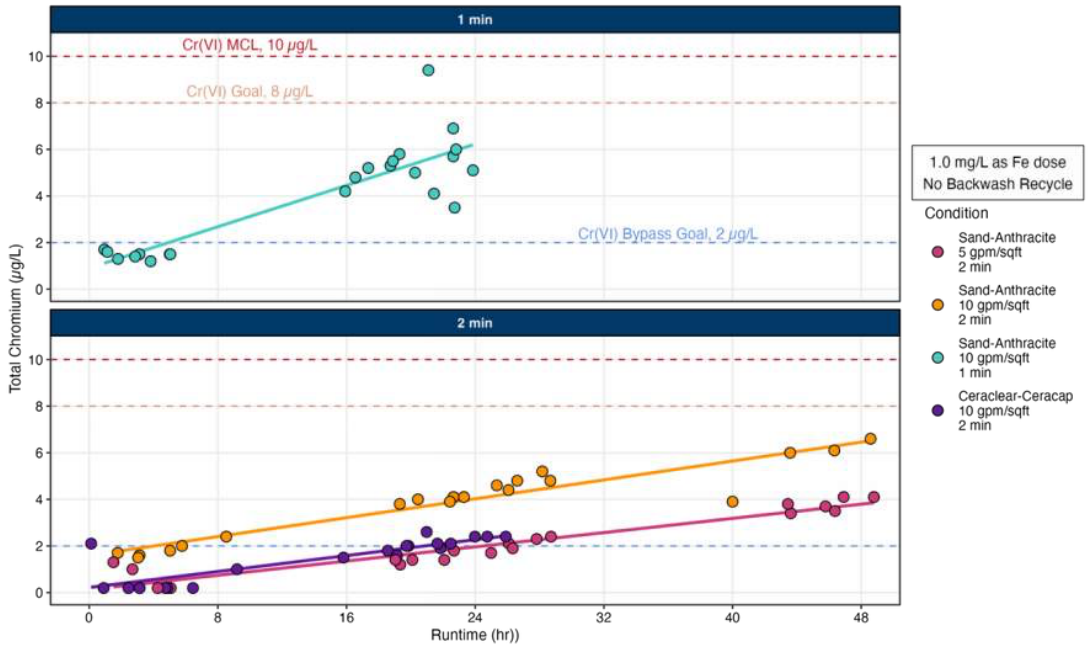


Figure 21. Cr(T) breakthrough with runtime at 1 mg-Fe/L ferrous dose.

Headloss as a function of runtime and UFRV is shown in Figure 22 for the conditions evaluated at the 1 mg-Fe/L dose. As with the 0.5 mg-Fe/L dose, the Ceraclear condition was observed to have the highest headloss. The two Sand conditions at a 10 gpm/ft^2 HLR showed comparable clean bed headloss values with higher headloss accumulation for the 1-minute reduction time resulting in higher headloss throughout the filter run compared to the 2-minute condition. The Sand at a 5 gpm/ft^2 HLR showed the lowest headloss and accumulation rate, due to decreased particle loading. Clean bed and maximum headloss for these same conditions are summarized in Table 19. Headloss values at the 0.5 mg-Fe/L Fe(II) dose and 1 mg-Fe/L Fe(II) dose were comparable for the Ceraclear condition. Clean bed headloss was similar for the Sand at a 10 gpm/ft^2 HLR and 2-minute reduction; however, the maximum headloss was approximately 40% higher at the 1 mg-Fe/L dose. The Sand at a 5 gpm/ft^2 HLR had an approximately 30% higher clean bed and 50% maximum headloss at the 1 mg-Fe/L dose.

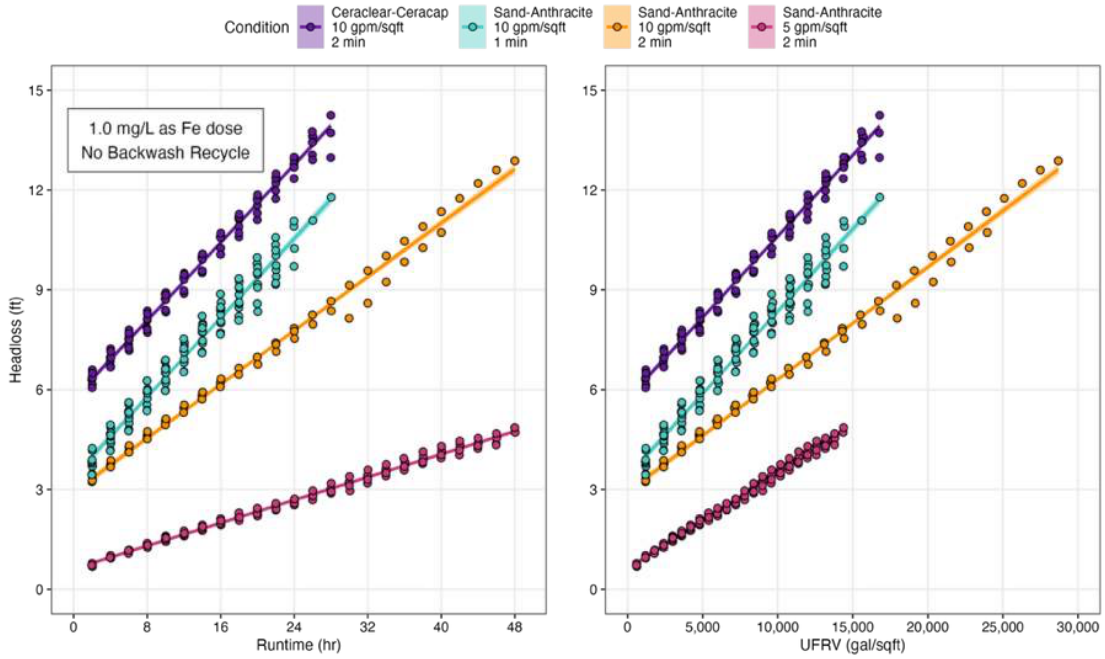


Figure 22. Headloss (differential pressure) versus runtime (left) or UFRV (right) at 1 mg-Fe/L ferrous dose.

Table 19. Headloss summary at 1 mg-Fe/L and no backwash recycle.

Condition	Clean bed Headloss (ft/psi)	Max Headloss (ft/psi)	Clean bed Headloss (ft/psi)	Max Headloss (ft/psi)
	1 mg-Fe/L Dose		0.5 mg-Fe/L Dose	
Sand-Anthracite: 5 gpm/ft^2 No Backwash Recycle 2 minutes	0.34/0.15	4.9/2.1	0.26/0.11	3.2/1.4
Sand-Anthracite 10 gpm/ft^2 No Backwash Recycle 2 minutes	2.5/1.1	12.9/5.6	2.5/1.1	9.1/3.9
Sand-Anthracite: 10 gpm/ft^2 No Backwash Recycle 1 minute	2.7/1.2	11.8/5.1	-	-
Ceraclear-Ceracap: 10 gpm/ft^2 No Backwash Recycle 2 minutes	5.4/2.3	14.2/6.2	5.4/2.3	13.8/6.0

Objective 5: Assess the fate of Cr(VI) within the drinking water and sanitary sewer distribution system

Filter effluent from the Sand at a 5 gpm/ft^2 HLR with a 0.5 mg-Fe/L dose and 2-minute reduction time was held headspace free over several days at room temperature to understand the potential for Cr(III) re-oxidation to Cr(VI) through the drinking water distribution system. The Cr(VI) and Cr(T) concentrations from these hold tests are shown in Figure 23 at initial collection (0-hr) and representative distribution system residence times of 1 day (17-hr), 3 days (41-hr), and 7 days (168-hr). Both Cr(VI) and Cr(T) were relatively stable over the weeklong hold with some variation in Cr(T) in the 7-day hold sample likely attributable to analytical margins of error. These results suggest limited re-oxidation of Cr(VI) in the distribution system, providing greater confidence in Cr(VI) concentrations at

customer taps. As the re-oxidation of Cr(VI) is limited to the Cr(T) concentration, the conservative approach of removing Cr(T) to below 8 µg/L ensures the distribution system Cr(VI) concentrations will not exceed the MCL even if complete re-oxidation were to occur.

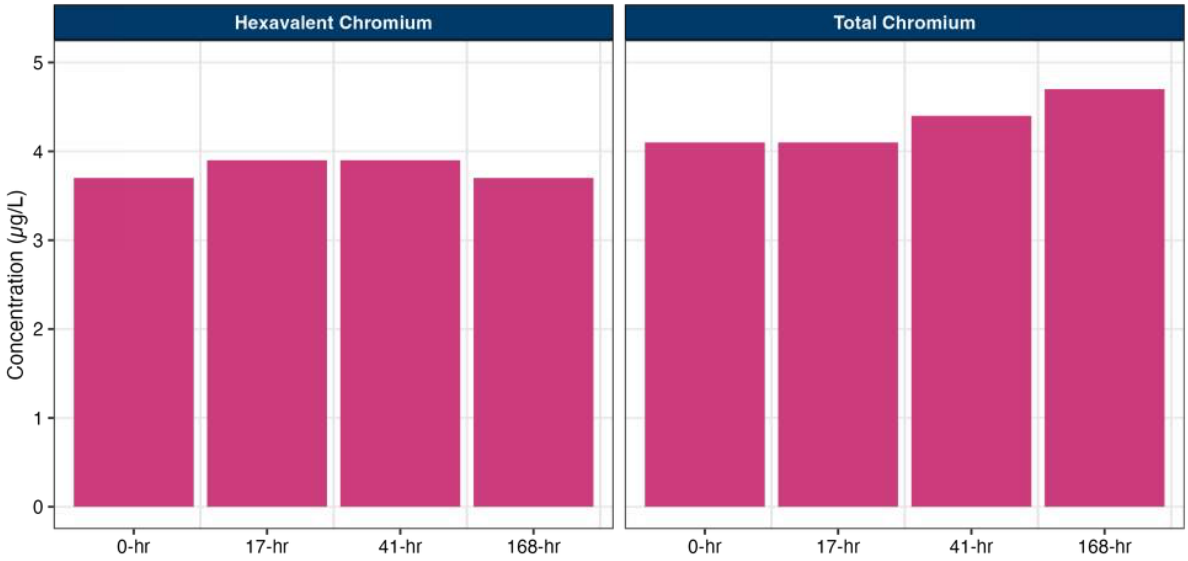


Figure 23. Filter effluent chromium re-oxidation hold tests. (Sand at a 5 gpm/ft^2 HLR, 0.5 mg-Fe/L dose and 2-minute reduction time).

Backwash residuals with elevated Cr(T) and Fe are expected to be discharged to the CWA sanitary sewer during full-scale operation. This increased loading must be effectively treated at the CWA WWTP to continue to achieve the permitted discharge requirements. To estimate the loadings and chromium speciation of the backwash wastewater entering the WWTP, bulk backwash wastewater was collected from a single backwash event from the Sand 5 gpm/ft^2 HLR, 0.5 mg-Fe/L dose and 2-minute reduction condition and was blended with CWA WWTP influent at conservative ratios of 5% and 15% (volume). The combined backwash and wastewater samples were measured for Cr(VI), Cr(T), and Fe at the time of sample preparation (0-day) and for hold times representative of the sewer collection system (1 day, 3 days, and 5 days). These results along with the backwash and average WWTP influent water quality are shown in Figure 24.

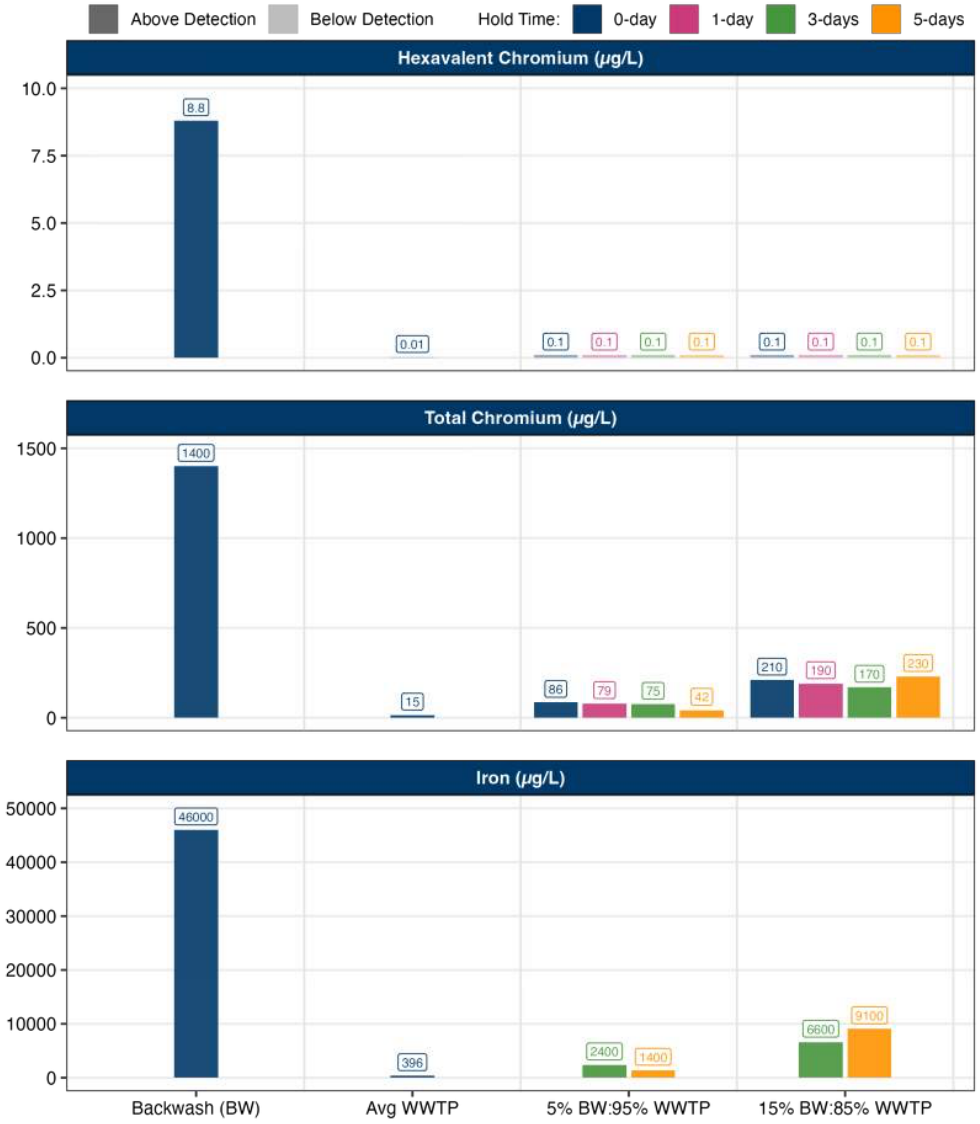


Figure 24. Blended backwash and wastewater hold tests Cr(VI) re-oxidation.

Backwash wastewater Cr(VI) concentrations were measured at 8.8 µg/L, below the WWTP daily discharge limit of 16.3 µg/L, but above the average monthly discharge limit of 8.1 µg/L. At the blended ratios of 5% and 15%, theoretical Cr(VI) concentrations are estimated at 0.44 and 1.32 µg/L, respectively, if completely conserved. The actual measured Cr(VI) concentrations were non-detect in the blended wastewater for all hold times, suggesting the wastewater matrix is reductive and Cr(VI) is converted to Cr(III), corresponding with historical WWTP influent and effluent Cr(VI) data. Based on these results, significant Cr(VI) loading to the WWTP influent is not expected and should not impact WWTP Cr(VI) discharge concentrations. The concentrations of Cr(T) and Fe in the blended wastewater were conserved with respect to the amount of backwash water blended with wastewater. Cr(T) and Fe are not regulated in the CWA WWTP discharge, and their impact on plant operations (e.g., sludge production, biological inhibition) were not evaluated in this study and should be considered.

Corrosion Analysis

As part of the Lead and Copper Rule Revisions (LCRR) that came into effect October 16, 2024, a corrosion analysis for new treatment processes must be reviewed and approved by DDW prior to its implementation. Accordingly, a desktop corrosion analysis was completed by comparing water quality and corrosion indices for the Well 19 water source to the pilot study's filter effluent results. The results of corrosion index parameters were compared to raw water quality based on historical and pilot-scale data are presented in Figure 25 and summarized in Table 20. No substantial variation was seen in the water quality parameters reviewed, except for chloride. Chloride concentrations increased by approximately 3 to 4 mg/L compared to the average raw water concentration, which is likely attributable to the addition of ferrous chloride and sodium hypochlorite as part of the RCF treatment process.



Figure 25. Raw Well 19 and pilot filter effluent corrosion water quality data.

Table 20. Corrosion water quality parameters.

Condition	pH (SU)	Calcium (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	CSMR*	TDS (mg/L)
Raw	8.22	18	2.7	9.2	22	0.42	150
Sand-Anthracite: 5 gpm/ft^2 No backwash recycle 0.5 mg-Fe/L 2 minutes	8.14	18	2.6	13.0	22	0.59	120
Sand-Anthracite: 10 gpm/ft^2 No backwash recycle 0.5 mg-Fe/L 2 minutes	8.13	18	2.6	13.0	22	0.59	150
Sand-Anthracite: 5 gpm/ft^2 Backwash recycle 0.5 mg-Fe/L 2 minutes	8.1	17	2.7	12.0	22	0.55	160
Sand-Anthracite: 5 gpm/ft^2 No backwash recycle 1 mg-Fe/L 2 minutes	7.80	18	2.7	13.0	22	0.59	160
Sand-Anthracite: 10 gpm/ft^2 No backwash recycle 1 mg-Fe/L 1 minute	7.79	18	2.7	13.0	22	0.59	160
*Non-corrosive: CSMR < 0.2, Moderately corrosive: 0.2 > CSMR > 0.5 , Corrosive CSMR > 0.5							

With respect to the scaling and corrosion indices evaluated and shown in Table 21, the Ryznar Index (RI), Aggressive Index (AI), and Larson's Ratio (LR) are comparable to the raw water condition and classified as aggressive, moderately corrosive, and non-corrosive, respectively, for raw water and filter effluent conditions. Aggressive describes a water that is likely to dissolve calcium carbonate and corrosive a water that is likely to dissolve metals from distribution system materials. While the average raw water condition is classified as aggressive (or non-scale forming) with respect to the Langlier Saturation Index (LSI) and Calcium Carbonate Precipitation Potential (CCPP), two of the filter effluent conditions, Sand operated at a 0.5 mg-Fe/L dose at 5 and 10 gpm/ft^2 HLRs are classified as scale-forming, primarily due to the elevated pH of these conditions on the date of testing.

The LSI, CCPP, and pH values of the pilot-scale treated waters are within the range of typical raw water values. The CSMR in all filter effluent samples were shifted from the moderately corrosive to corrosive range, due to the increase in chloride concentrations. Elevated CSMR is mostly a concern for galvanic corrosion, which occurs at the junction of two metals (e.g., copper with lead solder) and is of less severe concern with an alkalinity above 50 mg/L as $CaCO_3$, as is the case at Well 19 and all other CWA wells. Based on these data, it is not anticipated that RCF treatment will substantially alter the currently observed distribution system corrosion indices.

Table 21. Corrosion and scaling indices.

Condition	Langlier Saturation Index (LSI)	Calcium Carbonate Precipitation Potential (CCPP)	Ryznar Index (RI)	Aggressive Index (AI)	Chloride to Sulfate Mass Ratio (CSMR)	Larson's Ratio (LR)
Raw (Avg)	-0.13	-1.2	8.23	11.6	0.39	0.40
Sand-Anthracite 5 gpm/ft^2 No backwash recycle 0.5 mg-Fe/L 2 minutes	0.06	0.6	8.02	11.7	0.59	0.43
Sand-Anthracite 10 gpm/ft^2 No backwash recycle 0.5 mg-Fe/L 2 minutes	0.04	0.4	8.06	11.7	0.59	0.43
Sand-Anthracite 5 gpm/ft^2 Backwash recycle 0.5 mg-Fe/L 2 minutes	-0.02	-0.2	8.14	11.7	0.55	0.42
Sand-Anthracite 5 gpm/ft^2 No backwash recycle 1 mg-Fe/L 2 minutes	-0.29	-3.2	8.38	11.4	0.59	0.43
Sand-Anthracite 10 gpm/ft^2 No backwash recycle 1 mg-Fe/L 1 minutes	-0.30	-3.3	8.39	11.4	0.59	0.43

LSI < 0: aggressive*; LSI > 0: scale forming
CCPP < 0: aggressive*; CCPP > 0: scale forming
RI > 6.8: aggressive*
10 < AI < 12: moderately corrosive
0.2 < CMSR < 0.5: moderately corrosive; CSMR >= 0.5: corrosive
LR < 0.8: non-corrosive
*aggressive with respect to calcium carbonate

Conclusions and Design Considerations

This pilot testing program successfully demonstrated the use of RCF treatment for Cr(VI) removal below 8 µg/L at Well 19, with results expected to be applicable to other impacted wellsites, based on comparable results obtained through bench-scale testing (*Previous Pilot- and Bench-scale RCF Testing*). The overall process performance was confirmed at a Fe(II) dose of 0.5 mg-Fe/L and 2-minute reduction time over a range of successful HLRs that operated for 48 hours between backwashes, resulting in recoveries greater than 99%. These results provide design flexibility for each of the wellsites which each have differing constraints. Once the overall process performance was confirmed, the pilot system was used to identify opportunities to improve filter efficiency, decrease equipment footprints, and to inform backwash wastewater management approaches. Table 22 summarizes the pilot study's objectives, along with each objective's findings.

Table 22. Summary of pilot study objectives and findings

Objective		Pilot Findings
1	Confirm ferrous dose, reduction time, and filter runtimes required to achieve Cr(VI) finished water goal.	A 0.5 mg-Fe/L ferrous chloride dose with a 2-minute reduction time was shown to consistently achieve Cr(VI) concentrations below the 8 µg/L goal for all evaluated filter conditions including varying media types Sand and Ceraclear, hydraulic loading rates (5 – 10 gpm/ft^2), and backwash recycle conditions (no recycle or 10% influent flow recycled).
		Sand conditions at 5-, 7.5-, and 10-gpm/ft^2 hydraulic loading rates (HLR) achieved 48 hours of runtime while meeting filter effluent Cr(VI), total chromium [Cr(T)], and iron (Fe) goals. Ceraclear achieved 36 hours of runtime with backwashes triggered due to pilot pressure limitations; longer runtimes can likely be accommodated at full-scale while maintaining Cr(VI) and Fe goals.
		Headloss increased with increasing HLRs for Sand conditions. Compared to Sand at the same HLR, headloss was substantially higher for the Ceraclear media, which would result in higher pumping requirements and electrical costs at full-scale.
		Backwash recycle was not shown to substantially impact filter effluent Cr(VI) concentrations or filter operations in terms of headloss or runtime.
2	Explore backwash wastewater management options.	At the temperatures observed during the pilot study (72-80°F), a backwash loading rate (BWLR) of 19.9 gpm/ft^2 for sand media and 7.6 gpm/ft^2 for Ceraclear media was required to achieve 25% media expansion. These rates are expected to decrease at lower operational temperatures.
		At a ferrous dose of 0.5 mg-Fe/L, all Sand filters successfully operated for a 48-hour period. This resulted in unit filter run volumes (UFRV) ranging from 14,400 gal/ft^2 (HLR of 5 gpm/ft^2) to 28,800 gal/ft^2 (HLR of 10 gpm/ft^2) and filter recoveries between 99.0 and 99.5%, respectively, well above the recommended minimum of 95%. Ceraclear media also achieved filter recoveries greater than 99%.
		CWA does not currently have water quality discharge limits to the sewer system; therefore, backwash characterization was completed to inform potential contaminant loadings to the wastewater treatment plant (WWTP) due to backwash wastewater discharge. Fe and Cr(T) recovery in the wastewater was highly predictable for the Sand filters, ranging from 91-95% and 95-103%, respectively.
		The maximum volume of backwash settleable solids was observed after 3-hours for Sand, operated at an HLR of 5 gpm/ft^2 (13 mL/L), and 1-hour for Sand operated at an HLR 10 gpm/ft^2 (25 mL/L), suggesting there is a minimum settling time required for each operational condition, prior to initiating a

Objective		Pilot Findings
		backwash recycle stream. Sampling of the decant water showed a decrease in Cr(T), Fe and arsenic concentrations as solids settled with time and an increase in Cr(VI) as Cr(III) re-oxidized with free chlorine. All wells with possible connection to the CWA sewer system could potentially discharge directly to sewer, depending on the selected filter media and with consideration of peak or non-peak hours for discharge. Metered discharge could also be considered for each of these wellsites.
		If solids are to be managed on-site, the dewatered solids will likely be classified as non-Resource Conservation and Recovery Act (RCRA) California hazardous waste, which will require disposal at an appropriate waste receiving facility.
3	Evaluate the impact of backwash wastewater recycling on filter operations.	Backwash recycle introduced at 10% of the filter flow rate prior to the reduction contactors increased the filter UFRV by 10% while still achieving the filter effluent Fe, Cr(T) and Cr(VI) water quality goals. When conservatively estimating a backwash recycle rate of 80% of the backwash volume, the volume directed to sewer for Sand filters decreases from 139 gal/ft^2 to 28 gal/ft^2. The observed increased variability in concentrations were expected due to the operational conditions of the backwash recycle stream and is expected to improve at full-scale with more efficient backwash wastewater settling and the ability to increase the ferrous reduction time and ferrous iron dose to accommodate the additional 10% flow.
4	Evaluate the potential for RCF treatment with raw water blending.	A 1 mg-Fe/L ferrous chloride dose with 1- and 2-minute reduction times was shown to consistently achieve filter effluent Cr(VI) concentrations below the raw water bypass goal of 2 µg/L for all filter conditions.
		The Sand condition at a 5 gpm/ft^2 HLR, 1 mg-Fe/L dose, and 2-minute reduction time achieved 48-hours of runtime while meeting Cr(VI) and Fe goals. The Sand condition at a 10 gpm/ft^2 HLR, 1 mg-Fe/L dose, and 2-minute reduction resulted in a shortened runtime of 40-hours based on Fe breakthrough. The Ceraclear condition at a 10 gpm/ft^2 HLR, 1 mg-Fe/L dose, and 2-minute reduction, resulted in a shortened runtime of 28-hours based on headloss. Sand operated at a 10 gpm/ft^2 HLR, 1 mg-Fe/L dose, and 1-minute reduction with raw water treatment bypass, represents the smallest feasible treatment equipment footprint for CWA wells. Runtimes associated with this condition were significantly shorter at 24-hours due to Fe breakthrough.
		More rapid Cr(T) and Fe breakthrough, and headloss accumulation was observed at the 1 mg-Fe/L dose when compared to 0.5 mg-Fe/L. The 1-minute reduction time condition showed the fastest Cr(T) and Fe breakthrough.
		Raw water treatment bypass rates varied from 26% to 46% at CWA wells based on each well's raw water Cr(VI) and a treated water concentration of 2 µg/L.
5	Assess the fate of Cr(VI) within the drinking water and sanitary sewer distribution system.	Little to no re-oxidation was observed in filtered water held for up to 7 days. Targeting Cr(T) concentrations less than the Cr(VI) goal in finished water is a conservative treatment approach to meeting the MCL.
		Wastewater influent and backwash blended water Cr(VI) was non-detect at 5% and 15% volume of backwash water. Cr(T) and Fe concentrations were elevated compared to historical wastewater influent data corresponding to the concentrations and amount of backwash water added.

