PREPARED FOR

COACHELLA VALLEY WATER DISTRICT
COACHELLA WATER AUTHORITY
DESERT WATER AGENCY
INDIO WATER AUTHORITY

SGMA Alternative Groundwater Sustainability Plan Bridge Document for the Indio Subbasin

December 2016

Report

MWH now part of Stantec

SGMA Alternative Groundwater Sustainability Plan – Bridge Document for the Indio Subbasin

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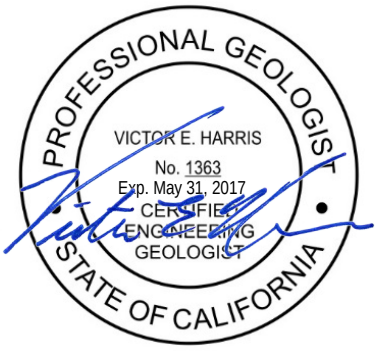
Prepared for:

Coachella Valley Water District
Coachella Water Authority
Desert Water Agency
Indio Water Authority



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Acronyms, Abbreviations, and Glossary

Acronym	Definition
AB	Assembly Bill
AF	Acre-Feet
AFY	Acre-Feet per Year
AOB	Area of Benefit
C2VSIM	California Central Valley Groundwater-Surface Water Simulation Model
CAP	Central Arizona Project
CASGEM	California Statewide Groundwater Elevation Monitoring Program
CCR	California Code of Regulations
CDPH	California Department of Public Health
CDWR	California Department of Water Resources
CEQA	California Environmental Quality Act
CIB	Capital Improvement Budget
CVAG	Coachella Valley Association of Governments
CVCC	Coachella Valley Conservation Commission
CVWD	Coachella Valley Water District
CWA	Coachella Water Authority
CWC	California Water Code
DAC	Disadvantaged Communities Program
EIR	Environmental Impact Report
ETo	Reference Evapotranspiration
ft	Feet
GIS	Geographic Information System
GPS	Global Positioning System
GRP	Groundwater Replenishment Program
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWMP	Groundwater Management Planning Act

Acronym	Definition
HCP	Habitat Conservation Plan
IID	Imperial Irrigation District
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
IWA	Indio Water Authority
IWFM	Integrated Water Flow Model
LC	Local Concern
LOS	Level of Service
MDMWC	Myoma Dunes Mutual Water Company
MOU	Memorandum of Understanding
MSWD	Mission Springs Water District
MWD	Metropolitan Water District of Southern California
MWH	MWH Americas, Inc.
PEIR	Program Environmental Impact Report
QSA	Quantification Settlement Agreement
RAC	Replenishment Assessment Charge
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SCAG	Southern California Association of Governments
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nutrient Management Plan
SNWA	Southern Nevada Water Authority
SS/TS	Source of Supply/Treatment Study
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TAG	Technical Advisory Group
TBD	To Be Determined
TDS	Total Dissolved Solids

Acronym	Definition
USDA	U.S. Department of Agriculture
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VSD	Valley Sanitary District
WMP	Water Management Plan
WRP	Water Reclamation Plant
WSA	Water Supply Assessment
WSV	Water Supply Verification

Executive Summary

The adoption of the Sustainable Groundwater Management Act (SGMA) in 2014 ushered in a new era of groundwater management in California. SGMA defines sustainable groundwater management as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results". SGMA requires the preparation of groundwater sustainability plans (GSPs) for all medium and high priority basins. The California Department of Water Resources (CDWR) developed emergency regulations that defined the content of GSPs. SGMA allows water agencies with existing groundwater management plans to submit those plans to CDWR for evaluation as alternatives to preparing a GSP. This Executive Summary is prepared in response to Section 354.4(a) of GSP regulations. Executive summaries are included in each of the reference documents that make up this alternative plan submittal.

ES.1 BACKGROUND

Decline in the Coachella Valley's groundwater table was first noted in the 1910s. Concerned that their artesian wells were drying, local residents and farmers formed the Coachella Valley Water District (CVWD) in 1918. CVWD took steps to secure water supplies from the Colorado River that led to the completion of the Coachella Branch of the All-American Canal in 1949. CVWD and Desert Water Agency (DWA) contracted with the State of California for water from the State Water Project (SWP) in the early 1960s with the first deliveries in 1973. At that time, CVWD and DWA implemented groundwater replenishment programs and collected replenishment assessment from groundwater producers. However, continued growth in the Valley resulted in groundwater level declines and overdraft.

Twenty years before the adoption of SGMA, CVWD began development of the initial Water Management Plan in 1994 after recognizing the need to sustainably manage the Coachella Valley Groundwater Basin. CVWD adopted the Coachella Valley Water Management Plan in 2002 (2002 WMP) to eliminate groundwater overdraft in the Basin. The 2002 WMP was updated in 2010 (2010 WMP Update) and adopted in 2012. This plan covers the Indio Subbasin of the Coachella Valley Groundwater Basin. CVWD, along with DWA and Mission Springs Water District also prepared the Mission Creek-Garnet Hill Water Management Plan (MCGH WMP) that covers the Mission Creek Subbasin and the Garnet Hill Subarea of the Indio Subbasin.

As of 2016, plan implementation is showing positive results with stabilizing water levels throughout much of the Valley. Continued implementation is expected to eliminate water level declines by about 2025.

ES.2 PURPOSE

The purpose of this Bridge Document is to demonstrate that the Coachella Valley Water Management Plan is functionally equivalent to the requirements for a GSP. This Bridge Document describes how the 2010 Coachella Valley Water Management Plan Update meets the requirements of SGMA. The document is organized according to the requirements of Articles 5 and 7 of CDWR's emergency regulations. Copies of the documents of record cited in this Bridge Document are included in the appendices.

ES.3 PLAN AREA

This Bridge Document specifically covers the Indio Subbasin, which is designated as Basin No. 7-12.01 in the California Department of Water Resources' (CDWR) Bulletin 118 (2003). The Indio Subbasin consists of four "subareas" – the Palm Springs, Garnet Hill, Thousand Palms, Thermal, and Oasis subareas. The Coachella Valley lies within the northwesterly portion of California's Colorado Desert, an extension of the Sonoran Desert. The San Bernardino, San Jacinto, and Santa Rosa Mountains provide an effective barrier against coastal storms, and greatly reduce the contribution of direct precipitation to replenish the Coachella Valley's groundwater, resulting in an arid climate.

The planning area includes the entirety of the Indio Subbasin as shown in Figure 2-1. In addition, the planning area includes land outside the Indio Subbasin that is or may in the future be dependent on groundwater pumped from the Subbasin. Section 2 of this Bridge Document presents the relevant SGMA requirements and describes how the plan complies with those requirements.

ES.4 BASIN SETTING

The subbasins of the Coachella Valley Groundwater Basin are the Mission Creek, Desert Hot Springs, San Gorgonio Pass, and Indio (Whitewater River) subbasins. The basin is surrounded by the San Bernardino Mountains on the north, the San Jacinto and Santa Rosa Mountains on the west, the Little San Bernardino Mountains on the east and the Salton Sea on the south. The boundaries between subbasins within the groundwater basin are generally defined by faults that serve as effective barriers to the lateral movement of groundwater.

During development of the 2002 WMP, a comprehensive assessment of the hydrogeologic conditions of the Indio Subbasin was conducted including preparation of a conceptual hydrogeologic model, development of historical water budget, development and calibration of a groundwater model, and analysis of future conditions both in the absence of water management and with implementation of programs described in the 2002 WMP. The 2010 WMP Update reviewed and updated the existing modeling based on recent observations and projected future water use patterns.

Section 3 of this Bridge Document presents the relevant SGMA requirements for basin and describes how the plan complies with those requirements.

ES.5 SUSTAINABLE MANAGEMENT CRITERIA

The established goal of the 2002 WMP and the 2010 WMP Update is to reliably meet current and future water demands in a cost effective and sustainable manner. The objectives of the 2010 WMP Update are to:

- Meet current and future water demands with a 10 percent supply buffer
- Eliminate long-term groundwater overdraft
- Manage and protect water quality
- Comply with state and federal laws and regulations
- Manage future costs
- Minimize adverse environmental impacts

Section 4 of this Bridge Document presents the relevant SGMA requirements for sustainable management criteria and describes how the plan complies with those requirements. Groundwater levels and water balance serve as the primary measurements to determine if the plan is being successfully implemented. Groundwater levels determined by modeling serve as both a measurable sustainability objective and interim objectives for assessing plan success. The water agencies evaluate water level trends for one and ten-year periods, allowing for operational flexibility, to identify the potential for undesirable results and the need for adaptive management and program implementation.

ES.6 MONITORING AND DATA MANAGEMENT

The primary objective of the monitoring and data management program is to evaluate the effectiveness of the water management programs and projects identified in the Plan. The existing monitoring activities include:

- Weather data – precipitation, temperature, and evapotranspiration
- Hydrologic data – streamflow
- Well logs – drillers logs of wells
- Groundwater production – pumping records for each well
- Water levels – groundwater elevations in wells
- Water quality – surface water and groundwater quality data
- Subsidence – ground surface elevation changes

Appendix C of the 2010 WMP Update describes the existing monitoring and reporting program. More than 300 wells are routinely monitored for water levels and quality. Section 5 of this Bridge Document presents the relevant SGMA requirements and describes how the plan complies with those requirements. The status of recommended monitoring improvements are also described in Section 5.

ES.7 PROJECTS AND MANAGEMENT ACTIONS

To achieve the sustainability goals described in Section 4 of this Bridge Document, the 2010 WMP Update identifies and implements the following water management elements (CVWD, 2012a):

- Water conservation measures
- Acquisition of additional water supplies
- Conjunctive use programs to maximize supply reliability
- Source substitution programs
- Groundwater recharge programs
- Water quality protection measures
- Other management activities

Section 6 of this Bridge Document presents the relevant SGMA requirements and describes how the plan complies with those requirements. Section 6 also describes the implementation status of the recommended programs and projects. Since the 2002 WMP was adopted, additional imported water supplies have been secured, new replenishment facilities have been constructed, more than 50 golf courses have been converted from groundwater to recycled or imported water, and extensive water conservation programs have been established.

Implementation of the recommended programs and projects is showing positive monitoring results that indicate the Indio Subbasin is largely in balance and water levels are stabilizing or increasing. Completion of programs such as the Mid-Valley Pipeline in-lieu replenishment program will allow the basin to achieve sustainable operations.

ES.8 ANNUAL REPORTS AND PERIODIC EVALUATIONS

Both CVWD and DWA have prepared annual engineering reports on the status of the groundwater basin since 1978 for the West Whitewater River area. CVWD has prepared annual engineering reports on the East Whitewater River since 2005. Section 7 of this Bridge Document presents the relevant SGMA requirements and describes how the plan and annual reports comply with those requirements. Although the existing reports address

almost all of the SGMA requirements, CVWD and DWA are evaluating how to modify their existing annual reports to comply with all SGMA reporting requirements. CVWD, DWA, CWA, and IWA are also evaluating whether to prepare individual annual reports or a consolidated annual report on basin conditions.

ES.9 CONCLUSIONS

Water management programs have been implemented in the Coachella Valley for many years. The 2002 WMP and the 2010 WMP Update developed comprehensive management plans for the Indio Subbasin. The original plan and the update were developed with the goal of reliably meeting current and future water demands in a cost effective and sustainable manner.

Based on the evaluation presented in this Bridge Document, these plans are functionally equivalent to the requirements of SGMA. Implementation of the plan to date is showing positive results in terms of both water balance and water levels. Continued implementation will ensure that the Indio Subbasin is operated sustainably consistent with the goals of SGMA.

Section 1
Introduction

The Sustainable Groundwater Management Act (SGMA) requires local agencies to develop and adopt groundwater sustainability plans that are tailored to the resources and needs of their communities with the goal of achieving long-term reliability. The SGMA allows local water agencies to submit an alternative plan to the department for evaluation and assessment of whether the alternative satisfies the objectives SGMA for the basin. The Coachella Valley has taken a proactive approach to manage its water resources in a sustainable manner, culminating in the development of the Coachella Valley Water Management Plan in 2002, the 2010 Coachella Valley Water Management Plan Update, and the Mission Creek-Garnet Hill Water Management Plan in 2013.

This section provides background information on the existing planning documents of the Coachella Valley Groundwater Basin (Basin) Indio Subbasin, the Sustainable Groundwater Management Act (SGMA) and requirements of "alternative plans." This Bridge Document specifically covers the Indio Subbasin, which is designated as Basin No. 7-12.01 in the California Department of Water Resources' (CDWR) Bulletin 118 (2003). The Indio Subbasin consists of four "subareas" – the Palm Springs, Garnet Hill, Thousand Palms, Thermal, and Oasis subareas. The Coachella Valley water agencies refer to the Garnet Hill Subarea as the Garnet Hill Subbasin based on United States Geological Survey (USGS) studies. The Garnet Hill Subarea of the Indio Subbasin was also evaluated in the 2013 Mission Creek-Garnet Hill Water Management Plan. Preparation of the 2013 plan was coordinated with the 2010 Coachella Valley Water Management Plan Update and used the same growth forecasts.

1.1 OBJECTIVE OF THE BRIDGE DOCUMENT

Under the SGMA, the Coachella Valley Water District (CVWD), Desert Water Agency (DWA), Indio Water Authority (IWA), Coachella Water Authority (CWA), Imperial County, and Mission Springs Water District (MSWD) have filed Notices of Election to form Groundwater Sustainability Agencies (GSAs) within their respective boundaries within the Indio Subbasin.

This SGMA bridge document will demonstrate that, for the Indio Subbasin, the Coachella Valley Water Management Plan (WMP) (CVWD, 2002; CVWD, 2012) is:

- Functionally equivalent to the elements of a Groundwater Sustainability Plan (GSP) required by Articles 5 and 7 of California Code of Regulations (CCR) Title 23, Division 2, Chapter 1.5, Subchapter 2; and
- Able to achieve the objectives of SGMA.

This Bridge Document is organized in sections that present the GSP plan contents described in Article 5 and Article 7 of CCR Title 23, Division 2, Chapter 1.5, Subchapter 2. The sections of this bridge document include tables that identify the location of the required GSP elements in the 2010 Coachella Valley Water Management Plan Update and other supporting planning documents. Each section of this document includes a brief summary of relevant information and provides relevant information to supplement information contained in the plan documents. Section headings of this Bridge Document also include reference to relevant sections of the GSP regulations.

1.2 EXISTING WATER MANAGEMENT PLANNING

Decline in the Coachella Valley's water table was first noted in the 1910s, when local residents and farmers, concerned that their artesian wells were drying, formed a public water district. The Coachella Valley County Water District, now CVWD, was established in 1918 under provisions of the County Water District Act (California Water Code [CWC] §30000-33901). The Coachella Valley's earliest groundwater replenishment efforts in the 1910s involved capturing fast-moving flood waters during storms and using that flow to replenish the Valley's western aquifer at Windy Point, northwest of Palm Springs. Importing of Colorado River water for farm irrigation began in 1948 following completion of the Coachella Canal. Groundwater replenishment expanded to include imported water by CVWD and DWA in 1973 through State Water Project (SWP) exchange agreements with Metropolitan Water District of Southern California (MWD). Following the change in water use trends from mainly agricultural to largely tourism, increased groundwater pumping for domestic use prompted the need to manage the Basin sustainably.

Twenty years before the adoption of SGMA, CVWD began development of the initial Water Management Plan in 1994 after recognizing the need to sustainably manage the Coachella Valley Groundwater Basin. CVWD adopted the Coachella Valley Water Management Plan in 2002 (2002 WMP) to eliminate groundwater overdraft in the Basin. The 2002 WMP was updated in 2010 in response to changes in the water planning environment such as increased growth projections and reduced SWP reliability. The 2010 Coachella Valley Water Management Plan Update (2010 WMP Update) written in compliance with AB 3030 and was adopted by the CVWD Board of Directors in January 2012, following completion of a supplemental program environmental impact report. This plan has a 35-year planning horizon and serves as a roadmap for water resources planning and development for the Coachella Valley.

The 2010 WMP Update focuses on a flexible management approach that allows increases or decreases in the magnitude and implementation rate of WMP elements in response to changes in supply availability, population projections, and water demands. The 2010 WMP Update uses a "building block approach" such that new supply increments and projects are developed as needed based on water demand and supply conditions, rather than in response to a pre-defined schedule. Consequently, periodic

review of water demands, supplies and implementation progress is an important element of the planning process. The 2014 Status Report was the first periodic review of the 2010 WMP Update and summarized implementation and included updated figures and tables.

In addition to the WMP, other planning documents used in the Coachella Valley include individual Urban Water Management Plans, Engineer's Reports on Water Supply and Replenishment Assessment, and the 2014 Coachella Valley Integrated Regional Water Management Plan.

In 2008, CVWD, DWA, IWA, CWA, Mission Springs Water District (MSWD), and Valley Sanitary District (VSD) formed the Coachella Valley Regional Water Management Group and have been engaging in collaborative groundwater management of the Basin.

1.3 GROUNDWATER MANAGEMENT PLANNING ACT

The Groundwater Management Planning Act (CWC Part 2.75, §10753), originally enacted as Assembly Bill (AB) 3030 (1992) and amended by Senate Bill (SB) 1938 (2002), provides the authority to prepare groundwater management plans. The intent of AB 3030 is to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions. SB 1938, signed into law in 2002, requires any public agency seeking State funds administered through CDWR for the construction of groundwater projects or groundwater quality projects to prepare and implement a groundwater management plan with certain specified components. Requirements include establishing basin management objectives, preparing a plan to involve other local agencies in a cooperative planning and public outreach effort, and adopting monitoring protocols that promote efficient and effective groundwater management. The requirements apply to both agencies that have already adopted groundwater management plans as well as agencies that do not overlie groundwater basins identified in Bulletin 118 and its updates. The Groundwater Management Planning Act (GWMP) was superseded in 2014 with the passage of the SGMA.

CVWD and DWA manage and replenish groundwater in the Indio Subbasin under legal authority established in the CWC (CVWD – CWC §31630-31639; DWA – Chapter 100 of CWC Appendix). The 2002 WMP and the 2010 WMP Update were prepared independently from the Groundwater Management Act. However, they cover many of the same topics that are required for a groundwater management plan.

1.4 SUSTAINABLE GROUNDWATER MANAGEMENT ACT

On September 16, 2014, the Governor signed into law a three-bill legislative package Assembly Bill (AB) 1739 (Dickinson), Senate Bill (SB) 1168 (Pavley), and SB 1319 (Pavley). Several additional bills signed by the Governor of California in 2015 amend the 2014 SGMA-related CWC: these include SB 13 (Pavley), AB 939 (Salas), SB 226

(Pavley), and AB 617 (Perea). These laws are collectively known as the SGMA. SGMA defines sustainable groundwater management as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results". "Undesirable results" are defined in SGMA and are summarized here as any of the following effects caused by groundwater conditions:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply
- Significant and unreasonable reduction of groundwater storage
- Significant and unreasonable seawater intrusion
- Significant and unreasonable degraded water quality
- Significant and unreasonable land subsidence
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

SGMA identifies the following:

- Requires critically-overdrafted high and medium priority basins to be managed under a GSP by January 31, 2020
- Requires all other groundwater basins designated as high or medium priority basins to be managed under a GSP by January 31, 2022
- Adjudicated basins are not required to develop GSPs, but they are required to submit annual reports to the CDWR beginning April 1, 2016
- Local agencies have the option of submitting an Alternative plan by January 1, 2017
- Gives GSAs the financial and enforcement authority to carry out effective local sustainable groundwater management

SGMA also expands the role of CDWR to support local implementation of sustainable groundwater management, and allows for intervention by the State Water Resources Control Board (SWRCB) at discrete points throughout the process if local agencies are not willing or able to manage groundwater sustainably.

SGMA requires the formation of GSAs to manage groundwater at the local level. GSAs must be formed by June 30, 2017 for the State's high- and medium-priority groundwater basins and subbasins. A GSA is responsible for developing and implementing a GSP to meet the sustainability goal of the basin to ensure that it is operated within its sustainable yield, without causing undesirable results. Local agencies are expected to collaborate and coordinate their GSA formations on a basin-wide scale to sustainably manage

groundwater at a local level. A local agency that decides to become a GSA will be required to perform the duties, and exercise the necessary powers, of a GSA when developing, implementing, and enforcing a basin's groundwater sustainability program (CDWR, 2016b).

1.5 GSA GOVERNANCE

Presently, six separate entities have filed Notices of Election to become GSAs with CDWR (**Appendix B**) to manage the Indio Subbasin of the Coachella Valley Groundwater Basin within their respective service areas:

- Coachella Valley Water District (CVWD)
- Coachella Water Authority (CWA)
- Desert Water Agency (DWA)
- Indio Water Authority (IWA)
- Mission Springs Water District (MSWD)
- County of Imperial (Imperial)

DWA is listed as an Exclusive Agency in Section 10723(c)(1) of SGMA within their boundary over the Indio Subbasin. DWA also filed a Notice of Election to become a GSA and its GSA status is “Exclusive.” CWA and IWA filed Notices of Election to become GSA’s within their boundaries in the Indio Subbasin and their GSA status is “Exclusive”. CVWD filed a Notice of Election to be a GSA within its boundary over the Indio Subbasin and its GSA status is “Overlap” due to a 2.5 square mile overlap with Imperial County’s GSA filing as described below. MSWD filed a Notice of Election to be a GSA over a 3 square mile area, of which about 2.7 square miles lies in the Indio Subbasin and their GSA status is “Overlap.” DWA and MSWD are meeting to resolve their issues.

A small portion of southwestern Indio Subbasin overlies the counties of San Diego and Imperial. All of this land falls within CVWD’s boundary. The San Diego County land is entirely within Anza Borrego Desert State Park and is undeveloped. San Diego County confirmed that it does not intend to file a Notice of Election over its portion of the Indio Subbasin.

Imperial County filed a notice of election to be a GSA over all groundwater basins within the county. The Imperial County filing overlaps with a very small portion of CVWD’s filing as a GSA over the Indio Subbasin. CVWD is currently working cooperatively with Imperial County to resolve this overlap. A portion of this land is Torres-Martinez Desert Cahuilla Indians tribal land with the remaining portion within Imperial County jurisdiction. CVWD and Imperial County are working to develop a MOU to resolve the GSA overlap.

1.6 IMPLEMENTATION AUTHORITY (§354.6d)

Section 354.6(c) of the GSP regulations requests information on the legal authority of the submitting agencies to implement the plan. The legal authority to implement the plan rests in the individual agencies who implement relevant programs within their respective service areas. The following paragraphs describe the legal authorities of the agencies that have filed to be GSAs to implement the provisions of SGMA and the 2010 WMP Update.

Coachella Water Authority is a joint powers authority formed as a component of the City of Coachella and the Housing Authority of the City of Coachella and has statutory authority over water supply within its service area. The City of Coachella is a general law city organized under §34000-45345 of the California Government Code. In 2009, the City of Coachella and CVWD executed a Memorandum of Understanding (MOU) whereby the City and CVWD agreed to work cooperatively to implement water conservation, source substitution, supply acquisition, and other programs related to the WMP. A copy of this MOU is included in Appendix C.

Coachella Valley Water District is a public agency of the State of California organized and operating under the County Water District Law, CWC §30000 *et seq.*, and the Coachella Valley Water District Merger Law, CWC §33100 *et seq.* Coachella Valley Water District has groundwater management powers under its enabling legislation and other applicable law.

Desert Water Agency is an independent special district created by a special act of the State Legislature contained in Chapter 100 of the CWC Appendix. DWA is empowered to replenish local groundwater supplies and collect assessments necessary to support a groundwater replenishment program as provided for in the Desert Water Agency Law, and has statutory authority over water supply. Under its act, DWA also has the power and authority to acquire, control, distribute, store, spread, sink, treat, purify, reclaim, recapture, and salvage any water, including sewage and storm waters, and to prevent, control or abate the pollution of water in any basin overlain in whole or in part by DWA.

CVWD and DWA have previously-existing legal authority to manage and replenish groundwater, and collect replenishment assessment fees under their existing legislations. CVWD and DWA executed water management agreements in 1976 and 1992 to replenish the western portion of the Indio (Whitewater River) subbasin with SWP Exchange water and share the associated costs. These agreements were updated and replaced in 2014. DWA adopted the 2010 WMP Update as a responsible party under the California Environmental Quality Act (CEQA). DWA's replenishment area overlaps the MSWD service area as shown in Figure 2-2 (agency boundaries) of this Bridge Document.

Indio Water Authority is a joint powers authority formed as a component of the City of Indio and Housing Authority of the City of Indio and has statutory authority over water

supply within its service area. The City of Indio is a general law city organized under §34000-45345 of the California Government Code. The City of Indio and IWA (collectively "Indio"), and CVWD executed a settlement agreement in June 2009 that addressed: (1) participation and cooperation of Indio and CVWD to develop an Integrated Regional Water Management Plan (lRWMP); (2) the Lower Whitewater River Area replenishment program; (3) cooperation between the City and CVWD regarding projects by either agency; (4) payment of the Replenishment Assessment Charge ("RAC") and dismissal of the litigation; (5) sewer services; and (6) mitigation of impacts on water supply. This agreement was subsequently amended in September 2009 and in February 2012 to extend the timing. The terms of the Indio-CVWD settlement agreement provide a mechanism for mutual cooperation on the implementation of programs to manage the Lower Whitewater River Area. A copy of this settlement agreement is included in Appendix C.

Mission Springs Water District was formed in 1953 as the Desert Hot Springs County Water District under the County Water District Law (California Water Code §30000 *et seq.*). MSWD has groundwater management powers under its enabling legislation and other applicable law, and statutory authority over retail municipal water supply and wastewater management within its service area.

The County of Imperial is a political subdivision of the State of California organized under §23000-33205 of the California Government Code. The County adopted two ordinances that define groundwater management requirements in Title 9 – Land Use Code, and include:

- Division 21 – Water Well Regulations
- Division 22 – Groundwater Management

The Imperial County ordinances provide the foundation for managing and protecting groundwater within the County.

1.7 SGMA ALTERNATIVE PLANS

SGMA recognizes the efforts many areas such as the Coachella Valley have made in developing and implementing groundwater management by allowing existing groundwater management plans to be submitted as an alternative to preparing a GSP. CWC §10733.6 describes three, voluntary, alternative paths to preparing and submitting a SGMA GSP as defined in CCR. More specifically, sections relevant to management of the Coachella Valley Groundwater Basin and CVWD and other parties to GSP's, and stakeholders, states – per the CCR, Title 23. Waters, Division 2. Department Of Water Resources, Chapter 1.5. Groundwater Management, Subchapter 2. Groundwater Sustainability Plans, Article 9. Alternatives, Section 358.2 Alternatives to Groundwater Sustainability Plans (CDWR, 2016a) – that:

(a) The entity that submits an Alternative shall demonstrate that the Alternative applies to the entire basin and satisfies the requirements of Water Code Section 10733.6.

(b) An Alternative shall be submitted to the Department by January 1, 2017, and every five years thereafter. A local agency or party directed by a court that submits an Alternative based on an adjudication action described in Water Code Section 10737.4 may submit the adjudication action to the Department for evaluation after January 1, 2017.

(c) An Alternative submitted to the Department shall include the following information:

(1) An Alternative submitted pursuant to Water Code Section 10733.6(b)(1) shall include a copy of the groundwater management plan.

(d) The entity submitting an Alternative shall explain how the elements of the Alternative are functionally equivalent to the elements of a Plan required by Articles 5 and 7 of this Subchapter and are sufficient to demonstrate the ability of the Alternative to achieve the objectives of the Act.