The following treatment process design conclusions and design considerations were informed by the pilot study results.

Operational Conditions

A Fe(II) dose of 0.5 mg-Fe/L with a 2-minute reduction time consistently achieved the pilot study's finished water goals with respect to Cr(VI) and Fe, with the sand filters operating for 48-hours between backwashes under this condition. A 1 mg-Fe/L Fe(II) dose should be applied if raw water bypass and blending is being considered, otherwise this higher dose is not necessary at full-scale and reduced filter runtimes and increased Fe loading to the sewer system. A reduced reduction time of 1-minute can also be considered if there are footprint constraints; however, this reduction time resulted in decreased runtime due to accelerated Fe breakthrough.

Sand filters operating at HLRs ranging from 5 gpm/ft^2 to 10 gpm/ft^2 successfully operated for 48 hours with a 0.5 mg/L-Fe ferrous dose and 2-minute reduction time. This provides design flexibility at each of the impacted wellsites.

Media Configuration

Both the traditional sand and Ceraclear media configurations were able to meet the pilot study's finished water goals; however, Ceraclear media operates at a significantly higher headloss which will increase annual electrical costs when compared to sand media. Ceraclear is also a proprietary media with only one supplier. Accordingly, sand media with an anthracite cap is recommended for full-scale implementation, unless site (i.e., backwash) constraints require the use of Ceraclear media. If Ceraclear media is chosen at one of CWA's wellsites, a minimum performance guarantee should be considered during the procurement process.

Backwash Loading Rates & Anticipated Wastewater Volumes

The BWLRs required to achieve 25% media expansion was confirmed for sand and Ceraclear media. At the raw water temperatures observed during the pilot study (72-80°F), a BWLR of 19.9 gpm/ft^2 for sand media and 7.6 gpm/ft^2 for Ceralear media was required to achieve 25% expansion. Backwash durations were not evaluated as a design variable at pilot-scale and should be implemented based on vendor recommendations. At the pilot durations, the sand filters' UBWV was 139 gal/ft^2 and the Ceraclear filter's UBWV was 102 for gal/ft^2. By conservatively recycling 80% of the backwash wastewater, the volume directed to sewer is reduced to 28 gal/ft^2 for Sand and 21 gal/ft^2 for Ceraclear.

During previous pilot studies, Cr(VI) release was observed upon filter start-up following periods of being offline. The release appears to be brief, with concentrations returning to baseline conditions following 1 bed volume of operation. Filter to waste is recommended when returning filters to service following periods of being offline.

Backwash Management Options

Assuming 4-ft diameter filter vessels, sand media can be installed at all CWA sewer accessible wellsites with metered discharge sewer. Well 11 and Well 18 can discharge directly to sewer during peak hour, whereas the remaining wellsites would need to consider Ceraclear media to facilitate direct discharge to sewer. In the cases where backwash wastewater will be metered to sewer, backwash recycle should be considered to reduce the overall volume of waste requiring disposal and to increase overall water efficiency. If backwash recycle is to be implemented, reducing hold times within the tank should be considered at low utilization wells, as extended hold times will result in the complete re-oxidation of Cr(III) to Cr(VI).

In the case of Well 19, unless CWA coordinates discharge to VSD and additional infrastructure improvements are made, process residuals must be transported offsite for disposal. Backwash recycle should be implemented to reduce the overall volume of waste requiring disposal. Results obtained from

the pilot's dewatered solids suggest the sludge will likely be classified as non-RCRA California hazardous waste, which will require disposal at an appropriate waste receiving facility. Due to the additional capital and operational costs associated with dewatering, off-site disposal of settled solids within the backwash storage tank to the CWA WWTP should be considered at Well 19.

Appendix A: Bench-scale Testing Protocol

Coachella Water Authority

RCF Ferrous Chloride Evaluation

Bench-scale Study Test Plan



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March 2025

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Introduction

In the Coachella Water Authority (CWA) water system, hexavalent chromium [Cr(VI)] is present in all active groundwater wells (Well 11, 12, 16, 17, 18, and 19) above the California State Water Resources Control Board Division of Drinking Water (DDW) maximum contaminant level (MCL) of 10 µg/L. This MCL applies at the entry point to the distribution system (EPDS). Hazen and Sawyer (Hazen) previously tested reduction coagulation filtration (RCF) technology at bench- and pilot-scale with stannous chloride ($SnCl_2$) and ferrous chloride reductants, which found RCF to be an effective technology for treatment of Cr(VI) at CWA's wells.

The RCF process removes Cr(VI) by first reducing Cr(VI) to the less soluble trivalent chromium[Cr(III)] species with the addition of a chemical reductant. The proposed reductant for this bench-scale study is ferrous iron, which is expected to reduce Cr(VI) as chromate (CrO_4^{2-}) to Cr(III) as chromium hydroxide [$Cr(OH)_3(s)$] according to the following equation:

$$3Fe^{2+} + CrO_4^{2-} + 8H_2O \rightarrow 3Fe(OH)_3(s) + Cr(OH)_3(s) + 4H^+$$

where $Fe(OH)_3(s)$ is ferric hydroxide, a typical form of ferric iron. Reduction time of Cr(VI) below the 10 µg/L MCL with ferrous iron can be as little as 1 to 2 minutes. Equivalent Cr(VI) reduction has been demonstrated with longer reduction times at a lower iron dose. Since iron is dosed in excess of the stoichiometric ratio, chlorine is injected following the requisite reduction time to aid in the oxidation of the residual iron to form $Fe(OH)_3$ particles. It is assumed that Cr(III) is adsorbed to the $Fe(OH)_3$ particles, which are subsequently removed through filtration. Note that Cr(III) is not individually regulated by DDW, but total chromium has an MCL of 50 µg/L at the EPDS.

The 2017 Hazen study validated RCF with ferrous chloride treatment to meet the Cr(VI) MCL for CWA wells. However, the results of previous testing were limited to a subset of wells, ferrous doses, and reduction times. This document provides the description and design of bench-scale testing to evaluate ferrous doses and reduction times for the removal of Cr(VI) from CWA wells, confirming previous dose/time pairs tested by Hazen and expanding the RCF dose/time test matrix. This will be completed with the addition of ferrous chloride at several doses and reduction times, terminating the reduction reaction with chlorine, followed by vacuum filtration with 0.45 µm membrane filters (47 mm diameter) to simulate sand filtration.

Objectives

The following objectives will be achieved at the bench-scale:

1. Compare and validate the results of the 2017 Hazen study with current water quality
2. Confirm the reduction time and ferrous dose combinations that will achieve CWA's finished water Cr(VI) goals for each source water

Methods and Materials

Testing will be completed using a 6-jar programmable jar tester (PB-900, Phipps & Bird, Inc.), shown in Figure 1, using 1.0 L of raw water per 2.0 L jar to minimize water shipping requirements. The objectives outlined in the previous section will be addressed using a series of jar tests (JT) detailed in

Table 1.

Procedure

Raw water analysis. Raw water quality parameters will be measured, including the pH, turbidity, Cr(VI), iron, and alkalinity for each source water.

Jar setup and testing. The jars will be rinsed and filled with 1-L of the prescribed source water. The jar testers will be started, and ferrous chloride will be immediately dosed. In previous bench testing, ferrous chloride doses of 0.5 and 1.0 mg/L as Fe were sufficient to reduce Cr(VI) below 10 µg/L, at reduction times of 1 and 2 minutes. Here, multiple ferrous chloride doses will be tested to better understand the specific ferrous dose and reduction times that can achieve CWA's treatment goal. Ferrous chloride doses of 0.3, 0.5, 0.8, and 1.0 mg/L as Fe will be tested. A total of nine different jar test sets will be conducted with the same ferrous doses described above, and the ferrous reduction time will be varied for each set of jar tests. The four sets of jar tests will be conducted with the following ferrous reduction times: 1 minute, 2 minutes, and 3 minutes.

Post-treatment. A 20 mL sample will be collected to measure Cr(VI) and Fe with the spectrophotometer at the end of reduction time to confirm Cr(VI) reduction and the correct ferrous chloride dose. Sodium hypochlorite will be dosed to quench the reduction reaction. Free chlorine will be analyzed to confirm dosing on select jars.

Filtration. Filtration will occur through vacuum filtration with 0.45 µm membrane filters. The filter will run to waste for 10 to 30s with DI, then 10 to 30s with the sample, then filtered into clean Erlenmeyer flasks until approximately 500 mL of the treated sample is filtered. Sample bottles will be filled from the flasks and refrigerated until shipment. Free chlorine will be analyzed to confirm a maintained resdiual on select jars.



Figure 1: Phipps & Bird, Inc. PB-900 jar tester (https://phippsbird.com/?page_id=3408)

Table 1: Jar testing conditions.

Parameter	Jar Set or Units	Jar/Bottle Number					
		1	2	3	4	5	6
Wells		**Well 11**	**Well 12**	**Well 16**	**Well 17**	**Well 18**	**Well 19**
Experimental conditions		**Ferrous Dose (mg/L as Fe)**			**Reduction time (s)**		
	Set 1	0.3			120		
	Set 2	0.3			180		
	Set 3	0.5			60		
	Set 4	0.5			120		
	Set 5	0.5			180		
	Set 6	0.8			60		
	Set 7	0.8			120		
	Set 8	1			60		
	Set 9	1			120		
Mixing							
Rapid – for ferrous addition	rpm/s	300/10			300/10		
Slow	rpm/s	100/reduction time			100/reduction time		
Water volume	L	1.0			1.0		
Water quality samples		one raw water sample and one water sample per jar					
Corona laboratory		alkalinity, confirmatory Cr(VI), Fe(T), pH, temperature, turbidity, free chlorine					
Commercial laboratory		Cr(T), Cr(VI), Fe(T)					

Table 2: Water quality analyses.

Parameter	Units	Method	
		Corona Laboratory	Commercial Laboratory
Alkalinity	mg/L as $CaCO_3$	HM[1] 8203	NA
Hexavalent chromium	µg/L	HM 8023	EPAM[2] 218.6, SM 3500-Cr B
pH	SU	SM[3] 4500-H^+	NA
Total chromium	µg/L	NA	EPAM 200.8
Total iron	mg/L	HM 8008	EPAM 200.7
Turbidity	NTU	EPAM 180.1	NA
Free chlorine	mg/L as Cl2	HM 8021	NA

[1]Hach Method.
[2]Environmental Protection Agency Method.
[3]Standard Method.

Table 3: Bench-scale testing conditions.

Parameter	Value	Units	Notes
Water volume	1.0	L/jar	duplicate jars per well
Mixing			
Rapid			ferrous chloride added at beginning
Speed	300	rpm	
Time	10	sec	
Slow			sodium hypochlorite added at end

Parameter	Value	Units	Notes
Speed	100	rpm	
Time	2.0	min	reduction time
Dose			
Ferrous chloride	0, 0.3, 0.5, 0.8, 1.0	mg/L as Fe	Kemira PIX-411
Sodium hypochlorite	0.5	mg/L as Cl_2	Sigma-Aldrich 425044
Ferrous Reduction times	60, 120, 180	s	

Table 4: Number of commercial laboratory samples for CWA wells.

	Raw	JTs	Total
Hexavalent chromium	6	54	60
Total chromium	6	54	60
Total iron	6	54	60

Schedule

Water collection and shipment along with bench scale testing is expected to occur the week of March 24. Samples will be shipped immediately upon completion of bench testing with an expected turnaround time of 2 weeks. Following data review and analysis, outcomes of bench scale testing will be discussed with CWA staff and included in the final water system and hexavalent chromium treatment assessment memo.

Appendix B: RCF Pilot Test Plan

Coachella Water Authority

Well 19 Reduction Coagulation Filtration
DRAFT Pilot Test Plan: Version 2

Corona Environmental Consulting, LLC

August 14, 2025

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Introduction

The California State Water Resources Control Board Division of Drinking Water's (DDW) maximum contaminant level (MCL) of 10 µg/L for hexavalent chromium [Cr(VI)] came into effect on October 1, 2024. Coachella Water Authority (CWA) has identified all six of their active groundwater wells as requiring treatment to achieve Cr(VI) compliance. With 9,363 service connections, CWA has a compliance deadline of October 1, 2027. The MCL package cites reduction coagulation filtration (RCF), strong base anion exchange (SBA-IX), and reverse osmosis as the best available technologies for Cr(VI) treatment. The *Hexavalent Chromium Treatment Technology Evaluation* (2025), completed by Corona Environmental Consulting, LLC (Corona), identified RCF treatment as the most appropriate treatment technology at each of the Cr(VI) impacted wells based on its relative ease of operation, operator familiarity and substantially lower conceptual 20-year net present worth cost estimates.

With unknowns remaining for backwash residual management for full-scale RCF implementation, especially in the case of Well 19, which is not connected to the CWA sanitary system, pilot testing was recommended as part of the *Treatment Technology Evaluation*. The pilot-scale study, led by Corona, will be conducted at the Well 19 site to confirm process performance, inform backwash residuals management, including backwash recycling, options for solids handling, and characterizing backwash wastewater that for most wells, is intended to be discharged to CWA's wastewater treatment plant (WWTP).

The pilot study outcomes will inform preliminary design at each of the six Cr(VI) impacted wellsites, led by Water Works Engineers, LLC (WWE). This pilot test plan summarizes the previous bench and pilot-scale RCF testing completed to date at CWA and describes each of the impacted wellsite's historical water quality and production, current pilot testing objectives, pilot equipment, and intended testing conditions. Adaptations to the pilot objectives, methods, and or schedule will be addressed in the pilot study report.

Previous Bench- and Pilot-scale RCF Studies

During the initial Cr(VI) regulatory period in 2017, Hazen and Sawyer (Hazen) and Corona collaboratively completed RCF bench- and pilot-scale testing using both stannous chloride and ferrous chloride (ferrous) reductants for Cr(VI) removal. This study, described in *Coachella Water Authority Stannous Chloride and Ferrous Chloride Testing for Hexavalent Chromium Removal* (Hazen, 2017), found that stannous chloride reductant had numerous limitations precluding it from further evaluation, while ferrous could achieve finished water quality goals without the same concerns.

The 2017 pilot-scale testing was completed at Well 12 and Well 19 using both traditional sand and Ceraflow-50 granular filter medias at ferrous doses ranging from 0.5 to 2 mg/L as iron (Fe) and hydraulic loading rates (HLR) of 5 and 10 gpm/ft^2. The best performing condition identified in the Hazen study was a ferrous dose of 0.5 mg/L as Fe with a 2-minute reduction time and an HLR of 10 gpm/ft^2. It was noted that a 1-minute reduction time resulted in decreased filter performance for both medias. The Ceraflow-50 media was backwashed based on headloss (10 psi) with a unit filter run volume (UFRV) of 13,800 gallons/ft^2, while the traditional sand media required the addition of a polymer (Magnafloc E38) dosed at 0.1 mg/L to achieve a UFRV of 27,000 gallons/ft^2 (45-hours) prior to backwashing on headloss (8.9 psi). The maximum total chromium concentration remained below 6 µg/L in both cases. Filter backwash waste was found to be non-hazardous based on Total Threshold Limit Concentration (TTLC) with total chromium concentrations being less than 5 mg/L. Dewatered samples were not analyzed during this testing.

As part of the ongoing Cr(VI) compliance study, Corona conducted RCF dose response testing at bench-scale for all six of the Cr(VI) impacted wells to confirm and expand on the 2017 Hazen results. Ferrous doses ranged from 0.3 to 1 mg/L as Fe, with 1-, 2- and 3-minute reduction times. Results from this testing were consistent with Hazen's findings, where a ferrous dose of 0.5 mg/L as Fe and a 2-minute reduction time was recommended as the starting condition for pilot-scale testing. Compared to the 1-minute reduction time, the 2-minute reduction time noticeably improved Cr(VI) reduction with all six wells achieving a Cr(VI) concentration below the CWA internal goal of 8 µg/L at a ferrous iron dose of 0.5 mg/L as Fe. The 3-minute reduction time did not provide additional Cr(VI) reduction. The 1.0 mg/L as Fe dose achieved concentrations less than 4 µg/L for all six wells and will be tested at pilot scale to evaluate the potential for raw water bypass.

Following the 2017 full-scale design recommendations and confirmatory 2025 bench-scale testing results, the initial pilot testing conditions will be a ferrous dose of 0.5 mg/L as Fe with a 2-minute reduction time. While available, it is unlikely that Ceraflow-50 will be tested at pilot-scale due to the media vendor's [Wateropolis Corporation (Mentor, OH)] exclusive agreement with a treatment system manufacturer. A similar product, Ceraclear-50, has been provided by Wateropolis, and will be tested if results from the traditional sand and anthracite configuration determines it is warranted. Note that this pilot design will include an anthracite cap on the tested ceramic media in the hopes to improve the Ceraflow-50 filter performance observed in 2017 by reducing overall headloss accumulation. This pilot will also expand on the evaluation of residual management options including backwash recycling and solids handling which are critical details required to inform the preliminary design and refine the estimated capital and operational costs.

Water Quality and Production

Each of the Cr(VI) impacted wells are expected to receive individual RCF treatment, with a seventh well, Well 20, planned for development in 2025. Each of these wells have comparable water quality matrices and performed similarly during the bench-scale RCF testing completed by Corona prior to the development of this test plan. Accordingly, pilot testing will be completed at one representative wellsite (Well 19), with pilot results being used for the preliminary design of all wellsites. An overview of the CWA system and pilot location is shown in Figure 1.

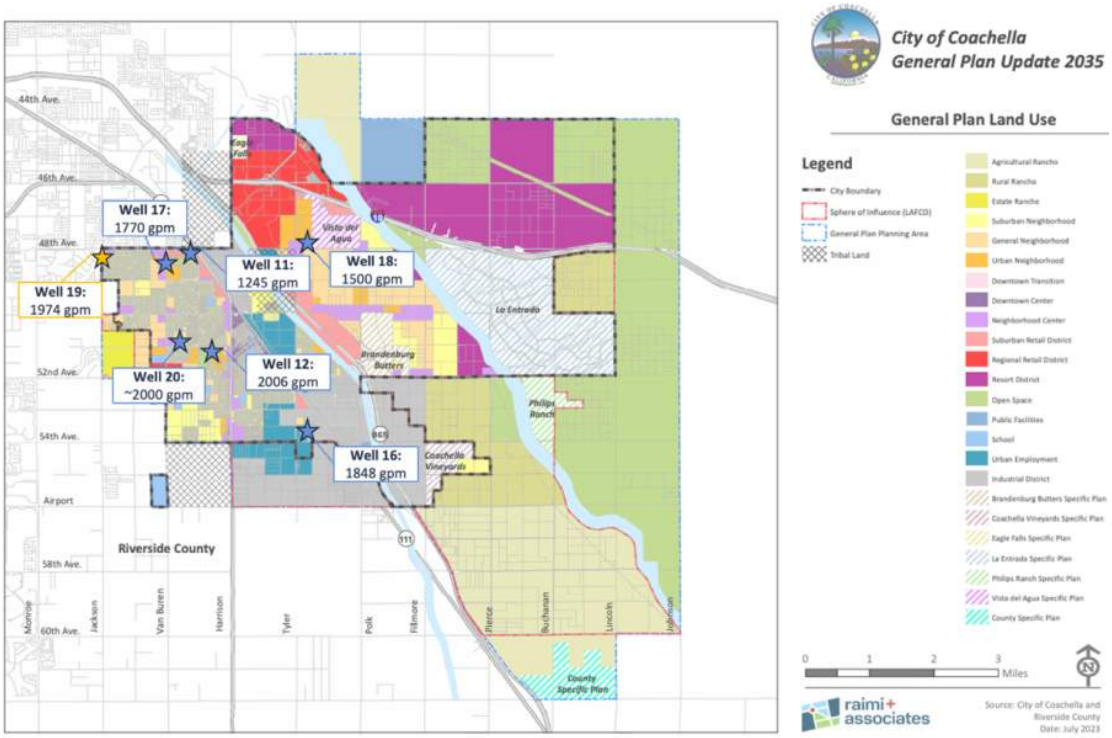


Figure 1. CWA system map showing active and planned wells and their corresponding pump rates.

There are two pressure zones in the CWA distribution system designated as 'Low Zone' and '150 Zone'. All active wells serve the Low Zone, except for Well 18, which serves the 150 Zone. Three storage reservoirs are used by CWA. Mecca reservoir, at a 3.6-million-gallon (MG) capacity, is located near Well 12 and serves the Low Zone. The Dillon Road reservoir, at a 1.5 MG capacity, serves the 150 Zone and is supplied by Well 18 with an emergency connection to Well 11. The Well 18 reservoir, at a 5.0 MG capacity, serves both the Low and 150 pressure zones and is only supplied by Well 18. Currently none of the Cr(VI) impacted wellsites have on-site treatment, apart from chlorine disinfection prior to entering the distribution system.

A summary of individual well design capacities, average annual utilization and historical water quality are provided in Table 1, with the pilot location (Well 19) bolded for reference. Production data was provided for the period from 2021 to 2024, and water quality data represent samples collected between 2011 and 2025, with non-detect values evaluated as half the reporting limit and used to calculate average concentrations. Note that Well 16 has not been used for production over the period of record and is anticipated to return online at a 1,500-gpm flow rate following rehabilitation. Well 20 is planned to be developed in 2025 with a design capacity of 2,000 gpm and will serve the Low Zone.

Table 1. Well production and water quality summary [minimum – maximum (mean)]

Parameter	Well 11		Well 12		Well 16		Well 17		Well 18		Well 19	
Well Details												
Design Capacity (gpm)	2,000		2,000		2,000		2,200		2,000		**2,000**	
2024 Pump Rate (gpm)	1,245		2,006		1,848		1,770		1,500		**1,974**	
Utilization (%)	25%		24%		0.1%		76%		48%		**90%**	
Pressure Zone	Low		Low		Low		Low		150		**Low**	
Chromium												
Total Chromium (µg/L)	15-19	(17.1)	18-24	(20.8)	13-32	(17.7)	20-25	(21.9)	12-14	(12.6)	**18-21**	**(19.3)**
Hexavalent Chromium (µg/L)	15-19	(16.7)	0-25	(20.4)	10-18	(14.1)	15-25	(21.9)	10-15	(12.8)	**15-22**	**(19.8)**
General Water Quality												
Alkalinity (mg/L)	86-100	(93.3)	80-100	(86.3)	80-90	(82.8)	79-96	(85.0)	76-93	(81.0)	**91-100**	**(95.3)**
Color (CU)	ND		ND		ND		ND		ND		**ND**	
Conductivity (µmhos/cm)	260-290	(277)	280-330	(312)	260-360	(302)	280-300	(285)	310-370	(345)	**250-290**	**(273)**
Hardness (mg/L as $CaCO_3$)	56-69	(63)	57-77	(68)	42-51	(46)	52-62	(54)	39-43	(41)	**54-60**	**(57)**
Odor (TON)	ND		ND		ND		ND		ND		**ND**	
pH (SU)	7.7-8.2	(8.1)	7.8-8.2	(8.0)	7.9-8.3	(8.2)	7.7-8.3	(8.1)	7.2-8.3	(8.1)	**7.0-8.3**	**(8.0)**
Total Dissolved Solids (mg/L)	110-240	(174)	170-240	(203)	160-240	(187)	110-190	(162)	190-230	(210)	**140-220**	**(169)**
Turbidity (NTU)	ND-8.5	(1.9)	ND-0.7	(0.2)	0.2-3.8	(1.2)	ND-0.7	(0.2)	ND-0.3	(0.1)	**ND-0.3**	**(0.1)**
Major Anions												
Bicarbonate (mg/L)	92-120	(108)	84-110	(100)	80-110	(97)	87-110	(99)	82-99	(95)	**99-120**	**(114)**
Chloride (mg/L)	6.9-19	(8.9)	9.4-20	(17.0)	8.0-13	(9.4)	9.7-13	(11.4)	8.1-14	(11.6)	**8.2-14**	**(9.5)**
Nitrate (mg/L as N)	ND-0.7	(0.5)	0.6-1.0	(0.8)	ND-0.6	(0.4)	0.5-0.9	(0.7)	ND-0.4	(0.3)	**0.4-0.8**	**(0.6)**
Sulfate (mg/L)	26-32	(30)	23-49	(42)	31-72	(44)	28-34	(31)	49-76	(65)	**21-42**	**(25)**
Major Cations												
Calcium (mg/L)	19-23	(21)	20-28	(24)	14-18	(16)	18-22	(19)	13-14	(13)	**17-19**	**(18)**
Magnesium (mg/L)	2.3-2.8	(2.5)	1.6-1.8	(1.7)	1.3-2.1	(1.7)	1.6-2.0	(1.9)	1.8-2.1	(2.0)	**2.6-2.8**	**(2.7)**
Potassium (mg/L)	3.9-4.2	(4.1)	3.7-4.3	(4.0)	3.5-4.2	(3.7)	3.7-4.0	(3.9)	4.0-4.4	(4.2)	**3.8-4.1**	**(3.9)**
Sodium (mg/L)	31-34	(32)	36-38	(37)	39-59	(44)	35-37	(36)	52-59	(56)	**34-37**	**(35)**

Parameter	Well 11		Well 12		Well 16		Well 17		Well 18		Well 19	
Additional Analytes of Concern												
Arsenic (µg/L)	ND-2.1	(1.2)	ND-2.0	(1.2)	ND-3.0	(2.4)	ND-2.5	(1.3)	2.4-3.3	(2.9)	**ND-2.0**	**(1.1)**
Iron (µg/L)	ND-160	(ND)	ND-50	(ND)	50-2200	(488)	ND-130	(ND)	ND	ND	**ND**	**ND**
Manganese (µg/L)	ND	(ND)	ND	(ND)	ND-29	(ND)	ND	(ND)	ND	(ND)	**ND**	**(ND)**
Selenium (µg/L)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	**ND**	**(ND)**
Silica (mg/L)	16-17	(17)	15-17	(16)	20	(20)	14-15	(15)	12-13	(13)	**14-15**	**(15)**
Uranium (pCi/L)	3.3-4.4	(3.8)	3.2-4.0	(3.6)	3.6-4.7	(4.2)	2.2-4.0	(3.0)	2.7-4.3	(3.6)	**3.0-4.6**	**(3.7)**
Vanadium (µg/L)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	ND	(ND)	**ND**	**(ND)**

[1]Non-detect as reported in California Drinking Water Watch Database or District provided data

The CWA wells have similar buffer capacities, are generally considered to be soft water (41–68 mg/L as $CaCO_3$), low total dissolved solids (TDS) concentrations (<300 mg/L), and low turbidity (<0.4 NTU). Cr(VI) appears to be the only contaminant of concern, with all the wells having low or non-detect arsenic and iron, low nitrate, and non-detect manganese, selenium and vanadium. Uranium is detectable in all wells at concentrations well below the MCL of 20 pCi/L. High concentrations of iron were detected in Well 16; however, this well is currently not operational. The 2,200 µg/L result was collected with the use of a test pump following many years of being offline. All samples collected for per- and polyfluoroalkyl substances have been non-detect to date. A time series of total chromium and Cr(VI) is provided in Figure 2, with data ranging from 2012 to 2025. Cr(VI) concentrations range from 10-25 µg/L with Well 18 having the lowest average concentration at 13 µg/L and Well 17 the highest at 22 µg/L. All six wells have an average Cr(VI) concentration above the 10 µg/L MCL and will require treatment to achieve Cr(VI) compliance.