The documents of record utilized in this SGMA Bridge Document are included as **Appendix A** and consist of the following:

- Coachella Valley Water Management Plan (CVWD, 2002a)
- Program Environmental Impact Report Coachella Valley Water Management Plan and State Water Project Entitlement Transfer (CVWD, 2002b)
- Coachella Valley Water Management Plan 2010 Update (CVWD, 2012a)
- Subsequent Program Environmental Impact Report for the Coachella Valley Water Management Plan 2010 Update (CVWD, 2012b)
- 2014 Status Report on the 2010 Coachella Valley Water Management Plan Update (CVWD and MWH, 2014)
- Engineer's Report on Water Supply and Replenishment Assessment (CVWD, 2016a)
- Engineer's Report Groundwater Replenishment and Assessment Program for the Whitewater River, Mission Creek, and Garnet Hill Subbasins (DWA, 2016)

The original planning document is the 2002 CVWMP. This plan was updated in 2010 and adopted in 2012. The environmental documents provide important information on the Coachella Valley environment, the impacts of the original Plan and the Update, and mitigation measures. The 2014 Status Report is a periodic review of the planning assumptions and implementation status for the 2010 WMP Update. The 2016 Engineer's

Report is an annual report on water supply and replenishment assessment prepared under authority of CWC §31631. These documents provide the basis for compliance with the requirements of SGMA. The explanation of how WMP plan components are functionally equivalent to a GSP is provided throughout this document. The 2002 WMP and the 2010 WMP Update relied on a number of technical references that are listed in the References of each document. Key references are cited in this Bridge Document with internet link citations.

Table 1-1 of the 2010 WMP Update (CVWD, 2012a) lists key components of the WMP, documents which of those components are consistent with requirements under CA Assembly Bill No. 3030 (AB 3030; 1992 Groundwater Management Act Chapter 947, Costa) and Senate Bill No. 1938 (SB 1938; 2002 Groundwater management Chapter 603, Machado), and provides a cross-reference to the applicable section or sections of the WMP.

The goals, intent, and ongoing implementation of the 2010 WMP Update and its intention to eliminate long term overdraft are both consistent and functionally equivalent to the intent and goals of SGMA.

In addition to the 2002 WMP and the 2010 WMP Update, water agencies in the Valley have participated in a number of other planning efforts including the preparation of an Integrated Regional Water Management Plan (CVRWMG, 2014) and a Salt and Nutrient Management Plan (CVWD, DWA, and IWA; 2014).

1.8 AGENCY INFORMATION

This section summarizes information about the four water agencies that are submitting this alternative plan.

1.8.1 Agency Names, Mailing Addresses, and Organization and Management Structure

Section 354.6(a) and (b) of the GSP regulations requests the names and mailing addresses of the water agencies submitting this Bridge Document along with their governing bodies and general managers who have management authority for implementation of the Plan are listed in **Table 1-1**.

Table 1-1
Agency Information

Agency	Governing Body	General Manager
Coachella Valley Water District 75515 Hovley Lane East Palm Desert, CA 92211	Five member elected board of directors	Jim Barrett, PE
Desert Water Agency 1200 S Gene Autry Trail Palm Springs, California 92264	Five member elected board of directors	Mark Krause, PE
City of Indio Water Authority 83-101 Avenue 45 Indio, CA 92201	Five member governing boarding consisting of City Council members	Scott Rogers, PE
City of Coachella Water Authority 53462 Enterprise Way Coachella, California 92236	Five member governing boarding consisting of City Council members	Brian Macy, PE

1.8.2 Plan Manager

Section 354.6(c) of the GSP regulations requests the name and contact information, including the phone number, mailing address and electronic mail address, of the plan manager.

Patti Reyes, PE
Manager of Planning and Special Programs
Coachella Valley Water District
75515 Hovley Lane East
Palm Desert, CA 92211
(760) 398-2661 x2270
preyes@cvwd.org

1.8.3 Implementation Costs

Section 354.6(e) of the GSP regulations requests an estimate of the cost of implementing the Plan and a general description of how the Agency plans to meet those costs. Section 8.4 of the 2010 WMP Update describes the implementation costs and Section 8.5 of the 2010 WMP Update describes the potential financing options.

Section 2
Description of Plan Area

Section 354.8 of the Groundwater Sustainability Plans (23CCR354.8) requires a written description of the plan area accompanied by applicable maps. The 2002 WMP and the 2010 WMP Update contained these descriptions and many of the required maps. In addition, the 2013 Mission Creek – Garnet Hill WMP also addresses the Garnet Hill Subarea of the Indio Subbasin. The plans were prepared before the adoption of SGMA and its related regulations; therefore, some requirements of GSP preparation were not specifically included in the original documents. This section provides a brief overview of the Coachella Valley regional setting, plan area, and its water agencies. Included in this section are supplemental maps that are now required for GSPs and a table documenting the functional equivalence of the plan to SGMA requirements.

2.1 PLAN COMPLIANCE WITH SGMA REQUIREMENTS

Table 2-1 provides a detailed description of the relevant SGMA regulation sections and how the WMP complies with SGMA.

Table 2-1
WMP Compliance with 23CCR354.8 – 23CCR354.10

Regulation Section	Regulation	WMP Compliance
354.8	Description of Plan Area	See below
354.8a	Mapping	See below
354.8a1	The area covered by the Plan, delineating areas managed by the Agency as an exclusive Agency and any areas for which the Agency is not an exclusive Agency, and the name and location of any adjacent basins.	The planning area is based on the Indio Subbasin and the areas served by water from the Subbasin. Figure 1-1 of the 2010 WMP Update presents a map of the planning area.
354.8a2	Adjudicated areas, other Agencies within the basin, and areas covered by an Alternative.	The Indio Subbasin is not adjudicated. Figure 1-2 of the 2010 WMP Update presents a map showing the groundwater basin boundaries and the service areas of major water agencies and the city boundaries in the planning

Regulation Section	Regulation	WMP Compliance
		area. Figure 2-2 of this Bridge Document presents an update version of this figure.
354.8a3	Jurisdictional boundaries of federal or state land (including the identity of the agency with jurisdiction over that land), tribal land, cities, counties, agencies with water management responsibilities, and areas covered by relevant general plans.	Figure 8-1 of the 2002 Program EIR and Figures 8-2 and 8-3 of the 2012 Subsequent Program Environmental Impact Report (SPEIR) show the location of Tribal lands in the Subbasin. **Figure 2-3** of this Bridge Document presents an updated map showing federal, state, and tribal land in the planning area. Figure 1-2 of the 2010 WMP Update shows the coverage area of relevant general plans of the cities and the counties.
354.8a4	Existing land use designations and the identification of water use sector and water source type.	Land use designations were evaluated and used to determine future water demands, however mapping was not created for the WMP. **Figure 2-4** presents the existing land use in the Valley based on 2005 mapping. The effects of land use changes is generally discussed in Section 3.1.2 of the 2010 WMP Update and Section 8.2 of the SPEIR. See text for a discussion of water use sectors and water source types.
354.8a5	The density of wells per square mile, by dasymetric or similar mapping techniques, showing the general distribution of agricultural, industrial, and domestic water supply wells in the basin, including de minimis extractors, and the location and extent of communities dependent upon groundwater, utilizing data provided by the Department, as specified in	**Figure 2-5** of this Bridge Document presents a map showing the number of wells per public land survey section. This figure includes all wells regardless of type and operational status. All urban communities in the Valley are dependent on groundwater. Agricultural and golf users use groundwater, imported Colorado River, or recycled water depending on their location.

Regulation Section	Regulation	WMP Compliance
	Section 353.2, or the best available information.	
354.8b	A written description of the Plan area, including a summary of the jurisdictional areas and other features depicted on the map.	A written description of the Plan area is includes in Section 1.2 of the 2010 WMP Update.
354.8c	Identification of existing water resource monitoring and management programs, and description of any such programs the Agency plans to incorporate in its monitoring network or in development of its Plan. The Agency may coordinate with existing water resource monitoring and management programs to incorporate and adopt that program as part of the Plan.	Appendix C of the 2010 WMP Update describes the existing and proposed monitoring programs in the planning area.
354.8d	A description of how existing water resource monitoring or management programs may limit operational flexibility in the basin, and how the Plan has been developed to adapt to those limits.	Section 6.1 of the 2010 WMP Update describes the need for operational and planning flexibility to adapt to unforeseen future conditions. The 2010 WMP Update uses a building block approach where management elements are implemented in response to future demands, water supplies, and the need to operate the basin sustainably as described in Section 6 and 8 of the 2010 WMP Update.
354.8e	A description of conjunctive use programs in the basin.	A description of the conjunctive use programs in the planning area are described in Section 6.4.10 of the 2010 WMP Update.
354.8f	A plain language description of the land use elements or topic categories of applicable general plans that includes the following:	See below

Regulation Section	Regulation	WMP Compliance
354.8f1	A summary of general plans and other land use plans governing the basin.	A general discussion of anticipated growth and land use changes was presented in Section 3.1 of the 2010 WMP Update. A summary of general plans and other land use plans affecting the basin is described in Section 2.3 of this document.
354.8f2	A general description of how implementation of existing land use plans may change water demands within the basin or affect the ability of the Agency to achieve sustainable groundwater management over the planning and implementation horizon, and how the Plan addresses those potential effects.	Section 3.1 of the 2010 WMP Update describes a number of factors that affect water demands in the planning area. Growth forecasts have been revised downward since plan adoption based on updated regional growth forecasts.
354.8f3	A general description of how implementation of the Plan may affect the water supply assumptions of relevant land use plans over the planning and implementation horizon.	An assessment of the impacts of Plan implementation is addressed in Section 8.2.3 of the 2012 SPEIR.
354.8f4	A summary of the process for permitting new or replacement wells in the basin, including adopted standards in local well ordinances, zoning codes, and policies contained in adopted land use plans.	Sections 6.8.1 and 8.2.2 of the 2010 WMP Update include general descriptions and recommendations regarding well management including construction, destruction, and abandonment; artesian well management, and well capping. Well construction/modification is governed by Riverside County Ordinance 682.3.
354.8f5	To the extent known, the Agency may include information regarding the implementation of land use plans outside the basin that could affect the ability of the Agency to achieve sustainable groundwater management.	Section 3.1.4 of the 2010 WMP Update includes a description of the effects of development outside the Indio Subbasin that would depend on groundwater or other water sources.

Regulation Section	Regulation	WMP Compliance
354.8g	A description of any of the additional Plan elements included in Water Code Section 10727.4 that the Agency determines to be appropriate.	Section 7 of the 2002 WMP and Section 8 of the 2010 WMP Update address groundwater management issues, strategies, and recommended programs regarding the elements listed in Water Code Section 10727.4.
354.10	Notice and Communication. Each Plan shall include a summary of information relating to notification and communication by the Agency with other agencies and interested parties	See below
354.10a	A description of the beneficial uses and users of groundwater in the basin, including the land uses and property interests potentially affected by the use of groundwater in the basin, the types of parties representing those interests, and the nature of consultation with those parties.	Discussed in Section 3 of this bridge document.
354.10b	A list of public meetings at which the Plan was discussed or considered by the Agency.	Section 2.7 of this bridge document summarizes public meetings conducted in the development of the 2010 WMP Update and SPEIR along with meetings held in the development of this bridge document.
354.10c	Comments regarding the Plan received by the Agency and a summary of any responses by the Agency.	The Final SPEIR, Section 13, addresses the comments received and responses during the development of the 2010 WMP Update and SPEIR.
354.10d	A communication section of the Plan that includes the following:	See below
354.10d1	An explanation of the Agency's decision-making process.	CVWD, CWA, DWA, and IWA have executed an MOU and meet regularly to discuss groundwater management issues. This MOU

Regulation Section	Regulation	WMP Compliance
		treats each GSA as a separate entity within its boundaries. Each agency has exclusive responsibility for implementation of specific programs and projects subject to approval by their respective governing bodies.
354.10d2	Identification of opportunities for public engagement and a discussion of how public input and response will be used.	Section 6.8.5 and Section 8.2.3 of the 2010 WMP Update describe the stakeholder process with regard to management strategies and plan implementation, respectively, and make recommendations for continued participation of stakeholder groups in ongoing management.
354.10d3	A description of how the Agency encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin.	The 2010 WMP Update incorporated a comprehensive stakeholder involvement process during the development of the plan. Beneficial users of the groundwater basin include a diverse group of stakeholders.
354.10d4	The method the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.	The water agencies inform the public about the progress implementing the plan through news releases, annual reports, engineer's reports, and special reports to the respective boards of directors.

2.2 PLANNING AREA OVERVIEW (§354.8a, 354.8b)

Section 2 of the 2002 WMP and Section 1.3 of the 2010 WMP Update presented detailed descriptions of the planning area. The following is a summary of information contained in these documents.

The planning area includes the entirety of the Indio Subbasin. In addition, the planning area includes land outside the Indio Subbasin that is or may in the future be dependent on groundwater pumped from the Subbasin. These additional developed or developable

lands include portions of the surrounding foothills of the San Jacinto and Santa Rosa Mountains, the southern portion of the Desert Hot Springs Subbasin, portions of the Mecca Hills, and lands on east and west shores of the Salton Sea.

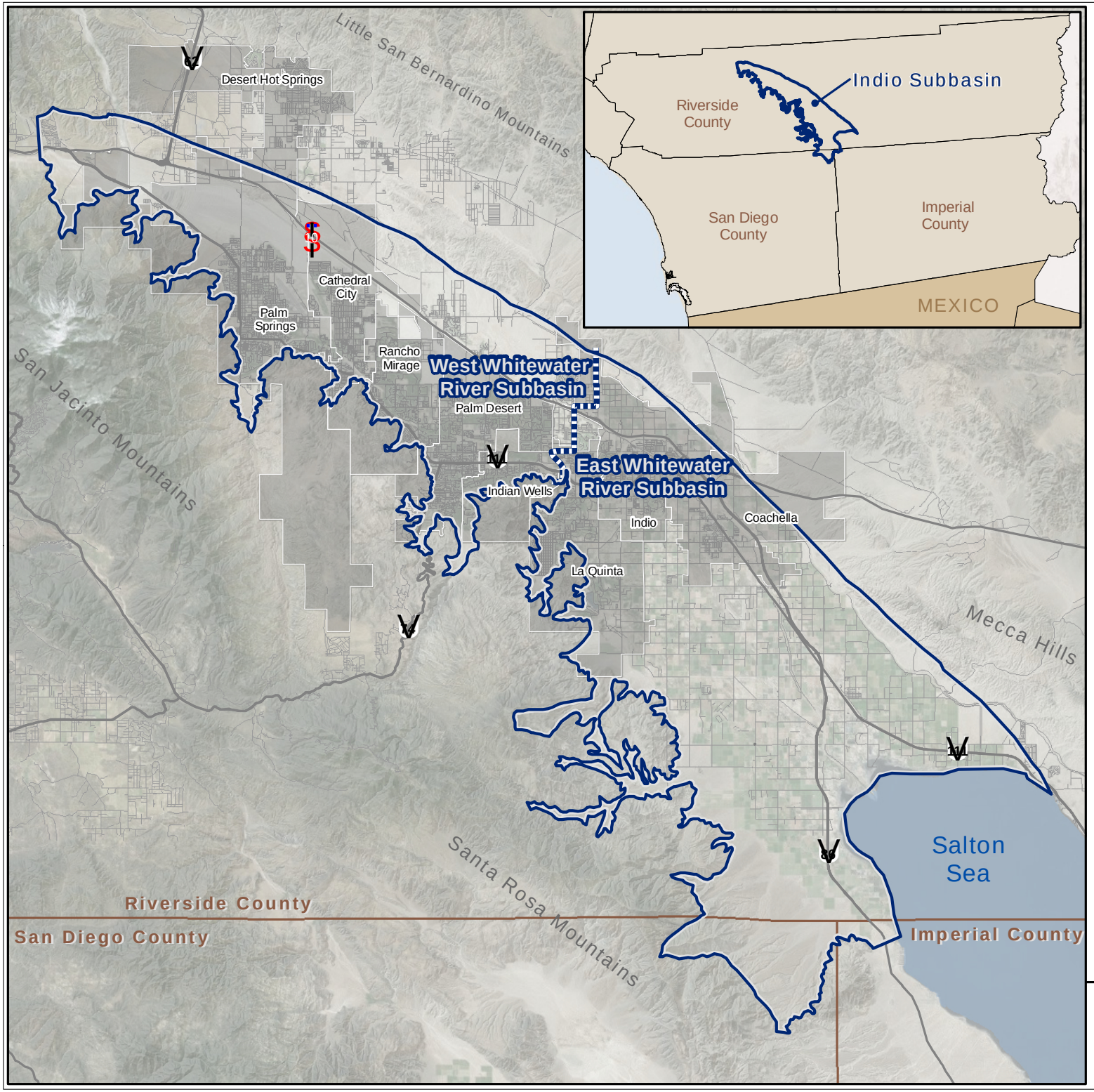
The planning area is a desert valley located in the central portion of Riverside County. It extends approximately 45 miles southeast from the San Bernardino Mountains to the northern shore of the Salton Sea. The Coachella Valley is bordered on the north by Mount San Gorgonio in the San Bernardino Mountains, on the west by the San Jacinto and Santa Rosa Mountains, on the east by the Little San Bernardino Mountains, and on the south by the Salton Sea.

The Coachella Valley lies within the northwesterly portion of California's Colorado Desert, an extension of the Sonoran Desert. The San Bernardino, San Jacinto, and Santa Rosa Mountains provide an effective barrier against coastal storms, and greatly reduce the contribution of direct precipitation to replenish the Coachella Valley's groundwater, resulting in an arid climate. The bulk of natural groundwater replenishment comes from runoff from the adjacent mountains.

Climate in the Coachella Valley is characterized by low humidity, high summer temperatures, and mild dry winters. Average annual precipitation in the Coachella Valley varies from 4 inches on the Valley floor to more than 30 inches in the surrounding mountains (CDWR, 1964). Most of the precipitation occurs during December through February (except for summer thundershowers). Mid-summer temperatures commonly exceed 100 degrees Fahrenheit (°F), frequently reach 110°F, and occasionally exceed 120°F. The average winter temperature is approximately 60°F (CVWD, 2016b).

For purposes of water management, the Indio Subbasin is divided into the West and East Whitewater River management areas. The West Whitewater River management area includes CVWD's West Whitewater River Area of Benefit (AOB) for replenishment assessment, and DWA's West Whitewater River and Garnet Hill AOBs. Geographically, CVWD's East Whitewater River AOB is southeast of an irregular line generally extending from Washington Street and Point Happy northeast to the Indio Hills near Jefferson Street, and the West Valley is northwest of this line, shown on **Figure 2-1**.

The West Whitewater River Subbasin includes the cities of Palm Springs, Cathedral City, Rancho Mirage, Indian Wells, and Palm Desert, portion of the cities of Desert Hot Springs and Indio, and the unincorporated communities of Sun City and Thousand Palms. The West Whitewater River Subbasin has a predominately resort/recreation-based economy. Water demand in the West Valley is supplied by several sources: groundwater, surface water from local streams, and recycled water. The East Whitewater River Subbasin includes the cities of Coachella, Indio, and La Quinta, and the unincorporated communities of Bermuda Dunes, Mecca, Oasis, Thermal, and Vista Santa Rosa. Historically, the East Whitewater River Subbasin has had an agricultural-based economy (CVWD, 2012a).



Regional Map of the Indio Subbasin

- Area of Benefit Boundary
- Highway
- Indio Subbasin
- County Boundary
- City
- Waterbody

N

0 2.5 5 10 Miles

Source: DWR, CVWD, Caltrans, CalAtlas

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Figure 2-1

The five largest water agencies that have historically managed the Basin include CVWD, DWA, IWA, CWA, and MSWD. The service boundaries of these agencies is shown on **Figure 2-2**.

The large tracts of land in the Coachella Valley are owned and managed by the federal and state governments. A map showing state and federal lands was not required for the WMP and WMP Update; but is presented on **Figure 2-3**. In addition, the federal government holds a large amount of land in trust for five Native American tribes: Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Cabazon Band of Mission Indians, Torres Martinez Desert Cahuilla Indians, and Twenty Palms Band of Mission Indians. Tribal lands in the Subbasin were depicted on Figure 8-1 of the 2002 Program EIR and Figures 8-2 and 8-3 of the 2012 SPEIR as well as on **Figure 2-3**.

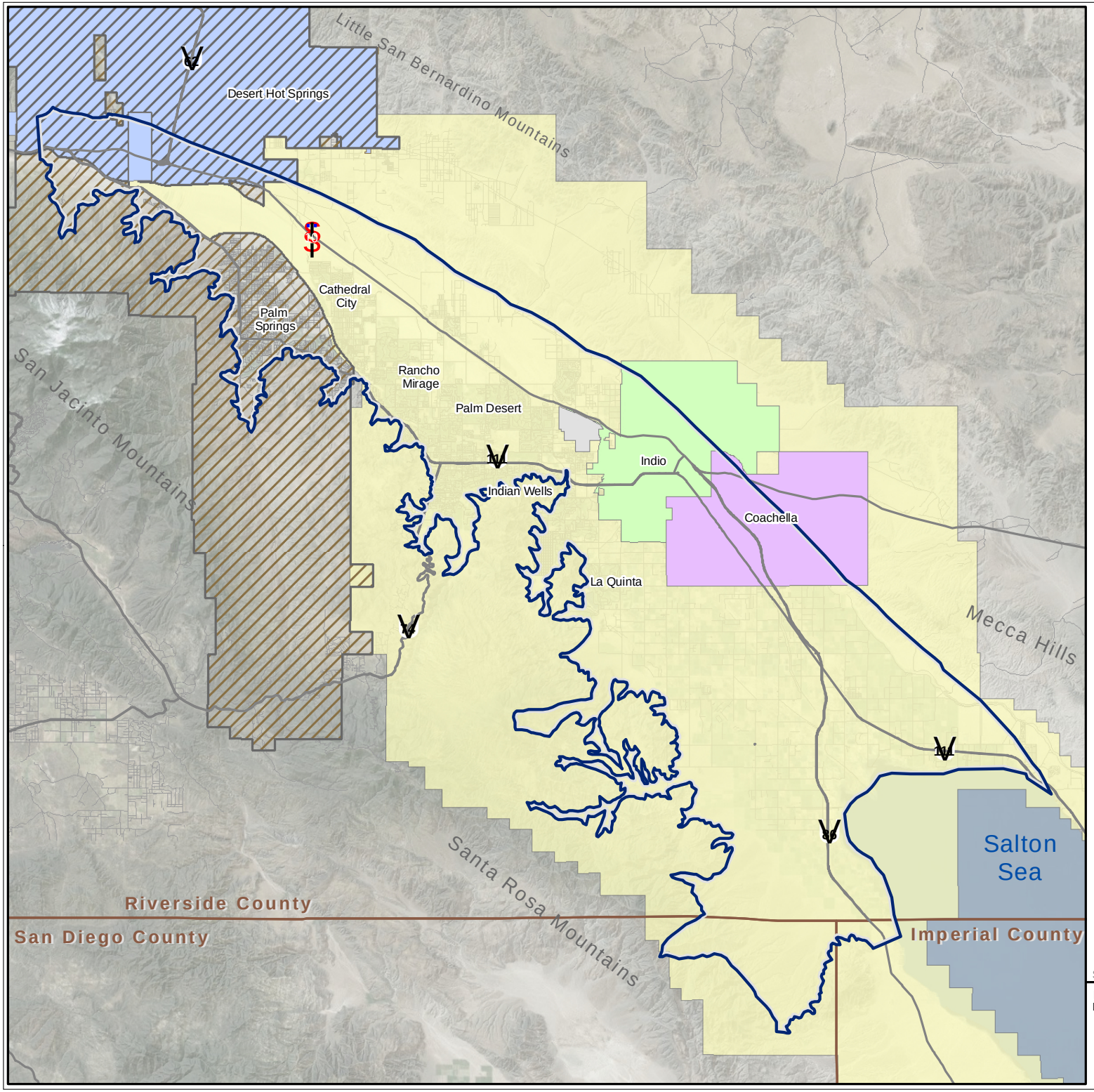
The water in the Coachella Valley has sustained these Native American people agriculturally, economically, culturally, and spiritually for a long period of time, as it still does today. The Coachella Valley Regional Water Management Group (CVRWMG) is collaborating with the local tribes on long-term water management planning to ensure that the water supply within the Coachella Valley is adequate for all users. As described in Section 2.6, the Agua Caliente Band of Cahuilla Indians filed a lawsuit on May 14, 2013 against Coachella Valley Water District and Desert Water Agency.

2.3 LAND USE PLANNING AND EFFECT ON WATER REQUIREMENTS (§354.8f)

The effects of land use on future water demands were evaluated in Section 4 of the 2002 WMP and Sections 3.2 and 3.3 of the 2010 WMP Update. The following information is provided as a supplement to that provided in the WMP and WMP Update.

State law requires every city and county within California to adopt a comprehensive General Plan. The General Plan represents the community's view of its future. General plans are required to include elements addressing Land Use, Open Space, Conservation, Housing, Circulation, Noise, and Safety. General plans may include optional elements relating to Air Quality, Capital Improvements/Public Facilities, Community Design, Economic/Fiscal Development, Energy, Flood Management, Geothermal, Parks and Recreation, and Water. General plans are not static documents; revisions are based on periodic reviews or adoption of specific plans that provide customized planning for a particular area or a large-scale project.

Table 2-2 lists the entities with land use planning responsibility within the Indio Subbasin.