Figure 2. Raw water total chromium and hexavalent chromium time series (2012-2025).

Reduction Coagulation Filtration Process Description

The RCF process removes Cr(VI) by first reducing Cr(VI) to the less soluble trivalent chromium [Cr(III)] species with the addition of a chemical reductant. The proposed reductant for this study is ferrous iron, which is assumed to reduce Cr(VI) as chromate (CrO_4^{2-}) to Cr(III) as chromium hydroxide [$Cr(OH)_3(s)$] according to the following equation:

$$3Fe^{2+} + CrO_4^{2-} + 8H_2O \rightarrow 3Fe(OH)_3(s) + Cr(OH)_3(s) + 4H^+$$

where $Fe(OH)_3(s)$ is ferric hydroxide, a typical form of ferric iron. Chromium is then removed through filtration and adsorption following a combination of precipitation as chromium hydroxide, coprecipitation as chromium hydroxide with ferric oxyhydroxides, and adsorption of chromium hydroxide to ferric oxyhydroxides, similar to arsenic removal using ferric-based coagulation filtration.

The previous bench- and pilot-scale testing completed at CWA found that a 2-minute reduction time at a 0.5 mg/L ferrous dose effectively reduced Cr(VI) below 8 µg/L. These studies also found that increased ferrous doses could be used to achieve Cr(VI) below 4 µg/L. Following the prescribed reaction time, chlorine is injected to aid in the oxidation of any residual ferrous iron to form ferric hydroxide particles, which are subsequently removed through filtration. Periodically, the filters require backwashing to remove the accumulated particulate and restore hydraulic capacity. A schematic of the RCF process is provided in Figure 3. In this illustration, backwash residuals are directly discharged to sewer. Backwash residuals can also be directed to a storage tank, allowing for settling and backwash recycling which improves overall water efficiency of the process and cost due to increased operational complexity.

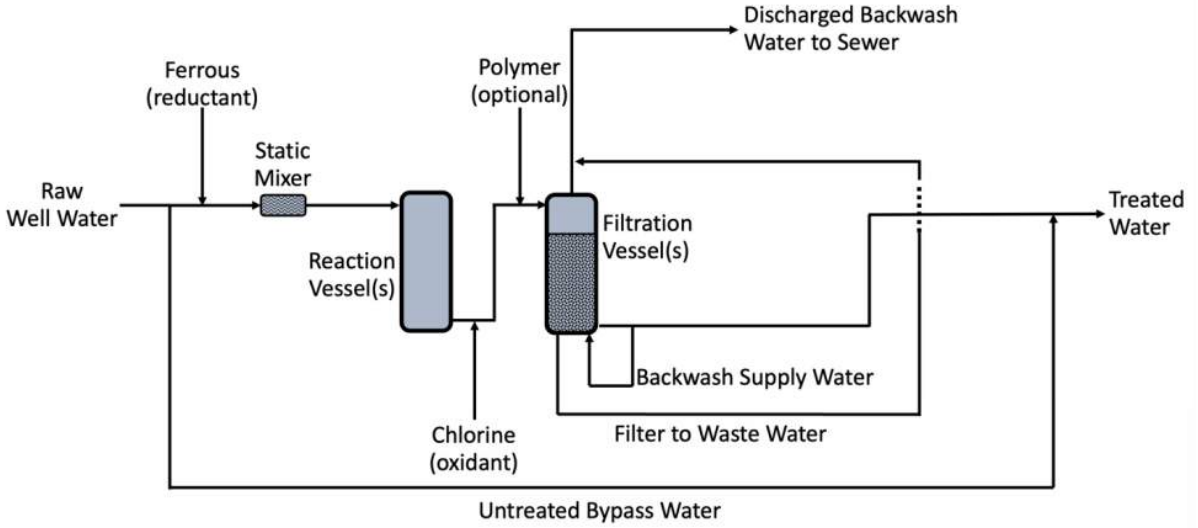


Figure 3. Simplified RCF process schematic, illustrated direct discharge to sewer

Objectives

The first objective of this pilot testing program is to verify RCF filter performance based on UFRV at a representative CWA wellsite. This will be completed by pilot-testing the recommended ferrous dose and reduction time obtained from the previous bench- and pilot-scale testing with two media designs and two HLRs. By testing alternative media designs and HLRs, inferences can be made during the design phase for the remaining wellsites that may have different site constraints to the piloted wellsite. Once the backwash criteria are established for the starting conditions, additional investigations such as backwash recycling, backwash solids dewatering, treatment bypass, and the fate of Cr(VI) within sewer and drinking water collection and distribution systems will be considered.

The pilot testing objectives, summarized in Table 2 are designed to investigate RCF treatment process fundamentals and opportunities for optimization. Testing will be completed at a representative wellsite (Well 19), with results being extrapolated for the remaining wellsites based on the pilot and bench-scale testing results. Samples will also be collected to complete a desktop corrosion analysis by comparing water quality and corrosion indices for each source water to the pilot study's filter effluent results to satisfy Lead and Copper Rule Revisions (LCRR) requirements and ensure treatment changes do not negatively impact finished water corrosivity. Note that the pilot objectives may be adapted based on CWA's or WWE's specific objectives or pilot findings and will be addressed in the pilot study report.

Table 2. Summary of the pilot study objectives and operations plan

Objective		Operation Plan
1	Confirm the ferrous dose, reduction time, and filter runtimes required to achieve Cr(VI) finished water goal.	Confirm that the selected bench-scale testing dose-time pair can reliably achieve the finished water Cr(VI) goal of less than 8 µg/L. Establish backwash trigger criteria (i.e., headloss, chromium or iron breakthrough, runtime) through extended operations.
2	Explore backwash wastewater management options.	Compare water efficiency, instantaneous backwash volumes, and total backwash volumes for various filter media configurations and hydraulic loadings rates.
		Characterize backwash waste by collecting and analyzing: o composite backwash samples to characterize backwash quantity and quality that may be discharged to the CWA sanitary sewer. o settled backwash decant and solids settling to evaluate opportunities to recycle backwash. o settled backwash solids to identify disposal options
		Evaluate the feasibility of on-site backwash solids dewatering using a pilot-scale system, and if possible, with volume limitations, collect dewatered solids for characterization.
		Confirm backwash hydraulic loading rates required to achieve minimum 20% media expansion for each media configuration.
3	Evaluate the impact of backwash wastewater recycling on filter operations.	Recycle backwash decant at 10% of influent flow rate to assess the impact of backwash wastewater recycling on filter runtimes, headloss accumulation, and iron and chromium breakthrough.
4	Evaluate the potential for RCF treatment with raw water blending.	Operate at an increased ferrous iron dose to achieve low-level (<4 µg/L) finished water Cr(VI) concentrations. Evaluate the maximum allowable raw water bypass that can achieve a Cr(VI) finished water goal of 8 µg/L and the impact to UFRV.
5	Assess the fate of Cr(VI) within the drinking water and sanitary sewer distribution system.	Perform bottle hold tests on backwash wastewater and treated filter effluent to estimate the extent of Cr(VI) transformation within these systems.

The recommended ferrous iron dose and reduction time from bench-scale testing will be the starting operational dose-time pair for Objective 1. The intent will be to extend filter runs past the anticipated operational runtime for the first week of operations to establish the backwash criteria for the remainder of the pilot study. Filter backwashes will initially be triggered by 24 hours of runtime but will be adjusted based on filter performance, such as finished water quality (Cr(VI) < 8 µg/L, iron < 0.24 mg/L), and filter headloss development, or as predicated by CWA's operational preferences. Once these operational conditions have been established, the remaining objectives will be evaluated as detailed below.

Objective 1: Confirm ferrous dose, reduction time, and filter runtimes to achieve Cr(VI) goal

Preliminary bench-scale testing was completed for the six Cr(VI) impacted wells to evaluate ferrous doses and reduction times that could achieve CWA's Cr(VI) finished water goal of ≤ 8 µg/L, or 80% of the MCL. This testing included a range of ferrous doses and reductions times, coagulation with the addition of sodium hypochlorite, and vacuum filtration with 0.45 µm filter paper to simulate full- or pilot-scale filtration. The results from this testing confirmed the 2017 pilot-testing results and indicated that at a ferrous dose of 0.5 mg/L as Fe and a 2-minute reduction time, Cr(VI) could be reduced to between 3 and 7 µg/L at all six wells. This dose-time pair will be the starting point for pilot-scale testing, with adjustments being made as needed to best achieve Objective 1. The bench-scale test plan and results will be summarized in the pilot study report.

The recommended ferrous dose and reduction time will be tested to confirm that the dosing strategy can reliably achieve the finished water Cr(VI) goal of ≤ 8 µg/L. In addition to Cr(VI) removal, iron must also be reliably removed to achieve, a finished water goal of 0.24 mg/L as Fe (80% of the secondary MCL). As previously stated, the filter runs will be extended past the anticipated typical runtime for the first week of operation to establish the backwash criteria that will be used for the remainder of the pilot study. Filter backwashes will first be triggered by 48-hours of runtime based the runtimes achieved during the 2017 pilot study, or the pilot system's maximum allowable headloss of 8 psi (18.5 feet of head). Backwashes may be manually initiated in the field based on filter effluent iron breakthrough results. Analytical samples will be sent for rushed analysis to identify potential iron and chromium breakthrough. Once all data is available, the filter runtimes will be adjusted based on filter performance criteria, such as finished water quality, filter headloss development, or as predicated by CWA's operational preferences or sewer capacity needs.

Objective 2: Explore backwash wastewater management options.

Chromium loaded ferric hydroxide particles must be filtered through granular media to remove the iron and chromium and achieve their respective finished water goals. The filters then require backwashing to remove the accumulated particulate and restore the hydraulic capacity. This backwash water volume and quality are highly dependent on ferrous dose, unit filter run volumes (UFRV), and the background water quality matrix. As each of the impacted wellsites have unique backwash management needs due to variable sanitary sewer connections and capacities, the purpose of this objective is to explore backwash management options to provide CWA an understanding of the character of this backwash wastewater under different management conditions and identify opportunities to minimize backwash residuals requiring disposal.

The following sub-objectives are expected to provide the quantitative data needed to inform backwash wastewater management options at each of the impacted wellsites.

Compare water efficiency, instantaneous backwash volumes and total backwash volumes for various filter media configurations and hydraulic loadings rates.

The purpose of this objective is to evaluate the performance of various media configurations and hydraulic loading rates (HLR) for both finished water quality, but also filter performance metrics such as backwash frequency, headloss accumulation, and UFRV, to measure the filter media's overall water efficiency. Outcomes from this objective will inform full-scale design as operating at increased HLR may allow for fewer filtration vessels at footprint constrained sites, while increased water efficiency will decrease the

total volume of backwash residuals requiring management. The following filter media configurations will be implemented at pilot-start up:

1. 6 inches of anthracite on top of 24 inches of silica sand; 5 gpm/ft^2
2. 6 inches of anthracite on top of 24 inches of silica sand; 10 gpm/ft^2
3. 6 inches of anthracite on top of 24 inches of Ceraflow-50; 5 gpm/ft^2
4. 6 inches of anthracite on top of 24 inches of Ceraflow-50; 10 gpm/ft^2

Traditional sand media will be operated at a typical HLR of 5 gpm/ft^2 and a backwash loading rate (BWLR) of 20 gpm/ft^2, as well as an increased HLR of 10 gpm/ft^2 to evaluate whether increased UFRVs can be achieved. An anthracite cap has been included in this study as it has been shown in previous studies to increase filter runtimes by capturing larger floc particles ahead of the finer grained filter media. Ceraflow-50, a ceramic filter media with a high uniformity coefficient and high surface area, can operate at an increased HLR of 10 gpm/ft^2, which can increase UFRV. Furthermore, as Ceraflow-50 media has a relatively low density, the BWLR is 10 gpm/ft^2, or half that of sand. These loading rates may reduce the requisite full-scale footprint, increase water efficiency, and limit the backwash volume requiring management. The Ceraflow-50 media will also be operated at a decreased HLR of 5 gpm/ft^2, to attempt to increase UFRV by decreasing the headloss accumulation that has been observed in past studies.

Characterize backwash wastewater under various management options.

Given the variability in sewer capacities at each of the impacted wellsites, backwash wastewater will be characterized under various potential backwash residual management options including:

- Direct sewer discharge,
- Backwash wastewater recycle and discharge of solids to sewer, and
- On-site solids management.

A summary of the preliminary maximum discharge rates for each of the Cr(VI) impacted wellsites, as developed by Akel Engineering Group, Inc. (Akel) are provided in Table 3. Note that Well 19 is not tributary to the CWA WWTP and is served by the Valley Sanitation District. At a minimum, this will include characterizing backwash volumes and water quality for instantaneous discharge to sewer, evaluating backwash wastewater settling and decant water quality to evaluate opportunities to recycle backwash, and finally, characterizing the settled backwash solids to identify disposal options, if necessary.

Table 3. CWA wellsite modelled discharge rates (AKEL, 2025)

Well ID	Well Location	Discharge Location		Maximum Discharge Rate	
		Manhole ID	Pipe Diameter (in)	Off-peak Hour @ 5 A.M. (gpm)	Peak Hour @ 10 A.M. (gpm)
Tributary to City of Coachella Wastewater Treatment Plant					
11	Avenue 48 and Dillon Road	X1588	15	346	346
12	South of Avenue 51 and west of Mecca Street	X1099	8	215	197
16	West of Tyler Street and north of Avenue 54	H23-001	10	229	90
17	West of Van Buren Street, between Avenue 48 and Avenue 49	D16-020	8	171	166
18	West of Tyler Street and north of Avenue 48	G15-009	24	2,940	2,872
20 *(In-Progress)*	East of Van Buren Street, between Avenue 50 and Avenue 51	Sevilla II On-site MH#1	8	166	157
Tributary to Valley Sanitary District [4]					
19	West of Jackson Street, between Avenue 48 and Avenue 49	-		-	-

AKEL ENGINEERING GROUP, INC. 4/24/2025

Notes:

1. This capacity evaluation determines the maximum allowable well discharge rates into the City's sewer collection system during off-peak and peak hours. The sewer collection system was evaluated based on the City of Coachella's design criteria, with the maximum allowable depth-to-diameter (d/D) ratio not to exceed 0.5 for pipes 12 inches or smaller, and 0.75 for pipes 15 inches or larger.
2. This evaluation assumes that the existing deficiency improvements (E1-E6), identified in the City's 2015 Sewer Master Plan have been completed.
3. The hydraulic analysis simulates the discharge flow rates during off-peak (midnight) and peak (morning) hours.
4. Well 19 discharges into the Valley Sanitary District's sewer collection system, and therefore excluded from this study.

As backwash water volumes and quality are dependent on ferrous dose and UFRV, composite backwash samples will be collected and analyzed for each of the anticipated full-cale media configurations, ferrous doses and UFRVs. Characterizing these composite backwash samples will allow CWA to determine the additional contaminant loadings to their WWTP and adjust the treatment process, if necessary, to achieve their permit discharge limits to the receiving water (Coachella Valley Storm Water Channel).

At a minimum, backwash wastewater will be analyzed for the parameters that have listed effluent limitation in the CWA WWTP's waste discharge requirements Order (Order R7-2020-0008), in addition to parameters identified by CWA and the project team. Toxic Characteristic Leaching Procedure (TCLP) and Waste Extraction Test (WET) will be completed on backwash wastewater dewatered solids, targeting 12-14% solids, based on Flo Trend's Roll-Off Sludge Mate's sample application results. This testing will determine whether these solids would be considered toxic hazardous waste in California and identify the appropriate waste facility, if necessary. A summary of the parameters to be analyzed and their associated regulatory limit is provided in Table 4.

Table 4. Backwash wastewater and settled solids sampling and associated regulatory limits

Backwash Wastewater	
WWTP Order Effluent Limits	
Parameter	Average Monthly, Average Weekly, Maximum Daily Limits
Total Suspended Solids (mg/L)	30, 45, NA
Free Chlorine (mg/L)	0.01, NA, NA
Hexavalent Chromium (µg/L)	8.1, NA, 16.3

Additional Analytes (No Current Limits)
Parameter
Total Chromium
Total Iron
Dissolved Iron

Backwash Settled Solids			
Toxic Characteristic Leaching Procedure (TCLP)		Waste Extraction Test (WET)	
Parameter	Regulatory Level (mg/L)	Parameter	Regulatory Level (mg/L)
Arsenic	5	Antimony	15.0
Barium	100	Arsenic	5.0
Benzene	0.5	Barium	100
Cadmium	1	Beryllium	0.75
Carbon Tetrachloride	0.5	Cadmium	1.0
Chlordane	0.03	Hexavalent Chromium	5.0
Chlorobenzene	100	Cobalt	80
Chloroform	6	Copper	25
Chromium	5	Lead	5.0
o-Cresol	200.0	Mercury	0.2
m-Cresol	200.0	Molybdenum	350
p-Cresol	200.0	Nickel	20
Cresol	200.0	Selenium	1.0
2,4-D	10	Silver	5.0
1,4-Dichlorobenzene	7.5	Thallium	7.0
1,2-Dichloroethane	0.5	Vanadium	24
1,1-Dichloroethylene	0.7	Zinc	250
2,4-Dinitrotoluene	0.13		
Endrin	0.02		
Heptachlor(and epoxide)	0.008		
Hexachlorobenzene	0.13		
Hexachlorobutadiene	0.5		
Hexachloroethane	3		
Lead	5		
Lindane	0.4		
Mercury	0.2		
Methoxychlor	10		
Methyl ethyl ketone	200		
Nitrobenzene	2		
Pentachlorophenol	100		
Pyridine	5.0		
Selenium	1		
Silver	5		
Tetrachlorethylene	0.7		
Toxaphene	0.5		
Trichloroethylene	0.5		
2,4,5-Trichlorophenol	400		
2,4,6-Trichlorophenol	2		
2,4,5-TP(Silver)	1		
Vinyl Chloride	0.2		

Evaluate the feasibility of on-site backwash solids dewatering using a pilot-scale system.

While discharging backwash wastewater directly to sewer is the most straightforward residual management option, if challenges are identified with sewer disposal or sites with sanitary sewer constraints may require on-site residuals handling to manage the wastewater. On-site solids management may also provide operational cost savings by reducing the total volumes requiring disposal. On-site management options can include 1) allowing backwash solids to accumulate in a storage tank until sufficient volume has been generated for off-site disposal, 2) directing the settled solids to a dewatering and drying container, or 3) mechanically dewatering the solids with a belt filter press or centrifuge. These approaches will concentrate Cr(VI) and other co-precipitated metals in solids and decrease the water content of the material for disposal, both of which can impact hazard classification and ultimate disposal.

This objective will evaluate the volume reduction of backwash wastewater, the processing time, and will characterize the dewatered solids to understand landfill disposal options and costs. This will be completed by collecting representative backwash wastewater and processing the known volume through a bench-scale roll-off dewatering system. The system is anticipated to be a pilot-scale "Roll-Off Sludge Mate" provided by Flo Trend (Houston, Texas), which has the potential to reduce the wastewater volume by 85-90%, depending on the percent solids and characteristics of the sludge.

Confirm backwash hydraulic loading rates needed to achieve 20% media expansion

To minimize instantaneous and total backwash wastewater volumes, the backwash HLR required to achieve a 20% media expansion will be confirmed and recorded throughout the pilot study. The backwash HLRs will be adjusted from the manufacturer's suggested specifications until 20% media expansion is achieved. These rates may be adjusted during the pilot to maintain this expansion at differing temperatures or to increase backwash efficiency. As previously stated, media types and configurations may be changed based on performance findings. By minimizing the backwash volumes, the total volume of backwash storage needed on a given site may decrease, as well as the overall volume of residuals requiring disposal.

Objective 3: Evaluate the impact of backwash wastewater recycling on filter operations.

Several of the wellsites' sewer capacity cannot accommodate the anticipated instantaneous discharge of backwash wastewater from RCF treatment without substantial sewer upgrades. In these cases, on-site storage for backwash wastewater is required to be included in the preliminary design. Introducing backwash recycle would allow for greater water efficiency and reduce the overall backwash wastewater storage volume and discharge requirements. This objective will evaluate the impact of backwash recycling on filter performance metrics by injecting decanted backwash wastewater from a cone bottom settling tank at a maximum flow rate of 10% of the influent filter flow. Impacts may include increased headloss accumulation and earlier iron or chromium breakthrough, leading to shorter filter runs.

Objective 4: Evaluate the potential for RCF treatment with raw water blending.

Partial raw water stream bypass and blending with treated water could result in capital cost and treatment footprint savings. This evaluation will consist of increasing the ferrous iron dose to 1.0 mg/L as Fe to achieve a finished water Cr(VI) of less than 2 µg/L to facilitate a consistent and meaningful opportunity for raw water blending at full-scale. Filter profile sampling for a minimum of 4 filter runs will be completed at this increased ferrous iron dose to determine if filter effluent Cr(VI) concentrations were consistently low enough over the entirety of a filter run, without substantially impacting total backwash volumes. The

resulting Cr(VI) concentrations will be used to calculate the maximum allowable raw water bypass that can achieve the Cr(VI) finished water quality goal of 8 µg/L.

Objective 5: Assess the fate of Cr(VI) within the drinking water and sanitary sewer distribution system.
Cr(III) re-oxidation to Cr(VI) has been observed with the application of chlorine and is influenced by both chlorine residual concentration and chlorine contact time. The purpose of this objective it to quantify the magnitude of the Cr(VI) re-oxidation in both the filter effluent and backwash wastewater to estimate the extent of re-oxidation in the drinking water and sanitary sewer distribution systems.

For the drinking water distribution system testing, selected filter effluent water will be collected and stored headspace free in amber bottles. These bottles will be sacrificially sampled for total chromium, Cr(VI) and chlorine residual at times representative of typical distribution system water ages. For the sanitary sewer distribution system testing, composite backwash wastewater will be combined with sanitary sewer water at a ratio representative of the anticipated backwash wastewater loading rates in the sanitary sewer discharge. Again, these combined waters will be stored headspace free in amber bottles and sacrificially sampled for total chromium, Cr(VI) and chlorine residual at times representative of the sanitary sewer distribution system.

Pilot Design

While RCF treatment will be implemented at each of the individual Cr(VI) wellsites, the pilot testing will be completed at one representative wellsite, Well 19, with results being used to inform design at the remaining wellsites. Well 19 was selected as it has one of the higher raw water Cr(VI) concentrations, has the highest utilization to enable near constant operation of the pilot system, and is the most constrained in terms of backwash residual management options as the local sanitary sewer is not connected to the CWA WWTP. Figure 4 shows a satellite image of the Well 19 wellsite for reference.

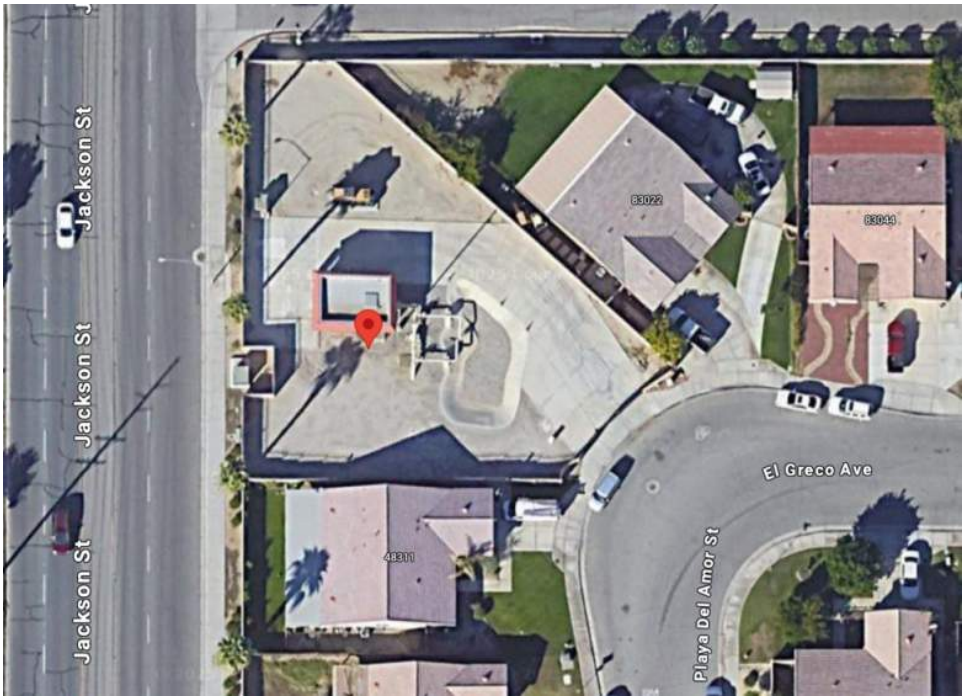


Figure 4. Satellite image of the Well 19 wellsite (Google, 2025)

The pilot system will consist of a *Granular Media Filter Module F400* (F400) pilot skid, constructed by Intuitech, Inc. (Salt Lake City, UT), with the addition of reduction contactor vessels to reduce Cr(VI) to Cr(III). A simplified schematic the pilot design is shown in Figure 5, and the accompanying Intuitech drawings are provided in Appendix B. The pilot system has four, 6-inch diameter filter columns that are operated by a programmable logic controller (PLC) with automatic, remote manual, or manual modes. Five, 7-gallon chemical storage tanks, and associated peristaltic pumps are included with the pilot equipment and will be used to dose ferrous chloride to the raw water from a common feed, and the remaining chemical feeds will be used for individual chlorine injection.

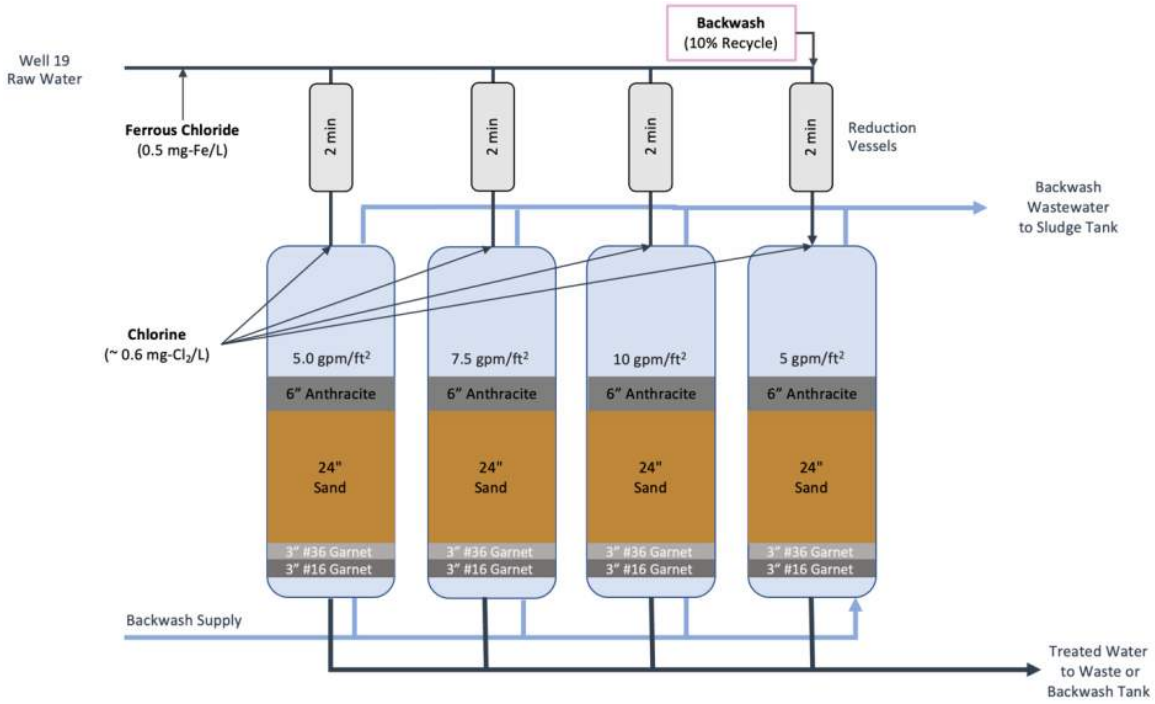


Figure 5. Conceptual pilot testing process flow diagram at start-up

Reduction contactors will be fabricated using 4-inch diameter PVC piping to allow for an initial 2-minutes of reduction contact time with ferrous iron at the filter's operational HLR. These contactors will be angled to ensure flow is moving in upslope direction to reduce short-circuiting through the contactor. Anthracite and sand will be provided by Red Flint Sand and Gravel (Eau Claire, WI) and Ceracap, Ceraflow-50 and Ceraclear-50 will be provided by Wateropolis Corporation (Mentor, OH). Manufacturer media specifications are presented in Appendix C. Finally, it is anticipated that backwash wastewater will be directed to a cone bottom tank for offsite disposal, as well as for backwash recycle following solids settling using flow paced peristaltic pumps to an injection point ahead of the reduction contactors.

A summary of the pilot start-up operational conditions is provided in Table 5. The pilot is commencing with sand media in all four columns to establish backwash trigger criteria while more information is gathered regarding the operational conditions for Ceraclear-50. The BWLRs will be adjusted and recorded during pilot start-up to achieve a media expansion of 25%. These rates may be adjusted during the pilot to maintain this expansion at differing temperatures or to increase backwash efficiency, if necessary. As previously stated, media types and operational conditions may be changed based on performance findings.

Table 5. Summary of initial pilot operational conditions.

Column	Media	Media Specifications			Filter Operation			Backwash		
		Depth inch	ES[1] mm	UC[2] unitless	Flow gpm	HLR gpm/ft^2	EBCT[3] min	HLR gpm/ft^2	Time (min)	Recycle (gpm)
Filter 1	Anthracite	6	1.0 - 1.1	< 1.5	1.0	5	4.9	20	10	-
Filter 2	Sand	24	0.45-0.55	< 1.5	1.5	7.5	3.2	20	10	-
Filter 3	#36 Garnet	3	0.5 - 0.6	-	2	10	2.4	20	10	-
Filter 4	#16 Garnet	3	0.8 - 1.2	-	1.0	5	4.9	20	10	0.1

[1] Effective size, [2] Uniformity coefficient, [3] Empty bed contact time

Pilot influent water will be supplied by redirecting a portion of Well 19's raw water through a backflow prevention device. As the well does not continuously operate, the pilot will be fitted with a sensor on the pilot's overflow weir that will remotely turn the pilot on and off based on the operation of the wells. Raw water overflow, needed to ensure pumps remain flooded, and de-chlorinated treated water effluent will be directed to the on-site basin. Backwash wastewater will be directed to a 200-gallon cone bottom backwash tank for backwash recycling and future off-site disposal. Backwash decant water will gravity feed to an external pilot skid that will pump water ahead of the desired filter's reduction contactor at a set rate of 10% of the influent of flow.

The pilot unit will continuously monitor and record flow rate, treated volumes, and differential pressure (headloss). The chemical dose rates will be flow paced and chemical flow for each feed system will also be monitored and recorded on the PLC. At start-up, backwashes will be initiated by headloss (8 psi) or runtime (48 hours), while operating in automatic mode. These triggers will be adjusted based on filter performance, such as iron and chromium breakthrough. A summary of the pilot system's instrumentation is provided in Table 6.

Table 6. Pilot system instrumentation.

Instrumentation	Location	Data Logging
Flow rate	Influent of each filter	Yes
Runtime	Each filter	
Chemical feed flow rate	After chemical feed pump	
Flow totalizer	Influent of each filter	
Differential pressure	Each filter	
Backwash flow rate	After backwash pump	

Data Collection

Routine water quality samples will be collected each weekday to evaluate RCF process performance at the locations summarized in Table 7. It is anticipated that Corona staff will be on site Tuesday, Wednesday, and Thursday of each week to perform routine sampling, maintenance, change conditions and collect additional samples as necessary. CWA staff will collect samples on Mondays and Fridays, with Corona staff available to support remotely. Documentation summarizing the daily operations for both CWA and Corona staff is provided in Appendix D. Additional data collection events, such as backwash characterization, backwash expansion, filter profile sampling, and corrosion indices will also occur over the course of the pilot study.

Table 7. Summary of pilot sampling locations

Sample	Sample Description	Sample Purpose
Raw	Raw well water to the pilot	Pre-treatment water quality
Contactor	Immediately after reduction contactor, prior to chlorine injection.	Measure Cr(VI) reduction without the influence of chlorine and ferrous dose confirmation.
F1-Inf	Sample port above individual filter media	Measure potential Cr(VI) re-oxidation due to sodium hypochlorite addition.
F2-Inf		
F3-Inf		
F4-Inf		
F1-Eff	Individual filter effluent sample taps	Total iron, total chromium and Cr(VI) removal.
F2-Eff		
F3-Eff		
F4-Eff		

The pilot unit measures and logs individual flow rate, run volumes, and differential pressure at a predetermined interval. All other measurements will be manually collected and recorded. Raw water and filter effluent Cr(VI), total chromium, and total iron laboratory samples will be collected daily. These samples will be stored on-site and picked up weekly at the CWA headquarters by Babcock Laboratories, Inc (Babcock) for laboratory analysis. Laboratory samples will be collected and paired with field samples confirming chemical doses and filter effluent concentrations. Free chlorine and total iron will be measured with a Hach DR900 portable colorimeter using Hach Method 8021 and Hach Method 8146, respectively. A summary of the daily sampling requirements for this study, including parameters, locations and frequencies are provided in Table 8.

Table 8. Summary of daily operational sampling requirements

Parameter	Sample Location				Frequency	Method
	Raw Water	Contactor Effluent	Filter Influents	Filter Effluents[1]		
Intuitech Data Logging						
Flow Rate				X	5-minute interval	Data logger
Runtime				X		
Run Volume				X		
Headloss				X		
Babcock Laboratories Samples						
Hexavalent Chromium	X[2]	X[2]	X[2]	X	Daily	EPA 218.7
Total Chromium	X[2]			X		EPA 200.7
Total Iron	X[2]	X		X		EPA 200.7
Field Measurements						
Free Chlorine			X	X	Daily	Hach Method 8021
Total Iron		X		X		Hach Method 8146
pH	X[2]			X		Calibrated Probe

[1] Additional samples for profiling filter performance over the duration of a filter run will be collected by Corona staff

[2] To be measured weekly

Additional data collection will be completed by Corona staff, including filter profiling, backwash wastewater characterization, bottle hold tests, and corrosion indices sampling. Filter profiling will consist of time series sampling of filter effluent to evaluate total iron, total chromium and Cr(VI) breakthrough over the duration of a filter run. During times series sampling, iron results will be obtained using the Hach Method 8146 and chromium and iron analyses will also be conducted by Babcock. As previously described, for bottle hold tests testing, filter effluent or backwash wastewater will be stored headspace free in amber bottles and sacrificially sampled for chromium speciation. Corrosion indices will be collected for the each of the raw waters and for select filter effluents to evaluate future treatment impacts on distribution system corrosion. For select media configurations and operational conditions, backwash characterization will be completed. This will include composite backwash, settled decant water, and settled solids sampling for analysis of parameters summarized in Table 4.

Schedule

Preliminary bench-scale testing was completed in April 2025, informing the pilot chemical dosing strategy. Delivery of the pilot equipment is scheduled for August 4, 2025, with set-up and initial operations beginning the week of August 4, 2024. The pilot is scheduled to operate through the first week of October, with objectives planned to be evaluated in the order presented above over the 8-week period. While on site, Corona staff will adhere to the Health and Safety Documentation presented in Appendix E. The schedule presented in Figure 6 shows the estimated time required to complete each objective and is subject to change based on preliminary study findings.

Figure 6. Anticipated pilot testing schedule



Analysis and Reporting

Biweekly meetings will continue to be scheduled with CWA to discuss the preliminary results and coordinate ongoing testing activities. WWE will also be included in these discussions, as necessary. Periodic updates can also be provided to DDW to assure the data being collected and reported will facilitate the successful permitting of the full-scale RCF system. Following the conclusion of the pilot testing, the results will be summarized in a draft technical memorandum issued to CWA. The pilot report will highlight the technical results from the testing and provide recommendations for full-scale operational parameters. After receiving comments from CWA, Corona will issue a final technical memorandum.

Appendix C: Filter Media Specifications



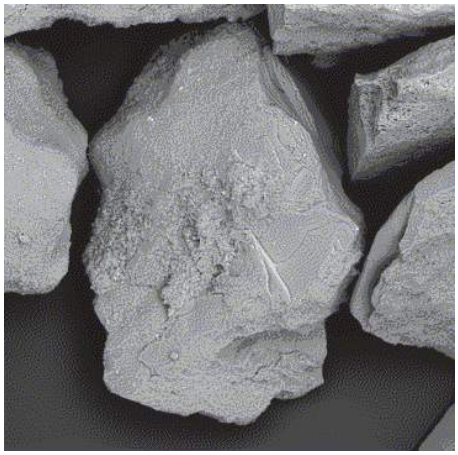
EROPOLIS

What is Ceraclear-50? Ceraclear-50 is a ceramic, angular, highly textured filter media.

Where is it used? Ceraclear-50 is used in all types of high-rate pressure filter applications.

Why is it used? Ceraclear-50 provides better water quality than any other media at high filtration rates.

Ceraclear-50 is a durable ceramic granular media with a rough texture. It is highly angular and uniform in size distribution giving it excellent particle retention.

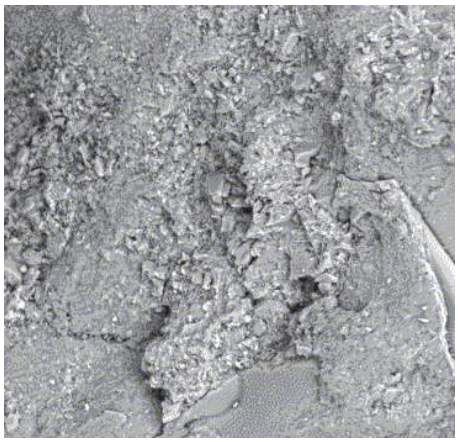


Ceraclear-50 is ideal for pressure filter applications such as:

- Surface Water Filtration
- Ground Water Filtration
- Iron and Manganese Removal
- Arsenic Removal
- Industrial Filtration

PRODUCT SPECIFICATIONS

Parameter	Ceraclear-50
Effective Size	0.30 mm — 0.40 mm (40-50 Mesh)
Uniformity Coefficient	< 1.4 (1.3 Typical)
Density	77 lbs/ft3 (1.23 g/cm3)
Recommended Backwash Rate	9.0+ gpm/ft2 (22 m/h)
Acid Solubility	<1% (0.1% typical)
Hardness Moh's	7.0



Standard packaging is 20 ft3 (0.56 M3) bulk bags and 50 lb. (25 kg) bags.

Ceraclear-50 is considered inert and non-reactive and is compatible with acid, caustic and all types of oxidants. Ceraclear-50 can be used in harsh industrial filtration applications, chemical filtration and in high temperature processes up to 1000 F. (538 C.)

For typical down flow filtration, we recommend a 24" deep filter bed (610 mm) and a typical operational flow rate of 8—10 gpm/ft2 (18.3—24 m/h). Design flow rates will vary depending on solids loading and desired filter run times.

C US

Ceraclear-50 has been tested and certified by the Water Quality Association according to NSF/ANSI 61

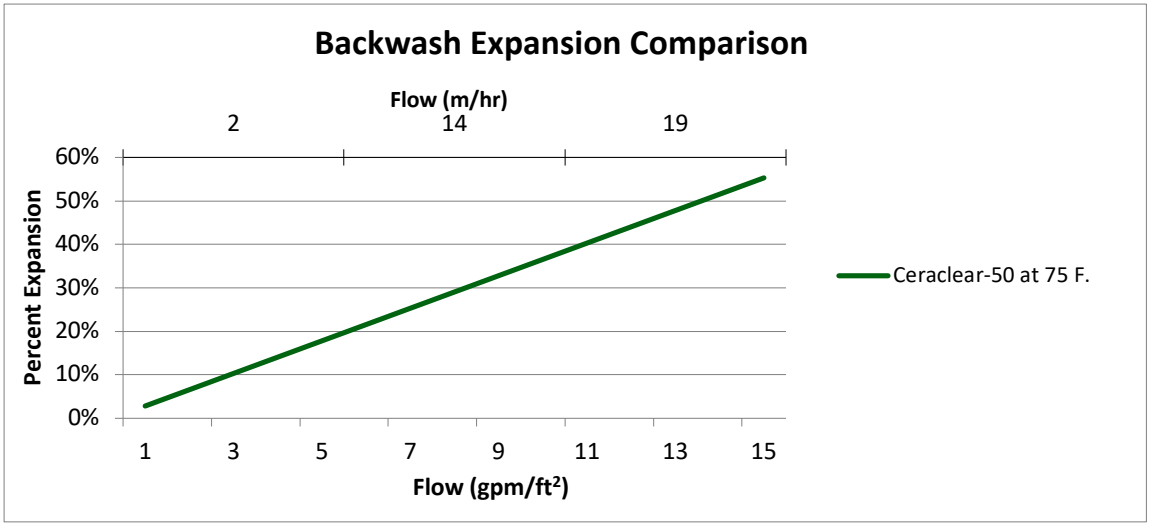
CONTACT US

sales@wateropolis.com • 440-596-0325 • www.wateropolis.com

Ceraclear-50

POLIS

OPERATIONAL DATA



Backwash curves for different temperatures is available upon request.
Operational data for other filter media sizes is available upon request.





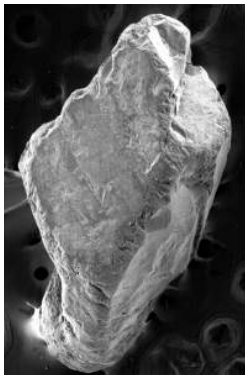
CERACAP

WATEROPOLIS

What is CeraCap? CeraCap is low density anthracite designed to sit on top of Ceraflow filter media.

Where is it used? CeraCap can be used on both Ceraflow-50 & Ceraflow-70.

Why is it used? CeraCap is used where high solids are present in filter feed water.



CeraCap is low density anthracite that is screened to a precise effective size ("ES") and a low uniformity coefficient ("UC"). The low density of the material ensures that it will stay properly stratified creating a high solids retention zone at the top of a Ceraflow filter. The presence of CeraCap increases total solids capacity of the filter without compromising the effluent quality.

CeraCap is ideal in conjunction with Ceraflow for pressure filter applications such as:

- Where coagulation or filtration aids are employed.
- Highly variable feed water quality or where intermittent spikes of high solids may occur.
- High levels of ferric iron or oxidized manganese.

PRODUCT SPECIFICATIONS

Parameter	CeraCap
Effective Size	0.5 mm — 0.6 mm (25-35 Mesh)
Uniformity Coefficient	< 1.4 (1.25 Typical)
Density	42 lbs/ft^3 (0.67 g/cm^3)
Compatible Ceraflow Media	Ceraflow-50 & Ceraflow-70
Recommended Backwash Rate	See Expansion Curves
Acid Solubility	<5%



CeraCap is low density anthracite specifically screened for compatibility with Ceraflow filter media. It is recommended for applications where there is there is an influent solids loading, > 2.0 ntu or 1.0 mg/l TSS .

CeraCap is pure anthracite and is considered inert and non-reactive and is compatible with all types of oxidants.

CeraCap with Ceraflow has a recommended operational flow rate of 8—10 gpm/ft^2 (18.3—24 m/h). Design flow rates will vary depending on solids loading and desired filter run times.

Standard packaging is 1.3 ft^3 (0.03 M^3) 50 lb bags (22.68 kg).

Note: Anthracite with a SG of 1.65 and bulk density of 55 lbs/ft^3 will not work in conjunction with any Ceraflow products.

CLASSIFIED C UL US WATER QUALITY

CONTACT US

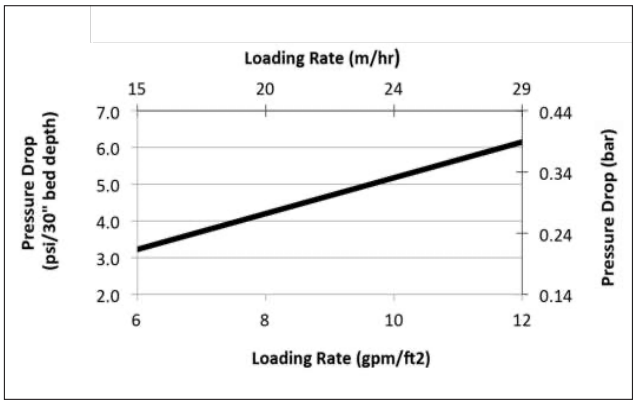
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CERACAP

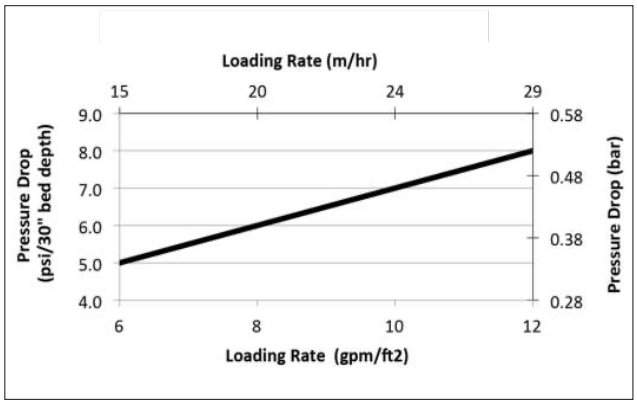
WATEROPOLIS

OPERATIONAL SPECIFICATIONS

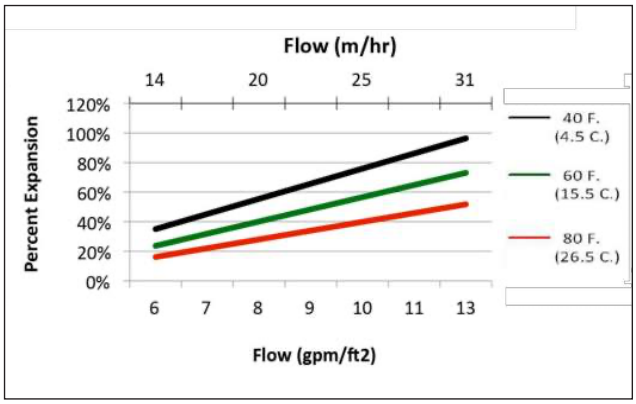
Ceraflow-50 w/ CeraCap



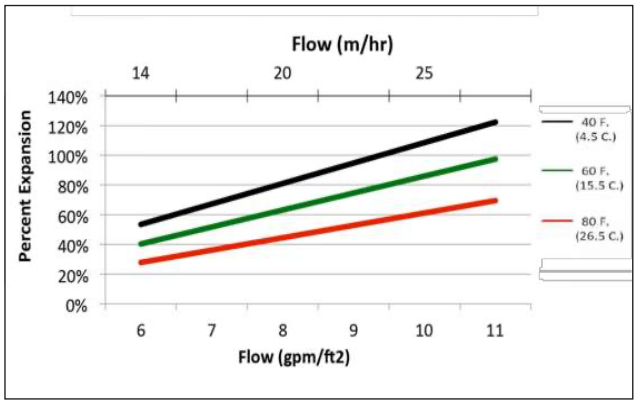
Ceraflow-70 w/ CeraCap



Ceraflow-50 w/CeraCap Backwash



Ceraflow-70 w/ CeraCap Backwash

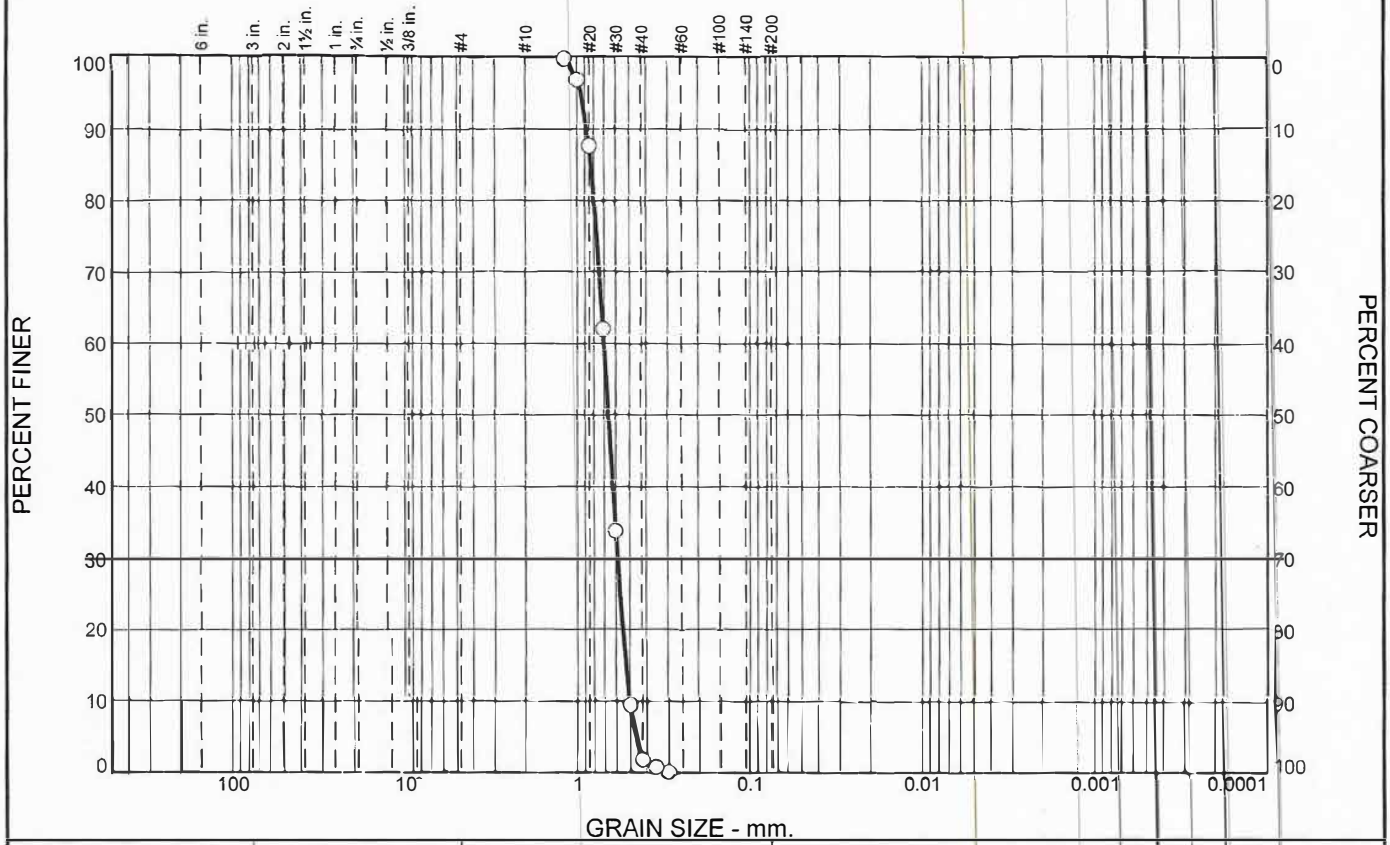


Additional Technical Data

- Moh's hardness 2.7 typical
- Specific Gravity: 1.4

ABOUT WATEROPOLIS Wateropolis Inc. is dedicated to identifying and developing new and innovative technologies for water and wastewater treatment. We look for simple, logical answers to complex questions.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
							1.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#16	99.7		
#18	96.8		
#20	87.5		
#25	62.0		
#30	33.8		
#35	9.5		
#40	1.9		
#45	0.8		
#50	0.1		