Water Service Areas and Cities

Service Areas

- Coachella Valley Water District
- Coachella Water Authority
- Desert Water Agency (DWA)
- Indio Water Authority
- Mission Springs Water District (MSWD)
- Myoma Dunes Water District

- Indio Subbasin
- Highway
- County Boundary
- Waterbody

0 2.5 5 10 Miles

Source: DWR, CVWD, Caltrans, CalAtlas

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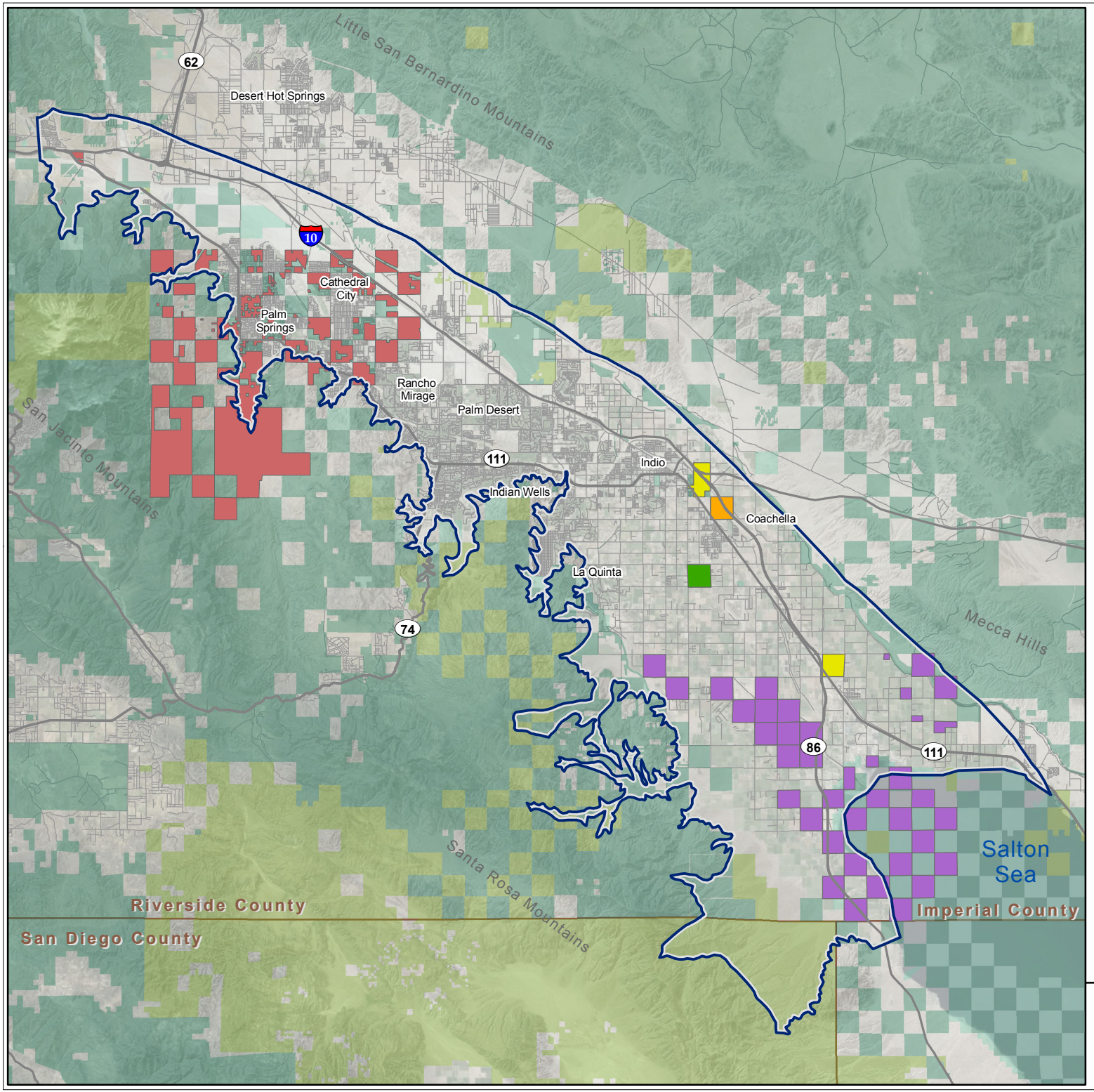
Figure 2-2



Land Ownership and Tribal Lands

Land Ownership

- Local Government
- State Lands
- Federal Land

Tribal Land

- Agua Caliente
- Augustine
- Cabazon
- Torres-Martinez
- Twenty-Nine Palms

- Indio Subbasin
- Highway
- County Boundary

N

0 2.5 5 10 Miles

Source: DWR, CVWD, Caltrans, CalAtlas, BLM

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Figure 2-3

Table 2-2
Land Use Planning Agencies

Agency	General Plan Adoption	Coverage Area
City of Desert Hot Springs	2000	Entire City
City of Palm Springs	2007	Entire City; City acts as Tribe's agent for Agua Caliente tribal trust lands per land use agreement.
City of Cathedral City	2002; amended 2009	Entire City; City acts as Tribe's agent for Agua Caliente tribal trust lands per land use agreement
City of Rancho Mirage	2005	Entire City; City acts as Tribe's agent for Agua Caliente tribal trust lands per land use agreement
City of Palm Desert	2004; update underway	Entire City
City of Indian Wells	Updated 2013 (Land Use updated 2007)	Entire City
City of Indio	Amended 1994; Land Use map 2007; update underway	Entire City
City of Coachella	2015	Entire City
City of La Quinta	2013	Entire City
County of Riverside	2003; update underway	Unincorporated land; County acts as Tribe's agent for Agua Caliente tribal trust lands per land use agreement. All other tribal lands excluded.
County of Imperial	2015	Unincorporated land; West Shore, Hot Mineral Spa, Bombay Beach
County of San Diego	2012	Unincorporated land; open space in Coachella Valley
Agua Caliente Band of Cahuilla Indians	Land Use Ordinance 2013	Tribal trust lands; other lands covered by land use

Agency	General Plan Adoption	Coverage Area
		contracts with Cities and Riverside County
Torres Martinez Desert Cahuilla Indians	Revised 2016	Tribal land
Cabazon Band of Mission Indians	1983	Tribal land
Augustine Band of Cahuilla Indians	Not available	Tribal land
Twenty Palms Band of Mission Indians	In preparation; expected adoption in 2017	Tribal land
U.S. Bureau of Land Management	2002 2004	California Desert Conservation Area – Coachella Valley Amendment Santa Rosa and Santa Jacinto National Monument
U.S. Forest Service	2005	San Bernardino National Forest
U.S. Fish and Wildlife Service	2013	Coachella Valley National Wildlife Refuge
California Department of Parks and Recreation	2005 2002	Anza Borrego Desert State Park Mount San Jacinto State Park
California Department of Fish and Wildlife	2015	State Wildlife Action Plan
Coachella Valley Conservation Commission	2008	Coachella Valley Conservation Areas under Coachella Valley Multiple Species Habitat Conservation Plan

Land use planning in the Indio Subbasin is governed by the general plans of the incorporated cities and the counties for unincorporated areas. Land use designations generally consist of the following categories:

- Residential – includes hillside, very low, low, medium, high density residential, and mobile home parks
- Commercial – includes general, neighborhood, shopping centers, offices, and resort hotels
- Mixed Use – includes combinations of residential, commercial and public uses
- Industrial – includes business parks, light industrial, and general industrial
- Institutional and Public Facilities – includes governmental offices, cultural facilities, libraries, museums, schools, hospitals, police and fire stations, utility substations as well as other public or quasi-public administrative offices or meeting spaces
- Open Space – includes parks, natural open spaces, and habitat areas; golf courses, pool areas, and landscaped lands defined as private open space; and natural or man-made watercourses
- Overlay Areas – special land use designations that provide a layer of standards in addition to those of the underlying land use; typically used to protect historic areas or limit development in hazard areas
- Agricultural - include row crops, nurseries, citrus groves and vineyards, dairies, ranches, poultry and hog farms, and other agricultural related uses

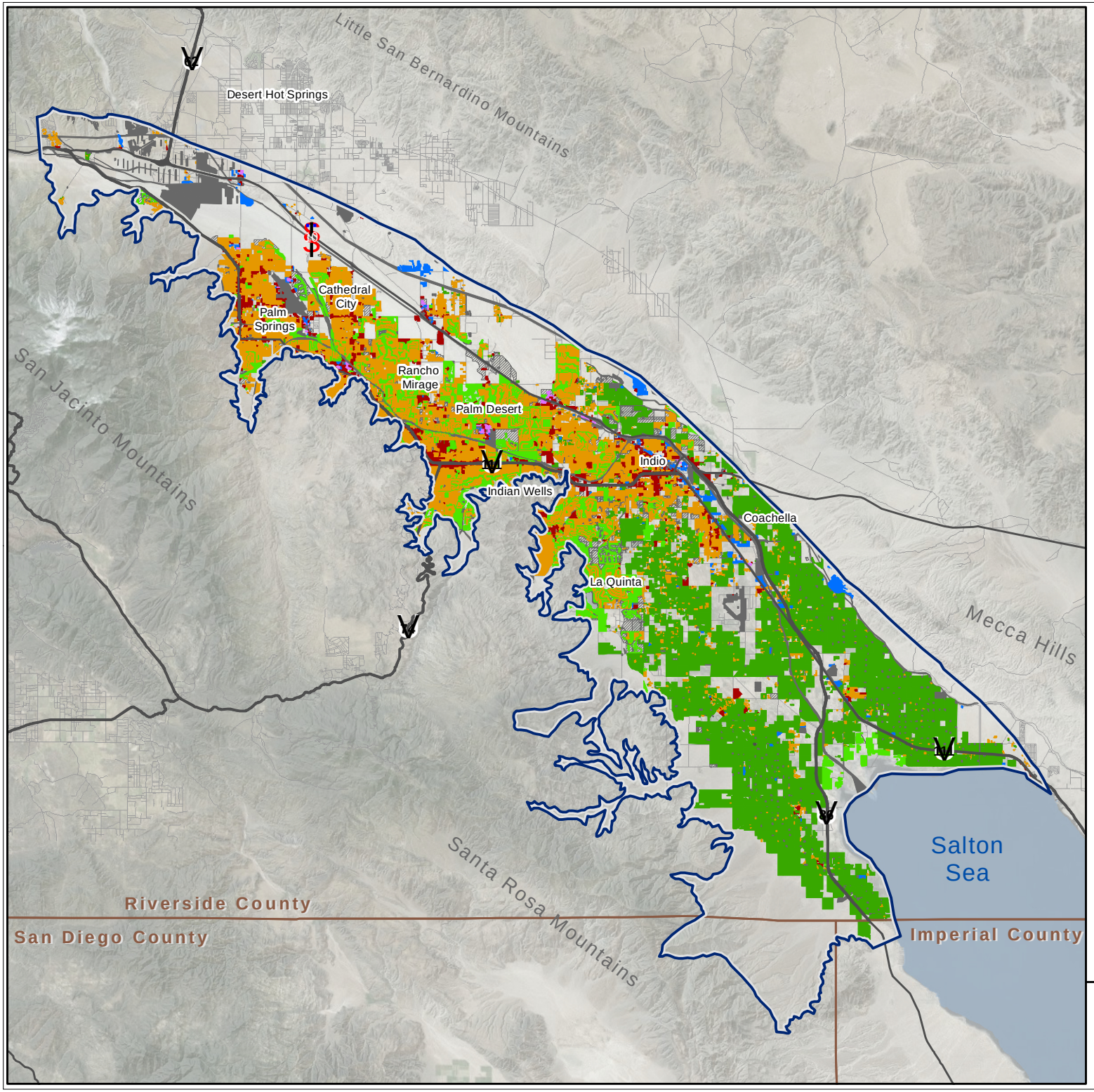
Existing land use in the region is illustrated in **Figure 2-4**.

Section 3.3 of the 2010 WMP Update describes the methodology used to develop future demands through 2045. The 2014 WMP Status Report revised these projected demands using updated regional growth forecasts.

The water agencies in the Coachella Valley periodically review growth forecasts and land use plans in conjunction with preparing their respective urban water management plans. In addition, the water agencies prepare and adopt water supply assessments and written verifications of water supply availability for large developments as required by Senate Bills 610 and 221 (adopted in 2001).

2.4 WATER USE SECTORS AND SOURCES (§354.8f)

Water use sectors and projected demands are described in Section 3.3 of the 2010 WMP Update. To supplement the information provided in Section 3.3 of the 2010 WMP Update, the following subsection provides additional information on water uses and sources. The Coachella Valley is comprised of three predominant water user groups: agriculture, golf,



2005 Land Use in the Indio Subbasin

Land Use Categories

- Agriculture
- Commercial and Services
- Industrial
- Mixed Commercial And Industrial
- Mixed Urban
- Open Space And Recreation
- Residential
- Transportation, Communication and Utilities
- Under Construction
- Vacant

- Indio Subbasin
- Highway
- County Boundary
- Waterbody

N

0 2.5 5 10 Miles

Land Use Source: SCAG (2005)

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Figure 2-4

and urban. Several smaller use categories are described below. Urban water use in the valley is met with groundwater, while agricultural and golf users depend on private groundwater wells or non-potable water including recycled water and imported Canal water. The following describes the major water use sectors and sources.

- Urban – includes all water uses related to urban development. Urban water supplies predominantly consist of groundwater within the Planning Area, with a small amount of local surface water in portions of the DWA service area. Supplies are generally served by the local water districts (CVWD and DWA) or city water utilities (Indio and Coachella). In some areas, private mutual water companies provide water service within their services areas. Urban water includes use on tribal lands for urban purposes.
- Golf – consists of water used for golf course irrigation and maintenance. Golf courses primarily use groundwater from private wells, local surface water, Coachella Canal water, or recycled water, and domestic water supply in a few limited areas. Golf also includes water use on tribal lands for golf irrigation purposes.
- Agriculture – consists of water used for irrigation of crops and related agricultural production. Coachella Canal water is the predominant agricultural water supply with groundwater pumped from private wells in areas where Canal water is not available. Agriculture includes water use on tribal lands for agricultural irrigation purposes.
- Industrial – consists of water used for industrial process and cooling. There is limited industrial use in the Valley and where not supplied by cities or local water districts, industrial uses rely on groundwater pumped from private wells. Industrial includes water use on tribal lands for industrial purposes.
- Other – includes uses such as recreational lakes, fish farms, duck clubs, and construction. Demands are met from Coachella Canal water or pumping from private wells. In some areas, construction water may be provided by the cities or local water districts.

During the preparation of the WMP and the WMP Update, water demands and supplies were specifically evaluated based on the water source supplying each use type based on location and existing patterns. Water demands supplied with groundwater are identified as potential users of imported or recycled water depending on use type as described in the Source Substitution subsection of Section 7 of the 2002 WMP (pages 7-16 through 7-19) and Section 6.5 of the 2010 WMP Update.

2.5 GROUNDWATER WELL DENSITY (§354.8a5)

The SGMA regulations require inclusion of a well density map. Such mapping was not required for preparation of the 2002 WMP or the 2010 WMP Update. **Figure 2-5** presents a well density map based on available well records for the sake of completeness. Not all wells have been classified by use type. This map indicates the approximate number of wells by Public Land Survey System section (approximately 1 square mile). It should be noted that some wells have poor records and their operational status may be unknown. Section 6.8.1.1 of the 2010 WMP Update recommended conducting a well canvass to determine the operational status of all wells in the subbasin. CVWD continually updates its well records as part of its replenishment assessment and water level monitoring programs.

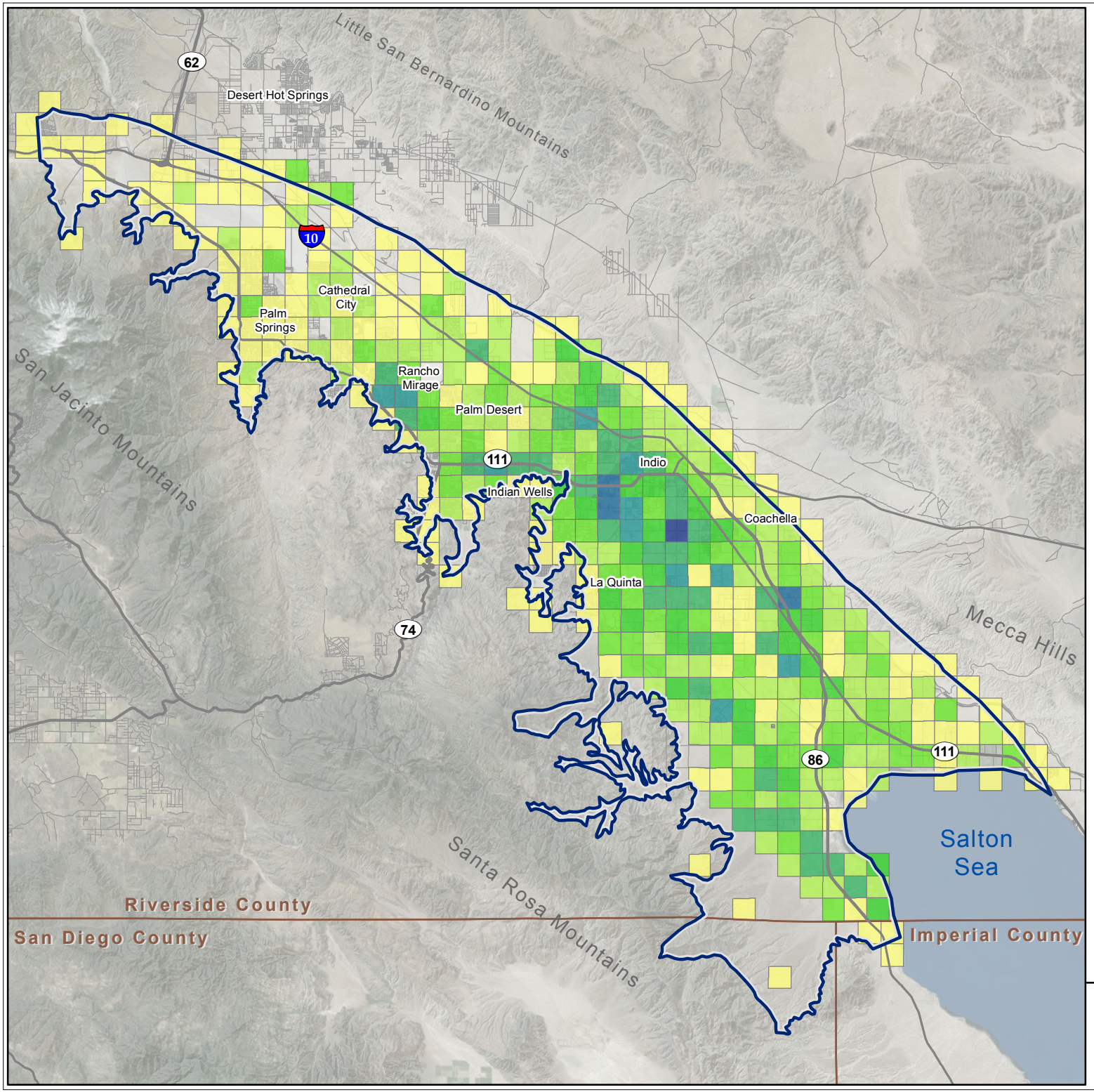
2.6 CHANGES SINCE WMP UPDATE ADOPTION

Several changes to the planning environment have taken place since adoption of the WMP Update in 2012. These include: revisions to projected water demands, Tribal water rights litigation, salt and nutrient management planning, and Whitewater River replenishment facility permitting.

2.6.1 Revisions to Projected Water Demands

The planning area for the WMP is unchanged since adoption of the WMP Update in 2012. However, water demand projections were updated in the 2014 WMP Update Status Report (CVWD, 2014) based on revised population growth forecasts based on the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan (RTP). Figure 2 of the 2014 Status Report (CVWD and MWH, 2014) presents a comparison of the population forecasts from the 2014 Report Card and the 2010 WMP Update; Table 1 of the 2014 WMP Status Report (CVWD and MWH, 2014) presents a comparison of water demand forecasts based on the revised population. The estimated water demand in 2045 was projected to be 759,500 AFY compared to the 2010 WMP Update demand of 885,400 AFY.

Recent urban conservation implemented in response to the on-going California drought is expected to further reduce urban demands in the future. The 2016 Urban Water Management Plans project urban water demands of 302,200 AFY in 2040. In comparison, the 2014 Status Report estimated urban demands of 384,200 AFY for 2040. Reduced urban demand will result in less groundwater production and allow the basin to meet the manage goals of at an earlier date.



Groundwater Well Density

Well Density per Square Mile *

- 1 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 70

* grid cells are approximately one square mile in area, based off the Public Land Survey System sections.

- Indio Subbasin
- Highway
- County Boundary
- Waterbody

N

0 2.5 5 10 Miles

Source: DWR, CVWD, Caltrans, CalAtlas

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Figure 2-5

2.6.2 Revisions to Projected Water Demands

The planning area for the WMP is unchanged since adoption of the WMP Update in 2012. However, water demand projections were updated in the 2014 WMP Update Status Report (CVWD, 2014) based on revised population growth forecasts based on the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan (RTP). Figure 2 of the 2014 Status Report (CVWD and MWH, 2014) presents a comparison of the population forecasts from the 2014 Report Card and the 2010 WMP Update; Table 1 of the 2014 WMP Status Report (CVWD and MWH, 2014) presents a comparison of water demand forecasts based on the revised population. The estimated water demand in 2045 was projected to be 759,500 AFY compared to the 2010 WMP Update demand of 885,400 AFY.

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2.6.3 Tribal Litigation

On May 14, 2013, the Agua Caliente Band of Cahuilla Indians sued Coachella Valley Water District and Desert Water Agency in the United States District Court, Central District of California, alleging that the Tribe has federal reserved rights and aboriginal rights in groundwater for its reservation and that the Tribe has related rights to the “pore space” beneath the reservation. The Tribe seeks declaratory relief regarding its alleged water rights and injunctive relief to prevent CVWD and DWA from overdrafting the groundwater basin and recharging the groundwater basin with imported water of a lesser quality than the native groundwater.

In July 2013, CVWD and DWA separately answered the Tribe’s complaint, denying the Tribe’s allegations and asserting various defenses to the Tribe’s claims.

On June 25, 2014, the United States filed a complaint in intervention supporting the Tribe’s claim of reserved water rights.

On March 24, 2015, the United States District Court ruled that the Tribe’s federal reserved water rights may extend to include groundwater, but “whether groundwater resources are necessary to fulfill the reservation’s purposes, however, is a question that must be addressed in a later phase of this litigation.” The district court also ruled that the Tribe’s claim of aboriginal occupancy was extinguished by the provisions of an 1851 Act of Congress, so the Tribe has no derivative right to groundwater on that basis. The district court certified its ruling on reserved water rights for interlocutory appeal. On June 10,

2015, the United States Court of Appeals for the Ninth Circuit agreed to hear CVWD and DWA's appeal of that ruling. On October 18, 2016, a three-judge panel of the Court of Appeals heard oral arguments and took the appeal under submission.

Further proceedings in the district court have been stayed pending determination of the appeal. If the ruling is affirmed, further trial proceedings will be necessary in the district court to address unresolved issues.

2.6.4 Salt and Nutrient Management Plan

CVWD, DWA, and IWA prepared and submitted a salt and nutrient management plan for the Coachella Valley to the Colorado River Basin Regional Water Quality Control Board in June 2015, pursuant to the State Water Resources Control Board's Recycled Water Policy. Salt and nutrient management plans are stakeholder-driven plans that are intended to facilitate basin-wide management of salts and nutrients from all sources in a manner that optimizes recycled water use while ensuring protection of groundwater supply and beneficial uses, agricultural beneficial uses, and human health. The SNMP is being reviewed by the Regional Board.

2.6.5 Whitewater River Replenishment Permit

A portion of CVWD's Whitewater River Replenishment Facility is located on federally-owned land and operated under a permit from the U. S. Bureau of Land Management (BLM). The permit expired in 2014 and CVWD applied for a new permit in March 2015. The permitting process requires an environmental review pursuant to the National Environmental Policy Act and is expected to commence in early 2017.

2.7 NOTICE AND COMMUNICATION (§354.10)

This section summarizes the current programs conducted in the Coachella Valley as part of stakeholder outreach and public education.

The implementation of a water management plan such as the CVWD 2010 WMP Update (CVWD, 2012) requires the cooperation of many entities. At the time the 2010 WMP report was prepared, SGMA-related law did not yet exist, and the guiding reference used was the Groundwater Management Planning Act (CWC §10750 *et seq*., commonly referred to as AB 3030), which encourages the formation of a technical advisory committee (TAC, or sometimes also referred to as a technical advisory group or TAG) of interested parties within the Indio Subbasin to help guide the development and implementation of the plan and provide a forum for resolution of controversial issues. Although the Coachella Valley WMP (CVWD, 2002a) and its 2010 Update (CVWD, 2012) was not prepared under this statutory authority, CVWD sought stakeholder input during the development of the 2002 WMP and the 2010 WMP Update.

When the 2002 WMP was prepared, CVWD met with a broad cross-section of Coachella Valley stakeholders to provide information about the importance of water management in the valley and to seek their input. After the 2002 WMP was adopted, CVWD developed a WMP Implementation Program. Preparation of the Implementation Program was guided by the Stakeholder Task Force, which was involved in all aspects of the Program development (see Section 2 of CVWD, 2012).

CVWD established an advisory committee in conjunction with implementation of the replenishment assessment program in the Lower Whitewater River Subbasin portion of the Coachella Valley Groundwater Basin. This committee consists of representatives of the water agencies and pumpers that extract groundwater from this area. The committee meets periodically to discuss progress in implementing the WMP and the financing of groundwater replenishment programs using the RAC.

CVWD and the valley's Native American tribes also met regularly to discuss issues to be addressed in 2010 WMP Update, as well as other subsequent projects. Additional meetings have been held between CVWD and individual tribes to discuss specific water issues affecting the tribes.

Implementation of the 2010 WMP Update will require on-going coordination among the water agencies, tribes, cities, Riverside County and affected stakeholders. In addition, the IRWMP process has opened additional forums for dialogue on water management issues in the valley. The list of stakeholders engaged since 2002 on issues related to the 2010 WMP preparation and implementation, and follow-up and related projects, are believed to be identical to those stakeholders required for engagement under SGMA GSP rules (CDWR, 2016a). Agencies party to this report and declaring SGMA GSA status have included extensive stakeholder lists as part of their submissions (CVWD, 2016c; CWA, 2016; DWA, 2016; IWA, 2016; see also **Appendix B**).

Stakeholder input and consensus is vital to the implementation of water management programs in the valley. Coachella Valley water agencies have since the original WMP (CVWD, 2002a) worked with partner agencies to grow public outreach via several mechanism that include early notification and outreach during both planning and implementation stages. Post-implementation feedback is done through traditional public comment during regularly scheduled Board meetings held by the various agencies and other stakeholder groups. Typically outreach efforts are key around the planning and implementation of water conservation programs, implementation of water management projects, or specific items such as development of the 2010 WMP Update (CVWD, 2012), development of the Coachella Valley Integrated Regional Water Management Plan, and more recently the SGMA basin boundary and GSA formation processes. Further, water agencies and the Coachella Valley tribes continue their on-going dialogue on water management in the valley.

Ongoing education and outreach programs not specific to management plan development include the following elements:

- Publications on lush and efficient landscaping
- Demonstration gardens
- Landscape and leak detection workshops
- Community outreach events, newsletters, and advertising
- Water conservation website, e-notifications, and Facebook page
- School education program

These programs are documented in the 2015 UWMP (CVWD, 2016b) and within the Board Packages submitted to CDWR as part of the SGMA GSA formation notification process (**Appendix B**).

A list of meetings with stakeholders for the 2010 WMP Update and SPEIR is included in **Table 2-3**. Stakeholder meetings conducted to date in the development of this bridge document are summarized in **Table 2-4**.

Table 2-3
Meetings with Stakeholders in the Development of the 2010 WMP Update and SPEIR

Date	Subject	Attendees
6/13/2006	Stakeholders' Meeting: Plan Introduction	Public
9/27/2006	Scoping Meeting	Public
3/15/2007	Stakeholders' Meeting	Public
9/4/2007	Water Supply Planning Projections and Agreements	City of Coachella, Fiesta Development, Desert Lakes
10/19/2007	Plan Introduction	City of Indio
2/29/2008	Plan Introduction, Implementation, and Need for Update	Bureau of Indian Affairs (BIA), Tribes
7/15/2008	Subsidence and Basin Overdraft	BIA, Torres Martinez Desert Cahuilla Indians
10/14/2008	Potential Effects of Plan on Groundwater Quality	BIA, Torres Martinez Desert Cahuilla Indians, Agua Caliente Band of Cahuilla Indians, Morongo Band of Mission Indians, Augustine Band of Cahuilla Indians, Twenty-Nine Palms Band of Mission Indians
1/27/2009	Plan Introduction and Status Update	CVRWMP Group
2/11/2009	Status Update	Public
2/17/2009	Status Update	BIA, Tribes
2/18/2009	Plan Introduction and Status Update	Riverside County Planning Commission
4/22/2009	Future Development and Demand Assumptions for Tribal Lands	BIA, Cabazon Band of Mission Indians, Morongo Band of Mission Indians, Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Twenty-Nine Palms Band of Mission Indians

Date	Subject	Attendees
6/3/2009	Imported Water and Groundwater Quality	BIA, Torres Martinez Desert Cahuilla Indians, Augustine Band of Cahuilla Indians, Morongo Band of Mission Indians, Twenty-Nine Palms Band of Mission Indians, Agua Caliente Band of Cahuilla Indians
7/16/2009	Status Update	BIA, Torres Martinez Desert Cahuilla Indians, Augustine Band of Cahuilla Indians, Morongo Band of Mission Indians, Cabazon Band of Mission Indians, Agua Caliente Band of Cahuilla Indians
7/20/2009	Growth Planning Assumptions	City of Indio
8/17/2009	IRWMP Process	BIA, Torres Martinez Desert Cahuilla Indians, Augustine Band of Cahuilla Indians, Morongo Band of Mission Indians, Cabazon Band of Mission Indians, Agua Caliente Band of Cahuilla Indians
9/17/2009	Eastern Coachella Valley Groundwater	BIA, Torres Martinez Desert Cahuilla Indians, Augustine Band of Cahuilla Indians, Agua Caliente Band of Cahuilla Indians
11/19/2009	Groundwater Quality Database, IRWMP Update, Plan/SPEIR Update	BIA, Torres Martinez Desert Cahuilla Indians, Augustine Band of Cahuilla Indians, Morongo Band of Mission Indians, Agua Caliente Band of Cahuilla Indians
4/20/2010	Plan Introduction, Implementation, and Need for Update	Public (CVWD Board Study Session)
11/16/2010	Plan Implementation Costs	Public (CVWD Board Study Session)
11/17/2010	WMP Status Update	BIA, Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Morongo Band of Mission Indians, Twenty-Nine Palms Band of Mission Indians
1/12/2011	Draft 2010 WMP Update	Public

Date	Subject	Attendees
1/12/2011	Draft 2010 WMP Update	BIA, Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians
3/23/2011	Discussion of Response Letter by Agua Caliente	Agua Caliente Band of Cahuilla Indians, Stetson Engineering
7/26/2011	Draft SPEIR Review	CVWD Environmental Assessment Committee
9/7/2011	Draft SPEIR Public Review	Public
1/17/2012	Final SPEIR Review	Public (CVWD Board Study Session)
1/24/2012	2010 WMP Update and Final SPEIR Adoption	Public, CVWD Board of Directors

Table 2-4
Meetings with Stakeholders in the Development of the Indio Subbasin Alternative GSP Bridge Document

Date	Subject	Attendees
8/8/2016	GSA Meeting	CVWD, DWA, IWA, CWA
9/7/2016	SGMA Overview and Alternative GSPs	Public, CVWD, DWA, IWA, CWA MSWD, BIA, Tribes
10/24/2016	GSA Meeting	CVWD, DWA, IWA, CWA
11/2/2016	Tribal Coordination Meeting	DWR, BIA, Cabazon Band of Mission Indians, Morongo Band of Mission Indians, Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Twenty-Nine Palms Band of Mission Indians, Torres Martinez Desert Cahuilla Indians, CVWD, DWA, IWA, CWA
11/16/2016	SGMA Alternative Plan Workshop	DWR, BIA, Cabazon Band of Mission Indians, Morongo Band of Mission Indians, Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Indians, Twenty-Nine Palms Band of Mission Indians, Torres Martinez Desert Cahuilla Indians, CVWD, DWA, IWA, CWA
12/12/2016	GSA Meeting	CVWD, DWA, IWA, CWA

Section 3
Basin Setting

The purpose of this section is to demonstrate the compliance of the 2010 WMP Update and its supporting documents with the goals and requirements of SGMA with respect to the groundwater basin setting.