* (no specification provided)

Material Description

.45-.55 mm <1.4

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.8737 D_{85}= 0.8301 D_{60}= 0.7016
D_{50}= 0.6612 D_{30}= 0.5858 D_{15}= 0.5269
D_{10}= 0.5028 C_u= 1.40 C_c= 0.97

Classification

USCS= AASHTO=

Remarks

Production Test Data

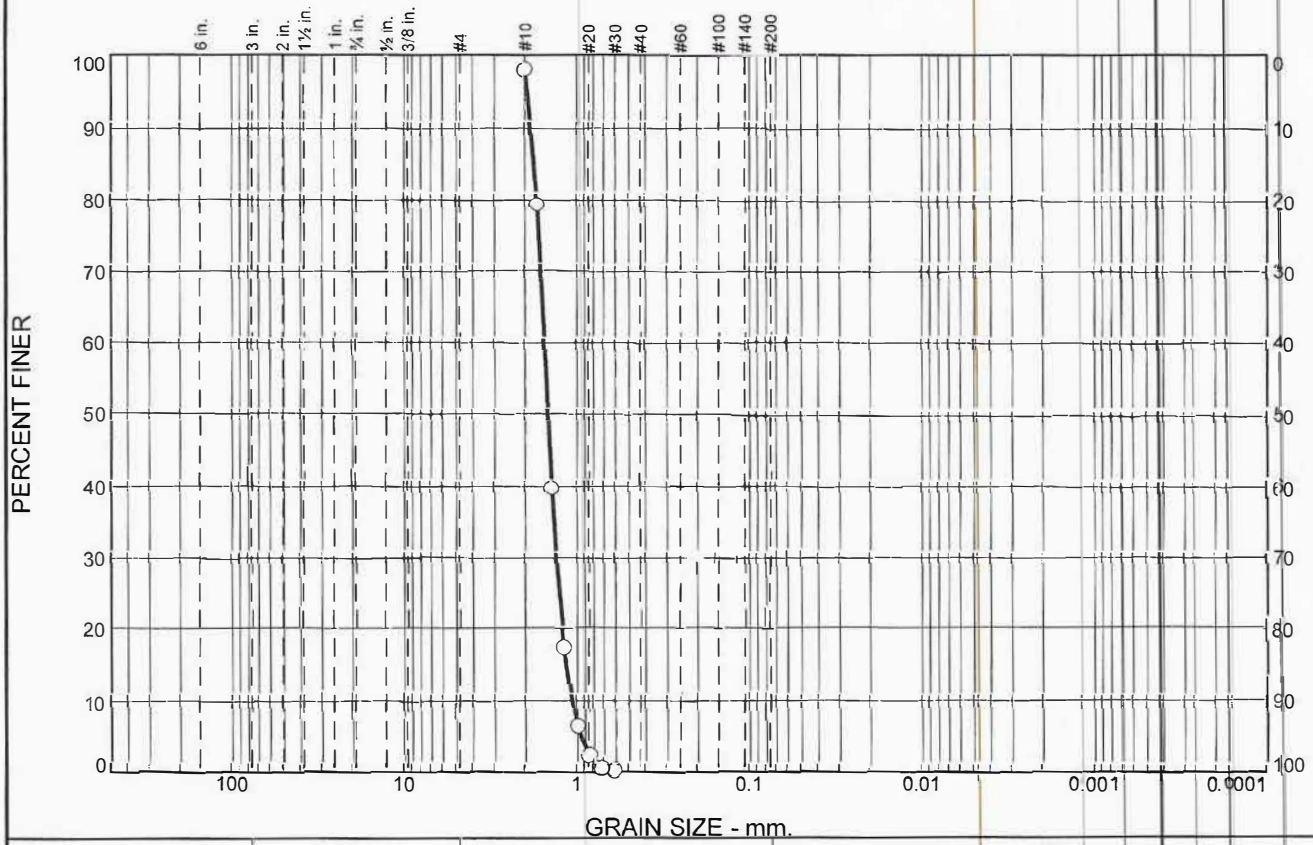
RED FLINT SAND & GRAVEL, LLC.
Eau Claire, Wisconsin

Client: Corona Environmental
Project:
Project No: Pilot Sample

Figure

Tested By: Justin Hanson **Checked By:** Jim Danzinger

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
						98.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	98.0		
#12	79.3		
#14	39.7		
#16	17.4		
#18	6.4		
#20	2.3		
#25	0.6		
#30	0.3		

* (no specification provided)

Material Description

1.00-1.10 mm UC < 1.5 Arthracite

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.8396 D_{85}= 1.7654 D_{60}= 1.5432
D_{50}= 1.4737 D_{30}= 1.3183 D_{15}= 1.1476
D_{10}= 1.0715 C_u= 1.44 C_c= 1.05

Classification

USCS= AASHTO=

Remarks

Pilot sample

Date:

RED FLINT SAND & GRAVEL, LLC.
Eau Claire, Wisconsin

Client: Corona Environmental
Project:
Project No: Pilot testing

Figure

Tested By: Justin Hanson **Checked By:** Jim Danzinger

Appendix D: Backwash Characterization Sample Results

Table F1. Summary of backwash characterization results

Operational Parameters: Sand, 5 gpm/ft, 0.5 mg-Fe/L, 2-minutes, 48-hour runtime (8/28/2025)				
Backwash Parameters: 19.9 gpm/ft, 7-minute duration				
Sample Type	**Hold Time**	**Parameter**	**Result**	**Units**
Bulk	0-hr	Iron	56	mg/L
Bulk	0-hr	Cr(T)	1600	µg/L
Bulk	0-hr	Hexavalent Chromium	8.5	µg/L
Bulk	0-hr	Total Suspended Solids	73	mg/L
Bulk	0-hr	Iron-Dissolved	1200	µg/L
Bulk	0-hr	Arsenic	66	µg/L
Settled Decant	2-hr	Iron	9.9	mg/L
Settled Decant	2-hr	Cr(T)	320	µg/L
Settled Decant	2-hr	Hexavalent Chromium	11	µg/L
Settled Decant	2-hr	Arsenic	14	µg/L
Settled Decant	4-hr	Iron	6.6	mg/L
Settled Decant	4-hr	Cr(T)	200	µg/L
Settled Decant	4-hr	Hexavalent Chromium	15	µg/L
Settled Decant	4-hr	Arsenic	9.1	µg/L
Settled Decant	4-hr	Free Chlorine (field)	0.29	mg/L
Settled Decant	4-hr	Total Fe (field)	5	mg/L
Settled Decant	5-day	Iron	0.096	mg/L
Settled Decant	5-day	Cr(T)	42	µg/L
Settled Decant	5-day	Hexavalent Chromium	41	µg/L
Operational Parameters: Sand, 5 gpm/ft, 0.5 mg-Fe/L, 2-minutes, 48-hour runtime (9/11/2025)				
Backwash Parameters: 19.9 gpm/ft, 7-minute duration				
Sample Type	**Hold Time**	**Parameter**	**Result**	**Units**
Bulk	0-hr	Iron	43	mg/L
Bulk	0-hr	Cr(T)	1300	µg/L
Bulk	0-hr	Hexavalent Chromium	12	µg/L
Bulk	0-hr	Total Dissolved Solids	240	mg/L
Bulk	0-hr	Iron-Dissolved	610	µg/L
Bulk	0-hr	Arsenic	50	µg/L
Bulk	0-hr	Total Fe (field)	41	mg/L
Bulk	0-hr	Free Chlorine (field)	0.54	mg/L
Settled Decant	1-hr	Iron	29	mg/L
Settled Decant	1-hr	Cr(T)	880	µg/L
Settled Decant	1-hr	Hexavalent Chromium	15	µg/L
Settled Decant	1-hr	Total Fe (field)	28.8	mg/L

Settled Decant	1-hr	Free Chlorine (field)	0.52	mg/L
Settled Decant	3-hr	Iron	6.4	µg/L
Settled Decant	3-hr	Cr(T)	220	mg/L
Settled Decant	3-hr	Hexavalent Chromium	19	µg/L
Settled Decant	3-hr	Total Fe (field)	6.1	mg/L
Settled Decant	3-hr	Free Chlorine (field)	0.41	mg/L
Operational Parameters: Sand, 5 gpm/ft, 0.5 mg-Fe/L, 2-minutes, 48-hour runtime (9/16/2025)				
Backwash Parameters: 19.9 gpm/ft, 7-minute duration				
Sample Type	**Hold Time**	**Parameter**	**Result**	**Units**
Bulk	0-hr	Iron	46	mg/L
Bulk	0-hr	Cr(T)	1400	µg/L
Bulk	0-hr	Hexavalent Chromium	8.8	µg/L
Bulk	0-hr	Total Suspended Solids	35	mg/L
Bulk	0-hr	Iron-Dissolved	1400	µg/L
Bulk	0-hr	Arsenic	56	µg/L
Bulk	0-hr	Total Fe (field)	37	mg/L
Settled Decant	1-hr	Iron	21	mg/L
Settled Decant	1-hr	Cr(T)	590	µg/L
Settled Decant	1-hr	Hexavalent Chromium	11	µg/L
Settled Decant	1-hr	Total Fe (field)	20.5	mg/L
Settled Decant	1-hr	Free Chlorine (field)	0.49	mg/L
Settled Decant	3-hr	Iron	7.2	µg/L
Settled Decant	3-hr	Cr(T)	220	mg/L
Settled Decant	3-hr	Hexavalent Chromium	16	µg/L
Settled Decant	3-hr	Total Fe (field)	7.9	mg/L
Settled Decant	3-hr	Free Chlorine (field)	0.44	mg/L
Operational Parameters: Sand, 10 gpm/ft, 0.5 mg-Fe/L, 2-minutes, 48-hour runtime (8/28/2025)				
Backwash Parameters: 19.9 gpm/ft, 7-minute duration				
Sample Type	**Hold Time**	**Parameter**	**Result**	**Units**
Bulk	0-hr	Iron	83	mg/L
Bulk	0-hr	Cr(T)	2400	µg/L
Bulk	0-hr	Hexavalent Chromium	13	µg/L
Bulk	0-hr	Total Suspended Solids	100	mg/L
Bulk	0-hr	Iron-Dissolved	290	µg/L
Bulk	0-hr	Arsenic	97	µg/L
Settled Decant	2-hr	Iron	12	mg/L
Settled Decant	2-hr	Cr(T)	390	µg/L
Settled Decant	2-hr	Hexavalent Chromium	17	µg/L

Settled Decant	2-hr	Arsenic	15	µg/L
Settled Decant	4-hr	Iron	6.5	mg/L
Settled Decant	4-hr	Cr(T)	220	µg/L
Settled Decant	4-hr	Hexavalent Chromium	21	µg/L
Settled Decant	4-hr	Arsenic	9.3	µg/L
Settled Decant	4-hr	Free Chlorine (field)	0.37	mg/L
Settled Decant	4-hr	Total Fe (field)	12.4	mg/L
Settled Decant	5-day	Iron	0.14	mg/L
Settled Decant	5-day	Cr(T)	52	mg/L
Settled Decant	5-day	Hexavalent Chromium	49	µg/L
Operational Parameters: Ceraclear, 10 gpm/ft, 0.5 mg-Fe/L, 2-minutes, 48-hour runtime (9/10/2025)				
Backwash Parameters: 7.6 gpm/ft, 13.3-minute duration				
Sample Type	**Hold Time**	**Parameter**	**Result**	**Units**
Bulk	0-hr	Iron	86	mg/L
Bulk	0-hr	Cr(T)	2600	µg/L
Bulk	0-hr	Hexavalent Chromium	16	µg/L
Bulk	0-hr	Total Suspended Solids	130	mg/L
Bulk	0-hr	Iron-Dissolved	1500	µg/L
Bulk	0-hr	Arsenic	100	µg/L
Settled Decant	1-hr	Iron	22	mg/L
Settled Decant	1-hr	Cr(T)	700	µg/L
Settled Decant	1-hr	Hexavalent Chromium	16	µg/L
Settled Decant	1-hr	Free Chlorine (field)	0.4	mg/L
Settled Decant	1-hr	Total Fe (field	15.25	mg/L
Settled Decant	3-hr	Iron	7.7	mg/L
Settled Decant	3-hr	Cr(T)	250	µg/L
Settled Decant	3-hr	Hexavalent Chromium	24	µg/L
Settled Decant	3-hr	Free Chlorine (field)	0.43	mg/L
Settled Decant	3-hr	Total Fe (field	8.1	mg/L
Operational Parameters: Sand, 10 gpm/ft, 1 mg-Fe/L, 1-minutes, 48-hour runtime (9/23/2025)				
Backwash Parameters: 19.9 gpm/ft, 7-minute duration				
Sample Type	**Hold Time**	**Parameter**	**Result**	**Units**
Bulk	0-hr	Iron	83	mg/L
Bulk	0-hr	Cr(T)	1500	µg/L
Bulk	0-hr	Hexavalent Chromium	3.9	µg/L
Bulk	0-hr	Total Dissolved Solids	200	mg/L
Bulk	0-hr	Iron-Dissolved	2200	µg/L
Bulk	0-hr	Arsenic	92	µg/L

Bulk	0-hr	Free Chlorine (field)	0.6	mg/L
Settled Decant	1-hr	Iron	9.2	mg/L
Settled Decant	1-hr	Cr(T)	180	µg/L
Settled Decant	1-hr	Hexavalent Chromium	5	µg/L
Settled Decant	1-hr	Total Dissolved Solids	180	mg/L
Settled Decant	1-hr	Iron-Dissolved	610	µg/L
Settled Decant	1-hr	Arsenic	11	µg/L
Settled Decant	1-hr	Total Fe (field)	9.1	mg/L
Settled Decant	1-hr	Free Chlorine (field)	0.57	mg/L
Settled Decant	3-hr	Iron	6.8	mg/L
Settled Decant	3-hr	Cr(T)	130	µg/L
Settled Decant	3-hr	Hexavalent Chromium	6.7	µg/L
Settled Decant	3-hr	Total Dissolved Solids	180	mg/L
Settled Decant	3-hr	Iron-Dissolved	440	µg/L
Settled Decant	3-hr	Arsenic	8.5	µg/L
Settled Decant	3-hr	Total Fe (field)	8.1	mg/L
Settled Decant	3-hr	Free Chlorine (field)	0.52	mg/L

Appendix C: Calculations

Project No.: 25-013
Title: Coachella Water Authority Cr6 Treatment Equipment Sizing - Reduction Vessel

By: R. MacLean
Date: 11/11/2025

	Units							
Well:		**11**	**12**	**16**	**17**	**18**	**19**	**20**
Flowrate	gpm	1,371	2,114	1,848	2,138	1,365	2,323	N/A
Design Flowrate	gpm	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Bypass Flowrate	gpm	0	0	0	0	0	0	0
Treatment Design Flowrate	gpm	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Contact Vessel Sizing								
Reduction Time	min	2	2	2	2	2	2	2
Horz. Vessel								
Baffling Factor	N/A	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Horizontal Tank Diameter	ft	8	8	8	8	8	8	8
Tank Cross-Section	ft^2	50.3	50.3	50.3	50.3	50.3	50.3	50.3
Required Side Shell	ft	15	15	15	17	15	15	15
Total Length	ft	18	18	18	20	18	18	18
ATEC Vert. Vessel								
Baffling Factor	N/A	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Vertical Tank Diameter	ft	4	4	4	4	4	4	4
Vertical Tank Height	ft	7	7	7	7	7	7	7
Volume of one vessel	ft^3	88	88	88	88	88	88	88
Required Volume	ft^3	764	764	764	840	764	764	764
Required No. of vessels	N/A	9	9	9	10	9	9	9

Project No.: 25-013
Title ATEC Backwash Sizing Options - HLR of 5 gpm/ft2

By: L. Bracamonte & Rachel Mclean
Date: 3/6/2026

Input

Well	11	12	16	17	18	19	20
Design Flow Flow (gpm)	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Exst Sanitary Sewer Size	15.00	8.00	10.00	8.00	24.00	-	8.00
ATEC Filter Vessel Sizing							
Design Loading Rate (gpm/ft^2)	5	5	5	5.5	5	5	5
Required X-Section (ft^2)	400	400	400	400	400	400	400
Filter Diameter (ft)	4	4	4	4	4	4	4
X-Section per Vessel (ft^2)	13	13	13	13	13	13	13
Required No. of Filters	32	32	32	32	32	32	32
No. of Filters to be installed	**32**	**32**	**32**	**32**	**32**	**32**	**32**
Backwash HLR (gpm/ft^2)	20	20	20	20	20	20	20
Backwash Instantaneous Flow (gpm)	251	251	251	251	251	251	251
Backwash Duration per Vessel (minute)	7	7	7	7	7	7	7
Backwash Frequency (days)	1	1	1	1	1	1	1
Backwash Volume per Vessel (gal)	1,759	1,759	1,759	1,759	1,759	1,759	1,759
Total Backwash Volume (gal)	56,297	56,297	56,297	56,297	56,297	56,297	56,297
Total Backwash Duration (minute)	224	224	224	224	224	224	224
Alternative 4A1 - Discharge Water to Settling Tank and and Recycle Water Through Treatment System. Settle Solids Hauled by Pumper Truck							
Backwash Volume (gal)	56,297					56,297	
Backwash Frequency (hr)	24					24	
Recycle Alternative Check							
Recycle Rate (gpm)	200					200	
Percent Solids based on Imhoff Results	0.5%					0.5%	
Disposal Volume/backwash (gallons)	281					281	
Recycle Volume/backwash (gallons)	56,016					56,016	
Drawdown Time (hr)	4.7					4.7	
Available Settling Time (hr)	19					19	
Settling Tank Sizing							
Settling Tank Safety Factor	1.5					1.5	
Days between Solids Cleanout	7					7	
Max. Est. Volume of Settled Solids (gallons)	1,970					1,970	
Required Settling Tank Volume (gallons)	58,268					58,268	
Settling Tank Design Volume (gal)	87,500					87,500	
Backwash Tank Diameter (ft)	**25.00**					**30.60**	
Backwash Tank Height (ft)	**24.00**					**16.00**	
Unit Capacity, gal/ft	3,672					5,501	
Max. Depth of Solids (ft)	0.5					0.4	
Total Tank Volume (gal)	88,133					88,026	
Tank Size OK?	**Yes**					**Yes**	
Solids Hauling from Settling Tank							
Septic Pumper Truck Capacity (gallons)	2,500					2,500	
Estimated Solids Accumulation per Day (gallons)	281					281	
Estimated Solids Clean-out Frequency (days)	8.9					8.9	
Recycle Water Pipe to Treatment System Sizing							
Recycle Flowrate (gpm)	200.00					200.00	
Pipe Size (in)	**4.0**					**4.0**	
Pipe Area (ft^2)	0.1					0.1	
Velocity (ft/s)	5.1					5.1	
Recycle Backwash Pump Sizing							
Recycle Flowrate (gpm)	200.0					200.0	
Estimated Required Head (psi)	**191.7**					**167.5**	
Estimated Required Head (ft)	442.9					386.9	
Assumed Pump Efficiency	40%					40%	
Pump Horsepower (HP)	56.0					48.9	
Standard Motor Rating (HP)	60.0					50.0	

Project No.: 25-013 **By:** L. Bracamonte

Title ATEC Backwash Sizing Options - HLR of 7gpm/ft2 **Input**

Date: 3/6/2026

Well	11	12	16	17	18	19	20
Design Flow Flow (gpm)	2,000	2,000	2,000	2,200	2,000	2,000	2,000
Exst Sanitary Sewer Size	15.00	8.00	10.00	8.00	24.00	-	8.00
ATEC Filter Vessel Sizing							
Design Loading Rate (gpm/ft^2)	7	7	7	7.5	7	7	7
Required X-Section (ft^2)	286	286	286	293	286	286	286
Filter Diameter (ft)	4	4	4	4	4	4	4
X-Section per Vessel (ft^2)	13	13	13	13	13	13	13
Required No. of Filters	23	23	23	24	23	23	23
No. of Filters to be installed	**24**	**24**	**24**	**24**	**24**	**24**	**24**
Backwash HLR (gpm/ft^2)	20	20	20	20	20	20	20
Backwash Instantaneous Flow (gpm)	251	251	251	251	251	251	251
Backwash Duration per Vessel (minute)	7	7	7	7	7	7	7
Backwash Frequency (days)	1	1	1	1	1	1	1
Backwash Volume per Vessel (gal)	1,759	1,759	1,759	1,759	1,759	1,759	1,759
Total Backwash Volume (gal)	42,223	42,223	42,223	42,223	42,223	42,223	42,223
Total Backwash Duration (minute)	168	168	168	168	168	168	168
Alternative 4A1 - Discharge Water to Settling Tank and and Recycle Water Through Treatment System. Settle Solids Hauled by Pumper Truck							
Backwash Volume (gal)	42,223					42,223	
Backwash Frequency (hr)	24					24	
Recycle Alternative Check							
Recycle Rate (gpm)	200					200	
Percent Solids based on Imhoff Results	0.5%					0.5%	
Disposal Volume/backwash (gallons)	211					211	
Recycle Volume/backwash (gallons)	42,012					42,012	
Drawdown Time (hr)	3.5					3.5	
Available Settling Time (hr)	20					20	
Settling Tank Sizing							
Settling Tank Safety Factor	1.5					1.5	
Days between Solids Cleanout	7					7	
Max. Est. Volume of Settled Solids (gallons)	1,478					1,478	
Required Settling Tank Volume (gallons)	43,701					43,701	
Settling Tank Design Volume (gal)	65,600					65,600	
Backwash Tank Diameter (ft)	**21.60**					**26.50**	
Backwash Tank Height (ft)	**24.00**					**16.00**	
Unit Capacity, gal/ft	2,741					4,126	
Max. Depth of Solids (ft)	0.5					0.4	
Total Tank Volume (gal)	65,791					66,018	
Tank Size OK?	**Yes**					**Yes**	
Solids Hauling from Settling Tank							
Septic Pumper Truck Capacity (gallons)	2,500					2,500	
Estimated Solids Accumulation per Day (gallons)	211					211	
Estimated Solids Clean-out Frequency (days)	**11.8**					**11.8**	
Recycle Water Pipe to Treatment System Sizing							
Recycle Flowrate (gpm)	200.00					200.00	
Pipe Size (in)	**4.0**					**4.0**	
Pipe Area (ft^2)	0.1					0.1	
Velocity (ft/s)	5.1					5.1	
Recycle Backwash Pump Sizing							
Recycle Flowrate (gpm)	200.0					200.0	
Estimated Required Head (psi)	**191.7**					**167.5**	
Estimated Required Head (ft)	442.9					386.9	
Assumed Pump Efficiency	40%					40%	
Pump Horsepower (HP)	56.0					48.9	
Standard Motor Rating (HP)	60.0					50.0	

Project No.: 25-013
Title: CWA - Initial Horizontal Vessel Sizing Calcs

By: A. Borgic
Date: 11/22/2025

			~5 gpm/SF	~7.5 gpm/SF		~5 gpm/SF	~7.5 gpm/SF	
Forward								
	Flowrate	gpm	2200	2200		2000	2000	
	Diameter	ft	12	10		12	8	
	Length	ft	36	30		34	34	
	Area	ft2	432	300		408	272	
	Cells	#	4	3		4	3	
	Cell Area	ft2/cell	108	100		102	91	
	Flowrate/cell	gpm/cell	550	733		500	667	
		gpm/ft2	5.1	7.3		4.9	7.4	
Backwash								
	BW Flowrate	gpm	2200	2200		2000	2000	
		gpm/cell	2200	2200		2000	2000	
		gpm/ft2	20.4	22.0		19.6	22.1	Want 20-gpm/SF
	Supply Cells	gpm	2200	2200		2000	2000	
		gpm/cell	733	1100		667	1000	
		gpm/ft2	6.8	11.0		6.5	11.0	

Project No.: 25-013
Title: Coachella Water Authority Hexavalent Chromium Sewer Replacement Option Analysis

By: R. MacLean
Date: 02/17/2026

Parameter	Units	W11	W12	W16	W17	W18	W20
Height Limit	ft	35	17	35	15	35	17
Max. Diameter	ft	0	20	22	26	0	22
Tank Surface Area	ft^2	0.0	314.2	380.1	530.9	0.0	380.1
Proposed Height of Tank	ft	0	12	20	12	0	12
EQ Tank Freeboard Allowance	-	1.5	1.5	1.5	1.5	1.5	1.5
EQ Tank Nominal Volume	ft^3	0	3770	7603	6371	0	4562
EQ Tank Nominal Volume	**gallons**	**0**	**28200**	**56900**	**47700**	**0**	**34100**
EQ Tank Volume	ft^3	0	2513	5068	4247	0	3041
EQ Tank Volume	gallons	0	18790	37900	31760	0	22740
Available Storage Volume	gallons	0	18790	37900	31760	0	22740
Filter Diameter	ft	4	4	4	4	4	4
Backwash HLR	gpm/ft^2	20	20	20	20	20	20
Instantaneous Flowrate	gpm	251	251	251	251	251	251
Backwash Duration per Vessel	min	7	7	7	7	7	7
Backwash Frequency	min	1440	1440	1440	1440	1440	1440
Flowrate Required to Drain Tank	**gpm**	**0**	**13**	**26**	**22**	**0**	**16**
No. of Filter Vessels (7-gpm/sf)	-	24	24	24	24	24	24
Total BW Duration	min	168	168	168	168	168	168
Available Accumulation Rate	gpm	0.0	111.8	225.6	189.0	0.0	135.4
Required Sewer Flowrate	**gpm**	**251**	**139**	**26**	**62**	**251**	**116**
Duration to Drain Tank	min	0	135	1473	510	0	196
Is Flowrate sufficient?	-	Yes	Yes	No	Yes	Yes	Yes
No. of Filter Vessels (5-gpm/sf)	-	32	32	32	32	32	32
Total BW Duration	min	224	224	224	224	224	224
Available Accumulation Rate	gpm	0.0	83.9	169.2	141.8	0.0	101.5
Required Sewer Flowrate	**gpm**	**251**	**167**	**82**	**110**	**251**	**150**
Duration to Drain Tank	min	0	112	461	290	0	152
Is Flowrate sufficient?	-	Yes	Yes	Yes	Yes	Yes	Yes

Project No.: 25-013
Title: CWA Cr6 RCF Chemical Feed Sizing

By: Rachel MacLean

Date: 12/01/25

Input, typical value
Input, varies by system
Calculated Value

Project Title/ Well Number								
	WELL	**11**	**12**	**16**	**17**	**18**	**19**	**20**
Parameter	**Units**	**Typical**	**Typical**	**Typical**	**Typical**	**Typical**		**Typical**
Pump Model								
Max Pump Capacity	gal/hr	1.83	1.83	1.83	1.25	1.83	1.83	1.83
Pump Capacity	gal/d	44.00	44.00	44.00	30.00	44.00	44.00	44.00
Chemical Strength	%	30%	30%	30%	30%	30%	30%	30%
Chemical Strength as Fe	%	13%	13%	13%	13%	13%	13%	13%
Chemical Specific Gravity	-	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Specific Weight	lb/gal	11.35	11.35	11.35	11.35	11.35	11.35	11.35
Fe (II) concentration	lb Fe/gal	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Treatment Process Flow Rate	gpm	2000	2000	2000	2200	2000	2000	2000
TreatmentProcess Flow Rate	mgd	2.88	2.88	2.88	3.17	2.88	2.88	2.88
Dosage as FeCl2	**mg/L**	**1.13**	**1.13**	**1.13**	**1.13**	**1.13**	**1.13**	**1.13**
Dosage as Fe	mg/L	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Feed Rate	lb/day	12.0	12.0	12.0	13.2	12.0	12.0	12.0
Feed Usage	gal/day	8.0	8.0	8.0	8.8	8.0	8.0	8.0
Feed Rate	**gal/hr**	**0.3**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**	**0.3**
Feed Rate	mL/min	21.1	21.1	21.1	23.2	21.1	21.1	21.1
Max. Monthly Plant/Well Utilization	-	62%	42%	98%	87%	73%	98%	98%
Chemical Usage	lb/day	7.4	5.0	11.8	11.5	8.8	11.8	11.8
Chemical Usage	gal/day	5.0	3.4	7.8	7.7	5.8	7.8	7.8
Required Pump Speed	%	18.2%	18.2%	18.2%	29.4%	18.2%	18.2%	18.2%
	mA	6.9	6.9	6.9	8.7	6.9	6.9	6.9
Existing Storage	gal	0	0	0	0	0	0	0
Proposed Additional Storage	gal	220	220	220	220	220	220	220
Total Storage Volume	**gal**	**220**	**220**	**220**	**220**	**220**	**220**	**220**
Days of Storage	day	44.3	65.4	28.0	28.7	37.6	28.0	28.0
Fill Interval (Fill @ 30% Remaining)	**day**	**31.0**	**45.8**	**19.6**	**20.1**	**26.3**	**19.6**	**19.6**

Project No.: 25-013
Title: CWA RCF Chemical Feed Sizing

By: Rachel MacLean
Date: 12/01/2025

Input, typical value
Input, varies by system
Calculated Value

Project Title/ Well Number

		11	11	12	12	16	16	17	17	18	18	19	19	20
Parameter	**Units**	**Current**	**Future**	**Current**	**Future**	**Current**	**Future**	**Current**	**Future**	**Current**	**Future**	**Current**	**Future**	**Typical**
Pump Model														
Max Pump Capacity (from Calibration)	gal/hr	1.83	1.83	1.83	1.83	1.83	1.83	1.25	1.25	1.83	1.83	1.83	1.83	1.83
Chemical Strength	%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Solution Concentration	NaOCl/L so	100	100	100	100	100	100	100	100	100	100	100	100	100
Solution Concentration	aOCl/gal	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Chemical (NaOCl) Specific Gravity	-	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Solution Density	soln/L so	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210
Solution Concentration	Cl2/gal so	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Process Flow Rate	gpm	2000	2000	2000	2000	2000	2000	2200	2200	2000	2000	2000	2000	2000
Process Flow Rate	mgd	2.88	2.88	2.88	2.88	2.88	2.88	3.17	3.17	2.88	2.88	2.88	2.88	2.88
Total dosage as Cl2	**mg/L**	**1.00**	**1.20**	**1.00**	**1.20**	**1.00**	**1.20**	**1.00**	**1.20**	**1.00**	**1.20**	**1.00**	**1.20**	**1.20**
Feed Rate	lb/day	24.0	28.8	24.0	28.8	24.0	28.8	26.4	31.7	24.0	28.8	24.0	28.8	28.8
Feed Usage	gal/day	30.3	36.3	30.3	36.3	30.3	36.3	33.3	40.0	30.3	36.3	30.3	36.3	36.3
Feed Rate	**gal/hr**	**1.3**	**1.5**	**1.3**	**1.5**	**1.3**	**1.5**	**1.4**	**1.7**	**1.3**	**1.5**	**1.3**	**1.5**	**1.5**
Feed Rate	mL/min	79.6	95.5	79.6	95.5	79.6	95.5	87.5	105.0	79.6	95.5	79.6	95.5	95.5
Plant/Well Utilization	-	62%	62%	42%	42%	98%	98%	87%	87%	73%	73%	98%	98%	98%
Chemical Usage	lb/day	14.9	17.9	10.1	12.1	23.6	28.3	23.0	27.6	17.5	21.1	23.6	28.3	28.3
Chemical Usage	gal/day	18.8	22.5	12.7	15.3	29.7	35.6	29.0	34.8	22.1	26.5	29.7	35.6	35.6
Required Pump Speed	%	68.8%	13.8%	68.8%	13.8%	68.8%	13.8%	111.0%	22.2%	68.8%	13.8%	68.8%	13.8%	82.6%
	mA	15.0	6.2	15.0	6.2	15.0	6.2	21.8	7.6	15.0	6.2	15.0	6.2	17.2
Existing Storage	gal	150	0	230	200	200	0	400	400	200	0	400	400	0
Proposed Storage	gal	0	500	0	0	0	500	0	0	0	500	0	0	500
Total Storage Volume	**gal**	**150**	**500**	**230**	**200**	**200**	**500**	**400**	**400**	**200**	**500**	**400**	**400**	**500**
Days of Storage	day	8.0	22.2	18.1	13.1	6.7	14.0	13.8	11.5	9.1	18.9	13.5	11.2	14.0
Fill Interval (Fill @ 30% Remaining)	**day**	**5.6**	**15.5**	**12.7**	**9.2**	**4.7**	**9.8**	**9.7**	**8.1**	**6.3**	**13.2**	**9.4**	**7.9**	**9.8**

Project No.: 25-013
Title: Pump Sizing Calcs

By: I. Banjo
Date: 11/11/2025

Coachella Water Authority Well Pump Sizing

	Current												With Treatment					
Well	Pump Manufacturer	Model	Stages	Imp, in	Curve?	VFD?	Power (HP)	Design Flow (gpm)	Design Head (ft)	Actual Flow (gpm)	Actual Head (ft)	% Flow Decrease	Required Motor Power (HP)	Head (ft)	Assumed Efficiency (%)	Pump Replacement?	Motor Replacement?	Flow gpm, (if same pump is used)
11	Peerless	Unknown	3	Unkown	No	Unknown	150	2,000	Not Provided	1,245	290	38%	250	325	70%	Yes	Yes	
12	Layne & Bowler	Unknown	Unkown	Unkown	No	Unknown	100	2,000	Not Provided	2,006	145	-0.3%	150	180	70%	Yes	Yes	
16	No Data Provided						100	2,000	Not Provided						70%	Yes	Yes	
17	Goulds	14RJHC	4	8.9375	Yes	Yes	200	2,200	280	1,770	275	20%	250	315	70%	Yes	Yes	1,800
18	Goulds	14RJHC	2	9.1875	Yes	Unknown	100	2,000	160	1,500	160	25%	150	195	70%	Yes	Yes	1,550
19	Goulds	14RJHC	4	8.9375	Yes	Yes	200	2,000	300	1,974	285	1.3%	250	335	70%	Yes	Yes	1,400
20	N/A - Future Pump																	

Project No.: 25-013
Title: CWA Well 11

By: I. Banjo
Date: 11/11/2025

Parameter			
Design Flowrate	2,000	gpm	
Current Design Head	290	ft	*used actual head instead of design head due to lack of data
Est. Pres. Head through ATEC Media, rec	15	psi	
Est. Pres. Head through ATEC Media, rec	34.65	ft	
New Design Head (TDH)	325	ft	
Hydraulic Horsepower	164.1	hp	
Est. Wire to Water efficiency	0.7	-	
Motor Input Power	234.5	hp	
Standar Motor Rating	250	hp	

$$BHP = \frac{Q\ H\ SG}{3{,}956\ \eta}$$

where

BHP = pump break horsepower (hp)

Q = volumetric flow rate (gpm)

H = total head added by pump (ft)

SG = specific gravity of fluid

η = pump efficiency

Project No.: 25-013 **Title:** CWA Well 12 **By:** I. Banjo
Date: 11/11/2025

Parameter		
Design Flowrate	2,000	gpm
Current Design Head	145	ft
Est. Pres. Head through ATEC Media, re	15	psi
Est. Pres. Head through ATEC Media, re	34.65	ft
New Design Head (TDH)	180	ft
Hydraulic Horsepower	90.8	hp
Est. Wire to Water efficiency	0.7	-
Motor Input Power	129.7	hp
Standar Motor Rating	150	hp

$$BHP = \frac{Q\ H\ SG}{3{,}956\ \eta}$$

where

BHP = pump break horsepower (hp)

Q = volumetric flow rate (gpm)

H = total head added by pump (ft)

SG = specific gravity of fluid

η = pump efficiency

Project No.: 25-013
Title: CWA Well 16

By: I. Banjo
Date: 11/11/2025

Parameter		
Design Flowrate	2,000	gpm
Current Design Head		ft
Est. Pres. Head through ATEC Media, re	15	psi
Est. Pres. Head through ATEC Media, re	34.65	ft
New Design Head (TDH)	35	ft
Hydraulic Horsepower	17.5	hp
Est. Wire to Water efficiency	0.7	-
Motor Input Power	25.0	hp
Standar Motor Rating	30	hp

$$BHP = \frac{Q\ H\ SG}{3{,}956\ \eta}$$

where

BHP = pump break horsepower (hp)

Q = volumetric flow rate (gpm)

H = total head added by pump (ft)

SG = specific gravity of fluid

η = pump efficiency

Project No.: 25-013
Title: CWA Well 17

By: I. Banjo
Date: 11/11/2025

Parameter		
Design Flowrate	2,200	gpm
Current Design Head	280	ft
Est. Pres. Head through ATEC Media, re	15	psi
Est. Pres. Head through ATEC Media, re	34.65	ft
New Design Head (TDH)	315	ft
Hydraulic Horsepower	175.0	hp
Est. Wire to Water efficiency	0.70	-
Motor Input Power	250.0	hp
Standar Motor Rating	250	hp

$$BHP = \frac{Q\ H\ SG}{3{,}956\ \eta}$$

where

BHP = pump break horsepower (hp)

Q = volumetric flow rate (gpm)

H = total head added by pump (ft)

SG = specific gravity of fluid

η = pump efficiency

Project No.: 25-013
Title: CWA Well 18

By: I. Banjo
Date: 11/11/2025

Parameter		
Design Flowrate	2,000	gpm
Current Design Head	160	ft
Est. Pres. Head through ATEC Media, re	15	psi
Est. Pres. Head through ATEC Media, re	34.65	ft
New Design Head (TDH)	195	ft
Hydraulic Horsepower	98.4	hp
Est. Wire to Water efficiency	0.70	-
Motor Input Power	140.6	hp
Standar Motor Rating	150	hp

$$BHP = \frac{Q\ H\ SG}{3{,}956\ \eta}$$

where

BHP = pump break horsepower (hp)

Q = volumetric flow rate (gpm)

H = total head added by pump (ft)

SG = specific gravity of fluid

η = pump efficiency

Project No.: 25-013
Title: CWA Well 19

By: I. Banjo
Date: 11/11/2025

Parameter		
Design Flowrate	2,000	gpm
Current Design Head	300	ft
Est. Pres. Head through ATEC Media, re	15	psi
Est. Pres. Head through ATEC Media, re	34.65	ft
New Design Head (TDH)	335	ft
Hydraulic Horsepower	169.2	hp
Est. Wire to Water efficiency	0.70	-
Motor Input Power	241.7	hp
Standar Motor Rating	250	hp

$$BHP = \frac{Q\ H\ SG}{3{,}956\ \eta}$$

where

BHP = pump break horsepower (hp)

Q = volumetric flow rate (gpm)

H = total head added by pump (ft)

SG = specific gravity of fluid

η = pump efficiency

Project No.: 25-013
Title: CWA Well 20 (Future Well

By: I. Banjo
Date: 11/11/2025

Parameter		
Design Flowrate	2,000	gpm
Current Design Head		ft
Est. Pres. Head through ATEC Media, re	15	psi
Est. Pres. Head through ATEC Media, re	34.65	ft
New Design Head (TDH)	35	ft
Hydraulic Horsepower	17.5	hp
Est. Wire to Water efficiency	0.70	-
Motor Input Power	25.0	hp
Standar Motor Rating	200	hp

$$BHP = \frac{Q\ H\ SG}{3{,}956\ \eta}$$

where

BHP = pump break horsepower (hp)

Q = volumetric flow rate (gpm)

H = total head added by pump (ft)

SG = specific gravity of fluid

η = pump efficiency

Appendix D: Conceptual-level Cost Estimates

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study **Check:** A. Borgic

Well 11 Master Values **Date:** 11/12/2025

Master Values

Item	Unit	Value	
Contingency	%	50%	
Discount Rate	%	5.0%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Construction Contingency	%	10%	
Installation Cost Factor for Equipment		Varies	
Electricity Cost	$/kWh	$ 0.114	Per electricity bills from 2024-2025
Days per Year Operating	days	91	Average annual utilization (25%)
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	2,190	
Maintenance			
% of Major Elec./Equip. =	%	2.0%	
Operations Personnel			
Days per Year =	days	365	
Hourly Cost =	$/hr	$ 120	
Management and Regulatory Compliance Personnel			
Days per Year =	days	52	
Hourly Cost =	$/hr	$ 180	

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 11 - Discharge Direct to Sewer (5-gpm/sf) **Date:** 11/12/2025

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
	CMU Perimeter Wall	380	LF	$320	1.00	$121,600
RCF System						
	Excavation	20	CY	$50	1.00	$1,011
	Aggregate Base Fill	15	CY	$30	1.00	$451
	Hauling	10	CY	$30	1.00	$307
Major Electrical						
RCF System						
	Electrical and Instrumentation	1	LS	$278,000	1.00	$278,000
Chemical Feed Systems						
	Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	51	CY	$1,200	1.00	$60,800
Chemical Feed Systems						
	CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	32	EA	$34,000	1.25	$1,360,000
Chemical Feed Systems						
	New SHC Storage Tank (500-gallons)	1	EA	$15,000	1.25	$18,750
	New SHC Feed Pump	1	EA	$1,000	1.25	$1,250
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades						
	Well Pump Replacement (250-HP)	1	EA	$150,000	1.25	$187,500
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	100	LF	$510	1.60	$81,600
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	30	LF	$220	1.60	$10,560
	6"-PVC Sanitary Sewer Piping	760	LF	$600	1.00	$456,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	100	LF	$50	1.00	$5,000
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$203,369**
SubTotal, Major Electrical						**$300,000**
SubTotal, Major Structural						**$176,000**
SubTotal, Major Equipment						**$1,962,313**
Subtotal, Major Piping & Valves						**$609,160**
SUBTOTAL						**$3,251,000**
Design Contingency				50%		$1,625,500
Material Escalation Contingency				40%		$1,300,400
PROBABLE CONSTRUCTION CONTRACT COST						**$6,177,000**
Construction Contingency				10%		$620,000
Detailed Design						$450,000
Engineering Support During Construction and Start-up				2%		$123,540
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$36,000
TOTAL CAPITAL PROJECT COST						**$7,540,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 11 Discharge Direct to Sewer (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	91	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	2,190	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,000	
Treated Water Flowrate	gpm	2,000	
Combined Plant Flowrate	gpm	2,000	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	25.0	
Additional Power Required	kW	18.65	
Additional Power Consumption	kWh/yr	40,844	
Additional Electricity Cost	$/yr	**$4,660**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,000	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	4.8	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.0	
14-Day Storage	gal	56.0	
Existing Storage	gal	165	
Feed Rate (gph)	gph	0.17	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$1,094**	
FeCl2 Feed			
Operation (gpm)	gpm	2,000	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	12.0	
Daily Usage	gal/day	7.5	
28-Day Storage	gal	211.1	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$3,902**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	7,525
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	686,691
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	7525
Additional Cost of Unrecycled Water Lost	$/yr	**$112.88**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	32
Disposal Cost on Yearly Basis	$/yr	**$5,630**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$4,331**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$45,246**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$4,660
Annual Chemical Cost	$4,996
Annual Sewer Fee and Water Loss	$113
Annual Basis for Media Replacement Cost	$9,960
Annual Maintenance	$45,246
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$118,000**
Monthly O&M Cost	$9,833

Project No.: 25-013
Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 11 - Discharge Direct to Sewer (5-gpm/sf)

By: R. MacLean
Check: A. Borgic
Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$7,540,000**
Total O&M Cost	$/year	**$118,000**
	$/month	$10,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$9,010,000**

Annual Water Production =	262.80	MG
	806.56	AF
20-Year Water Production =	16,131.17	AF
Capital Cost =	$470	per AF
O&M Cost =	$90	per AF
Well 11 Treated Water Cost =	**$560**	**per AF**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 11 - Discharge Direct to Sewer (7-gpm/sf) **Date:** 11/12/2025

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
	CMU Perimeter Wall	360	LF	$320	1.00	$115,200
RCF System						
	Excavation	18	CY	$50	1.00	$911
	Aggregate Base Fill	13	CY	$30	1.00	$402
	Hauling	9	CY	$30	1.00	$281
Major Electrical						
RCF System						
	Electrical and Instrumentation	1	LS	$224,000	1.00	$224,000
Chemical Feed Systems						
	Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	45	CY	$1,200	1.00	$54,300
Chemical Feed Systems						
	CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	24	EA	$34,000	1.25	$1,020,000
Chemical Feed Systems						
	New SHC Storage Tank (500-gallons)	1	EA	$15,000	1.25	$18,750
	New SHC Feed Pump	1	EA	$1,000	1.25	$1,250
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades						
	Well Pump Replacement (250-HP)	1	EA	$150,000	1.25	$187,500
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	129	LF	$510	1.60	$105,264
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	22	LF	$220	1.60	$7,744
	6"-PVC Sanitary Sewer Piping	760	LF	$600	1.00	$456,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	71	LF	$50	1.00	$3,550
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$196,794**
SubTotal, Major Electrical						**$246,000**
SubTotal, Major Structural						**$169,500**
SubTotal, Major Equipment						**$1,622,313**
Subtotal, Major Piping & Valves						**$628,558**
SUBTOTAL						**$2,863,000**
Design Contingency				50%		$1,431,500
Material Escalation Contingency				40%		$1,145,200
PROBABLE CONSTRUCTION CONTRACT COST						**$5,440,000**
Construction Contingency				10%		$540,000
Detailed Design						$450,000
Engineering Support During Construction and Start-up				2%		$108,800
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$36,000
TOTAL CAPITAL PROJECT COST						**$6,710,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 11 Discharge Direct to Sewer (7-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	91	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	2,190	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,000	
Treated Water Flowrate	gpm	2,000	
Combined Plant Flowrate	gpm	2,000	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	25.0	
Additional Power Required	kW	18.65	
Additional Power Consumption	kWh/yr	40,844	
Additional Electricity Cost	$/yr	**$4,660**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,000	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	4.8	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.0	
14-Day Storage	gal	56.0	
Existing Storage	gal	165	
Feed Rate (gph)	gph	0.17	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$1,094**	
FeCl2 Feed			
Operation (gpm)	gpm	2,000	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	12.0	
Daily Usage	gal/day	7.5	
28-Day Storage	gal	211.1	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$3,902**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	5,644
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	515,018
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	5644
Additional Cost of Unrecycled Water Lost	$/yr	**$84.66**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	24
Disposal Cost on Yearly Basis	$/yr	**$4,222**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$3,248**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$37,366**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$4,660
Annual Chemical Cost	$4,996
Annual Sewer Fee and Water Loss	$85
Annual Basis for Media Replacement Cost	$7,470
Annual Maintenance	$37,366
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$108,000**
Monthly O&M Cost	$9,000

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 11 - Discharge Direct to Sewer **Check:** A. Borgic

Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$6,710,000**
Total O&M Cost	$/year	**$108,000**
	$/month	$9,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$8,060,000**

Annual Water Production =	262.80	MG
	806.56	AF
20-Year Water Production =	16,131.17	AF
Capital Cost =	$420	per AF
O&M Cost =	$80	per AF
Well 11 Treated Water Cost =	**$500**	**per AF**

Project 25-013 **By** R. MacLean
Title: Coachella Water Authority Hexavalent Chromium Compliance Study Well 12 Master Values **Check** A. Borgic
Date: 11/12/2025

Master Values

Item	Unit	Value	
Contingency	%	50%	
Discount Rate	%	5.0%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Construction Contingency	%	10%	
Installation Cost Factor for Equipment		Varies	
Electricity Cost	$/kWh	$ 0.114	Per electricity bills from 2024-2025
Days per Year Operating	days	88	Average annual utilization (24%)
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	2,102	
Maintenance			
% of Major Elec./Equip. =	%	2.0%	
Operations Personnel			
Days per Year =	days	365	
Hourly Cost =	$/hr	$ 120	
Management and Regulatory Compliance Personnel			
Days per Year =	days	52	
Hourly Cost =	$/hr	$ 180	

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 11 - Discharge Direct to Sewer (5-gpm/sf) **Date:** 2/26/2026

Item	Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work					
Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
RCF System					
Excavation	27	CY	$50	1.00	$1,363
Aggregate Base Fill	20	CY	$30	1.00	$606
Hauling	14	CY	$30	1.00	$416
Major Electrical					
RCF System					
Electrical and Instrumentation	1	LS	$278,000	1.00	$278,000
Chemical Feed Systems					
Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural					
RCF System					
Reduction & Filter Vessels Foundation Slab	51	CY	$1,200	1.00	$60,800
Backwash System					
Backwash Tank Foundation Slab	17	CY	$1,200	1.00	$20,400
Chemical Feed Systems					
CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment					
RCF System					
Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
Filtration Vessels (4-ft Diam. Vert. Vessels)	32	EA	$34,000	1.25	$1,360,000
Backwash Settling Tank (Welded Steel)	28,200	GAL	$5.00	1.25	$176,250
Chemical Feed Systems					
New SHC Feed Pump	1	EA	$1,000	1.25	$1,250
FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades					
Well Pump Replacement (150-HP)	1	EA	$120,000	1.25	$150,000
Major Piping and Valves					
RCF System					
12"-DIP Treatment Piping	195	LF	$510	1.60	$159,120
12" Valves	6	EA	$2,500	1.60	$24,000
6"-DIP Backwash Piping	22	LF	$220	1.60	$7,744
4"-PVC Sanitary Sewer Piping	340	LF	$600	1.00	$204,000
Chemical Feed System					
3/8" Tubing with 2" Carrier Conduit	72	LF	$50	1.00	$3,600
Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work					**$82,385**
SubTotal, Major Electrical					**$300,000**
SubTotal, Major Structural					**$196,400**
SubTotal, Major Equipment					**$2,082,313**
Subtotal, Major Piping & Valves					**$430,464**
SUBTOTAL					**$3,092,000**
Design Contingency			50%		$1,546,000
Material Escalation Contingency			40%		$1,236,800
PROBABLE CONSTRUCTION CONTRACT COST					**$5,875,000**
Construction Contingency			10%		$590,000
Detailed Design					$450,000
Engineering Support During Construction and Start-up			2%		$117,500
Application Programming					$125,000
Sewer Connection Fee					$10,000
Permitting (B&S, Fire Dept., DDW)					$36,000
TOTAL CAPITAL PROJECT COST					**$7,200,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 12 Discharge Direct to Sewer (5-gpm/sf)

Check: A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	88	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	2,102	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,000	
Treated Water Flowrate	gpm	2,000	
Combined Plant Flowrate	gpm	2,000	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	25.0	
Additional Power Required	kW	18.65	
Additional Power Consumption	kWh/yr	39,210	
Additional Electricity Cost	$/yr	**$4,474**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,000	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	4.8	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.0	
14-Day Storage	gal	56.0	
Existing Storage	gal	230	
Feed Rate (gph)	gph	0.17	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$1,050**	
FeCl2 Feed			
Operation (gpm)	gpm	2,000	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	12.0	
Daily Usage	gal/day	7.5	
28-Day Storage	gal	211.1	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$3,746**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	7,525
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	659,223
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	7525
Additional Cost of Unrecycled Water Lost	$/yr	**$112.88**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	32
Disposal Cost on Yearly Basis	$/yr	**$5,630**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$4,331**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$47,646**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$4,474
Annual Chemical Cost	$4,796
Annual Sewer Fee and Water Loss	$113
Annual Basis for Media Replacement Cost	$9,960
Annual Maintenance	$47,646
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$120,000**
Monthly O&M Cost	$10,000

Project No.: 25-013
Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 12 - Discharge Direct to Sewer (5-gpm/sf)

By: R. MacLean
Check: A. Borgic
Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$7,200,000**
Total O&M Cost	$/year	**$120,000**
	$/month	$10,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$8,700,000**

Annual Water Production =	252.29	MG
	774.30	AF
20-Year Water Production =	15,485.92	AF
Capital Cost =	$460	per AF
O&M Cost =	$100	per AF
Well 12 Treated Water Cost =	**$560**	**per AF**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 12 - Discharge Direct to Sewer (7-gpm/sf) **Date:** 2/26/2026