3.1 PLAN COMPLIANCE WITH SGMA REQUIREMENTS

Demonstration of WMP compliance with the requirements of SGMA are demonstrated in **Table 3-1** which contains specific references to the relevant figures, tables, and report sections.

Table 3-1
WMP Compliance with 23CCR354.12 – 23CCR354.20

Regulation Section	Regulation Text	WMP Compliance
354.12	Introduction to Basin Setting	
354.14	Hydrogeologic Conceptual Model	The conceptual model of the Indio Subbasin is based on work prepared by CDWR (1964) Tyley (1974), Swain (1978); and Reichard and Meadows (1992). Additional information is provided in Fogg, *et al.* (2000) (see Appendix D (Revised) of the 2002 Final Program Environmental Impact Report (PEIR)).
354.14a	Each Plan shall include a descriptive hydrogeologic conceptual model of the basin based on technical studies and qualified maps that characterizes the physical components and interaction of the surface water and groundwater systems in the basin.	Section 4.1 of the WMP Update summarizes the conceptual model of the basin. Additional information is included in Section 6.2.2 of the 2012 SPEIR, and Section 6.2.2 and Appendix D (Revised) of the 2002 PEIR.
354.14b	The hydrogeologic conceptual model shall be summarized in a written description that includes the following:	See below

Regulation Section	Regulation Text	WMP Compliance
354.14b1	The regional geologic and structural setting of the basin including the immediate surrounding area, as necessary for geologic consistency.	Section 4.1 of the 2010 WMP Update; Section 6.2.2 of the SPEIR; Section 6.2.2 of 2002 PEIR.
354.14b2	Lateral basin boundaries, including major geologic features that significantly affect groundwater flow.	Section 4.1 of the 2010 WMP Update; Section 6.2.2 of the SPEIR; Section 6.2.2 of 2002 PEIR.
354.14b3	The definable bottom of the basin.	Per CDWR Bulletin 108, the basin bottom has not been defined. Gravity survey data imply a depth in excess of 10,000 feet. Wells drilled in the Subbasin vary in depth from several hundred to more than 1,400 ft.
354.14b4	Principal aquifers and aquitards, including the following information:	Principal aquifers and aquitards are described in Section 4.1.1 of the 2010 WMP Update. Additional information is presented in Section 6.2.2 of the 2012 SPEIR, and Section 6.2.2 and Appendix D (Revised) of the 2002 PEIR.
354.14b4A	Formation names, if defined.	Formation names are described in the relevant text of Section 4.1.1 of the 2010 WMP Update, Section 6.2.2 of the 2012 SPEIR, and Section 6.2.2 and Appendix D (Revised) of the 2002 PEIR.
354.14b4B	Physical properties of aquifers and aquitards, including the vertical and lateral extent, hydraulic conductivity, and storativity, which may be based on existing technical studies or other best available information.	The physical properties of the aquifers and aquitards are generally described in Section 4.1.1 of the 2010 WMP Update and in more detail in Sec 6.2.2 of the 2012 SPEIR, and in Sec 6.2.2 and Appendix D (revised) of the 2002 PEIR.
354.14b4C	Structural properties of the basin that restrict groundwater flow within the principal aquifers,	Structural features affecting groundwater flow are described in Section 4.1.1 of the 2010 WMP

Regulation Section	Regulation Text	WMP Compliance
	including information regarding stratigraphic changes, truncation of units, or other features.	Update and in more detail in Section 6.2.2 of the 2012 SPEIR, and in Section 6.2.2 and Appendix D (Revised) of the 2002 PEIR.
354.14b4D	General water quality of the principal aquifers, which may be based on information derived from existing technical studies or regulatory programs.	Groundwater quality is described in Section 6.2.7 of the 2012 SPEIR and in Section 6.3.3 of the 2002 PEIR. Maps showing water quality variation for key parameters are shown on Figure 6-8 and 6-9 of the 2012 SPEIR for the period 2000-2009.
354.14b4E	Identification of the primary use or uses of each aquifer, such as domestic, irrigation, or municipal water supply.	Primary uses of water area described in Section 3.3 of the 2010 WMP Update; historical groundwater use is described in Section 4.1.5 of the 2010 WMP Update and Section 3 – Historical Water Demands of the 2002 WMP.
354.14b5	Identification of data gaps and uncertainty within the hydrogeologic conceptual model	Data gaps are generally identified in Section 6.8.4.2 and Appendix C of the 2010 WMP Update, and are also summarized in Section 3.7 of this Bridge Document. Specific data gaps relative to groundwater modeling are discussed in the Peer Review Report (Appendix D Revised) of the 2002 PEIR. Data uncertainties were discussed in Section 2.4 of the Coachella Valley Groundwater Model Peer Review Report contained in Appendix D (Revised) of the Final Program EIR for the 2002 CVWMP.
354.14c	The hydrogeologic conceptual model shall be represented graphically by at least two scaled cross-sections that display the information required by this section and are sufficient to depict major	A longitudinal cross section is presented on Figure 6-3 of the 2002 PEIR and additional lateral cross sections are presented in Appendix E of 2002 PEIR

Regulation Section	Regulation Text	WMP Compliance
	stratigraphic and structural features in the basin.	
354.14d	Physical characteristics of the basin shall be represented on one or more maps that depict the following:	See below
354.14d1	Topographic information derived from the U.S. Geological Survey or another reliable source	A general topographic map of the basin is provided on Figure 4-1 of the 2002 WMP PEIR based on USGS digital elevation data. Topographic data is utilized to define the cell characteristics of the groundwater model.
354.14d2	Surficial geology derived from a qualified map including the locations of cross sections required by this Section.	A surficial geology map was provided on Figure 4-2 of the 2002 PEIR. Conceptual cross sections are presented on Figures 6-2 and 6-3 of the 2002 PEIR. Locations of cross sections are shown on Figure 6-1 and cross sections are presented in Appendix E of the 2002 PEIR. An additional down-valley cross section is included in Appendix D (Revised) of the 2002 PEIR.
354.14d3	Soil characteristics as described by the appropriate Natural Resources Conservation Service soil survey or other applicable studies.	A soil association map is presented on Figure 4-6 of the 2002 PEIR based on Soil Conservation Service mapping of Riverside County, California.
354.14d4	Delineation of existing recharge areas that substantially contribute to the replenishment of the basin, potential recharge areas, and discharge areas, including significant active springs, seeps, and wetlands within or adjacent to the basin.	Major groundwater recharge facilities are shown on Figure 2-2 of the 2012 SPEIR. The portion of the Subbasin not underlain by the semi-perched aquifer is considered capable of recharging the aquifer system. There are no known active springs, seeps or groundwater dependent

Regulation Section	Regulation Text	WMP Compliance
		wetlands in the Indio Subbasin. However, springs, seeps, and groundwater dependent vegetation occur up-gradient from the San Andreas fault which borders the Indio Subbasin on the northeast.
354.14d5	Surface water bodies that are significant to the management of the basin.	Figure 5-1 of the 2012 SPEIR shows the major natural and man-made surface water features that affect water management.
354.14d6	The source and point of delivery for imported water supplies.	Figure 5-1 of the 2012 SPEIR shows the imported water facilities delivering water to the Valley. As described at various points in the WMP, the WMP Update, and the associated environmental documents, SWP water is exchanged for Colorado River and released into the Whitewater River north of Palm Springs for recharge at the Whitewater River Replenishment Facility. Deliveries of Colorado River water from the Coachella Canal are made from distribution laterals for the Canal to users throughout the East Valley.
354.16	Each Plan shall provide a description of current and historical groundwater conditions in the basin, including data from January 1, 2015, to current conditions, based on the best available information that includes the following:	The 2010 WMP Update was based on historical groundwater conditions and data through 2009. Annually, CVWD and DWA prepare engineer's reports pursuant to CWC that document groundwater conditions, the most recent of which cover the period ending December 2015.
354.16a	Groundwater elevation demonstrating flow directions, lateral and vertical gradients, and	See below

Regulation Section	Regulation Text	WMP Compliance
	regional pumping patterns, including:	
354.16a1	Groundwater elevation contour maps depicting the groundwater table or potentiometric surface associated with the current seasonal high and seasonal low for each principal aquifer within the basin.	Figure 6-7 of the 2012 SPEIR presents water level contours for the Lower aquifer in 1999 and 2009. A water level contour map for 2015 is presented in **Figure 3-3** of this Bridge Document. Figures VII-6 and VII-7 of the 2016 engineer's report presents water level changes for 2014 through 2015 and 2005 through 2015. Seasonal trends are not typically observed for most of the subbasin. Water level data by individual aquifer is not readily available.
354.16a2	Hydrographs depicting long-term groundwater elevations, historical highs and lows, and hydraulic gradients between principal aquifers.	Figure 4-2 of the 2010 WMP Update presents hydrographs for representative wells in the Subbasin. An updated version of this figure is presented in herein covering data through August 2016. No data is available on vertical gradients between aquifers.
354.16b	A graph depicting estimates of the change in groundwater in storage, based on data, demonstrating the annual and cumulative change in the volume of groundwater in storage between seasonal high groundwater conditions, including the annual groundwater use and water year type.	Figures 6-4 and 6-5 of the 2012 SPEIR present estimated annual change in groundwater storage and cumulative change in groundwater storage for the western and eastern portions of the Subbasin for the period 1936-2009. Updated figures showing inflows, outflows, and change in storage through 2015 are presented on Figures VI-4 and VII-4 of the CVWD's 2016 Engineer's Report. Water year types have not been established for local supplies.

Regulation Section	Regulation Text	WMP Compliance
354.16c	Seawater intrusion conditions in the basin, including maps and cross-sections of the seawater intrusion front for each principal aquifer.	Intrusion of saline water from the Salton Sea is conceptually possible if groundwater levels are below the level of the Salton Sea. CVWD installed nested monitoring wells near the Salton Sea in 1995 and 2002 to evaluate the potential for intrusion. Evidence of current intrusion is not obvious based on monitoring; however, saline groundwater is observed in deep aquifers near the Salton Sea.
354.16d	Groundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and map of the location of known groundwater contamination sites and plumes.	Section 5.1 of the 2010 WMP Update includes a discussion of the water quality issues. Section 6.3.3 of the 2002 PEIR and Section 6.2.7 of the 2012 SPEIR include detailed discussions of current water quality.
354.16e	The extent, cumulative total, and annual rate of land subsidence, including maps depicting total subsidence, utilizing data available from the Department, as specified in Section 353.2, or the best available information.	Land subsidence is described in Section 5.5 of the 2010 WMP Update. Land subsidence in the Coachella Valley has been investigated since 1996 through an on-going cooperative program between CVWD and USGS. Section 5.5 of the 2010 WMP Update The most recent report is USGS Scientific Investigations Report 2014–5075.
354.16f	Identification of interconnected surface water systems within the basin and an estimate of the quantity and timing of depletions of those systems, utilizing data available from the Department, as specified in Section 353.2, or the best available information.	For most of the Indio Subbasin, there is no direct interconnection between surface water and groundwater. Portions of the East Valley are underlain by shallow clay layers that create a semi-perched aquifer system. Subsurface tile drains are installed on agricultural land in this area to prevent root zone saturation. These drains discharge to the

Regulation Section	Regulation Text	WMP Compliance
		Coachella Valley Stormwater Channel and surface drains to the Salton Sea.
354.16g	Identification of groundwater dependent ecosystems within the basin, utilizing data available from the Department, as specified in Section 353.2, or the best available information.	When the 2002 WMP and 2010 WMP update were prepared, mapping of groundwater-dependent vegetation was not available. However, the water balance and groundwater model included use of shallow groundwater by phreatophytic vegetation on undeveloped land overlying the semi-perched aquifer area.
354.18	Water Budget	A detailed water budget was prepared for the Coachella Valley Groundwater Model. This budget is documented in the Water Balance section of Section 3 of the 2002 WMP, Section 6.3.1 of the 2002 WMP PEIR. This balance is updated in Section 4.1.6 of the 2010 WMP Update and 6.2.5 of the 2012 SPEIR.
354.18a	Each Plan shall include a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions, and the change in the volume of water stored. Water budget information shall be reported in tabular and graphical form.	Section 4.1.6 and Table 4-1 of the 2010 WMP Update and Section 6.2.5, Table 6-2, and Figure 6-4 of the 2012 SPEIR show the water budget for the Indio Subbasin.
354.18b	The water budget shall quantify the following, either through direct measurements or estimates based on data:	The water budget is based on a combination of direct measurements and estimates based on hydrologic principles.

Regulation Section	Regulation Text	WMP Compliance
354.18b1	Total surface water entering and leaving a basin by water source type.	Local and imported surface entering the basin through direct recharge and deep percolation of applied water is included in the water budget.
354.18b2	Inflow to the groundwater system by water source type, including subsurface groundwater inflow and infiltration of precipitation, applied water, and surface water systems, such as lakes, streams, rivers, canals, springs and conveyance systems.	Inflows to the groundwater system are accounted for in the water budget. See Section 4.1.6 and Table 4-1 of the 2010 WMP Update and Section 6.2.5, Table 6-2, and Figure 6-4 of the 2012 SPEIR. Infiltration of precipitation is not included because annual evapotranspiration significantly exceeds annual precipitation.
354.18b3	Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow.	Outflows from the groundwater system are accounted for in the water budget. See Section 4.1.6 and Table 4-1 of the 2010 WMP Update and Section 6.2.5, Table 6-2, and Figure 6-4 of the 2012 SPEIR.
354.18b4	The change in the annual volume of groundwater in storage between seasonal high conditions.	Annual and cumulative change in groundwater storage through 2009 is presented on Figures 6-4 and 6-5 of the 2010 SPEIR. Updated annual change in storage through 2015 is presented in Figures VI-4 and VII-4 of the CVWD's 2016 Engineer's Report.
354.18b5	If overdraft conditions occur, as defined in Bulletin 118, the water budget shall include a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions.	Table 4-1 of the 2010 WMP Update shows estimated overdraft for the period of 2000 through 2009. Figures VI-4 and VII-4 of the CVWD's Engineer's Reports present the annual change in storage through the year 2015. About 10,000 AFY of water was lost from storage in the West Whitewater River Area is based on a ten-year running average. For

Regulation Section	Regulation Text	WMP Compliance
		the same ten-year period, there was no change in storage in the East Whitewater River Area.
354.18b6	The water year type associated with the annual supply, demand, and change in groundwater stored.	As noted earlier, water year types have not been established for local supplies.
354.18b7	An estimate of sustainable yield for the basin.	The WMP and WMP Update uses change in storage as a surrogate for sustainable yield. If the change in storage is positive over a ten-year moving average period; the basin is presumed to be operating within its sustainable yield.
354.18c	The Plan shall quantify the current, historical, and projected water budget for the basin as follows:	See below:
354.18c1	Current water budget information shall quantify current inflows and outflows for the basin using the most recent hydrology, water supply, water demand, and land use information.	The current water budget is updated annually in the Engineer's Reports on Water Supply and Groundwater Replenishment Assessment for each designated Area of Benefit. The most recent assessment is presented in the 2016 Engineer's Report (CVWD, 2016a). Figures VI-4 and VII-4 graphically present the historical and projected water budget for the West and East portions of the Indio Subbasin.
354.18c2	Historical water budget information shall be used to evaluate availability or reliability of past surface water supply deliveries and aquifer response to water supply and demand trends relative to water year type. The historical water budget shall include the following:	A historical water budget was developed for the period 1936-1996 as part of groundwater model calibration. The budget was extended through 2009 as part of groundwater modeling for the 2010 WMP Update.
354.18c2A	A quantitative evaluation of the availability or reliability of historical	A quantitative evaluation of local runoff was prepared as part of

Regulation Section	Regulation Text	WMP Compliance
	surface water supply deliveries as a function of the historical planned versus actual annual surface water deliveries, by surface water source and water year type, and based on the most recent ten years of surface water supply information.	groundwater model development and calibration (Fogg, *et al.*, 2000). This evaluation was updated through 2009 for the 2010 WMP Update. Long-term averages are used for future projections. Evaluation of SWP water reliability is based on the most recent SWP Delivery Reliability Report available at the time of report preparation. Long-term average SWP supply is assumed to decline to 50% of Table A Amounts in the future in the absence of the California WaterFix and Bay-Delta Conservation Plan.
354.18c2B	A quantitative assessment of the historical water budget, starting with the most recently available information and extending back a minimum of 10 years, or as is sufficient to calibrate and reduce the uncertainty of the tools and methods used to estimate and project future water budget information and future aquifer response to proposed sustainable groundwater management practices over the planning and implementation horizon.	The most recent water budget assessment is presented in the 2016 Engineer's Report (CVWD, 2016a). Figures VI-4 and VII-4 graphically present the historical and projected water budget for the West and East portions of the Indio Subbasin.
354.18c2C	A description of how historical conditions concerning hydrology, water demand, and surface water supply availability or reliability have impacted the ability of the Agency to operate the basin within sustainable yield. Basin hydrology may be characterized and evaluated using water year type.	Section 3 of the 2002 WMP and Section 4.1.6 of the 2010 WMP Update describe the effect of historical conditions on the groundwater basin.

Regulation Section	Regulation Text	WMP Compliance
354.18c3	Projected water budgets shall be used to estimate future baseline conditions of supply, demand, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:	Section 7.4.1 of the 2010 WMP Update and Section 6.4.1 of the SPEIR describe the future conditions with Plan implementation.
354.18c3A	Projected hydrology shall utilize 50 years of historical precipitation, evapotranspiration, and streamflow information as the baseline condition for estimating future hydrology. The projected hydrology information shall also be applied as the baseline condition used to evaluate future scenarios of hydrologic uncertainty associated with projections of climate change and sea level rise.	The projected local hydrology used long-term average conditions for 1936-2009. Projections for Colorado River supplies are based on the Law of the River and expected shortages as prepared by USBR (2007). Projections for future SWP supplies are based on the most recent SWP Delivery Reliability Report available at the time of report preparation. Future SWP reliability is assumed to be 50% of Table A Amounts in the absence of the California WaterFix and Bay-Delta Conservation Plan. Potential effects of climate change/sea level rise are incorporated in SWP imported water projections.
354.18c3B	Projected water demand shall utilize the most recent land use, evapotranspiration, and crop coefficient information as the baseline condition for estimating future water demand. The projected water demand information shall also be applied as	Projected water demands prepared for the 2010 WMP Update utilized the most recent usage trends on a per capita and per acre basis. A 10% supply buffer was included to account for future demand and supply uncertainty as described in Section 6.1 of the 2010 WMP

Regulation Section	Regulation Text	WMP Compliance
	the baseline condition used to evaluate future scenarios of water demand uncertainty associated with projected changes in local land use planning, population growth, and climate.	Update. Urban demand projections were updated in the 2014 WMP Update Report and 2016 UWMPs.
354.18c3C	Projected surface water supply shall utilize the most recent water supply information as the baseline condition for estimating future surface water supply. The projected surface water supply shall also be applied as the baseline condition used to evaluate future scenarios of surface water supply availability and reliability as a function of the historical surface water supply identified in Section 354.18(c)(2)(A), and the projected changes in local land use planning, population growth, and climate.	As described above, the most recent imported water supply reliability data is used to estimate future conditions.
354.18d	The Agency shall utilize the following information provided, as available, by the Department pursuant to Section 353.2, or other data of comparable quality, to develop the water budget:	See below
354.18d1	Historical water budget information for mean annual temperature, mean annual precipitation, water year type, and land use.	Locally developed data is used for plan preparation.
354.18d2	Current water budget information for temperature, water year type, evapotranspiration, and land use.	Locally developed data is used for plan preparation.
354.18d3	Projected water budget information for population, population growth, climate change, and sea level rise.	Locally developed data is used for plan preparation.
354.18e	Each Plan shall rely on the best available information and best available science to quantify the	The Coachella Valley Groundwater Model (Fogg, *et al.*, 2000) used the best available science to evaluate

Regulation Section	Regulation Text	WMP Compliance
	water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow. If a numerical groundwater and surface water model is not used to quantify and evaluate the projected water budget conditions and the potential impacts to beneficial uses and users of groundwater, the Plan shall identify and describe an equally effective method, tool, or analytical model to evaluate projected water budget conditions.	groundwater basin response both historically and for the projected future planning scenarios. The model was used for the period of 1997 through 2035 for preparation of the 2002 WMP. For the 2010 WMP Update, the groundwater model inputs were updated through 2009 and the projections were extended through 2045.
354.18f	The Department shall provide the California Central Valley Groundwater-Surface Water Simulation Model (C2VSIM) and the Integrated Water Flow Model (IWFM) for use by Agencies in developing the water budget. Each Agency may choose to use a different groundwater and surface water model, pursuant to Section 352.4.	Not applicable to the Coachella Valley.
354.20a	Each Agency may define one or more management areas within a basin if the Agency has determined that creation of management areas will facilitate implementation of the Plan. Management areas may define different minimum thresholds and be operated to different measurable objectives than the basin at large, provided that undesirable results are defined consistently throughout the basin.	Pursuance to CWC §31630-31639 and CWC Appendix Chapter 100, CVWD and DWA have established areas of benefit (AOBs) for the purpose of assessing groundwater replenishment assessments. CVWD has two AOBs and DWA has two AOBs in the Indio Subbasin (as shown in **Figure 3-5** of this Bridge Document).

Regulation Section	Regulation Text	WMP Compliance
354.20b	A basin that includes one or more management areas shall describe the following in the Plan:	See below
354.20b1	The reason for the creation of each management area.	The reasons for creation of AOBs is described in the 2016 Engineer's Reports prepared by CVWD and DWA.
354.20b2	The minimum thresholds and measurable objectives established for each management area, and an explanation of the rationale for selecting those values, if different from the basin at large.	Minimum thresholds and measurable objectives for management areas were not required by State Law when the 2002 WMP and 2010 WMP Update were prepared. CVWD and DWA monitor the effectiveness of groundwater management conditions based on the water budget and measured groundwater levels and report those results in their respective annual engineer's reports.
354.20b3	The level of monitoring and analysis appropriate for each management area.	See above
354.20b4	An explanation of how the management area can operate under different minimum thresholds and measurable objectives without causing undesirable results outside the management area, if applicable.	CVWD and DWA review monitoring data annually to determine potential effects within the West and East Valley portions of the Indio Subbasin.
354.20c	If a Plan includes one or more management areas, the Plan shall include descriptions, maps, and other information required by this Subarticle sufficient to describe conditions in those areas.	The sections of the 2002 WMP and 2010 WMP Update describe conditions in the West and East Valley portions of the Indio Subbasin. The most recent 2016 Engineer's Reports prepared by CVWD and DWA describe the current conditions in the Indio Subbasin.

3.2 BASIN OVERVIEW (§354.12)

The subbasins of the Coachella Valley Groundwater Basin are the Mission Creek, Desert Hot Springs, San Gorgonio Pass, and Indio[1] (Whitewater River) subbasins. The Garnet Hill is formally considered by CDWR to be a subarea of the Indio Subbasin, but based on hydrologic data has some distinct behaviors that suggest that faulting or subsurface stratigraphy differ from that of the overall Indio Subbasin. The subbasins, with their groundwater storage aquifers, are defined without regard to water quantity or quality. They delineate areas underlain by formations which readily yield stored groundwater through water wells and offer natural reservoirs for the regulation of water supplies.

The boundaries between subbasins within the groundwater basin are generally defined by faults that serve as effective barriers to the lateral movement of groundwater. Details of the geology and hydrogeology of these subbasins and the broader Coachella Valley basin are described below. Minor subareas have also been delineated, based on one or more of the following geologic or hydrologic characteristics: type of water-bearing formations, water quality, areas of confined groundwater, forebay areas, groundwater divides, and surface drainage divides.

The following is a list of the subbasins and associated subareas as designated by CDWR and the United States Geological Survey (USGS).

- Mission Creek subbasin (subbasin 7-21.02 per CDWR Bulletin 118, 2003)
- Desert Hot Springs subbasin (subbasin 7-21.03 per CDWR Bulletin 118, 2003)
    - Miracle Hill subarea
    - Sky Valley subarea
    - Fargo Canyon subarea
- Garnet Hill subbasin (considered a subarea of the Indio Subbasin in CDWR Bulletin 118, 2013; and a subbasin by USGS)
- San Gorgonio Pass subbasin (subbasin 7-21.04 per CDWR Bulletin 118, 2003)
- Whitewater River Subbasin (subbasin 7-21.01 per CDWR Bulletin 118, 2003; referred to therein as the Indio Subbasin)
    - Palm Springs subarea
    - Thermal subarea

[1] CDWR assigned the name “Indio Subbasin” in its Bulletin 108. CVWD and Desert Water Agency use the designation “Whitewater River Subbasin.”

- Thousand Palms subarea
- Oasis subarea

The location of each subbasin is shown on **Figure 3-1**.

3.3 HYDROGEOLOGIC CONCEPTUAL MODEL (§354.14)

Section 354.14 of the SGMA regulations requires the development of hydrogeologic conceptual model of the basin. The Indio Subbasin has been studied extensively by CDWR (Bulletin 108, 1964 and Well Standards Investigation, 1979) and USGS (Mendenhall, 1909; Hely, 1964; Tyley, 1974; Swain, 1978; and Reichard and Meadows, 1992). The conceptual model developed for the basin relies heavily on these references and the results of subsequent well drilling and groundwater modeling including (Fogg *et al.*, 2000).