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
RCF System						
	Excavation	26	CY	$50	1.00	$1,314
	Aggregate Base Fill	19	CY	$30	1.00	$558
	Hauling	14	CY	$30	1.00	$428
Major Electrical						
RCF System						
	Electrical and Instrumentation	1	LS	$224,000	1.00	$224,000
Chemical Feed Systems						
	Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	45	CY	$1,200	1.00	$54,300
Backwash System						
	Backwash Tank Foundation Slab	15	CY	$1,200	1.00	$17,600
Chemical Feed Systems						
	CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	24	EA	$34,000	1.25	$1,020,000
	Backwash Settling Tank (Welded Steel)	28,200	GAL	$5.00	1.25	$176,250
Chemical Feed Systems						
	New SHC Feed Pump	1	EA	$1,000	1.25	$1,250
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades						
	Well Pump Replacement (150-HP)	1	EA	$120,000	1.25	$150,000
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	195	LF	$510	1.60	$159,120
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	22	LF	$220	1.60	$7,744
	4"-PVC Sanitary Sewer Piping	340	LF	$600	1.00	$204,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	72	LF	$50	1.00	$3,600
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$82,300**
SubTotal, Major Electrical						**$246,000**
SubTotal, Major Structural						**$187,100**
SubTotal, Major Equipment						**$1,742,313**
Subtotal, Major Piping & Valves						**$430,464**
SUBTOTAL						**$2,688,000**
Design Contingency				50%		$1,344,000
Material Escalation Contingency				40%		$1,075,200
PROBABLE CONSTRUCTION CONTRACT COST						**$5,107,000**
Construction Contingency				10%		$510,000
Detailed Design						$450,000
Engineering Support During Construction and Start-up				2%		$102,140
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$36,000
TOTAL CAPITAL PROJECT COST						**$6,340,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 11 Discharge Direct to Sewer (7-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	88	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	2,102	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,000	
Treated Water Flowrate	gpm	2,000	
Combined Plant Flowrate	gpm	2,000	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	25.0	
Additional Power Required	kW	18.65	
Additional Power Consumption	kWh/yr	39,210	
Additional Electricity Cost	$/yr	**$4,474**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,000	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	4.8	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.0	
14-Day Storage	gal	56.0	
Existing Storage	gal	230	
Feed Rate (gph)	gph	0.17	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$1,050**	
FeCl2 Feed			
Operation (gpm)	gpm	2,000	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	12.0	
Daily Usage	gal/day	7.5	
28-Day Storage	gal	211.1	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$3,746**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	5,644
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	494,417
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	5644
Additional Cost of Unrecycled Water Lost	$/yr	**$84.66**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	24
Disposal Cost on Yearly Basis	$/yr	**$4,222**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$3,248**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$39,766**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$4,474
Annual Chemical Cost	$4,796
Annual Sewer Fee and Water Loss	$85
Annual Basis for Media Replacement Cost	$7,470
Annual Maintenance	$39,766
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$110,000**
Monthly O&M Cost	$9,167

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 11 - Discharge Direct to Sewer (7-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$6,340,000**
Total O&M Cost	$/year	**$110,000**
	$/month	$9,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$7,710,000**

Annual Water Production =	252.29	MG
	774.30	AF
20-Year Water Production =	15,485.92	AF
Capital Cost =	$410	per AF
O&M Cost =	$90	per AF
Well 12 Treated Water Cost =	**$500**	**per AF**

Project 25-013 **By:** R. MacLean
Title: Coachella Water Authority Hexavalent Chromium Compliance Study Well 16 Master Values **Check** A. Borgic
Date: 11/12/2025

Master Values

Item	Unit	Value	
Contingency	%	50%	
Discount Rate	%	5.0%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Construction Contingency	%	10%	
Installation Cost Factor for Equipment		Varies	
Electricity Cost	$/kWh	$ 0.114	Per electricity bills from 2024-2025
Days per Year Operating	days	183	Average annual utilization- assumed 50%
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	4,380	
Maintenance			
% of Major Elec./Equip. =	%	2.0%	
Operations Personnel			
Days per Year =	days	365	
Hourly Cost =	$/hr	$ 120	
Management and Regulatory Compliance Personnel			
Days per Year =	days	52	
Hourly Cost =	$/hr	$ 180	

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 16 - Discharge Direct to Sewer (5-gpm/sf) **Date:** 2/26/2026

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
	CMU Perimeter Wall	300	LF	$320	1.00	$96,000
RCF System						
	Excavation	29	CY	$50	1.00	$1,430
	Aggregate Base Fill	21	CY	$30	1.00	$639
	Hauling	14	CY	$30	1.00	$434
Major Electrical						
RCF System						
	Electrical and Instrumentation	1	LS	$278,000	1.00	$278,000
Chemical Feed Systems						
	Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	51	CY	$1,200	1.00	$60,800
Backwash System						
	Backwash Tank Foundation Slab	29	CY	$1,200	1.00	$35,300
Chemical Feed Systems						
	CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	32	EA	$34,000	1.25	$1,360,000
	Backwash Settling Tank (Welded Steel)	56,900	GAL	$5.00	1.25	$355,625
Chemical Feed Systems						
	New SHC Storage Tank (500-gallons)	1	EA	$15,000	1.25	$18,750
	New SHC Feed Pump	1	EA	$1,000	1.25	$1,250
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades						
	Well Pump Replacement (250-HP)	1	EA	$150,000	1.25	$187,500
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	240	LF	$510	1.60	$195,840
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	10	LF	$220	1.60	$3,520
	4"-PVC Sanitary Sewer Piping	355	LF	$600	1.00	$213,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	127	LF	$50	1.00	$6,350
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$178,502**
SubTotal, Major Electrical						**$300,000**
SubTotal, Major Structural						**$211,300**
SubTotal, Major Equipment						**$2,317,938**
Subtotal, Major Piping & Valves						**$474,710**
SUBTOTAL						**$3,482,000**
Design Contingency				50%		$1,741,000
Material Escalation Contingency				40%		$1,392,800
PROBABLE CONSTRUCTION CONTRACT COST						**$6,616,000**
Construction Contingency				10%		$660,000
Detailed Design						$450,000
Engineering Support During Construction and Start-up				2%		$132,320
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$36,000
TOTAL CAPITAL PROJECT COST						**$8,030,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 16 Discharge Direct to Sewer (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	183	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	4,380	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,000	
Treated Water Flowrate	gpm	2,000	
Combined Plant Flowrate	gpm	2,000	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	25.0	
Additional Power Required	kW	18.65	
Additional Power Consumption	kWh/yr	81,687	
Additional Electricity Cost	$/yr	**$9,320**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,000	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	4.8	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.0	
14-Day Storage	gal	56.0	
Existing Storage	gal	200	
Feed Rate (gph)	gph	0.17	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$2,188**	
FeCl2 Feed			
Operation (gpm)	gpm	2,000	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	12.0	
Daily Usage	gal/day	7.5	
28-Day Storage	gal	211.1	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$7,803**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	7,525
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	1,373,381
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	7525
Additional Cost of Unrecycled Water Lost	$/yr	**$112.88**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	32
Disposal Cost on Yearly Basis	$/yr	**$5,630**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$4,331**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$52,359**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$9,320
Annual Chemical Cost	$9,991
Annual Sewer Fee and Water Loss	$113
Annual Basis for Media Replacement Cost	$9,960
Annual Maintenance	$52,359
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$135,000**
Monthly O&M Cost	$11,250

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 16 - Discharge Direct to Sewer **Check:** A. Borgic

Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$8,030,000**
Total O&M Cost	$/year	**$135,000**
	$/month	$11,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$9,710,000**

Annual Water Production =	525.60	MG
	1,613.12	AF
20-Year Water Production =	32,262.34	AF
Capital Cost =	$250	per AF
O&M Cost =	$50	per AF
Well 16 Treated Water Cost =	**$300**	**per AF**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 16 - Discharge Direct to Sewer (7-gpm/sf) **Date:** 2/26/2026

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
	CMU Perimeter Wall	300	LF	$320	1.00	$96,000
RCF System						
	Excavation	27	CY	$50	1.00	$1,330
	Aggregate Base Fill	20	CY	$30	1.00	$590
	Hauling	14	CY	$30	1.00	$407
Major Electrical						
RCF System						
	Electrical and Instrumentation	1	LS	$224,000	1.00	$224,000
Chemical Feed Systems						
	Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	45	CY	$1,200	1.00	$54,300
Backwash System						
	Backwash Tank Foundation Slab	22	CY	$1,200	1.00	$26,800
Chemical Feed Systems						
	CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	24	EA	$34,000	1.25	$1,020,000
	Backwash Settling Tank (Welded Steel)	56,900	GAL	$5.00	1.25	$355,625
Chemical Feed Systems						
	New SHC Storage Tank (500-gallons)	1	EA	$15,000	1.25	$18,750
	New SHC Feed Pump	1	EA	$1,000	1.25	$1,250
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades						
	Well Pump Replacement (250-HP)	1	EA	$150,000	1.25	$187,500
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	240	LF	$510	1.60	$195,840
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	10	LF	$220	1.60	$3,520
	4"-PVC Sanitary Sewer Piping	355	LF	$600	1.00	$213,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	127	LF	$50	1.00	$6,350
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$178,327**
SubTotal, Major Electrical						**$246,000**
SubTotal, Major Structural						**$196,300**
SubTotal, Major Equipment						**$1,977,938**
Subtotal, Major Piping & Valves						**$474,710**
SUBTOTAL						**$3,073,000**
Design Contingency				50%		$1,536,500
Material Escalation Contingency				40%		$1,229,200
PROBABLE CONSTRUCTION CONTRACT COST						**$5,839,000**
Construction Contingency				10%		$580,000
Detailed Design						$450,000
Engineering Support During Construction and Start-up				2%		$116,780
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$36,000
TOTAL CAPITAL PROJECT COST						**$7,160,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 16 Discharge Direct to Sewer (7-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	183	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	4,380	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,000	
Treated Water Flowrate	gpm	2,000	
Combined Plant Flowrate	gpm	2,000	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	25.0	
Additional Power Required	kW	18.65	
Additional Power Consumption	kWh/yr	81,687	
Additional Electricity Cost	$/yr	**$9,320**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,000	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	4.8	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.0	
14-Day Storage	gal	56.0	
Existing Storage	gal	200	
Feed Rate (gph)	gph	0.17	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$2,188**	
FeCl2 Feed			
Operation (gpm)	gpm	2,000	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	12.0	
Daily Usage	gal/day	7.5	
28-Day Storage	gal	211.1	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$7,803**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	5,644
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	1,030,036
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	5644
Additional Cost of Unrecycled Water Lost	$/yr	**$84.66**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	24
Disposal Cost on Yearly Basis	$/yr	**$4,222**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$3,248**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$44,479**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$9,320
Annual Chemical Cost	$9,991
Annual Sewer Fee and Water Loss	$85
Annual Basis for Media Replacement Cost	$7,470
Annual Maintenance	$44,479
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$125,000**
Monthly O&M Cost	$10,417

Project No.: 25-013
Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 16 - Discharge Direct to Sewer (7-gpm/sf)

By: R. MacLean
Check: A. Borgic
Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$7,160,000**
Total O&M Cost	$/year	**$125,000**
	$/month	$10,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$8,720,000**

Annual Water Production =	525.60	MG
	1,613.12	AF
20-Year Water Production =	32,262.34	AF
Capital Cost =	$220	per AF
O&M Cost =	$50	per AF
Well 16 Treated Water Cost =	**$270**	**per AF**

Project 25-013
Title: Coachella Water Authority Hexavalent Chromium Compliance Study Well 17 Master Values

By: R. MacLean
Check: A. Borgic
Date: 11/12/2025

Master Values

Item	Unit	Value	
Contingency	%	50%	
Discount Rate	%	5.0%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Construction Contingency	%	10%	
Installation Cost Factor for Equipment		Varies	
Electricity Cost	$/kWh	$ 0.114	Per electricity bills from 2024-2025
Days per Year Operating	days	277	Average annual utilization (76%)
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	6,658	
Maintenance			
% of Major Elec./Equip. =	%	2.0%	
Operations Personnel			
Days per Year =	days	365	
Hourly Cost =	$/hr	$ 120	
Management and Regulatory Compliance Personnel			
Days per Year =	days	52	
Hourly Cost =	$/hr	$ 180	

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 17 - Discharge Direct to Sewer (5.5-gpm/sf) **Date:** 2/26/2026

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
	CMU Perimeter Wall	175	LF	$320	1.00	$56,000
RCF System						
	Excavation	32	CY	$50	1.00	$1,602
	Aggregate Base Fill	24	CY	$30	1.00	$722
	Hauling	16	CY	$30	1.00	$479
Major Electrical						
RCF System						
	Electrical and Instrumentation	1	LS	$278,000	1.00	$278,000
Chemical Feed Systems						
	Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	52	CY	$1,200	1.00	$62,000
Backwash System						
	Backwash Tank Foundation Slab	26	CY	$1,200	1.00	$31,400
Chemical Feed Systems						
	CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	32	EA	$34,000	1.25	$1,360,000
	Backwash Settling Tank (Welded Steel)	47,700	GAL	$5.00	1.25	$298,125
Chemical Feed Systems						
	New SHC Feed Pump	1	EA	$1,000	1.25	$1,250
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades						
	Well Pump Replacement (250-HP)	1	EA	$150,000	1.25	$187,500
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	268	LF	$510	1.60	$218,688
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	13	LF	$220	1.60	$4,576
	4"-PVC Sanitary Sewer Piping	65	LF	$600	1.00	$39,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	165	LF	$50	1.00	$8,250
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$138,803**
SubTotal, Major Electrical						**$300,000**
SubTotal, Major Structural						**$208,600**
SubTotal, Major Equipment						**$2,241,688**
Subtotal, Major Piping & Valves						**$326,514**
SUBTOTAL						**$3,216,000**
Design Contingency				50%		$1,608,000
Material Escalation Contingency				40%		$1,286,400
PROBABLE CONSTRUCTION CONTRACT COST						**$6,110,000**
Construction Contingency				10%		$610,000
Detailed Design						$450,000
Engineering Support During Construction and Start-up				2%		$122,200
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$36,000
TOTAL CAPITAL PROJECT COST						**$7,460,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 17 Discharge Direct to Sewer (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	277	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	6,658	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,200	
Treated Water Flowrate	gpm	2,200	
Combined Plant Flowrate	gpm	2,200	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	27.5	
Additional Power Required	kW	20.52	
Additional Power Consumption	kWh/yr	136,581	
Additional Electricity Cost	$/yr	**$15,584**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,200	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	5.3	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.4	
14-Day Storage	gal	61.5	
Existing Storage	gal	400	
Feed Rate (gph)	gph	0.18	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$3,659**	
FeCl2 Feed			
Operation (gpm)	gpm	2,200	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	13.2	
Daily Usage	gal/day	8.3	
28-Day Storage	gal	232.2	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$13,047**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	7,525
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	2,087,539
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	7525
Additional Cost of Unrecycled Water Lost	$/yr	**$112.88**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	32
Disposal Cost on Yearly Basis	$/yr	**$5,630**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$4,331**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$50,834**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$15,584
Annual Chemical Cost	$16,705
Annual Sewer Fee and Water Loss	$113
Annual Basis for Media Replacement Cost	$9,960
Annual Maintenance	$50,834
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$146,000**
Monthly O&M Cost	$12,167

Project No.: 25-013 **By:** R. MacLean
Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 17 - Discharge Direct to Sewer **Check:** A. Borgic
Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$7,460,000**
Total O&M Cost	$/year	**$146,000**
	$/month	$12,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$9,280,000**

Annual Water Production =	878.80	MG
	2,697.13	AF
20-Year Water Production =	53,942.63	AF
Capital Cost =	$140	per AF
O&M Cost =	$30	per AF
Well 17 Treated Water Cost =	**$170**	**per AF**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 17 - Discharge Direct to Sewer (7.5-gpm/sf) **Date:** 2/26/2026

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
	CMU Perimeter Wall	175	LF	$320	1.00	$56,000
RCF System						
	Excavation	30	CY	$50	1.00	$1,481
	Aggregate Base Fill	22	CY	$30	1.00	$674
	Hauling	15	CY	$30	1.00	$437
Major Electrical						
RCF System						
	Electrical and Instrumentation	1	LS	$224,000	1.00	$224,000
Chemical Feed Systems						
	Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	46	CY	$1,200	1.00	$55,500
Backwash System						
	Backwash Tank Foundation Slab	20	CY	$1,200	1.00	$23,900
Chemical Feed Systems						
	CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	24	EA	$34,000	1.25	$1,020,000
	Backwash Settling Tank (Welded Steel)	47,700	GAL	$5.00	1.25	$298,125
Chemical Feed Systems						
	New SHC Feed Pump	1	EA	$1,000	1.25	$1,250
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades						
	Well Pump Replacement (250-HP)	1	EA	$150,000	1.25	$187,500
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	208	LF	$510	1.60	$169,728
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	30	LF	$220	1.60	$10,560
	4"-PVC Sanitary Sewer Piping	65	LF	$600	1.00	$39,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	165	LF	$50	1.00	$8,250
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$138,592**
SubTotal, Major Electrical						**$246,000**
SubTotal, Major Structural						**$194,600**
SubTotal, Major Equipment						**$1,901,688**
Subtotal, Major Piping & Valves						**$283,538**
SUBTOTAL						**$2,764,000**
Design Contingency				50%		$1,382,000
Material Escalation Contingency				40%		$1,105,600
PROBABLE CONSTRUCTION CONTRACT COST						**$5,252,000**
Construction Contingency				10%		$530,000
Detailed Design						$450,000
Engineering Support During Construction and Start-up				2%		$105,040
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$36,000
TOTAL CAPITAL PROJECT COST						**$6,510,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 17 Discharge Direct to Sewer (7.5-gpm/sf)

Check: A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	277	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	6,658	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,200	
Treated Water Flowrate	gpm	2,200	
Combined Plant Flowrate	gpm	2,200	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	27.5	
Additional Power Required	kW	20.52	
Additional Power Consumption	kWh/yr	136,581	
Additional Electricity Cost	$/yr	**$15,584**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,200	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	5.3	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.4	
14-Day Storage	gal	61.5	
Existing Storage	gal	400	
Feed Rate (gph)	gph	0.18	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$3,659**	
FeCl2 Feed			
Operation (gpm)	gpm	2,200	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	13.2	
Daily Usage	gal/day	8.3	
28-Day Storage	gal	232.2	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$13,047**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	5,644
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	1,565,655
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	5644
Additional Cost of Unrecycled Water Lost	$/yr	**$84.66**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	24
Disposal Cost on Yearly Basis	$/yr	**$4,222**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$3,248**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$42,954**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$15,584
Annual Chemical Cost	$16,705
Annual Sewer Fee and Water Loss	$85
Annual Basis for Media Replacement Cost	$7,470
Annual Maintenance	$42,954
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$136,000**
Monthly O&M Cost	$11,333

Project No.: 25-013 **By:** R. MacLean
Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 17 - Discharge Direct to Sewer **Check:** A. Borgic
Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$6,510,000**
Total O&M Cost	$/year	**$136,000**
	$/month	$11,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$8,200,000**

Annual Water Production =	878.80	MG
	2,697.13	AF
20-Year Water Production =	53,942.63	AF
Capital Cost =	$120	per AF
O&M Cost =	$30	per AF
Well 17 Treated Water Cost =	**$150**	**per AF**

Project 25-013 **By** R. MacLean
Title: Coachella Water Authority Hexavalent Chromium Compliance Study Well 18 Master Values **Check** A. Borgic
Date: 11/21/25

Master Values

Item	Unit	Value	
Contingency	%	50%	
Discount Rate	%	5.0%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Construction Contingency	%	10%	
Installation Cost Factor for Equipment		Varies	
Electricity Cost	$/kWh	$ 0.114	Per electricity bills from 2024-2025
Days per Year Operating	days	175	Average annual utilization (48%)
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	4,205	
Maintenance			
% of Major Elec./Equip. =	%	2.0%	
Operations Personnel			
Days per Year =	days	365	
Hourly Cost =	$/hr	$ 120	
Management and Regulatory Compliance Personnel			
Days per Year =	days	52	
Hourly Cost =	$/hr	$ 180	

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 18 - Discharge Direct to Sewer (5-gpm/sf) **Date:** 11/21/2025

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
	CMU Perimeter Wall	0	LF	$320	1.00	$0
RCF System						
	Excavation	20	CY	$50	1.00	$1,011
	Aggregate Base Fill	15	CY	$30	1.00	$451
	Hauling	10	CY	$30	1.00	$307
Major Electrical						
RCF System						
	Electrical and Instrumentation	1	LS	$278,000	1.00	$278,000
Chemical Feed Systems						
	Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	51	CY	$1,200	1.00	$60,800
Backwash System						
	Backwash Tank Foundation Slab	0	CY	$1,200	1.00	$0
Chemical Feed Systems						
	CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	32	EA	$34,000	1.25	$1,360,000
Chemical Feed Systems						
	New SHC Storage Tank (500-gallons)	1	EA	$15,000	1.25	$18,750
	New SHC Feed Pump	1	EA	$1,000	1.25	$1,250
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades						
	Well Pump Replacement (150-HP)	1	EA	$120,000	1.25	$150,000
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	150	LF	$510	1.60	$122,400
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	210	LF	$220	1.60	$73,920
	6"-PVC Sanitary Sewer Piping	1100	LF	$600	1.00	$660,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	70	LF	$50	1.00	$3,500
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$81,769**
SubTotal, Major Electrical						**$300,000**
SubTotal, Major Structural						**$176,000**
SubTotal, Major Equipment						**$1,924,813**
Subtotal, Major Piping & Valves						**$915,820**
SUBTOTAL						**$3,398,000**
Design Contingency				50%		$1,699,000
Material Escalation Contingency				40%		$1,359,200
PROBABLE CONSTRUCTION CONTRACT COST						**$6,456,000**
Construction Contingency				10%		$650,000
Detailed Design						$450,000
Engineering Support During Construction and Start-up				2%		$129,120
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$36,000
TOTAL CAPITAL PROJECT COST						**$7,860,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 11 Discharge Direct to Sewer (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	175	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	4,205	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,000	
Treated Water Flowrate	gpm	2,000	
Combined Plant Flowrate	gpm	2,000	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	25.0	
Additional Power Required	kW	18.65	
Additional Power Consumption	kWh/yr	78,420	
Additional Electricity Cost	$/yr	**$8,948**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,000	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	4.8	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.0	
14-Day Storage	gal	56.0	
Existing Storage	gal	1100	
Feed Rate (gph)	gph	0.17	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$2,101**	
FeCl2 Feed			
Operation (gpm)	gpm	2,000	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	12.0	
Daily Usage	gal/day	7.5	
28-Day Storage	gal	211.1	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$7,491**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	7,525
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	1,318,446
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	7525
Additional Cost of Unrecycled Water Lost	$/yr	**$112.88**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	32
Disposal Cost on Yearly Basis	$/yr	**$5,630**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$4,331**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$44,496**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$8,948
Annual Chemical Cost	$9,592
Annual Sewer Fee and Water Loss	$113
Annual Basis for Media Replacement Cost	$9,960
Annual Maintenance	$44,496
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$126,000**
Monthly O&M Cost	$10,500

Project No.: 25-013
Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 11 - Discharge Direct to Sewer (5-gpm/sf)

By: R. MacLean
Check: A. Borgic
Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$7,860,000**
Total O&M Cost	$/year	**$126,000**
	$/month	$11,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$9,430,000**

Annual Water Production =	504.58	MG
	1,548.59	AF
20-Year Water Production =	30,971.85	AF
Capital Cost =	$250	per AF
O&M Cost =	$50	per AF
Well 18 Treated Water Cost =	**$300**	**per AF**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 18 - Discharge Direct to Sewer (7-gpm/sf) **Date:** 11/21/2025

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
	CMU Perimeter Wall	0	LF	$320	1.00	$0
RCF System						
	Excavation	18	CY	$50	1.00	$911
	Aggregate Base Fill	13	CY	$30	1.00	$402
	Hauling	9	CY	$30	1.00	$281
Major Electrical						
RCF System						
	Electrical and Instrumentation	1	LS	$224,000	1.00	$224,000
Chemical Feed Systems						
	Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	45	CY	$1,200	1.00	$54,300
Backwash System						
	Backwash Tank Foundation Slab	0	CY	$1,200	1.00	$0
Chemical Feed Systems						
	CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	24	EA	$34,000	1.25	$1,020,000
Chemical Feed Systems						
	New SHC Storage Tank (500-gallons)	1	EA	$15,000	1.25	$18,750
	New SHC Feed Pump	1	EA	$1,000	1.25	$1,250
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades						
	Well Pump Replacement (150-HP)	1	EA	$120,000	1.25	$150,000
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	150	LF	$510	1.60	$122,400
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	210	LF	$220	1.60	$73,920
	6"-PVC Sanitary Sewer Piping	1100	LF	$600	1.00	$660,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	70	LF	$50	1.00	$3,500
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$81,594**
SubTotal, Major Electrical						**$246,000**
SubTotal, Major Structural						**$169,500**
SubTotal, Major Equipment						**$1,584,813**
Subtotal, Major Piping & Valves						**$915,820**
SUBTOTAL						**$2,998,000**
Design Contingency				50%		$1,499,000
Material Escalation Contingency				40%		$1,199,200
PROBABLE CONSTRUCTION CONTRACT COST						**$5,696,000**
Construction Contingency				10%		$570,000
Detailed Design						$450,000
Engineering Support During Construction and Start-up				2%		$113,920
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$36,000
TOTAL CAPITAL PROJECT COST						**$7,000,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 18 Discharge Direct to Sewer (7-gpm/sf) **Check:** A. Borgic

Date: 11/21/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	175	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	4,205	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,000	
Treated Water Flowrate	gpm	2,000	
Combined Plant Flowrate	gpm	2,000	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	25.0	
Additional Power Required	kW	18.65	
Additional Power Consumption	kWh/yr	78,420	
Additional Electricity Cost	$/yr	**$8,948**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,000	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	4.8	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.0	
14-Day Storage	gal	56.0	
Existing Storage	gal	1100	
Feed Rate (gph)	gph	0.17	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$2,101**	
FeCl2 Feed			
Operation (gpm)	gpm	2,000	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	12.0	
Daily Usage	gal/day	7.5	
28-Day Storage	gal	211.1	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$7,491**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	5,644
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	988,834
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	5644
Additional Cost of Unrecycled Water Lost	$/yr	**$84.66**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	24
Disposal Cost on Yearly Basis	$/yr	**$4,222**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$3,248**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$36,616**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$8,948
Annual Chemical Cost	$9,592
Annual Sewer Fee and Water Loss	$85
Annual Basis for Media Replacement Cost	$7,470
Annual Maintenance	$36,616
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$116,000**
Monthly O&M Cost	$9,667

Project No.: 25-013
Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 18 - Discharge Direct to Sewer (7-gpm/sf)

By: R. MacLean
Check: A. Borgic
Date: 11/21/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$7,000,000**
Total O&M Cost	$/year	**$116,000**
	$/month	$10,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$8,450,000**

Annual Water Production =	504.58	MG
	1,548.59	AF
20-Year Water Production =	30,971.85	AF
Capital Cost =	$230	per AF
O&M Cost =	$40	per AF
Well 18 Treated Water Cost =	**$270**	**per AF**

Project 25-013 **By** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study Well 19 Master Values