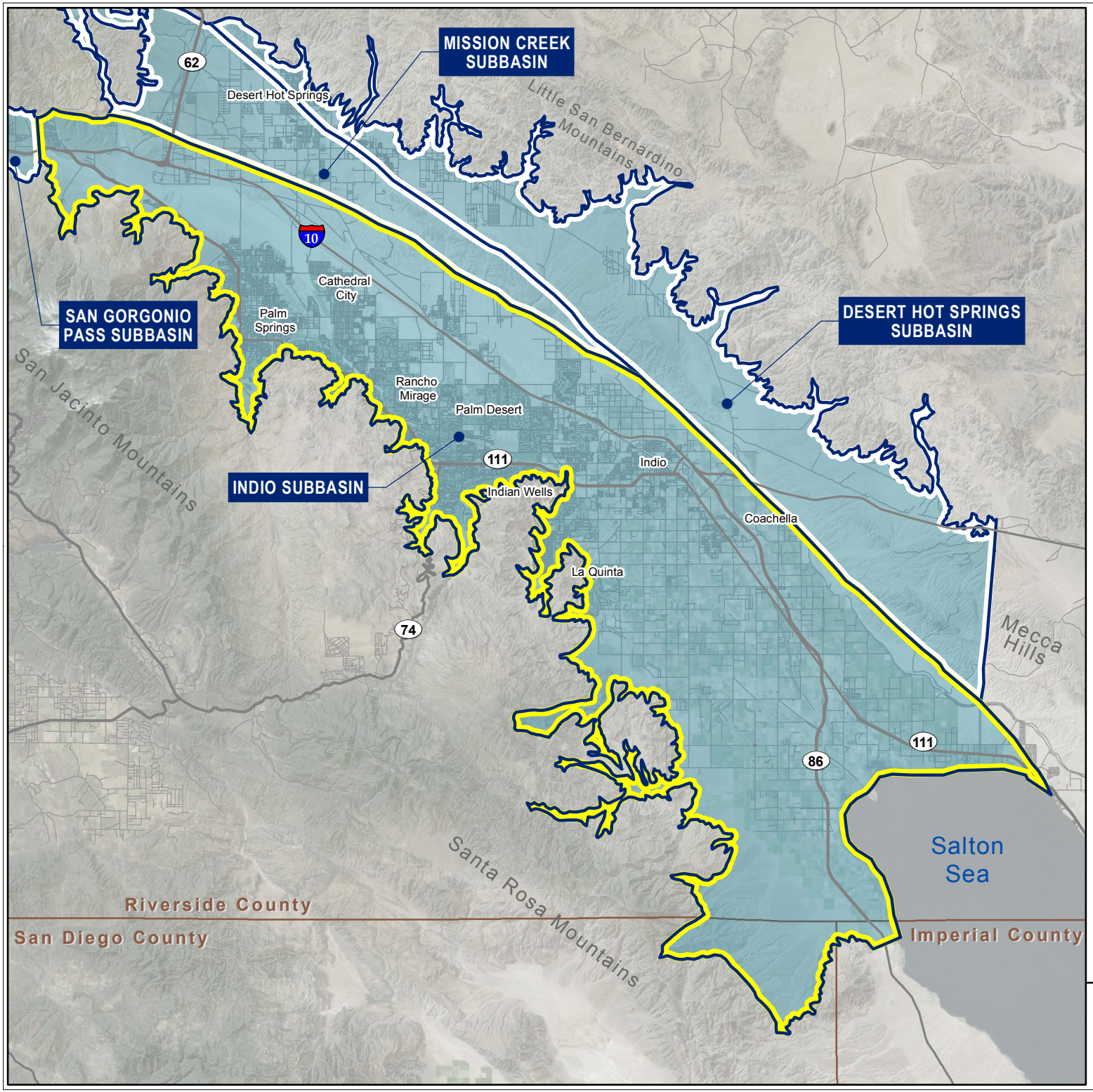
The Coachella Valley Groundwater Basin encompasses much of the floor area of Coachella Valley. The valley itself trends northwest–southeast; its surface slopes generally to the southeast, and in bounded on its northern, northwestern, southwestern, and southern margins by uplifted mountains of bedrock. Valley sedimentary fill can generally be described as thick sand and gravel sedimentary sequences eroded from the surrounding mountains. Sedimentary infill within the Coachella Valley thickens from north to south, and depending on location within the basin is at least several thousand and as much as 12,000 feet in thickness. The upper about 2,000 ft constitute the aquifer system that is the primary source of groundwater supply (CDWR, 1979). A geologic map of the Coachella Valley is provided in **Figure 3-2** for reference.

3.4 HISTORICAL AND CURRENT GROUNDWATER CONDITIONS (§354.16)

Groundwater conditions in the Indio Subbasin have been documented annually since as early as 1976 when the first management agreement was executed between CVWD and DWA. Documentation of groundwater conditions have included a summary of the water balance, change in storage, hydrographs, overdraft condition, and projected water balance. Since the 2010 WMP Update, additional monitoring data has been collected. The following presents the most recent data.

3.4.1 Groundwater Elevation Contour Maps

The 2012 SPEIR for the 2010 WMP Update presented groundwater contour maps for 1999 and 2009 and a comparison of water level differences between those years; see Figure 6-7 of the 2012 SPEIR. **Figure 3-3** presents the water levels in the Indio Subbasin based on 2015 monitoring data.



Groundwater Basin and Subbasins

- Coachella Valley Groundwater Basin
- Groundwater Subbasin
- Highway
- County Boundary

N

0 2.5 5 10 Miles

Source: DWR, CVWD, Caltrans, CalAtlas

Document:
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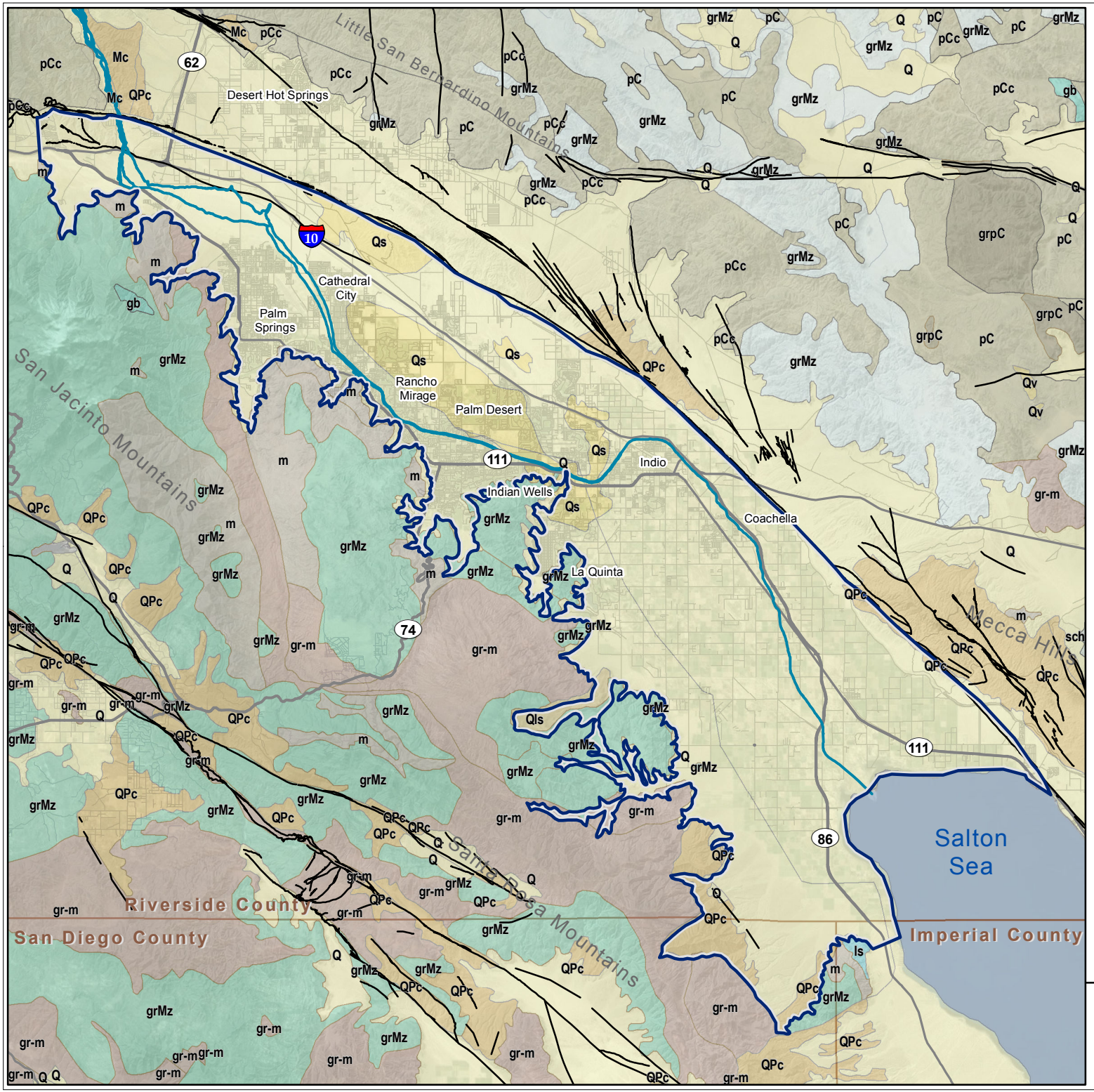
Figure 3-1



Geology of the Indio Subbasin

Quaternary Fault

Whitewater River

Geology Type

(USGS OFR 2005-1305, Updated 2007)

Quaternary

- Qv — Basalt
- Qs — Dune Sand
- Qls — Landslide

Tertiary

- Q — Alluvium
- Ti — Basalt
- E — Mudstone
- Tv — Rhyolite
- QPc/Oc/Qc/Mc — Sandstone

Cretaceous

- sch — Schist

Jurassic

- gr — Plutonic rock
- grMz — Tonalite

Triassic

- gb — Gabbro

Permian

- grMz — Diorite

Paleozoic

- J — Argillite
- ls — Limestone

Paleozoic

- pC/pCc — Gneiss
- grpC — Granite
- gr-m — Plutonic rock
- m — Schist

Highway

Indio Subbasin

County Boundary

Waterbody

N

0 2.5 5 10 Miles

Source: DWR, CVWD, Caltrans, CalAtlas

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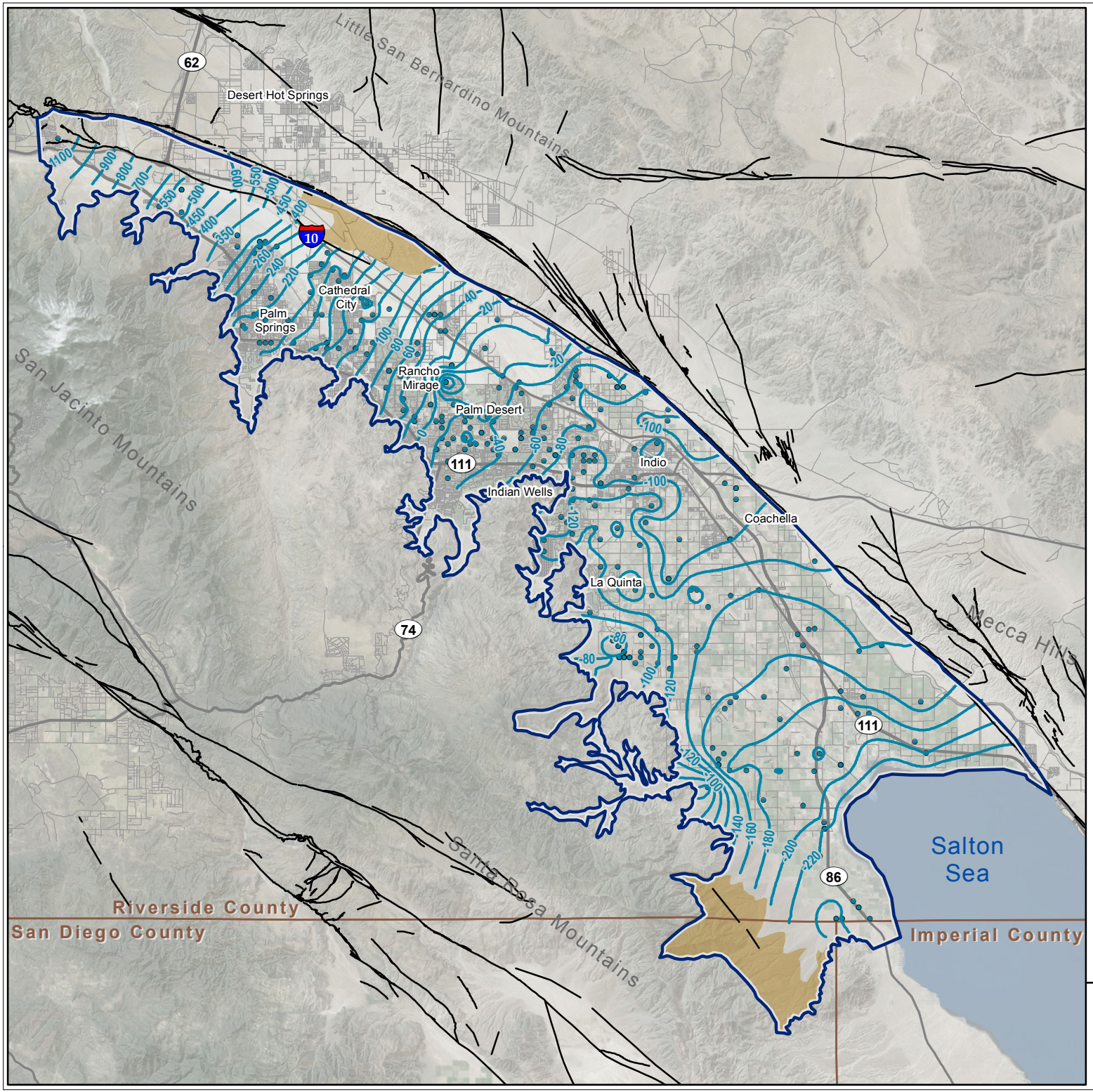
Figure 3-2



2015 Average Groundwater Elevation

- Groundwater Elevation Data Point
- Quaternary Fault
- Groundwater Elevation Contour
- Semi-Waterbearing Rock Area
- Indio Subbasin
- Highway
- County Boundary
- Waterbody

N

0 2.5 5 10 Miles

Source: DWR, CVWD, Caltrans, CalAtlas

Document:
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Figure 3-3

Figure VII-6 and Figure VII-7 of the Engineer's Report (CVWD, 2016a) show the changes in groundwater level in the Indio Subbasin from 2014 to 2015 and 2005 to 2015, respectively.

3.4.2 Hydrographs

Figure 6-6 of the 2010 WMP Update (CVWD, 2012a) presented hydrographs for nine representative wells in the Indio Subbasin. The location of these hydrographs is shown in Figure 4-1 of the 2010 WMP Update. **Figure 3-4** is an updated version of that figure to provide an indication of the recent basin response to water management activities. Several of the wells used in the 2010 WMP Update are no longer being monitored so nearby wells are added.

3.4.3 Change in Storage

Change in groundwater storage is evaluated in both the 2002 WMP and the 2010 WMP Update. Current change in storage conditions are described in Section 3.6 of this Bridge Document.

3.4.4 Seawater Intrusion

CVWD installed nested monitoring wells near the Salton Sea in 1995 and 2002 to evaluate the potential for Salton Sea water intrusion into the groundwater basin. Brackish groundwater has been observed in the two deep monitoring wells located near the CVSC and Lincoln Street. It has not been determined whether these wells show active intrusion or instead show the residual saline water from previous incarnations of the Salton Sea (Lake Cahuilla), which occurred numerous times as result of Colorado River flows.

Current monitoring data shows water levels in these wells are under artesian pressure and range from 17 feet below to 19 feet above the current elevation of the Salton Sea. Data from these monitoring wells also show that the water levels in the primary production aquifers are increasing. The depth to water in 2004 in the primary production aquifer was 40 feet to 100 feet below the ground surface. Current water levels at the multiple-zone monitoring well near Lincoln Street range from 12 feet below ground surface to 19 feet above ground surface.

3.4.5 Groundwater Quality Issues

Section 5.1 of the 2010 WMP described the major water quality issues facing water users in the Indio Subbasin. The key issues discussed in the WMP Update are salinity management, perchlorate, arsenic, chromium-6, uranium, nitrate, volatile organic compounds, and endocrine disrupting compounds; of these, arsenic, chromium-6 and uranium are naturally-occurring. Treatment has been implemented for arsenic removal

and plans are underway to implement treatment for chromium-6. Other constituents are monitored for future action if needed.

3.4.6 Land Subsidence

Land subsidence in the Coachella Valley has been investigated since 1996 through an on-going cooperative program between CVWD and USGS. Section 5.5 of the 2010 WMP Update presents a discussion of land subsidence in the Coachella Valley. Since the adoption of the WMP Update, the USGS has completed an additional round of monitoring and analysis in 2010 and presented that information in Scientific Investigations Report 2014–5075 (Sneed *et al.*, 2014). The next round of subsidence monitoring and analysis is expected to be completed in 2018.

3.4.7 Interconnected Surface Water

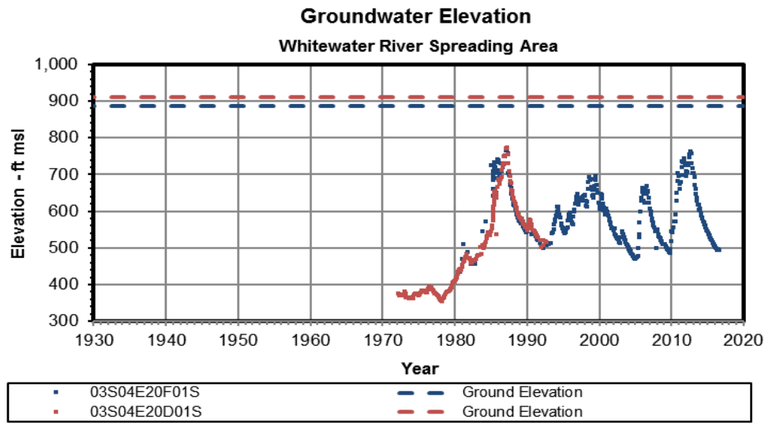
There is limited interconnections between the groundwater aquifers and surface water. The notable exception appears to be the interconnection between the lower reaches of the CVSC and the semi-perched aquifer in the East Valley. An extensive subsurface tile drain system was installed in the 1950s and 1960s to keep salty shallow groundwater below the rooting zone in the agricultural areas. Section 6.8.2 of the 2010 WMP Update describes the drainage system in more detail. Flows in the drainage system respond to groundwater levels, increasing when levels are higher and decreasing when levels are lower.

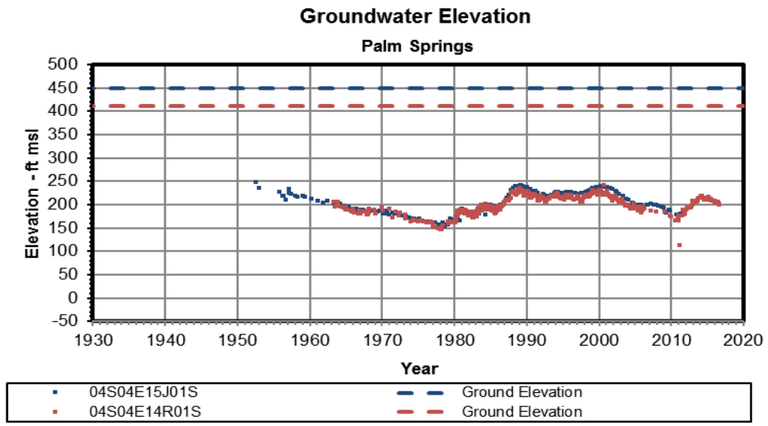
3.4.8 Groundwater Dependent Ecosystems

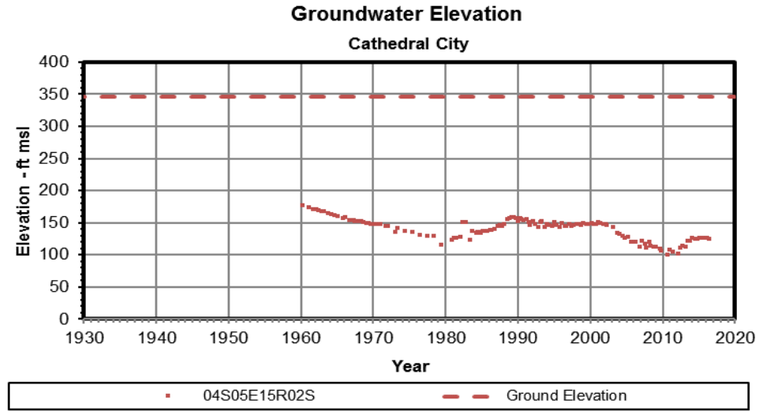
Groundwater dependent ecosystems rely on relatively shallow groundwater levels to support vegetative transpiration. When the 2002 WMP and 2010 WMP Update were prepared, mapping of groundwater-dependent vegetation was not available. However, the groundwater balance and groundwater model included consumption of shallow groundwater by phreatophytic vegetation on undeveloped land overlying the semi-perched aquifer area. These lands are not served by the CVWD subsurface agricultural tile drain system, which collects the shallow saline groundwater and convey it to the Salton Sea.

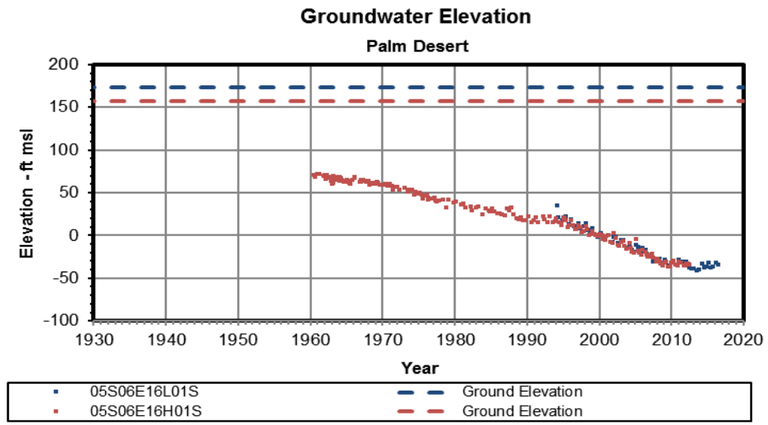
3.5 WATER BUDGET (§354.18)

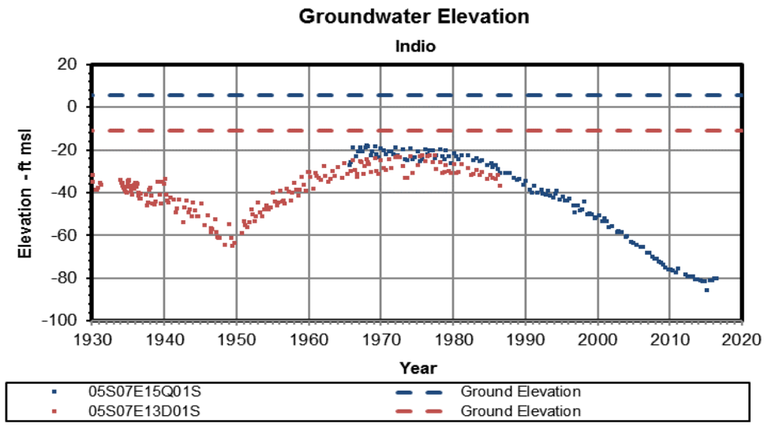
The SGMA regulations require the development of an annual budget of groundwater and surface water entering and leaving the groundwater system for historical, current, and projected future conditions. The original water budget for the Indio Subbasin was developed during the preparation of the Coachella Valley Groundwater Model for the 2002 WMP and PEIR. The original budget incorporates all known inflows and outflows to

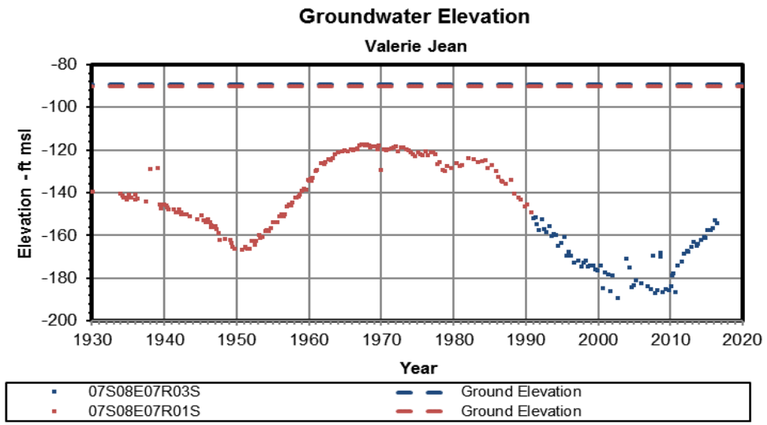


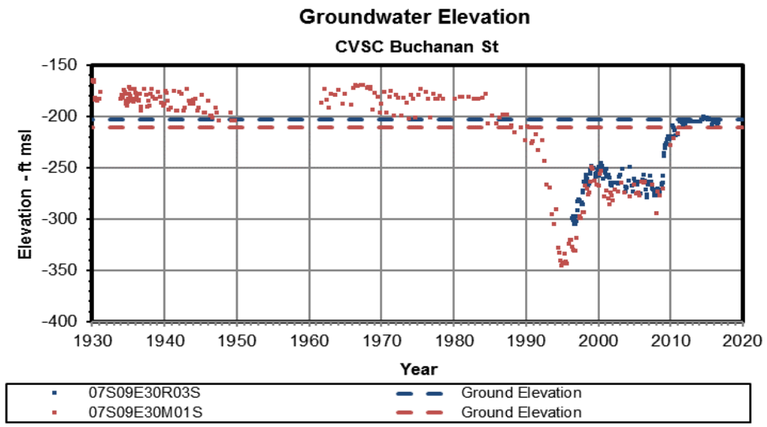


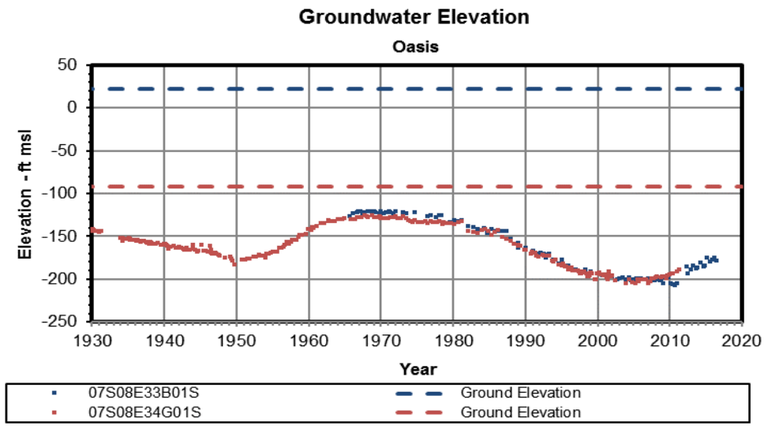












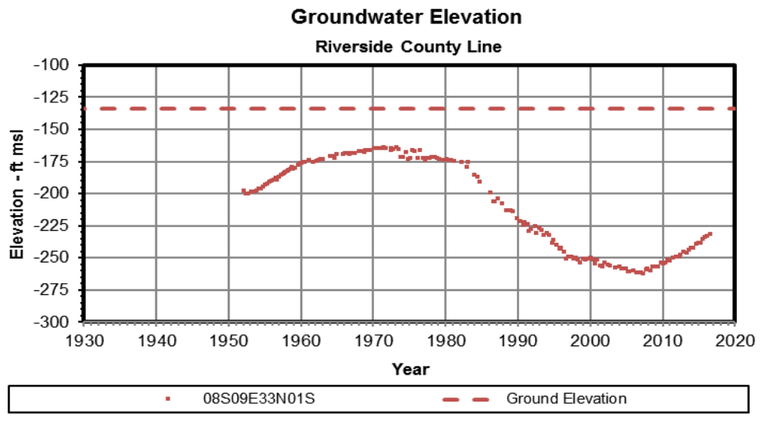


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Figure 3-4
Representative Groundwater Elevation Hydrographs

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the basin for the period 1936 through 1996, which was used for model calibration. A detailed discussion of the water budget is presented in the Water Balance section of Section 3 of the 2002 WMP and Section 6.3.1 of the 2002 WMP PEIR. Additional detail is presented in Appendix D (Revised) of the 2002 WMP PEIR.

For the 2002 WMP and PEIR, the historical water budget was extended from 1997 through 1999 (the baseline year for the PEIR). A baseline water budget was developed for the period of 2000 through 2035 that reflected future conditions in the absence of a water management plan. Separate future water budgets were developed for each of the alternatives evaluated in the 2002 WMP.

The water budget was updated in Section 4.1.6 of the 2010 WMP Update with historical data through the year 2009 and the projected water budget for the updated plan was extended through 2045 as presented in Section 6.2.5 of the 2012 SPEIR for the 2010 WMP Update. Water budget projections assume long-term average local runoff, CDWR projections of SWP reliability (reduced to 50 percent without the California Water Fix and EcoFix), and Colorado River supplies based on the Law of the River and the Quantification Settlement Agreement. SWP Exchange water deliveries assume Metropolitan Water District of Southern California must maintain a positive advanced delivery balance in all years.

The water balance in the Indio Subbasin is calculated annually in the Engineer's Report on Water Supply and Replenishment Assessment. For the Indio Subbasin, the water balance is presented separately for the West Whitewater Area of Benefit (AOB) and the East Whitewater AOB. In 2015, there was a net outflow of 41,300 AF from the Indio Subbasin due to low SWP Exchange deliveries (CVWD, 2016a). Note that the water balance for a particular year does not represent the long-term average water balance and total water balance is impacted by annual SWP Exchange water deliveries for replenishment at Whitewater Recharge Facility.

3.5.1 Change in Storage

The annual change in storage of the basin is the net inflow minus outflow. Historical and projected annual change in storage of the West Valley and East Valley is illustrated in Figure VI-4 and Figure VII-4 of the Engineer's Report (CVWD, 2016a), respectively.

3.5.2 Overdraft Condition

CDWR Bulletin 160-09 (2009 California Water Plan Update) provides a definition of overdraft as follows:

> *"Overdraft is defined as the condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the*

basin over a period of years, during which the water supply conditions approximate average conditions."

To mitigate overdraft conditions in the Basin, CVWD, in cooperation with DWA, has been running their Groundwater Replenishment Program (GRP). Operations include providing groundwater replenishment in the West Whitewater River Subbasin AOB since 1973 and in the Mission Creek subbasin Management Area since 2002, via importation of Colorado River water for direct replenishment at the Whitewater River Groundwater Replenishment Facility and Mission Creek Groundwater Replenishment Facility, respectively. The Groundwater Recharge Program is discussed in Section 6.6 of the 2010 WMP Update (CVWD, 2012a) and the Engineer's Report on Water Supply and Replenishment Assessment (CVWD, 2016a).

3.5.3 Estimate of Sustainable Yield

During development of the 2002 WMP and the 2010 WMP Update, CVWD utilized the estimated groundwater response as determined by groundwater modeling and the future groundwater balance to determine whether groundwater pumping would exceed available supplies. As growth occurs, agricultural water use is expected to decline and urban water use will increase. This requires the use of imported water to change from agricultural to urban. The goal of the WMP Update is to maintain a positive annual change in groundwater storage under average supply conditions both now and in the future. The 2010 WMP Update identifies additional water supply development including recycled water and desalinated agricultural drain water plus water conservation to meet projected water demands and to maintain a positive groundwater balance for the basin.

3.5.4 Projected Water Balance

The projected groundwater balance with implementation of the WMP is presented in Figure VI-4 and Figure VII-4 of the Engineer's Report (CVWD, 2016a). This balance is based on long-term average availability of local runoff and imported water, projected growth in the Valley, and implementation of the programs and projects identified in Section 8 of the 2010 WMP Update.

3.6 EXISTING MANAGEMENT AREAS (§354.20)

As described previously, the Indio Subbasin is divided into two management areas, namely the West Whitewater River Subbasin AOB and the East Whitewater River Subbasin AOB. The line separating the West Valley and the East Valley is based on the area that receives measureable benefit from recharge operations at Whitewater Recharge Facility. **Figure 3-5** illustrates these management areas and shows the location of recharge facilities.

CVWD and DWA assess a Replenishment Assessment Charge (RAC) for groundwater withdrawals in each agency's AOBs as described in their respective annual engineer's reports. The engineer's reports discuss the water supply conditions in each AOB (CVWD, 2016a; DWA, 2016).

3.7 DATA GAPS (§354.12, 354.14)

Specific data gaps identified in this 2010 WMP Update (CVWD, 2012a) are:

- Surface water flow data to estimate potential yield from stormwater capture projects.
- Insufficient data documenting water requirements for habitat, water quality and compliance with water quality regulations.
- Lack of a centralized groundwater database that allows all water agencies to share data.
- Uniform reporting of urban water use by user class to track water conservation efforts.
- Groundwater production data for wells in the East Valley, especially agricultural wells.
- Non-uniform water quality monitoring data for several constituents of concern, especially perchlorate.
- Existing groundwater models lack water quality predictive capabilities.

Evaluation of data gaps are performed on an on-going basis to identify areas where data being collected in the valley are insufficient. The monitoring program will be updated to ensure provision of data needed to manage water resources and evaluate the effectiveness of WMP activities.

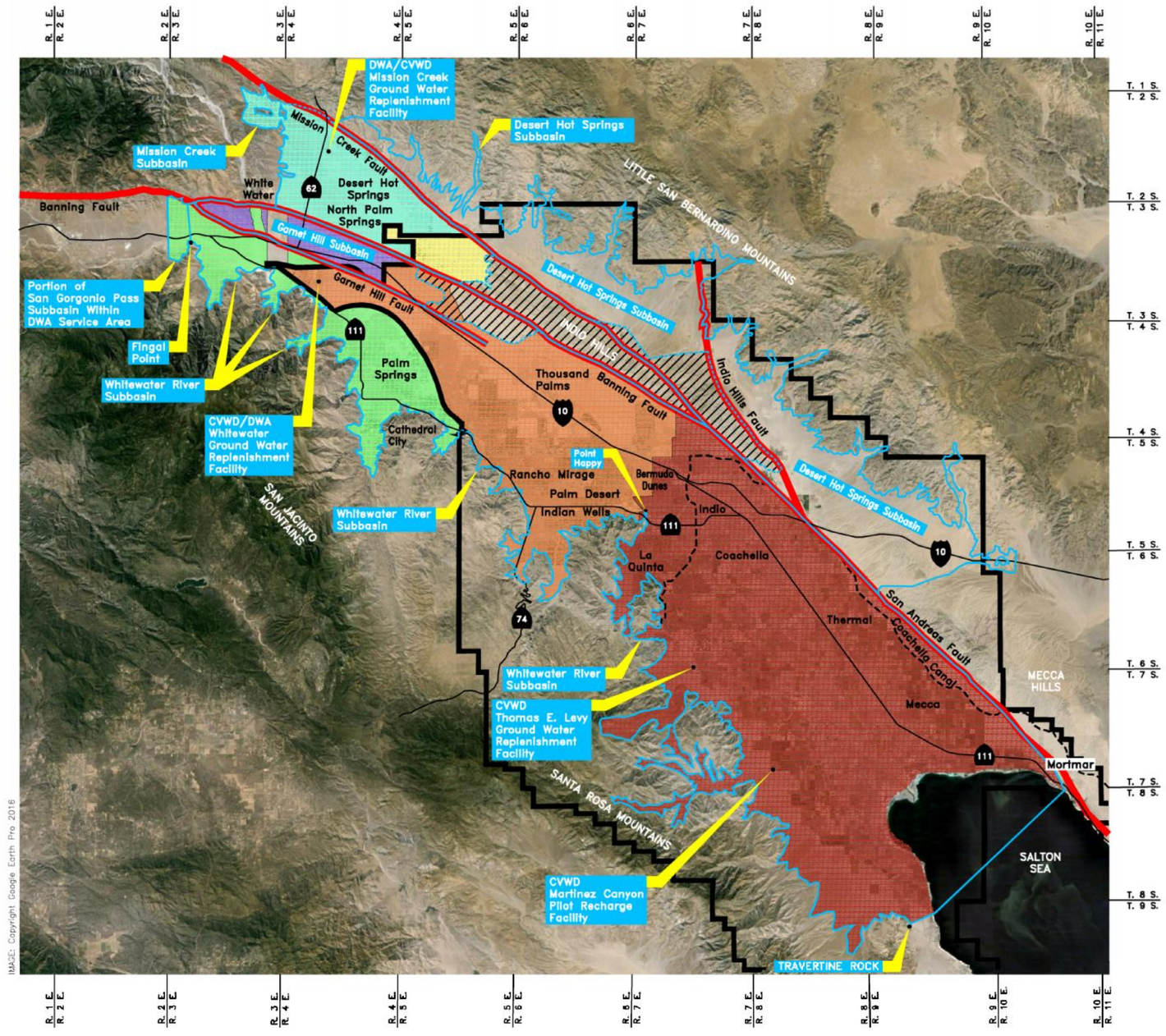
To eliminate the data gaps identified above, the 2010 WMP Update identified several new programs/projects to be implemented:

- Develop water resources database to facilitate data sharing between agencies and tribes.
- Construct additional monitoring wells in conjunction with new recharge facilities.
- Develop a water quality assessment documenting on-going monitoring activities in the basin.
- Conduct a joint investigation of the distribution of perchlorate in water supply wells in the valley.

- Update and recalibrate Coachella Valley groundwater model based on current data and conduct a peer review of updated model.
- Develop a new planning interface and database that can be linked with land use plans and agricultural activities to better distribute pumping and return flows to the model.
- Develop and calibrate a water quality model capable of simulating the changes in salinity and possibly other conservative water quality parameters in conjunction with the salt/nutrient management plan.
- Develop a coordinated approach among the water purveyors and CVAG for calculating urban per capita water usage including methodologies for determining service area population.

Table 6-2 of this bridge document provides an update on the implementation status of these recommendations.

Areas of Benefit in the Indio Subbasin
Figure 3-5



COACHELLA VALLEY WATER DISTRICT
GROUNDWATER REPLENISHMENT AND ASSESSMENT PROGRAM

2016–2017

GROUNDWATER SUBBASIN MAP SHOWING GROUNDWATER REPLENISHMENT AREAS OF BENEFIT (EITHER DIRECT OR INDIRECT)

LEGEND

- CVWD BOUNDARY
- FAULTS
- SUBBASIN BOUNDARIES
- CVWD WEST WHITEWATER RIVER SUBBASIN AREA OF BENEFIT
- CVWD EAST WHITEWATER RIVER SUBBASIN AREA OF BENEFIT
- CVWD MISSION CREEK SUBBASIN AREA OF BENEFIT
- DWA WHITEWATER RIVER SUBBASIN AREA OF BENEFIT
- DWA MISSION CREEK SUBBASIN AREA OF BENEFIT
- DWA GARNET HILL SUBBASIN AREA OF BENEFIT
- INDIO HILLS (LOW PERMEABILITY)

MAP SOURCE:

2016 GOOGLE EARTH PRO (AERIAL PHOTOGRAPHY), MISSION CREEK AND GARNET HILL SUBBASINS WATER MANAGEMENT PLAN FINAL REPORT, JANUARY 2013 (SUBBASIN BOUNDARIES)

From Figure III-1 of Engineer's Report (CVWD, 2016a)

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Section 4
Sustainable Management Criteria

The purpose of this section is to demonstrate the compliance of the 2010 WMP Update and its supporting documents with the goals and requirements of SGMA with respect to sustainability goals and objectives to prevent SGMA-defined undesirable effects.

4.1 SGMA REQUIREMENTS

Section 354.22 through 354.30 of the SGMA regulations establish the requirements for sustainable management criteria. SGMA requires GSPs to establish a sustainability goal "that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline. The undesirable results defined in SGMA are:

- Chronic lowering of groundwater levels
- Reduction of groundwater storage
- Seawater Intrusion
- Degraded water quality
- Land subsidence
- Depletions of interconnected surface waters

SGMA and its associated regulations requires the establishment of minimum thresholds for each monitoring site that, if exceeded, may cause undesirable results. The SGMA regulations also require "the establishment of measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon."

At the time the 2002 WMP and the 2010 WMP Update were prepared, there were no requirements for establishing minimum thresholds and measurable objectives for each monitoring site. Consequently, the 2002 WMP and 2010 WMP do not specifically address these requirements. However, the WMP and WMP Update established water management goals and objectives that drive the implementation of the WMP programs and projects. Progress toward achieving these goals is evaluated using a combination of water level monitoring, water budget evaluation, subsidence monitoring, and water quality monitoring.

4.2 EXISTING SUSTAINABILITY GOALS (§354.22)

The established goal of the 2002 WMP is to reliably meet current and future water demands in a cost effective and sustainable manner. To meet this goal, four specific objectives were identified for the 2002 WMP (CVWD, 2012a):

1. Eliminate groundwater overdraft and its associated adverse impacts, including:
   - groundwater storage reductions,
   - declining groundwater levels,
   - land subsidence, and
   - water quality degradation;
2. Maximize conjunctive use opportunities;
3. Minimize adverse economic impacts to Coachella Valley water users; and
4. Minimize environmental impacts.

These goals were refined in the 2010 WMP Update as follows (CVWD, 2012a):

1. **Meet current and future water demands with a 10 percent supply buffer.** As discussed previously, the water resources environment in California faces significant uncertainties due to growth, legal and environmental restrictions of water exports from the Delta, legal uncertainty associated with the Quantification Settlement Agreement (QSA), and climate change. Because of this uncertainty, the 2010 WMP Update includes a water supply planning buffer of 10 percent of projected demand. This buffer will provide valley water managers with a contingency in the event that growth is greater than expected or that water supplies are lower than expected.
2. **Eliminate long-term groundwater overdraft.** Groundwater overdraft reduction was the primary driving force behind the 2002 WMP. Overdraft reduction continues to be an important objective of the 2010 WMP Update because of the importance placed of sustainability. Water supplies must be sufficient to reduce the current overdraft and manage future overdraft such that future generations will have adequate dependable water supplies. However, the water managers recognize that the large amounts of water stored in the groundwater basin provide a valuable resource for meeting water demands during periods of imported water shortage. Consequently, overdraft should be managed in a way that allows this storage to be used when needed to avoid shortages.
3. **Manage and protect water quality.** The quality of the groundwater is generally very high. However, localized water quality issues such as arsenic exist that currently require treatment to make water suitable for potable use. Concerns have been expressed about recharging the basin with Colorado River water which has

a higher salinity than the existing groundwater. The need to manage water quality is addressed in the 2010 WMP Update, including the cost of treatment which could significantly increase the cost of water.

4. **Comply with state and federal laws and regulations.** A number of local, state, and federal laws, regulations, permits and agreements affect water management in the Coachella Valley including: drinking water regulations, waste discharge requirements, well construction standards, CalGreen Building Code, and state and federal water contracts to name a few. CVWD and the participants in this plan will make their best efforts to comply with applicable laws, regulations and agreements and will plan for future changes to those requirements.
5. **Manage future costs.** The cost for development and management of the Coachella Valley water resources is expected to increase in the future in response to resource scarcity, increasing regulatory requirements, and growth. While there are few if any "cheap" water supply solutions remaining, the 2010 WMP Update seeks to meet future water needs in the most cost-effective manner.
6. **Minimize adverse environmental impacts.** The California Environmental Quality Act (CEQA) requires the evaluation and mitigation of adverse environmental impacts. The WMP minimizes and mitigates adverse environmental impacts to the extent practical.

4.3 UNDESIRABLE RESULTS, THRESHOLDS, AND OBJECTIVES (§354.26, 354.28, 354.30)

CWC §10721(x) describes six undesirable results that should be mitigated through sustainable groundwater management: (1) chronic lowering of groundwater levels, (2) reduction of groundwater storage, (3) seawater intrusion, (4) degraded water quality, (5) land subsidence, and (6) depletions of interconnected surface water.

As described below, groundwater levels and water balance serve as the primary measurement to determine if the plan is being successfully implemented. Groundwater levels determined by modeling serve as both a measurable sustainability objective and interim objectives for assessing plan success. The water agencies evaluate water level trends for one and ten-year periods, allowing for operational flexibility, to identify the potential for undesirable results and the need for adaptive management and program implementation.

The following paragraphs describe the occurrence of undesirable results in the Indio Subbasin and the approach taken in the 2002 WMP and 2010 WMP Update to evaluate these results.

4.3.1 Chronic Lowering of Groundwater Levels

The Coachella Valley is dependent on the groundwater basin as an integral component for managing water supply. Chronic lowering of groundwater levels is a critical concern in the Valley and the primary driving force for the 2010 WMP Update (CVWD, 2012a) and has since been a fundamental management goal. Long-term lowering of groundwater levels has significant impacts including consequent reduction of groundwater storage and land subsidence through settling, increased cost of pumping, negative effects on phreatophytic vegetation, and potential risk of Salton Sea water intrusion.

Prior to adoption of the 2002 WMP, most of the Indio Subbasin experienced sustained lowering of groundwater levels at rates of 1.5 to 3.5 ft per year over the twenty year period of 1980-2000. Lowering of groundwater levels in the East Valley portions of the Subbasin resulted in the elimination of artesian well conditions and increased risk of water quality degradation and land subsidence. The evaluation of water management plan alternatives in the 2002 WMP considered projected changes in groundwater levels over a 35-year planning period using 1999 levels as a baseline. Figure 6-26 of the 2002 PEIR shows the projected differences in groundwater elevations from 1999 to 2035 with implementation of the WMP. The 2010 WMP Update evaluated the changes in water levels from 2009 through 2045 with implementation of the updated WMP. In addition, the SPEIR for the 2010 WMP evaluated water level changes between 2009 and 2020 as an interim target.

Since adoption of the 2002 WMP, water levels in the northern portions of the West Valley area of the Subbasin (from Whitewater to Cathedral City) experienced relatively stable long-term trends although levels have fluctuated significantly in response to variable recharge of SWP Exchange water at the Whitewater River Replenishment Facility.. Water levels in the northern portions of the West Valley area of the Subbasin (from Whitewater to Cathedral City) experience relatively stable long-term trends although levels fluctuated in response to variable recharge of SWP Exchange water at the Whitewater River Replenishment Facility.

Implementation of the WMP programs since plan adoption have had a positive effect on water level declines. As shown previously in **Figure 3-3**, water levels declined in much of the Subbasin through about 2009. Figure VII-7 of the Engineer's Report (CVWD, 2016a) shows that groundwater levels increased for much of the Valley for the period of 2005 through 2015. However, groundwater levels in the mid-Valley area (Rancho Mirage-Palm Desert-Indio) exhibited declining levels.

Since that time, implementation of the Thomas E. Levy Replenishment Facility in the East Valley, acquisition of increased SWP Table A Amounts for recharge at Whitewater, connection of 10 additional golf courses to Coachella Canal and recycled water, and extensive water conservation through both incentives and water rate structure changes have caused groundwater pumping to decline from over 380,000 AFY in 2008 to 261,200 AFY in 2015. At the same time, the Coachella Canal water has increased from about

330,000 AFY to 392,000 AFY in 2015 due to implementation of the QSA. This supply will reach 459,000 AFY by 2026. These factors are expected to have a positive effect on groundwater levels in the next ten years.

4.3.2 Reduction of Groundwater Storage

Change in groundwater storage is the annual amount of groundwater that is stored or removed from the groundwater basin. The continued reduction in groundwater storage to the point that adverse impacts occur is referred to as overdraft. These adverse impacts can include water quality degradation and land subsidence as well as increased pumping costs. As described in Section 6 of the WMP, a general objective of the WMP is to eliminate groundwater overdraft by maintaining a positive change in storage to eliminate overdraft by 2030. The 2010 WMP retained this objective as described in Section 7.4.1 of that report.

It is recognized that variations in annual supply availability, especially SWP Exchange water, may limit the ability to maintain a positive change in storage in all years. Therefore, the future change is storage was evaluated using long-term average imported water supplies. Interim targets are based on the projected water balance as presented in Section 7.4.1 of the 2010 WMP Update.

Prior to adoption of the 2002 WMP, approximately 1.4 million AF of water was withdrawn from the subbasin between 1936 and 1999 (CVWD, 2002a). Between 2000 and 2009, an addition 1.1 million AF was removed from storage (CVWD, 2012a). This storage depletion can lead to a variety of adverse impacts, including increased pumping energy/cost, water quality degradation, and land subsidence. A key objective of the 2010 WMP Update is to reduce groundwater overdraft and its associated adverse impacts, with a goal of eliminating overdraft by 2030.

Since 2009, groundwater conditions have significantly improved. Documentation presented in the annual Engineer's Reports and the 2014 Report Card on the WMP Update indicate that approximately 350,000 AF has been added to storage as a result of increased recharge, conversion of golf course pumping to imported and recycled water, and water conservation.

4.3.3 Seawater Intrusion

The Indio Subbasin is at minimal risk for seawater intrusion, but there may be a potential for Salton Sea water to intrude the shallow aquifer in the East Valley if groundwater levels are not sufficiently high to prevent intrusion. Protective elevations that would prevent saltwater intrusion were not determined during preparation of the 2002 WMP or the 2010 WMP Update. Instead, groundwater modeling was used to estimate potential subsurface inflows from the Salton Sea. If positive inflows were calculated, salt water intrusion was presumed to occur. Therefore, management alternatives were evaluated with the goal of

minimizing subsurface Salton Sea inflows to the basin. If groundwater levels are at or above modeled results, then salt water intrusion potential should be minimized.

To monitor seawater intrusion, CVWD has constructed nested monitoring wells within close proximity of the Salton Sea and collects samples from several depth zones to test for water quality. There is currently no evidence that seawater intrusion is occurring since the installation of nested wells in this area. High total dissolved solids (TDS) concentrations in the deepest zones of these wells does occur, likely attributable to ancient manifestations of the Salton Sea. As described in Section 3.5.4, recent monitoring shows water levels are 12 to 19 ft above the elevation of the Salton Sea.

4.3.4 Degraded Water Quality

The 2002 WMP identified water quality degradation as a significant adverse impact of groundwater overdraft. Groundwater quality in the Coachella Valley varies with depth, proximity to faults and recharge basins, presence of surface contaminants, and other hydrogeologic or human factors. Water agencies conduct water quality monitoring in accordance with federal and state drinking water requirements, and analyze water samples for more than 100 regulated and unregulated substances. The 2002 WMP evaluated the potential for water quality degradation using a salt balance approach. Net salt addition to the basin is unavoidable due to the dependence on imported water supplies from the Colorado River. Therefore, the 2002 WMP sought to minimize net salt addition to the basin. Migration of contaminant plumes was not evaluated in the 2010 WMP Update.

The 2010 WMP Update identified salinity, hexavalent chromium, arsenic, and nitrate as water quality constituents of concern in the Indio Subbasin. The 2010 WMP sought to minimize the effects of overdraft on these constituents but did not establish specific water quality thresholds and goals. However, the 2010 WMP Update sought to minimize water quality impacts in the East Valley portion of the subbasin by establishing a drain flow target of about 100,000 AFY by 2045.

4.3.5 Land Subsidence

The 2002 WMP identified the potential risk of land subsidence caused by continued overdraft. The 2002 WMP used 1999 groundwater levels in combination with subsurface geology as an indicator of potential subsidence. As described in Section 7 of that plan, alternative plans were evaluated on the basis of subsidence risk based on projected water level changes between 1999 and 2035. As described in Section 7.4.1.5 of the 2010 WMP Update, groundwater levels in susceptible portions of the basin lower than those in 2005 were identified as having higher risk of continued subsidence.

During WMP preparation, CVWD and the USGS began cooperatively funded studies investigating land subsidence in the Coachella Valley in 1996. Global Positioning System

(GPS) surveying and Interferometric Synthetic Aperture Radar (InSAR) methods are used to determine the location, extent, and magnitude of the vertical land-surface changes in the Coachella Valley.

A report was published by the USGS in 2007 entitled Detection and Measurement of Land Subsidence Using Global Positioning System Surveying and Interferometric Synthetic Aperture Radar, Coachella Valley, California 1996-2005 (Sneed and Brandt, 2007). The most recent phase of the investigation evaluated correlations between subsidence and recovery related to local geology and groundwater level changes during the period 1993 to 2010. The most recent in this series of reports was published by the USGS in 2014 (Sneed *et al.*, 2014).

This report indicated that subsidence occurred in the East Whitewater River Subbasin AOB and portions of the West Whitewater River Subbasin AOB (primarily within the Palm Desert area). However, decreased rates of subsidence, or uplift, were observed in the La Quinta area in 2010. The uplift was attributed to the recovering water levels in the vicinity of the Thomas E. Levy Replenishment Facility (Sneed *et al.*, 2014).

USGS has commenced their next round of subsidence monitoring in the Coachella Valley. This report will be available in 2018. Since 1990, CVWD has invested over $1 million to monitor land subsidence in the region.

4.3.6 Depletions of Interconnected Surface Water

As described in Section 3.5.7, there are few areas of interconnected surface water and groundwater in the Indio Subbasin. The ancient lakebed deposits in the East Valley portion of the subbasin create semi-perched groundwater conditions. An agricultural drainage system was installed in the 1950s through mid-1970s to maintain shallow groundwater levels below the rooting zone and convey brackish irrigation return water to the Salton Sea.

An indirect relationship exists between groundwater levels in the basin and flows in the drainage system. Between about 1980 and 2000, agricultural drain flows decreased from about 130,000 AFY to about 75,000 AFY. From 2000 to 2009 drain flows decreased to about 54,000 AFY. Since 2009, drain flows have been relatively stable averaging 54,000 AFY.

If groundwater levels fall, flows to the drains decrease and irrigation return flows can percolate into the underlying deeper aquifer causing water quality impacts. For planning purposes, CVWD has estimated that drain flows (excluding stormwater and wastewater discharges) in the range of 90,000 to 110,000 AFY is needed to maintain salt export while minimizing groundwater losses. Monitoring of drain flows in comparison to simulated results serves as interim targets for assessing surface water depletion/accretions.

4.4 SUMMARY

Although the 2002 WMP and the 2010 WMP Update were prepared before SGMA was adopted, these plans address the six undesirable effects associated with groundwater overdraft. The WMP and the WMP Update seek to achieve this objective and eliminate undesirable effects by maintaining a positive water balance and meeting the groundwater level targets established through modeling. The 2010 WMP Update states:

> *The approach for developing the 2010 WMP Update is to reduce overdraft in the basin by achieving a positive change in storage and raising water levels. When this is achieved, the risk of subsidence is reduced or eliminated. The strategies evaluated for the 2010 WMP Update achieve a reasonable balance between the benefits of overdraft reduction, water level increases and impacts resulting from those increases. As the WMP is implemented, it is important that monitoring results be evaluated on a regular basis to ensure that unanticipated adverse impacts are not occurring. If monitoring shows potential adverse conditions, then appropriate action can be taken to adjust plan implementation.*

Section 5
Monitoring and Data Management

The purpose of this section is to demonstrate the compliance of the 2010 WMP Update and its supporting documents with the goals and requirements of SGMA with respect to monitoring networks and data management. The current monitoring program is fully compliant with CASGEM requirements.

5.1 PLAN COMPLIANCE WITH SGMA REQUIREMENTS

Demonstration of WMP compliance with the requirements of SGMA are demonstrated in **Table 5-1** which contains specific references to the relevant figures, tables, and report sections.