Check A. Borgic

Date: 11/12/2025

Master Values

Item	Unit	Value	
Contingency	%	50%	
Discount Rate	%	5.0%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Construction Contingency	%	10%	
Installation Cost Factor for Equipment		Varies	
Electricity Cost	$/kWh	$ 0.114	Per electricity bills from 2024-2025
Days per Year Operating	days	329	Average annual utilization (90%)
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	7,884	
Maintenance			
% of Major Elec./Equip. =	%	2.0%	
Operations Personnel			
Days per Year =	days	365	
Hourly Cost =	$/hr	$ 120	
Management and Regulatory Compliance Personnel			
Days per Year =	days	52	
Hourly Cost =	$/hr	$ 180	

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost
Well 19 - Recycle Backwash (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work					
Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
RCF System					
Excavation	36	CY	$50	1.00	$1,798
Aggregate Base Fill	28	CY	$30	1.00	$846
Hauling	17	CY	$30	1.00	$503
Major Electrical					
RCF System					
Electrical and Instrumentation	1	LS	$278,000	1.00	$278,000
Chemical Feed Systems					
Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural					
RCF System					
Reduction & Filter Vessels Foundation Slab	51	CY	$1,200	1.00	$60,800
Backwash Settling Tank Foundation Slab	59	CY	$1,200	1.00	$71,000
Chemical Feed Systems					
CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment					
RCF System					
Horiz. Reduction Vessel (8-ft Diameter & 18-ft Side Shell)	1	EA	$300,000	1.25	$375,000
Filtration Vessels (4-ft Diam. Vert. Vessels)	32	EA	$34,000	1.25	$1,360,000
Backwash Settling Tank (Welded Steel)	90,000	GAL	$5	1.25	$562,500
Backwash Recycle Pump Skid	1	EA	$45,000	1.25	$56,250
Chemical Feed Systems					
New SHC Feed Pump	1	EA	$1,000	3.00	$3,000
FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades					
Well Pump Replacement (250-HP)	1	EA	$150,000	1.25	$187,500
Major Piping and Valves					
RCF System					
12"-DIP Treatment Piping	95	LF	$510	1.60	$77,520
Valves & Fittings	6	LS	$2,500	1.60	$24,000
6"-DIP Backwash Recycle Piping	185	LF	$220	1.60	$65,120
Chemical Feed System					
3/8" Tubing with 2" Carrier Conduit	45	LF	$50	1.00	$2,250
Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work					**$83,147**
SubTotal, Major Electrical					**$300,000**
SubTotal, Major Structural					**$247,000**
SubTotal, Major Equipment					**$2,564,063**
Subtotal, Major Piping & Valves					**$200,890**
SUBTOTAL					**$3,395,000**
Design Contingency			50%		$1,697,500
Material Escalation Contingency			40%		$1,358,000
PROBABLE CONSTRUCTION CONTRACT COST					**$6,451,000**
Construction Contingency			10%		$650,000
Detailed Design					$450,000
Engineering Support During Construction and Start-up			2%		$129,020
Application Programming					$125,000
VSD Connection Fee					$0
Permitting (B&S, MEP, Fire Dept., VSD, DDW)					$36,000
TOTAL CAPITAL PROJECT COST					**$7,840,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 19 Recycle Backwash (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
Electricity Cost	$/kWh	$ 0.114
Days per Year Operating	days	329
Hours per Day Operation	hours	24
Hours per Year Operating	hours	7,884
Well 11 ADDITIONAL Pumping Cost from Treatment		
Raw Water Flowrate	gpm	2,000
Treated Water Flowrate	gpm	2,000
Combined Plant Flowrate	gpm	2,000
Increase in Head from Reduction Vessels, I	ft	11.6
Increase in Head from Filter Vessels	ft	23.1 10-psi
Efficiency	%	70%
Additional Horsepower	hp	25.0
Additional Power Required	kW	18.65
Additional Power Consumption	kWh/yr	147,037
Additional Electricity Cost	$/yr	**$16,777**
Well 11 Pumping Cost for Backwash Recycle		
Backwash Recycle Flowrate	gpm	200
Recycle Pressure Head	ft	35
Backwash Frequency	hr	24
Efficiency	%	70%
Additional Horsepower	hp	2.53
Additional Power Required	kW	1.88
Backwash Duration/vessel	min	7
Backwash Flowrate/vessel	gpm	251
Backwash Total Volume	gallons	56297
Duration of Recycle	min	281
Additional Power Consumption	kWH/yr	2903
Additional Electricity Cost	$/yr	**$331.26**
SHC Feed (12.5%)		
Operation (gpm)	gpm	2,000
Additional SHC Dose Rate (mg/l)	mg/L	0.2
Daily Use (lb/day)	lb/day	4.8
Percent Purity		12.5%
Chemical (NaOCl) Spec. Gravity	-	1.21
SHC Unit Weight (lb/gal)	lb/gal	9.6
Daily Useage (gal)	gal	4.0
14-Day Storage	gal	56.0
Existing Storage	gal	400.0
Feed Rate (gph)	gph	0.17
Sodium Hypochlorite Cost	$/gal	$3.00
SHC Cost	$/yr	**$3,939**
FeCl2 Feed		
Operation (gpm)	gpm	2,000
Dose Rate as FeCl2	mg/L	1.13
Chemical Strength	%	14%
Chemical Specific Gravity	-	1.36
Active Specific Weight as Fe	lb/gal	1.59
Does as Fe	mg/L	0.50
Feed Rate	lb/day	12.0
Daily Usage	gal/day	7.5
28-Day Storage	gal	211.1
FeCl2 Cost	$/lb	$0.50
FeCl2 WPG	lb/gal	11.3424
FeCl2 Annual Cost	$/yr	**$14,046**

Item	Unit	Value
Annual Trucked Solids Charge		
Estimated Cost Hauling Cost	$	$500
Distance to Wastewater Treatment Plant	miles	7
Volume of Septic Pumper Truck Tank	gal	3,000
Backwash Duration/vessel	min	7
Backwash Flowrate/vessel	gpm	251
Backwash Total Volume	gallons	56297
Percent of settled Solids in Backwash	%	0.9%
Volume of Solids per Backwash	gal	507
Backwash Frequency	hr	24.0
Est. Annual backwash volume	gal	166,443
Pump Truck Trips/year	trips/yr	62.0
Disposal Fee	$	Incl.
Total Fee	$/yr	**$31,000.00**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	32
Disposal Cost on Yearly Basis	$/yr	**$5,630**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$4,331**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$57,281**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$17,108
Annual Chemical Cost	$17,984
Annual Solids Disposal Costs	$31,000
Annual Basis for Media Replacement Cost	$9,960
Annual Maintenance	$57,281
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$186,000**
Monthly O&M Cost	$15,500

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 19 Recycle Backwash (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$7,840,000**
Total O&M Cost	$/year	**$186,000**
	$/month	$16,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$10,160,000**

Annual Water Production =	946.08	MG
	2,903.61	AF
20-Year Water Production =	58,072.21	AF
Capital Cost =	$140	per AF
O&M Cost =	$30	per AF
Well 19 Treated Water Cost =	**$170**	**per AF**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost
Well 19 - Recycle Backwash (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work					
Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
RCF System					
Excavation	31	CY	$50	1.00	$1,527
Aggregate Base Fill	24	CY	$30	1.00	$709
Hauling	15	CY	$30	1.00	$436
Major Electrical					
RCF System					
Electrical and Instrumentation	1	LS	$224,000	1.00	$224,000
Chemical Feed Systems					
Electrical and Instrumentation	1	LS	$22,000	1.00	$22,000
Major Structural					
RCF System					
Reduction & Filter Vessels Foundation Slab	45	CY	$1,200	1.00	$54,300
Backwash Settling Tank Foundation Slab	46	CY	$1,200	1.00	$55,100
Chemical Feed Systems					
CMU Blockwall Chemical Storage Building	144	SF	$800	1.00	$115,200
Major Equipment					
RCF System					
Horiz. Reduction Vessel (8-ft Diameter & 18-ft Side Shell)	1	EA	$300,000	1.25	$375,000
Filtration Vessels (4-ft Diam. Vert. Vessels)	24	EA	$34,000	1.25	$1,020,000
Backwash Settling Tank (Welded Steel)	69,000	GAL	$5	1.25	$431,250
Backwash Recycle Pump Skid	1	EA	$45,000	1.25	$56,250
Chemical Feed Systems					
New SHC Feed Pump	1	EA	$1,000	3.00	$3,000
FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Upgrades					
Well Pump Replacement (250-HP)	1	EA	$150,000	1.25	$187,500
Major Piping and Valves					
RCF System					
12"-DIP Treatment Piping	95	LF	$510	1.60	$77,520
Valves & Fittings	6	LS	$2,500	1.60	$24,000
6"-DIP Backwash Recycle Piping	185	LF	$220	1.60	$65,120
Chemical Feed System					
3/8" Tubing with 2" Carrier Conduit	45	LF	$50	1.00	$2,250
Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work					**$82,672**
SubTotal, Major Electrical					**$246,000**
SubTotal, Major Structural					**$224,600**
SubTotal, Major Equipment					**$2,092,813**
Subtotal, Major Piping & Valves					**$200,890**
SUBTOTAL					**$2,847,000**
Design Contingency			50%		$1,423,500
Material Escalation Contingency			40%		$1,138,800
PROBABLE CONSTRUCTION CONTRACT COST					**$5,409,000**
Construction Contingency			10%		$540,000
Detailed Design					$450,000
Engineering Support During Construction and Start-up			2%		$108,180
Application Programming					$125,000
VSD Connection Fee					$0
Permitting (B&S, MEP, Fire Dept., VSD, DDW)					$36,000
TOTAL CAPITAL PROJECT COST					**$6,670,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 19 Recycle Backwash (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
Electricity Cost	$/kWh	$ 0.114
Days per Year Operating	days	329
Hours per Day Operation	hours	24
Hours per Year Operating	hours	7,884
Well 11 ADDITIONAL Pumping Cost from Treatment		
Raw Water Flowrate	gpm	2,000
Treated Water Flowrate	gpm	2,000
Combined Plant Flowrate	gpm	2,000
Increase in Head from Reduction Vessels, I	ft	11.6
Increase in Head from Filter Vessels	ft	23.1 10-psi
Efficiency	%	70%
Additional Horsepower	hp	25.0
Additional Power Required	kW	18.65
Additional Power Consumption	kWh/yr	147,037
Additional Electricity Cost	$/yr	**$16,777**
Well 11 Pumping Cost for Backwash Recycle		
Backwash Recycle Flowrate	gpm	200
Recycle Pressure Head	ft	35
Backwash Frequency	hr	24
Efficiency	%	70%
Additional Horsepower	hp	2.53
Additional Power Required	kW	1.88
Backwash Duration/vessel	min	7
Backwash Flowrate/vessel	gpm	251
Backwash Total Volume	gallons	42223
Duration of Recycle	min	211
Additional Power Consumption	kWH/yr	2177
Additional Electricity Cost	$/yr	**$248.45**
SHC Feed (12.5%)		
Operation (gpm)	gpm	2,000
Additional SHC Dose Rate (mg/l)	mg/L	0.2
Daily Use (lb/day)	lb/day	4.8
Percent Purity		12.5%
Chemical (NaOCl) Spec. Gravity	-	1.21
SHC Unit Weight (lb/gal)	lb/gal	9.6
Daily Useage (gal)	gal	4.0
14-Day Storage	gal	56.0
Existing Storage	gal	400.0
Feed Rate (gph)	gph	0.17
Sodium Hypochlorite Cost	$/gal	$3.00
SHC Cost	$/yr	**$3,939**
FeCl2 Feed		
Operation (gpm)	gpm	2,000
Dose Rate as FeCl2	mg/L	1.13
Chemical Strength	%	14%
Chemical Specific Gravity	-	1.36
Active Specific Weight as Fe	lb/gal	1.59
Does as Fe	mg/L	0.50
Feed Rate	lb/day	12.0
Daily Usage	gal/day	7.5
28-Day Storage	gal	211.1
FeCl2 Cost	$/lb	$0.50
FeCl2 WPG	lb/gal	11.3424
FeCl2 Annual Cost	$/yr	**$14,046**

Item	Unit	Value
Annual Trucked Solids Charge		
Estimated Cost Hauling Cost	$	$500
Distance to Wastewater Treatment Plant	miles	7
Volume of Septic Pumper Truck Tank	gal	3,000
Backwash Duration/vessel	min	7
Backwash Flowrate/vessel	gpm	251
Backwash Total Volume	gallons	42223
Percent of settled Solids in Backwash	%	1.05%
Volume of Solids per Backwash	gal	443
Backwash Frequency	hr	24.0
Est. Annual backwash volume	gal	145,638
Pump Truck Trips/year	trips/yr	62.0
Disposal Fee	$	Incl.
Total Fee	$/yr	**$31,000.00**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	24
Disposal Cost on Yearly Basis	$/yr	**$4,222**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$3,248**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$46,776**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$17,025
Annual Chemical Cost	$17,984
Annual Solids Disposal Costs	$31,000
Annual Basis for Media Replacement Cost	$7,470
Annual Maintenance	$46,776
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$173,000**
Monthly O&M Cost	$14,417

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 19 Recycle Backwash (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$6,670,000**
Total O&M Cost	$/year	**$173,000**
	$/month	$14,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$8,830,000**

Annual Water Production =	946.08	MG
	2,903.61	AF
20-Year Water Production =	58,072.21	AF
Capital Cost =	$110	per AF
O&M Cost =	$40	per AF
Well 19 Treated Water Cost =	**$150**	**per AF**

Project 25-013 **By** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study Well 20 Master Values **Check** A. Borgic

Date: 11/12/2025

Master Values

Item	Unit	Value	
Contingency	%	50%	
Discount Rate	%	5.0%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Construction Contingency	%	10%	
Installation Cost Factor for Equipment		Varies	
Electricity Cost	$/kWh	$ 0.114	Per electricity bills from 2024-2025
Days per Year Operating	days	183	Average annual utilization- assumed 50%
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	4,380	
Maintenance			
% of Major Elec./Equip. =	%	2.0%	
Operations Personnel			
Days per Year =	days	365	
Hourly Cost =	$/hr	$ 120	
Management and Regulatory Compliance Personnel			
Days per Year =	days	52	
Hourly Cost =	$/hr	$ 180	

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 20 - Discharge Direct to Sewer (5-gpm/sf) **Date:** 2/26/2026

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
	CMU Perimeter Wall	400	LF	$320	1.00	$128,000
RCF System						
	Excavation	68	CY	$50	1.00	$3,400
	Aggregate Base Fill	30	CY	$30	1.00	$902
	Hauling	55	CY	$30	1.00	$1,648
Major Electrical						
	Switchboard	1	LS	$115,000	1.00	$115,000
	Panelboard	1	LS	$300,000	1.00	$300,000
	Electrical Commodities (Conduit, Conductors, Lights)	1	LS	$120,000	1.00	$120,000
	Manual Transfer Switch	1	LS	$30,000	1.00	$30,000
	Instrumentation and Controls	1	LS	$300,000	1.00	$300,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	51	CY	$1,200	1.00	$60,800
Backwash System						
	Backwash EQ Tank Foundation Slab	27	CY	$1,200	1.00	$32,000
Building with Storage and Control Rooms						
	CMU Blockwall Chemical Storage Building	720	SF	$800	1.00	$576,000
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	32	EA	$34,000	1.25	$1,360,000
	Backwash Settling Tank (Welded Steel)	34,100	GAL	$5.00	1.25	$213,125
Chemical Feed Systems						
	SHC Storage Tank (500-gallons)	1	LS	$15,000	1.25	$18,750
	SHC Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump						
	Well Pump (250-HP)	1	EA	$250,000	1.25	$312,500
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	105	LF	$510	1.60	$85,680
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	35	LF	$220	1.60	$12,320
	4"-PVC Sanitary Sewer Piping	135	LF	$600	1.00	$81,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	60	LF	$50	1.00	$3,000
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$213,951**
SubTotal, Major Electrical						**$865,000**
SubTotal, Major Structural						**$668,800**
SubTotal, Major Equipment						**$2,317,938**
Subtotal, Major Piping & Valves						**$238,000**
SUBTOTAL						**$4,304,000**
Design Contingency				50%		$2,152,000
Material Escalation Contingency				40%		$1,721,600
PROBABLE CONSTRUCTION CONTRACT COST						**$8,178,000**
Construction Contingency				10%		$820,000
Detailed Design						$600,000
Engineering Support During Construction and Start-up				3%		$245,340
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$45,000
TOTAL CAPITAL PROJECT COST						**$10,020,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 20 Discharge Direct to Sewer (5-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	183	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	4,380	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,000	
Treated Water Flowrate	gpm	2,000	
Combined Plant Flowrate	gpm	2,000	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	25.0	
Additional Power Required	kW	18.65	
Additional Power Consumption	kWh/yr	81,687	
Additional Electricity Cost	$/yr	**$9,320**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,000	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	4.8	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.0	
14-Day Storage	gal	56.0	
Existing Storage	gal	0	
Feed Rate (gph)	gph	0.17	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$2,188**	
FeCl2 Feed			
Operation (gpm)	gpm	2,000	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	12.0	
Daily Usage	gal/day	7.5	
28-Day Storage	gal	211.1	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$7,803**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	7,525
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	1,373,381
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	7525
Additional Cost of Unrecycled Water Lost	$/yr	**$112.88**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	32
Disposal Cost on Yearly Basis	$/yr	**$5,630**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$4,331**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$63,659**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$9,320
Annual Chemical Cost	$9,991
Annual Sewer Fee and Water Loss	$113
Annual Basis for Media Replacement Cost	$9,960
Annual Maintenance	$63,659
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$146,000**
Monthly O&M Cost	$12,167

Project No.: 25-013
Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 20 - Discharge Direct to Sewer (5-gpm/sf)

By: R. MacLean
Check: A. Borgic
Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$10,020,000**
Total O&M Cost	$/year	**$146,000**
	$/month	$12,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$11,840,000**

Annual Water Production =	525.60	MG
	1,613.12	AF
20-Year Water Production =	32,262.34	AF
Capital Cost =	$310	per AF
O&M Cost =	$60	per AF
Well 20 Treated Water Cost =	**$370**	**per AF**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF Capital Cost **Check:** A. Borgic

Well 20- Discharge Direct to Sewer (7-gpm/sf) **Date:** 2/26/2026

Item		Quantity	Unit	Unit Cost	Installation Cost Factor	Total Cost
Site Work						
	Mobilization/Demobilization	1	LS	$80,000	1.00	$80,000
	CMU Perimeter Wall	400	LF	$320	1.00	$128,000
RCF System						
	Excavation	66	CY	$50	1.00	$3,300
	Aggregate Base Fill	28	CY	$30	1.00	$853
	Hauling	54	CY	$30	1.00	$1,622
Major Electrical						
	Switchboard	1	LS	$115,000	1.00	$115,000
	Panelboard	1	LS	$300,000	1.00	$300,000
	Electrical Commodities (Conduit, Conductors, Lights)	1	LS	$120,000	1.00	$120,000
	Manual Transfer Switch	1	LS	$30,000	1.00	$30,000
	Instrumentation and Controls	1	LS	$300,000	1.00	$300,000
Major Structural						
RCF System						
	Reduction & Filter Vessels Foundation Slab	51	CY	$1,200	1.00	$60,800
Backwash System						
	Backwash EQ Tank Foundation Slab	27	CY	$1,200	1.00	$32,000
Chemical Feed Systems						
	CMU Blockwall Chemical Storage Building	720	SF	$800	1.00	$576,000
Major Equipment						
RCF System						
	Horiz. Reduction Vessel (7,500-gal baffled tank)	1	EA	$300,000	1.25	$375,000
	Filtration Vessels (4-ft Diam. Vert. Vessels)	24	EA	$34,000	1.25	$1,020,000
	Backwash Settling Tank (Welded Steel)	34,100	GAL	$5.00	1.25	$213,125
Chemical Feed Systems						
	SHC Storage Tank (500-gallons)	1	LS	$15,000	1.25	$18,750
	SHC Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
	FeCl2 Storage Pallet (4X 55-gal drums) w/ Ramp	1	EA	$850	1.25	$1,063
	FeCl2 Feed Pumps & Skid (1 duty, 1 standby)	1	LS	$15,000	1.25	$18,750
Well Pump Installation						
	Well Pump (250-HP)	1	EA	$150,000	1.25	$187,500
Major Piping and Valves						
RCF System						
	12"-DIP Treatment Piping	105	LF	$510	1.60	$85,680
	12" Valves	6	EA	$2,500	1.60	$24,000
	6"-DIP Backwash Piping	35	LF	$220	1.60	$12,320
	4"-PVC Sanitary Sewer Piping	135	LF	$600	1.00	$81,000
Chemical Feed System						
	3/8" Tubing with 2" Carrier Conduit	60	LF	$50	1.00	$3,000
	Chemical Injection Quills/Static Mixer	2	LS	$10,000	1.60	$32,000
SubTotal, Site Work						**$213,776**
SubTotal, Major Electrical						**$865,000**
SubTotal, Major Structural						**$668,800**
SubTotal, Major Equipment						**$1,852,938**
Subtotal, Major Piping & Valves						**$238,000**
SUBTOTAL						**$3,839,000**
Design Contingency				50%		$1,919,500
Material Escalation Contingency				40%		$1,535,600
PROBABLE CONSTRUCTION CONTRACT COST						**$7,294,000**
Construction Contingency				10%		$730,000
Detailed Design						$450,000
Engineering Support During Construction and Start-up				2%		$145,880
Application Programming						$125,000
Sewer Connection Fee						$10,000
Permitting (B&S, Fire Dept., DDW)						$36,000
TOTAL CAPITAL PROJECT COST						**$8,790,000**

Project No.: 25-013 **By:** R. MacLean

Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF O&M Cost
Well 20 Discharge Direct to Sewer (7-gpm/sf) **Check:** A. Borgic

Date: 11/12/2025

Item	Unit	Value	
Discount Rate	%	5%	
Period of Analysis	years	20	
Present Worth Factor		12.462	
Electricity Cost	$/kWh	$ 0.114	
Days per Year Operating	days	183	
Hours per Day Operation	hours	24	
Hours per Year Operating	hours	4,380	
Well 11 ADDITIONAL Pumping Cost from Treatment			
Raw Water Flowrate	gpm	2,000	
Treated Water Flowrate	gpm	2,000	
Combined Plant Flowrate	gpm	2,000	
Increase in Head from Reduction Vessels, F	ft	11.6	5-psi
Increase in Head from Filter Vessels	ft	23.1	10-psi
Efficiency	%	70%	
Additional Horsepower	hp	25.0	
Additional Power Required	kW	18.65	
Additional Power Consumption	kWh/yr	81,687	
Additional Electricity Cost	$/yr	**$9,320**	
SHC Feed (12.5%)			
Operation (gpm)	gpm	2,000	
Additional SHC Dose Rate (mg/l)	mg/L	0.2	
Daily Use (lb/day)	lb/day	4.8	
Percent Purity		12.5%	
Chemical (NaOCl) Spec. Gravity	-	1.21	
SHC Unit Weight (lb/gal)	lb/gal	9.6	
Daily Useage (gal)	gal	4.0	
14-Day Storage	gal	56.0	
Existing Storage	gal	0	
Feed Rate (gph)	gph	0.17	
Sodium Hypochlorite Cost	$/gal	$3.00	
SHC Cost	$/yr	**$2,188**	
FeCl2 Feed			
Operation (gpm)	gpm	2,000	
Dose Rate as FeCl2	mg/L	1.13	
Chemical Strength	%	14%	
Chemical Specific Gravity	-	1.36	
Active Specific Weight as Fe	lb/gal	1.59	
Does as Fe	mg/L	0.50	
Feed Rate	lb/day	12.0	
Daily Usage	gal/day	7.5	
28-Day Storage	gal	211.1	
FeCl2 Cost	$/lb	$0.50	
FeCl2 WPG	lb/gal	11.3424	
FeCl2 Annual Cost	$/yr	**$7,803**	

Item	Unit	Value
Annual Sewer Fee (FY 2025/26)		
Fixed Rate (commercial low-strength)	$	$0
Volumetric Rate (commercial low-strength)	$/100 ft^3	$0.00
Backwash Flowrate/vessel	gpm	251
Backwash Duration/vessel	min	7
Disposal Volume per BW	ft^3	5,644
Backwash Frequency	hr	24.0
Est. Annual backwash flow	ft^3	1,030,036
Total Fee	$/yr	**$0**
Water Lost for Backwash		
CWA Water Cost	$/100 ft^3	$1.50
Annual Water Loss for Backwash	ft^3	5644
Additional Cost of Unrecycled Water Lost	$/yr	**$84.66**
RCF Media Replacement Costs		
Media Replacement Frequency	yr	10.0
Disposal Fee	$/ft^3	$40
Media Volume per Filter Vessel	ft^3	44
Number of Vessels	-	24
Disposal Cost on Yearly Basis	$/yr	**$4,222**
Media Cost per Vessel	$	$1,353
Media Cost on Yearly Basis	$/yr	**$3,248**
Maintenance		
% of Major Elec./Equip. =	%	2.0%
Annual Maintenance Cost =	$/yr	**$54,359**
Operations Personnel		
Days per Year =	days	365
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$120
Annual Oper. Personnel Cost =	$/yr	**$43,800**
Management and Regulatory Compliance Personnel		
Days per Year =	days	52
Person-hours/day =	pers.-hr/day	1
Hourly Cost =	$/hr	$180
Annual Mgmt/Reg. Compliance Cost =	$/yr	**$9,360**

O&M Cost Summary

Cost Parameter	Cost
Annual Additional Electricity Cost	$9,320
Annual Chemical Cost	$9,991
Annual Sewer Fee and Water Loss	$85
Annual Basis for Media Replacement Cost	$7,470
Annual Maintenance	$54,359
Annual Operations Personnel Cost	$43,800
Annual Mgmt. and Reg. Compliance	$9,360
Total O&M Cost	**$134,000**
Monthly O&M Cost	$11,167

Project No.: 25-013
Title: Coachella Water Authority Hexavalent Chromium Compliance Study - RCF NPW Well 20 - Discharge Direct to Sewer (7-gpm/sf)

By: R. MacLean
Check: A. Borgic
Date: 11/12/2025

20-Year Net Present Worth (NPW)

Parameter	Units	Value
Total Capital Project Cost	$	**$8,790,000**
Total O&M Cost	$/year	**$134,000**
	$/month	$11,000
20-Year NPW Parameters		
Discount Rate	%	5%
Period of Analysis	years	20
Present Worth Factor		12.462
20-Year NPW	$	**$10,460,000**

Annual Water Production =	525.60	MG
	1,613.12	AF
20-Year Water Production =	32,262.34	AF
Capital Cost =	$270	per AF
O&M Cost =	$50	per AF
Well 20 Treated Water Cost =	**$320**	**per AF**