Table 5-1
WMP Compliance with 23CCR354.34 – 23CCR354.40

Regulation Section	Regulation Text	WMP Compliance
354.34a	Each Agency shall develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation.	Appendix C of the 2010 WMP Update describes the existing monitoring program.
354.34b	Each Plan shall include a description of the monitoring network objectives for the basin, including an explanation of how the network will be developed and implemented to monitor groundwater and related surface conditions, and the interconnection of surface water and groundwater,	Appendix C of the 2010 WMP Update describes general objectives of the monitoring program.

Regulation Section	Regulation Text	WMP Compliance
	with sufficient temporal frequency and spatial density to evaluate the affects and effectiveness of Plan implementation. The monitoring network objectives shall be implemented to accomplish the following: (1) Demonstrate progress toward achieving measurable objectives described in the Plan. (2) Monitor impacts to the beneficial uses or users of groundwater. (3) Monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds. (4) Quantify annual changes in water budget components.	
354.34c	Each monitoring network shall be designed to accomplish the following for each sustainability indicator:	See below
354.34c1	Chronic Lowering of Groundwater Levels. Demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features by the following methods: (A) A sufficient density of monitoring wells to collect representative measurements through depth-discrete perforated intervals to characterize the groundwater table or	More than 300 wells in the Indio Subbasin were monitored for groundwater levels at least twice in 2015.

Regulation Section	Regulation Text	WMP Compliance
	potentiometric surface for each principal aquifer. (B) Static groundwater elevation measurements shall be collected at least two times per year, to represent seasonal low and seasonal high groundwater conditions.	
354.34c2	Reduction of Groundwater Storage. Provide an estimate of the change in annual groundwater in storage.	Major surface water inflows and outflows are gauged. All production wells exceeding 10 AFY in the DWA area and 25 AFY in the CVWD area are metered. Change in storage is estimated annually in CVWD's and DWA's engineer's reports.
354.34c3	Seawater Intrusion. Monitor seawater intrusion using chloride concentrations, or other measurements convertible to chloride concentrations, so that the current and projected rate and extent of seawater intrusion for each applicable principal aquifer may be calculated.	Two sets of nested wells (four each) are located near the Salton Sea to monitor water levels and quality at different depths.
354.34c4	Degraded Water Quality. Collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues.	Water quality from municipal production wells monitored at least every three years. Selected wells monitored more frequently.
354.34c5	Land Subsidence. Identify the rate and extent of land subsidence,	Land subsidence is evaluate by USGS using GPS and InSAR

Regulation Section	Regulation Text	WMP Compliance
	which may be measured by extensometers, surveying, remote sensing technology, or other appropriate method.	techniques every four years. Evaluation is currently underway with a report anticipated in 2018.
354.34c6	Depletions of Interconnected Surface Water. Monitor surface water and groundwater, where interconnected surface water conditions exist, to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions. The monitoring network shall be able to characterize the following: (A) Flow conditions including surface water discharge, surface water head, and baseflow contribution. (B) Identifying the approximate date and location where ephemeral or intermittent flowing streams and rivers cease to flow, if applicable. (C) Temporal change in conditions due to variations in stream discharge and regional groundwater extraction. (D) Other factors that may be necessary to identify adverse impacts on beneficial uses of the surface water.	Flows in the Coachella Valley Stormwater Channel near Mecca are measured daily by USGS. Flows in Salton Sea drains are monitored monthly by CVWD.

Regulation Section	Regulation Text	WMP Compliance
354.34d	The monitoring network shall be designed to ensure adequate coverage of sustainability indicators. If management areas are established, the quantity and density of monitoring sites in those areas shall be sufficient to evaluate conditions of the basin setting and sustainable management criteria specific to that area.	In the West Whitewater AOB, 148 wells were monitored in 2015; in the East Whitewater AOB, 155 wells were monitored in 2015.
354.34e	A Plan may utilize site information and monitoring data from existing sources as part of the monitoring network.	Sites are selected based on access and well characteristics.
354.34f	The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:	See below
354.34f1	Amount of current and projected groundwater use.	All production wells exceeding 10 AFY in the DWA area and 25 AFY in the CVWD area are metered. Evaluation of metering production to 2 AFY to be conducted by 2017. Projected groundwater use is estimated from data used to develop the water management plan.
354.34f2	Aquifer characteristics, including confined or unconfined aquifer conditions, or other physical characteristics that affect groundwater flow.	Wells are classified by aquifer if sufficient construction data is available.

Regulation Section	Regulation Text	WMP Compliance
354.34f3	Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.	Monitoring sites are established based on the availability of existing wells, site access, and spatial distribution. Water levels in adjacent basins are monitored by each respective water agency.
354.34f4	Whether the Agency has adequate long-term existing monitoring results or other technical information to demonstrate an understanding of aquifer response.	Selected wells have been monitored since the 1920s.
354.34g	Each Plan shall describe the following information about the monitoring network:	See below
354.34g1	Scientific rationale used for the site selection process.	See Section 5.2.3 in this Bridge Document for discussion.
354.34g2	Consistency with data and reporting standards described in Section 352.4. If a site is not consistent with those standards, the Plan shall explain the necessity of the site to the monitoring network, and how any variation from the standards will not affect the usefulness of the results obtained.	Data and reporting standards are consistent with CASGEM and SGMA reporting requirements. The monitoring agencies continuously evaluate the consistency of monitoring sites with applicable standards.
354.34g3	For each sustainability indicator, the quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site or representative	Monitoring agencies will evaluate the monitoring program for inclusion of thresholds, objectives and interim milestones in future GSA coordination meetings.

Regulation Section	Regulation Text	WMP Compliance
	monitoring sites established pursuant to Section 354.36.	
354.34h	The location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used.	See Figure 5-1 of this Bridge Document for a map of CASGEM monitoring wells in the Indio Subbasin.
354.34i	The monitoring protocols developed by each Agency shall include a description of technical standards, data collection methods, and other procedures or protocols pursuant to Water Code Section 10727.2(f) for monitoring sites or other data collection facilities to ensure that the monitoring network utilizes comparable data and methodologies.	Not specifically addressed in Appendix C of the 2010 WMP Update. Monitoring program utilizes CASGEM monitoring protocols.
354.34j	An Agency that has demonstrated that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin, as described in Section 354.26, shall not be required to establish a monitoring network related to those sustainability indicators.	Monitoring specified in the WMP addresses the SGMA-defined undesirable results and sustainability factors.

Regulation Section	Regulation Text	WMP Compliance
354.36	Representative Monitoring Each Agency may designate a subset of monitoring sites as representative of conditions in the basin or an area of the basin, as follows:	Hydrographs for representative wells are prepared based on spatial distribution within subbasin. CASGEM wells serve as representative monitoring sites.
354.36a	Representative monitoring sites may be designated by the Agency as the point at which sustainability indicators are monitored, and for which quantitative values for minimum thresholds, measurable objectives, and interim milestones are defined.	CASGEM wells serve as representative monitoring sites. Additional wells are also monitored for water levels.
354.36b	Groundwater elevations may be used as a proxy for monitoring other sustainability indicators if the Agency demonstrates the following:	As discussed in Section 4 of this report, groundwater elevations are used as the primary method for evaluating sustainability factors.
354.36b1	Significant correlation exists between groundwater elevations and the sustainability indicators for which groundwater elevation measurements serve as a proxy.	Groundwater model calibration evaluated correlation between groundwater levels and water balance, surface water flows, land subsidence, and potential seawater intrusion. .
354.36b2	Measurable objectives established for groundwater elevation shall include a reasonable margin of operational flexibility taking into consideration the basin setting to avoid undesirable results for the sustainability indicators for which groundwater elevation measurements serve as a proxy.	The water agencies evaluate water level trends for one and ten-year periods to allow for hydrologic variability and operational flexibility. Additional discussion is provided in Section 4.3 of this Bridge Document.

Regulation Section	Regulation Text	WMP Compliance
354.36c	The designation of a representative monitoring site shall be supported by adequate evidence demonstrating that the site reflects general conditions in the area.	Wells included in the CASGEM program serve as representative monitoring sites.
354.38	Assessment and Improvement of Monitoring Network	See below
354.38a	Each Agency shall review the monitoring network and include an evaluation in the Plan and each five-year assessment, including a determination of uncertainty and whether there are data gaps that could affect the ability of the Plan to achieve the sustainability goal for the basin.	Monitoring gaps were identified and information to address gaps is provided in Table 5-2 of the Bridge Document. GSAs will periodically review the monitoring programs for potential enhancements and update the monitoring program in subsequent plan updates.
354.38b	Each Agency shall identify data gaps wherever the basin does not contain a sufficient number of monitoring sites, does not monitor sites at a sufficient frequency, or utilizes monitoring sites that are unreliable, including those that do not satisfy minimum standards of the monitoring network adopted by the Agency.	Appendix C of the 2010 WMP Update describes the existing monitoring program and data gaps. Section 5.5 of this Bridge Document lists the data gaps and actions being undertaken to address the gaps.
354.38c	If the monitoring network contains data gaps, the Plan shall include a description of the following: (1) The location and reason for gaps in the monitoring network. (2) Local issues and circumstances that limit or prevent monitoring.	Section C.1.9 of Appendix C of the 2010 WMP Update addresses monitoring data gaps as well as Section 5.5 of this Bridge Document. The 2010 WMP Update recommended on-going evaluation of data gaps and recommendation for improvements.

Regulation Section	Regulation Text	WMP Compliance
354.38d	Each Agency shall describe steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites.	Section C.2 of Appendix C of the 2010 WMP Update recommended monitoring and reporting improvements. Section 5.5 of this Bridge Document describes steps being taken to address data gaps. **Table 5-2** of this Bridge Document presents the status of recommended monitoring improvements.
354.38e	Each Agency shall adjust the monitoring frequency and density of monitoring sites to provide an adequate level of detail about site-specific surface water and groundwater conditions and to assess the effectiveness of management actions under circumstances that include the following: (1) Minimum threshold exceedances (2) Highly variable spatial or temporal conditions. (3) Adverse impacts to beneficial uses and users of groundwater. (4) The potential to adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of sustainability goals in an adjacent basin.	Appendix C of the 2010 WMP Update did not include a provision for increased monitoring frequency or density. The monitoring entities adjust monitoring frequency if needed based on the observed results. Given the large number of wells it monitors (over 300), CVWD has determined that measuring water levels three times per year provides an adequate balance of measurement frequency and cost. The other agencies monitor wells monthly.
354.40	Monitoring data shall be stored in the data management system developed pursuant to Section	Each agency maintains its own data management system. CVWD and DWA summarize monitoring

Regulation Section	Regulation Text	WMP Compliance
	352.6. A copy of the monitoring data shall be included in the Annual Report and submitted electronically on forms provided by the Department.	results in their annual Engineer's Reports prepared per the CWC.

5.2 EXISTING AND PROPOSED MONITORING PROGRAMS (§354.34 –354.38)

The existing monitoring program and proposed improvements to the monitoring program are discussed in the 2010 WMP Update. Monitoring objectives and scientific rationale are summarized below.

5.2.1 Monitoring Objectives

The primary objective of the monitoring and data management program is to evaluate the effectiveness of the water management programs and projects identified in the Plan. Although a significant amount of data is currently collected, opportunities exist for improvements in data collection, sharing and evaluation.

5.2.2 Existing Monitoring Program

The hydrologic system of the Coachella Valley has been extensively monitored by a number of agencies for many years. This section provides a general overview of the types of data currently being collected and action items that will be implemented to improve the existing program.

Existing monitoring activities include:

- Weather data – precipitation, temperature, and evapotranspiration
- Hydrologic data – streamflow
- Well logs – drillers logs of wells
- Groundwater production – pumping records for each well
- Water levels – groundwater elevations in wells
- Water quality – surface water and groundwater quality data
- Subsidence – ground surface elevation changes

CVWD and DWA each prepare annual Engineer's Reports on Water Supply and Replenishment Assessment for the subbasins within their respective service areas that subject to a groundwater replenishment assessment charge. These reports describe the groundwater basins, water supply conditions, groundwater production, replenishment program and the annual replenishment assessment charged for production within each basin (CVWD, 2012a). Annual reports are currently prepared for the Indio Subbasin.

5.2.3 Scientific Rationale

Each CASGEM agency's monitoring program describes the scientific rationale for monitoring site selection. Both CASGEM and non-CASGEM wells are selected for monitoring based on well ownership, site access, robust historical water level records, well depth, and spatial distribution. CASGEM wells are typically not used for groundwater production; whereas non-CASGEM wells may be pumped.

5.2.4 Proposed Monitoring Improvements

Appendix C of the 2010 WMP Update recommended the certain monitoring and reporting improvements the status of which are listed in **Table 5-2**.

Table 5-2
Status of Recommended Monitoring and Reporting Improvements

Action Item	Implementation Status
Summaries of annual precipitation and ETo should be presented in the annual engineer's reports on water supply and replenishment assessment	Precipitation reported beginning in 2015. ETo reporting is under evaluation for possible inclusion in engineer's reports.
CVWD will work with the USGS to restore the gauging station on the CVSC at Lincoln Street to provide continuous flow recording	Completed
Data from all well completion reports will be entered into a centralized GIS database	Well completion reports scanned; linkage to GIS is under development
Conduct an updated survey of production wells in the East Valley to determine the owner/operator, location, operational status and production reporting for each well.	Pending

Action Item	Implementation Status
Use power records and pump tests to develop more accurate estimates of pumping by unmetered wells	Completed for all known unmetered production wells
Require installation of meters on wells where necessary to obtain accurate production data	Evaluation to be performed in 2016 to require metering of all production wells capable of producing more than 2 AFY.
Apply to CDWR and be designated as the monitoring and reporting entity for the Valley.	Completed. CVWD, DWA, CWA IWA and MSWD are designated CASGEM monitoring entities in the Indio Subbasin.
Incorporate well hydrographs in the annual engineer's reports for each groundwater basin.	To be completed in 2017 Engineer's Report
Measured water levels will be compared to modeled levels to document progress toward meeting the WMP objectives.	Completed in 2016 for selected representative wells. See Figure Period evaluation to be performed.
Evaluate additional wells for inclusion in monitoring program	Table 8-2 of the 2015 Salt and Nutrient Management Plan presented a list of potential wells that could be monitored for level and quality. The water agencies will conduct a feasibility study by 2020.
Continue contracting with USGS to monitor the extent of land subsidence	Contract with USGS renewed in 2014. Next report is expected in 2018.
Consider construction of extensometers at critical locations to monitor subsidence	Deferred pending need

5.3 COMPLIANCE WITH DATA AND REPORTING STANDARDS (§354.40)

Current data and reporting standards include compliance with the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. CVWD and DWA report groundwater balance data on a calendar year basis as required by their relevant legislation.

5.4 CASGEM COMPLIANCE (§354.36)

As a result of SBX7 6 (enacted in November 2009), the Department of Water Resources developed the CASGEM Program. The CASGEM Program establishes a basis for collaboration between local monitoring parties and CDWR to collect groundwater elevation information statewide and make that information available to the public. The

statewide data are compiled in the CASGEM Online System and made available to the public via the Internet with a GIS interface. As a result, all interested parties can use the data to evaluate and monitor groundwater conditions in California.

CVWD, DWA, IWA, CWA, and MSWD are all currently in compliance with CASGEM reporting requirements. There are 70 CASGEM wells within the Coachella Valley Groundwater Basin, 57 of which are located in the Indio Subbasin. The location of each CASGEM well within the Indio Subbasin is shown on **Figure 5-1**.

5.5 MONITORING DATA GAPS (§354.38)

Monitoring data gaps typically occur due to a lack of suitable wells or site access. The 2010 WMP Update (CVWD, 2012a) identified several current data gaps associated with current monitoring programs and data management:

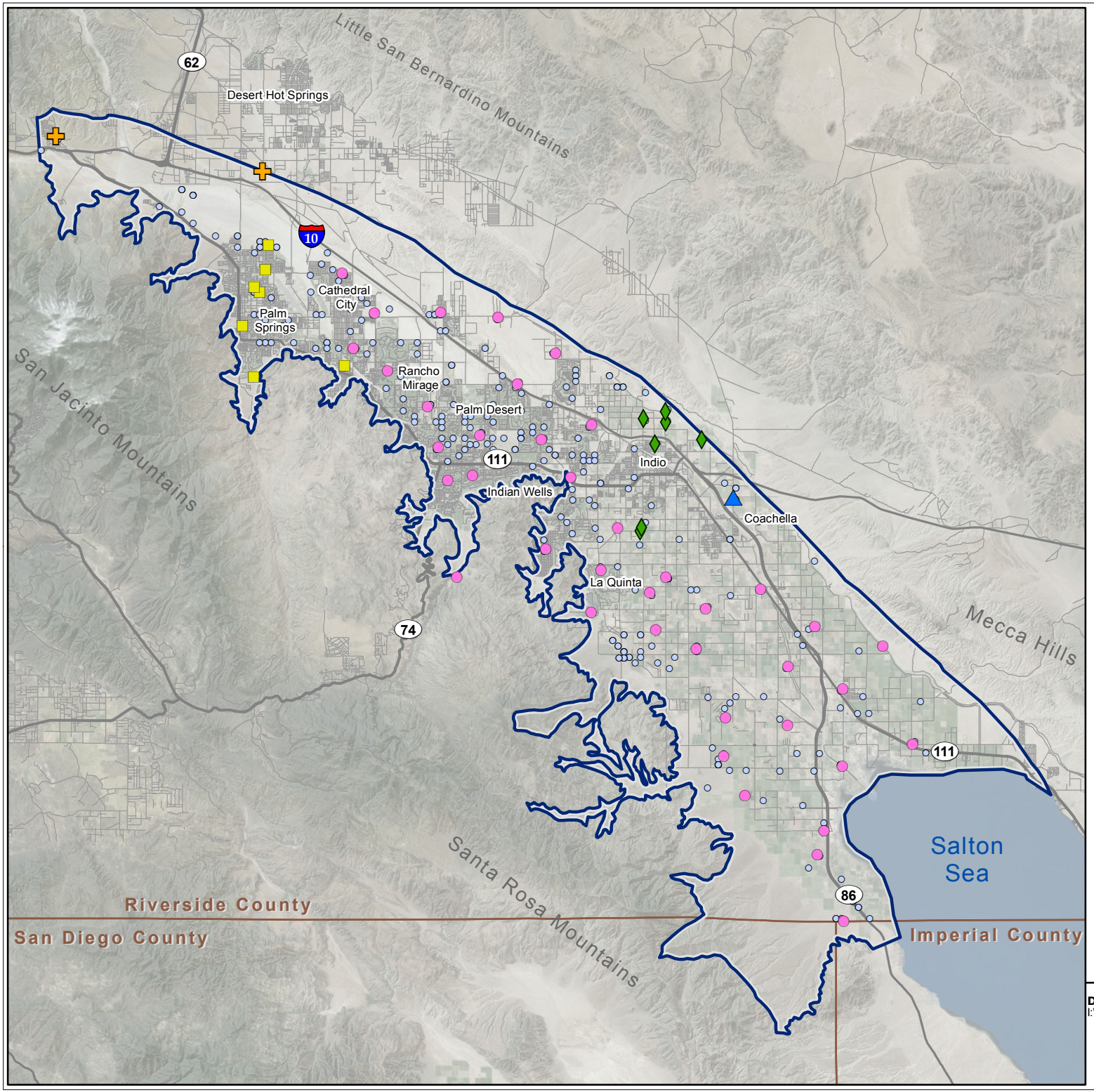
- Surface water flow data to estimate potential yield from stormwater capture projects.
- Lack of a centralized groundwater database that allows all water agencies to share data.
- Uniform reporting of urban water use by user class to track water conservation efforts.
- Groundwater production data for wells in the East Valley, especially agricultural wells.
- Non-uniform coverage of water quality data especially regarding perchlorate.

CVWD worked cooperatively with USGS to install a new stream gauging station at Murray Creek.

Monitoring wells are selected so they can provide a good representation of groundwater levels within each agencies service areas. If one monitoring well is decommissioned, another nearby well with the same approximate depth will be selected for monitoring. If there is no nearby agency-owned well, the agencies will reach out to nearby private well owners in the area for monitoring and include it in CASGEM. Also, if the water service areas increase, additional wells would be selected so a good representation of the service area's groundwater levels is still obtained.

5.6 DATA COLLECTION AND MANAGEMENT SYSTEM (§352.6, 354.40)

Each of the four GSAs maintain their own data management systems in compliance with CASGEM. Surface water data monitored by the USGS is managed by that agency.



Wells with Recent Groundwater Level Data

CASGEM Wells

- City of Coachella Water Authority
- Coachella Valley Water District
- Desert Water Agency
- Indio Water Authority
- Mission Springs Water District

- Non-CASGEM Well

- Indio Subbasin
- Highway
- County Boundary
- Waterbody

N

0 2.5 5 10 Miles

Source: DWR, CVWD, Caltrans, CalAtlas

Document:
I:\Coachella_Valley_WD_MXDs\Indio_SB\CASGEM_Wells.mxd

MWH

Figure 2-2

Section 6
Projects and Management Actions

The purpose of this section is to demonstrate the compliance of the 2010 WMP Update and its supporting documents with the goals and requirements of SGMA with respect to projects and management actions.

6.1 PLAN COMPLIANCE WITH SGMA REQUIREMENTS

Demonstration of WMP compliance with the requirements of SGMA are demonstrated in **Table 6-1** which contains specific references to the relevant figures, tables, and report sections.

Table 6-1
WMP Compliance with 23CCR354.44

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
354.44a	Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.	Sections 6 and 8 of the 2010 WMP described potential and recommended management programs and projects to achieve sustainability.
354.44b	Each Plan shall include a description of the projects and management actions that include the following:	See below:
354.44b1	A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action. The list shall include projects and management actions that may be utilized to meet interim milestones, the exceedance of minimum thresholds, or where undesirable results have occurred	Table 8-1 of the 2010 WMP Update presented a list of projects and management actions to meet the WMP goals and objectives.

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
	or are imminent. The Plan shall include the following:	
354.44b1A	A description of the circumstances under which projects or management actions shall be implemented, the criteria that would trigger implementation and termination of projects or management actions, and the process by which the Agency shall determine that conditions requiring the implementation of particular projects or management actions have occurred.	Section 8 of the 2010 WMP Update describes the recommended actions with a general description of the factors that determine implementation.
354.44b1B	The process by which the Agency shall provide notice to the public and other agencies that the implementation of projects or management actions is being considered or has been implemented, including a description of the actions to be taken.	Project implementation is incorporated in annual agency capital improvement budgets. The public and other agencies are notified through press releases, board actions, and CEQA notifications.
354.44b2	If overdraft conditions are identified through the analysis required by Section 354.18, the Plan shall describe projects or management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft.	All projects and programs identified in Section 8 of the 2010 WMP Update are intended to lead to elimination of long-term groundwater overdraft and mitigate the effects thereof.
354.44b3	A summary of the permitting and regulatory process required for each project and management action.	Section 2.6.2 of the 2012 SPEIR lists the anticipated permitting required for project implementation.
354.44b4	The status of each project and management action, including a time-table for expected initiation and completion, and the accrual of expected benefits.	Table 8-1 in Section 8.3 indicates the desired completion date and responsible entities for each management action. Section 3.4 and Table 3-3 of the 2012 SPEIR

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
		lists the same information and the potential environmental impact of each action. An updated status table is presented as **Table 6-2** of this report.
354.44b5	An explanation of the benefits that are expected to be realized from the project or management action, and how those benefits will be evaluated.	The benefits of project and program implementation is described in Section 8 of the 2010 WMP Update.
354.44b6	An explanation of how the project or management action will be accomplished. If the projects or management actions rely on water from outside the jurisdiction of the Agency, an explanation of the source and reliability of that water shall be included.	The benefits of project and program implementation is described in Section 8.3 of the 2010 WMP Update.
354.44b7	A description of the legal authority required for each project and management action, and the basis for that authority within the Agency.	The legal authority of each implementing entity is described in Section 1 of this Bridge Document.
354.44b8	A description of the estimated cost for each project and management action and a description of how the Agency plans to meet those costs.	Section 8.4 of the 2010 WMP Update describes the implementation costs and Section 8.5 of the 2010 WMP Update describes the potential financing options.
354.44b9	A description of the management of groundwater extractions and recharge to ensure that chronic lowering of groundwater levels or depletion of supply during periods of drought is offset by increases in groundwater levels or storage during other periods.	Management of groundwater extractions is not part of the 2010 WMP Update. However, the replenishment assessment charges and municipal water rates provide an economic signal to encourage water conservation. Each water purveyor adopted ordinances to mandate water conservation during the on-going drought.

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
354.44c	Projects and management actions shall be supported by best available information and best available science.	Projects and programs were evaluated in the 2002 WMP and the 2010 WMP Update on the basis of their ability to reduce groundwater overdraft, technical feasibility, reliability, cost, water quality, permitting, and environmental impacts.
354.44d	An Agency shall take into account the level of uncertainty associated with the basin setting when developing projects or management actions.	The 2010 WMP Update accounted for planning uncertainty through the use of a flexible implementation schedule and inclusion of a planning buffer of 10 percent of projected water demands in evaluating future supplies.

6.2 MANAGEMENT STRATEGIES (§354.44)

To achieve the sustainability goals described in Section 4, the 2010 WMP Update identifies and implements the following water management elements (CVWD, 2012a):

- Water conservation measures
- Acquisition of additional water supplies
- Conjunctive use programs to maximize supply reliability
- Source substitution programs
- Groundwater recharge programs
- Water quality protection measures
- Other management activities

The following describes the current status of program implementation since preparation of the 2010 WMP Update (CVWD, 2012a) and the 2014 Status Report (CVWD and MWH, 2014).

6.2.1 Water Conservation

Water conservation strategies in place are described in Section 6.3 of the 2010 WMP Update. More recently, in July 2015, the State mandated that water agencies develop

and implement plans to reduce water use to meet mandated conservation goals in response to statewide drought. Urban water users were required to meet a target of reducing overall use by 32 percent relative to 2013 baseline use.

CVWD, DWA, IWA and the City of Coachella have initiated and continue to implement a number of on-going water conservation programs for large landscape customers and residential customers. For example, compliance with California building codes and the Federal Energy Policy Act of 1992 (PL 102-486) requires the installation of water efficient plumbing for all new home construction and large rehabilitation projects.

In addition, most water purveyors and several cities within the basin have implemented landscape audit programs and rebates for replacements of lawns with water-efficient landscaping. The CVWD Ordinance No. 1302.2 (2015) provides uniform landscaping standards throughout the valley. The ordinance is based on a 2007 CVWD ordinance and was developed in conjunction with CVAG, Riverside County, the Coachella Valley cities and major water purveyors. It is one of the most stringent ordinances in the State and is one of the few to establish turf limitations for new golf courses. All cities and water agencies agreed to either adopt the ordinance in its entirety, adopt a similar version, or adopt it by reference in the local agency's ordinance.

Since the first 2002 WMP was prepared, CVWD has implemented agricultural water conservation efforts. CVWD farmers reduced their 2003-2008 AF/acre water use intensity an average of 9.9 percent. Between 2007 and 2013 CVWD and DWA customers reduced water use by 20 percent via rebates, incentive programs, and efficiency improvements.

In mid-2016, the USBR awarded CVWD a $300,000 Drought Resiliency Project grant to help offset the costs of a pipeline and pump station that will enhance the district's ability to deliver Colorado River water to the Bermuda Dunes area. This award was part of the current phase of funding made available to river water contractors under the 2014 Pilot System Conservation Program (USBR, 2014). The new infrastructure will make it possible to annually bring more than 1,000 acre-feet of Colorado River water to Bermuda Dunes for irrigation purposes, reducing groundwater pumping by a like amount.

The USBR also awarded CVWD a $1 million WaterSMART Water and Energy Efficiency grant to help finance rebates for the removal of turf that is replaced with drought-tolerant, low water-use desert landscaping at golf courses (USBR, 2014). CVWD combines these funds with their own $6 million budgeted for turf replacement rebates at residences, businesses and homeowners associations.

6.2.2 Additional Water Supplies

The 2002 WMP identified the need for CVWD and DWA to acquire additional water supplies to manage current and future groundwater overdraft. Supplies identified included the Colorado River, State Water Project, other transfers, recycled water, desalinated drain

water, and stormwater capture. Section 6.4 of the 2010 WMP Update describes the management strategies associated with securing additional sources of water.

6.2.2.1 Colorado River Supplies under the Quantification Settlement Agreement

In 2003, CVWD, Imperial Irrigation District (IID), and Metropolitan Water District of Southern California (MWD), along with the State of California and USBR, successfully completed negotiation of the QSA. The QSA quantifies the Colorado River water allocations of California's agricultural water contractors for 75 years and provides for the transfer of water between agencies. Under the QSA, CVWD has a base allocation of 330,000 AFY. As of 2015, CVWD received 378,000 AFY of Colorado River water deliveries under the QSA (CVWD, 2016a). CVWD's 2016 forecasted use is currently 364,079 AF; about 2,100 AF more than their use estimated at years-start (USBR, 2016a). CVWD's Colorado River allocation will reach 459,000 AFY by 2026 and remain at that level until 2048, when it reduces to 456,000 AFY through 2078, the term of the QSA. In 2016, CVWD will obtain 397,000 AF of Colorado River water, of which 383,000 AFY would be available for use after accounting for conveyance losses.

In response to ongoing drought throughout the western basin states, current and projected reduced inflows into the Colorado River (e.g., USBR, 2012), and to avoid onerous cuts under the USBR 2007 Colorado River Interim Guidelines for Lower Basin Shortages & Coordinated Operations for Lake Powell & Lake Mead (USBR, 2007a, 2007b), 2016 demands on the Colorado River supplies have been reduced by voluntarily agreement between the USBR, Central Arizona Project (CAP), MWD, Denver Water, and Southern Nevada Water Authority (SNWA) under the USBR 2014 Pilot System Conservation Program (USBR, 2014). Under this program, CVWD is offering to farming customers rebates to convert up to 667 acres of farmed land from flood/furrow to drip irrigation. The program began in 2016, is scheduled to operate for five years, and is estimated to conserve up to 5,000 AF over the five years at a value of slightly more than $200/AF. Current USBR projections under the draft Annual Operating Plans for 2017 indicate that under the most probable inflow scenarios, end of water year 2017 Colorado River flows and storage levels at Lake Mead are anticipated to be at historic lows. Under the most probable inflow scenario, Lake Mead is projected to end water year 2017 at elevation 1,070.15 feet, with 9.21 million AF in storage (35 percent of capacity). Lake Mead is projected to increase to elevation 1,074.31 feet with 9.55 million AF in storage (37 percent of capacity) at the end of calendar year 2017 (USBR, 2016b).

6.2.2.2 State Water Project

CVWD and DWA receive no water directly from the SWP, but receive their SWP allocation in the equivalent volume of Colorado River water from MWD through exchange agreements executed in 1983 and 2003. This SWP Exchange water is delivered to the Whitewater River Subbasin at turnouts in the Whitewater River channel. Under a separate 1984 agreement between these three parties, MWD make advanced deliveries of SWP

Exchange water the Coachella Valley. During periods of supply deficiency, MWD makes deliveries of SWP water to the Coachella Valley from the Advanced Delivery account. In 2014, the CDWR severely restricted SWP deliveries to 5 percent of the Table A Amounts. SWP water allocations for 2016 were 60 percent of the Table A Amounts. The combined SWP Table A Amounts for CVWD and DWA total 194,100 AFY.

The SWP faces many challenges including the on-going drought, risk of Delta levee failure, legal and regulatory restrictions on exports due to environmental degradation, water quality degradation and climate change. In the absence of definitive measures to resolve these challenges, SWP reliability is likely to continue declining. To the extent that less water is available to SWP contractors, Coachella Valley basin water agencies will be more reliant on recycled water, Colorado River water, or other sources described herein.

6.2.2.3 Other Water Transfers

As opportunities arise, CVWD and DWA make water purchases from programs such as Governor's Drought Water Bank, the Yuba Accord. Additional purchases from the SWP and from others with water rights, mainly in the Central Valley of California, will be evaluated as they become available to determine whether they meet CVWD's and DWA's needs.

6.2.2.4 Recycled Water

The principal non-potable uses for recycled water in the Coachella Valley are:

- Agricultural irrigation
- Golf course irrigation
- Urban landscape irrigation

CVWD and DWA currently deliver approximately 14,000 AFY of recycled water in the West Valley for golf course and other large irrigation uses. Wastewater generated in the West Valley that is not reused for irrigation is percolated into the groundwater basin. Current recycled water usage in the East Valley is approximately 700 AFY for agricultural irrigation. East Valley wastewater that is not reused is discharged to the CVSC (CVWD, 2012a). Section 6.5.1 of the 2010 WMP Update includes a detailed discussion of recycled water strategy.

6.2.2.5 Desalinated Drain Water

The 2002 WMP recommended that a drain water desalination facility commence operation between 2010 and 2015 with a 4,000 AFY facility to treat agricultural drainage water for irrigation purposes. The facility would be expanded to 11,000 AFY by 2025. Product water would be delivered to the Coachella Canal distribution system for non-

potable use. The 2015 Urban Water Management Plan (CVWD, 2016b) anticipates the need for desalinated drain water starting in 2025.

A brackish groundwater treatment pilot study and feasibility study was completed in 2008. Reverse osmosis (RO) was recommended to meet water quality goals and provide additional flexibility in the level of water quality produced should the facility's objectives change in the future. The recommended approach to brine management was to convey the RO concentrate via pipeline to constructed wetlands located at the north shore of the Salton Sea. This study concluded that agricultural drainage water can be treated for reuse as non-potable water and potentially as new potable water (CVWD, 2012)

6.2.2.6 Stormwater Capture

Stormwater capture was identified as a potential method to augment local water supplies in the Coachella Valley. Currently, most stormwater is captured and recharged except during periods of flash flooding. Since adoption of the 2010 WMP Update, no additional actions have been taken to evaluate stormwater capture.

6.2.3 Groundwater Supply Substitution

Supply substitution represents an effective strategy to mitigate the lowering of groundwater levels and consequent groundwater storage capacity and subsidence. Management strategies currently include the substitution of groundwater supply with recycled water and Canal water for golf and agricultural use and future treatment of Canal water for urban use. Groundwater supply substitution management strategies are discussed in detail in Section 6.5 of the 2010 WMP Update.

Several groundwater substitution projects were identified in the 2010 WMP Update (CVWD, 2012). These include:

- Conversion of existing and future golf courses in the West Valley from groundwater to recycled water.
- Conversion of existing and future golf courses in the East Valley from groundwater to Colorado River water.
- Conversion of existing and future golf courses in the West Valley from groundwater to Colorado River water via the Mid-valley Pipeline. Initial efforts on this project are discussed below.
- Conversion of agricultural irrigation from groundwater to Colorado River water, primarily in the Oasis area.
- Conversion of urban use from groundwater to treated Colorado River water in the East Valley.

- Conversion of outdoor urban use to non-potable water including Colorado River water or recycled water in the East Valley. Although not specifically stated, it is anticipated that some volume of the outdoor urban use water is derived from basin groundwater.

6.2.3.1 Golf Courses Served with Canal Water

CVWD has worked closely with East Valley golf courses to encourage the use of Canal water instead of pumping groundwater. Since 2010 WMP Update adoption, CVWD has connected two additional golf courses to the Canal water distribution system. Currently, 26 golf courses are connected and CVWD plans to connect nine additional courses by 2019. Design plans are being prepared to connect three additional courses to the Canal water system by the end of 2016. Canal water deliveries to golf courses have increased from 16,000 AFY in 2010 to 20,900 AFY in 2015. CVWD staff works closely with the connected golf courses to ensure they meet at least 80 percent of their demand with Canal water.

6.2.3.2 Mid-Valley Pipeline

The MVP is a pipeline distribution system to deliver Colorado River water to the Mid-valley area for use with CVWD's recycled water for golf courses and open space irrigation. This source substitution project will reduce groundwater pumping for these uses. Construction of the first phase of the MVP from the Coachella Canal in Indio to WRP-10 (6.6 miles in length) was completed in 2009. Implementation of later phases will expand the MVP to be able to serve approximately 50 golf courses in the Rancho Mirage-Palm Desert-Indian Wells area that currently use groundwater as their primary source of supply with a mixture of Colorado River water and recycled water (CVWD, 2012a).

CVWD has contracted with a consulting firm to prepare a non-potable water master plan to guide the implementation of the MVP project; this plan is to be completed in 2016. CVWD continues to connect golf courses to the MVP system. Since adoption of the 2010 WMP Update, CVWD has connected six additional golf courses to the MVP system. Engineering design is underway for six additional courses.

6.2.3.3 Treated Coachella Canal Water for Urban Use

The 2002 WMP and the 2010 WMP Update envisioned the treatment of Canal water for urban use. Both CVWD and IWA have plans to treat Canal water in the future with implementation based on actual growth. Currently, treatment is not expected to occur before 2020.

6.2.4 Groundwater Recharge

Groundwater recharge in the Indio Subbasin is a major groundwater management strategy that has been employed in the Valley. The 2002 WMP included continuing recharge at the existing Whitewater Recharge Facility in the West Valley, recharge in the East Valley using Colorado River water at the Thomas E. Levy Groundwater Replenishment Facility and Martinez Canyon Replenishment Facility. Groundwater recharge is discussed in Section 6.6 of the 2010 WMP Update. Recharge operations are summarized annually in the Engineer's Report on Water Supply and Replenishment Assessment.

IWA conducted a preliminary investigation (performed by Petra Geotechnical) that identified Posse Park (Avenue 42 and Golf Center Parkway adjacent to the Coachella Canal) as a potential location for recharge of both the upper and lower Coachella Valley aquifer by either spreading or injection wells. IWA drilled two exploratory wells at this location and plans to conduct further studies to validate the use of Posse Park to replenish the aquifer. The amount of potential recharge at this location has not been determined. The 2010 WMP Update assumed that an Indio facility could recharge 10,000 AFY for planning purposes.

Since adoption of the 2010 WMP Update, CVWD has investigated several potential locations for groundwater recharge in the Palm Desert-Rancho Mirage area. Currently, CVWD is evaluating the conversion of existing percolation ponds at WRP-10 to recharge Colorado River water supplied from the Mid-Valley Pipeline. If this project is feasible, CVWD could recharge water during the winter months when golf demand from the Mid-Valley Pipeline is low.

6.2.5 Water Quality Improvements

Section 6.7 of the 2010 WMP Update (CVWD, 2012a) describes the management strategies related to the improvement of groundwater quality. Based on historical and recent monitoring, CVWD, CWA, and IWA have identified that about 30 percent of their drinking water wells have chromium-6 levels that are above California's new standard of 10 µg/L. Building on the success with ion exchange (IX) technology for arsenic removal and treatment, the water agencies evaluated the use of similar technology to reduce chromium-6 levels found in other drinking water wells. IWA is currently treating three wells to remove chromium-6.

CVWD developed the proposed Chromium-6 Water Treatment Facilities Project that would use IX to treat drinking water wells located within the cities of Desert Hot Springs, Rancho Mirage, Palm Desert, La Quinta, Indio, and within portions of unincorporated Riverside County including Thermal. CVWD also planned to construct a centralized facility to regenerate the ion exchange resin from each treatment facility. These facilities were expected to be operational before January 1, 2020.

On Sept. 27, 2016, before construction of treatment facilities started, the results of a new water treatment study were released that showed significant removal of chromium-6 from drinking water using a Reduction-Coagulation-Filtration treatment process. On Oct. 25, 2016, the CVWD Board of Directors temporarily stopped the construction of the current Chromium-6 compliance plan and approved launching a pilot study to evaluate the feasibility and effectiveness of this alternative process using test equipment installed at representative CVWD wells. This process has the potential to be a simpler alternative to IX that is more environmentally friendly, more cost-effective, and would have less impact on the community. The results of the pilot study will be available in Mid-2017.

If this alternative proves to be a viable solution, CVWD expects to meet the state's Jan. 1, 2020 deadline to be in compliance with the new MCL. If testing shows this alternative is not feasible and CVWD reverts to the original plan, CVWD may not meet the 2020 deadline. However, because the alternative process has the potential to meet the MCL at a substantially lower cost and with less negative impact to the community and the environment, it was determined that taking time to conduct the pilot study is the right decision.

CWA worked proactively to meet the new chromium-6 standard before it was adopted by the State. The Water Authority has selected a conventional ion exchange system to reduce chromium-6 levels for compliance with the new state standard. Construction is expected to begin in 2017.

6.2.6 Other Management Activities

Additional management activities are described in the 2010 WMP Update (CVWD, 2012a), Section 6.8. These activities include source water protection, groundwater monitoring, and drainage control.

6.3 CURRENT IMPLEMENTATION STATUS (§354.22)

The recommended actions identified in the 2010 WMP Update were described in Table 8-1 of that report. CVWD prepared a status report (report card) on WMP Update implementation in 2014. A revised version of Table 8-1 of the 2010 WMP Update with the current updated status is presented as **Table 6-2**. Additional discussion of plan implementation, including implementation costs, is found in Section 8.4 of the 2010 WMP Update.

Table 6-2
WMP Implementation Plan Status

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
Water Conservation Program				
Adopt and implement 2009 CVWD/CVAG Landscape Ordinance or equivalent	CVWD, water purveyors, cities, Riverside County	Ongoing	Complete	Ordinance revised in 2015 to comply with new State requirements and reduce ET Adjustment Factor
Establish urban water conservation baseline	CVWD, DWA, IWA, CWA, MDMWC	Completed	Complete	Re-evaluated in 2016 UWMPs based on 2010 census population
Achieve minimum 10 percent reduction in existing golf course use	CVWD, DWA	2015	Underway	Work via Golf Task Force to implement and monitor custom water budgets Budget program Funds in CIB
Achieve 14 percent reduction in agricultural water use	CVWD	2020	Deferred	2020
Achieve 20 percent reduction in urban per capita use	CVWD, DWA, IWA, CWA, MDMWC	2020	Underway	2015 UWMPs documented 37% reduction in 2015 from 1999 to 2008 baseline average.

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
Water Supply Development Program				
Complete siting studies, environmental impact evaluation and design for CVSC drain water capture and treatment facilities	CVWD	2013	Deferred due to changes in needs	Imported water status report (2015) indicated potential deferral until 2025
File for water rights application for change of point of use for wastewater effluent discharges to allow water recycling	CVWD, VSD, Coachella	2015	Deferred	Work with CVWD District Counsel to complete filing
Complete construction of initial CVSC drain water capture and treatment facilities	CVWD	2015	Deferred due to changes in needs	Imported water status report (2015) indicated potential deferral until 2025
Conduct a feasibility study to investigate the potential for additional stormwater capture in the East Valley	CVWD	2015	Ongoing with stormwater studies	Maximize stormwater capture in facilities design
Conduct a study to determine the amount of water lost to leakage or otherwise unaccounted in the first 49 miles of the Coachella Canal and evaluate the feasibility of	CVWD	2015	No longer a priority due to measured losses below 5% since canal lining	Continue to monitor annual system losses

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
corrective actions to capture the lost water				
Conduct a joint investigation with Indio and Coachella of groundwater development potential in Fargo Canyon Subarea of the Desert Hot Springs Subbasin to determine the available supply and suitability for use in meeting non-potable demands of development east of the San Andreas fault	CVWD, IWA, Coachella	2020	Deferred due to changes in needs	Re-evaluate need in next WMP Update
Source Substitution Program				
Prepare a master plan for Mid-Valley Pipeline completion Phase 2	CVWD	2011	Underway	To be completed in 2016
Connect four golf course users along the MVP alignment to MVP	CVWD	2011	Completed	Monthly Progress Report to Board
Work with existing East Valley golf courses having Colorado River water access to increase their use to 90 percent of demand	CVWD	2012	Underway – revised to 80% via non-potable agreements	Report Progress in annual Non-Potable Water Report

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
Investigate regional opportunities for Colorado River water treatment facilities	CVWD, IWA, CWA	2012	Completed via Source of Supply/Treatment Study (SS/TS)	Budget funds in future CIB based on growth
Develop policy requiring the installation of non-potable water systems for new development	CVWD	2012	Complete	Required via WSA's/WSV's and Development Design Manual
Work with large agricultural groundwater pumpers to determine what obstacles exist that prevent them from using additional Colorado River water and encourage them to reduce their groundwater pumping	CVWD	2012	Deferred	Re-evaluate need in next WMP Update
Construct north and east extensions to the MVP system	CVWD	2013	Deferred pending master plan	To be addressed in Phase 2 MVP master plan. Monthly Progress Report to Board
Complete siting studies, environmental impact evaluation and design for Colorado River water treatment facilities	CVWD	2013	Deferred	Re-evaluate schedule based on SS/TS and growth

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
Complete construction of initial Colorado River water treatment facilities and connect to distribution system	CVWD	2015	Deferred	Re-evaluate schedule based on SS/TS and growth
Complete Oasis study update	CVWD	2015	Complete Design by 2015 Construction by 2025	Quarterly Progress Report to Board Budget funds in CIP
Prepare a non-potable water distribution master plan Phase 3	CVWD	2015	Deferred	Budget for FY 2017-18
Complete construction of MVP backbone system	CVWD	2020	Deferred	Re-evaluate schedule based on Phase 3 MVP master planning
Groundwater Recharge Program				
Operate and monitor the Levy replenishment facility with a 40,000 AFY goal	CVWD	2010	Underway with lower goal of 32,000 AFY	Re-evaluate need in next WMP Update
Investigate groundwater storage opportunities with IID	CVWD	2010	Complete	
Transfer the unused portion of the 35,000 AFY of SWP water available under the QSA to the Whitewater Recharge Facility	CVWD	2011	Complete	Budget transportation funds annually. Maximize advanced delivery opportunities.

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
Work with the City of Indio to evaluate the feasibility of developing a groundwater recharge project that reduce groundwater overdraft. If feasible, work with Indio to construct the facility.	CVWD, IWA	2011	Deferred pending evaluation of need	Continue evaluation
Design and construct an additional pumping station and pipeline from Lake Cahuilla to the Levy facility if the existing pumping station and pipeline cannot provide sufficient water to meet the annual goal	CVWD	2015	Deferred	Re-evaluate need in next WMP Update
Conduct siting studies, environmental impact evaluation and design for Martinez Canyon Replenishment Facility	CVWD	2018	Deferred due to monitoring results	Budget Oasis Expansion funds in CIB
Monitoring and Data Management				
Continue to monitor the extent of land subsidence	CVWD, USGS	2010	Monitoring ongoing – next report in 2018	Continue monitoring and evaluate results
Provide additional information in the annual engineers' reports:	CVWD, DWA	2011	More consistency with DWA's reports achieved.	Evaluate report content for compliance with SGMA reporting requirements

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
• Annual precipitation and stream flows • Additional groundwater level data and hydrographs • In-lieu recharge water deliveries from imported and recycled water that offset pumping • Imported water deliveries for direct use			• Complete • Hydrographs added • To be added to 2017-18 report • To be added to 2017-18 report	
Obtain CDWR designation as groundwater level monitoring and reporting entity for the Coachella Valley within their respective service areas	CVWD, DWA, water purveyors	2011	Complete via the CASGEM Program	Budget funds as needed to continue program participation
Prepare a comprehensive groundwater monitoring plan	CVWD, DWA, water purveyors, wastewater agencies, tribes	2012	Deferred	Pursue IRWM Grant Funding; periodic review by GSAs
Enhance the CVSC gauging station at Lincoln Street to provide continuous flow recording	CVWD, USGS	2012	Complete	Budget CIB funds as necessary to continue to drain flow monitoring.
Develop centralized groundwater database	CVWD, DWA, water agencies, tribes	2012	Deferred	Budget funds in CIB as necessary to maintain program participation

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
Other Programs				
Continue to operate a groundwater advisory committee regarding groundwater management issues in the East Valley	CVWD, water agencies, pumpers, tribes	2010	Complete	Budget CIB funds as necessary to continue annual meetings
Develop a program to educate and work with well owners to properly control artesian wells	CVWD	2011	Complete	Budget funds in CIB/CIP and pursue grant funding
Update and recalibrate the CVWD groundwater model based on the most current information	CVWD	2012	Deferred	Complete in parallel with future WMP Update
Develop a water planning interface to the groundwater model	CVWD	2012	Deferred	Add to scope of work for next groundwater model update
Prepare a plan to maintain and enhance the existing drainage system to allow its future use for urban purposes	CVWD	2012	Complete Legal Authority Established	
Develop well construction, destruction and abandonment policies	CVWD, DWA, water agencies, tribes, Riverside County	2012	Complete	Support County's efforts to enforce. Pursue IRWM Grant Funding

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
Add groundwater quality simulation capabilities to the model that will allow simulation of salinity (TDS) and nitrogen in the groundwater	CVWD	2013	Deferred	Add to scope of work for next groundwater model update.
Prepare a salt/nutrient management plan for the Valley to meet SWRCB Recycled Water Policy requirements	CVWD, DWA, water purveyors, wastewater agencies, tribes, agricultural and golf communities, and Regional Board	2014	Submitted to RWQCB in June 2015 RWQCB acceptance pending	Continue coordination with RWQCB to obtain acceptance
Extend urban water and sewer service to trailer/RV park communities with deficient infrastructure and poor water quality	CVWD	2015	Ongoing Formed Disadvantaged Community Task Force. Developing an implementation strategy that prioritizes connection needs. Secured IWRM and USDA Rural assistance funding for Saint Anthony's, Huerda, Mountain View Estates mobile home parks.	Continue to sponsor applications for USDA, IRWM, CDPH, SWRCB funding

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
			Short Term Arsenic Treatment,	
Investigate the feasibility of installing nitrate treatment on selected high nitrate wells to avoid redistribution of nitrates.	CVWD	2015	Underway via CVWD's Source of Supply/Treatment Study. Treatment process being re-evaluated.	Complete by 12/2014 Budget funds in 2015/16 CIP
Undertake a cooperative program to identify and cap wells that are no longer being used for groundwater production	CVWD, DWA	2015	Underway	Support County's efforts to enforce. Pursue IRWM Grant Funding
Environmental Enhancement and Mitigation Projects				
Develop plans for the creation of: • 25 acres of managed pupfish replacement habitat • 66 acres of managed rail replacement habitat • 44 acres of Sonoran cottonwood-willow riparian forest habitat	CVWD	2010	Underway: Received Wildlife Agency approval of site; Under Review by Corps.	Work with US Army Corps of Engineers to complete review. Update project implementation Schedule. Budget funds in CIB/CIP

Plan Element	Responsible Entity(ies)	2010 Update Goal	2016 Status	Recommendation
Remove tamarisk, restore and enhance mesquite and Coachella Valley round-tailed ground squirrel habitat on land CVWD owns in the East Indio Hills Conservation Area	CVWD	Not Specified	Study underway by CVCC	Support CVCC efforts to complete feasibility study
Conserve approximately 1,200 acres of land owned in the CVFTL HCP Whitewater Floodplain Preserve in perpetuity as part of the CVMSHCP Reserve System	CVWD	2010	Underway: Resource Agencies reviewing Draft Conservation Easement prepared by CVCC & CVWD	Work with Resource agencies to achieve conservation easement approvals

Section 7
Annual Reports and Periodic Evaluations

The purpose of this section is to demonstrate the compliance of the 2010 WMP Update and its supporting documents with the goals and requirements of SGMA with respect to Article 7 of the Groundwater Sustainability Plans emergency regulations.

7.1 PLAN COMPLIANCE WITH SGMA REQUIREMENTS

Demonstration of WMP compliance with the annual reporting requirements of SGMA are demonstrated in **Table 7-1** which contains specific references to the relevant figures, tables, and report sections. CVWD, DWA, CWA, and IWA may prepare individual annual reports or a consolidated annual report on basin conditions. CVWD and DWA have separate statutory reporting requirements in connection with their respective replenishment assessments.

Table 7-2 demonstrates plan compliance with the periodic plan review and evaluation requirements of SGMA.

Table 7-1
WMP Compliance with 23CCR356.2

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
356.2	Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:	CVWD and DWA have prepared annual reports since 1978 for the West Whitewater River Subbasin and CVWD has prepared annual reports for the East Whitewater River Subbasin since 2004. Copies of the most recent reports are presented in Appendix A of this Bridge Document.
356.2a	General information, including an executive summary and a location map depicting the basin covered by the report.	Each annual report contains an executive summary and a map of the basin and the relevant areas of benefit (Figure III-1 of CVWD's 2016 Engineer's Report and Figure
356.2b	A detailed description and graphical representation of the following conditions of the basin managed in the Plan:	See below
356.2b1	Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows:	See below
356.2b1A	Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions.	One-year and ten-year change in groundwater elevation contour maps are presented in Figures VI-1, VI-2, VII-1, VII-2, VII-6 and VII-7 of the CVWD's 2016 Engineer's Report. Groundwater contour

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
		maps and seasonal change in elevation will be added to future annual Engineer's Reports based on available data.
356.2b1B	Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year.	Groundwater hydrographs for selected wells with data through December 2015 were presented in Figure 3-4 of this bridge document. Hydrographs will be added to future annual Engineer's Reports based on available data.
356.2b2	Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector, and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions.	Total groundwater extraction for the preceding calendar years is presented in Tables VI-1 and VI-1 of CVWD's 2016 Engineer's Report. All reportable production is metered. Groundwater production will be classified by use sector in future annual Engineer's Reports based on available data. A map showing the general location of production will be added to future annual Engineer's Reports based on available data.
356.2b3	Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year.	Annual surface water use is reported in Tables VI-1 and VI-1, and groundwater replenishment deliveries is reported in Tables VI-3 and VII-3 of CVWD's 2016 Engineer's Report. In-lieu use will be added to future annual Engineer's Reports based on available data.
356.2b4	Total water use shall be collected using the best available measurement methods and shall	Total water use by sector and water source type will be added to

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
	be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year.	future annual Engineer's Reports based on available data.
356.2b5	Change in groundwater in storage shall include the following:	See below
356.2b5A	Change in groundwater in storage maps for each principal aquifer in the basin.	One-year and ten-year change in groundwater elevation contour maps are presented in Figures VI-1, VI-2, VII-1, VII-2, VII-6 and VII-7 of the CVWD's 2016 Engineer's Report.
356.2b5B	A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year.	Graphs of annual change in groundwater storage based on water budget calculations are presented in Figures VI-4 and VII-4 of the CVWD's 2016 Engineer's Report, along with a ten-year running average. Cumulative change in storage charts will be incorporated in future annual Engineer's Reports.
356.2c	A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or	A discussion of progress toward implementing the Plan will be added to future annual Engineer's Reports.

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
	management actions since the previous annual report.	

Table 7-2
WMP Compliance with 23CCR356.4

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
356.4	Each Agency shall evaluate its Plan at least every five years and whenever the Plan is amended, and provide a written assessment to the Department. The assessment shall describe whether the Plan implementation, including implementation of projects and management actions, are meeting the sustainability goal in the basin, and shall include the following:	CVWD updated the original 2002 WMP with the 2010 WMP Update. A status report on the 2010 WMP Update was completed in 2014, a copy of which is included in Appendix A. CVWD is currently preparing another status report which is expected to be available in 2017. A comprehensive review and update of the WMP will be completed before 2022.
356.4a	A description of current groundwater conditions for each applicable sustainability indicator relative to measurable objectives, interim milestones and minimum thresholds.	Current groundwater conditions are reported in the most recent engineer's reports. The 2014 Status Report included a general discussion of
356.4b	A description of the implementation of any projects or management actions, and the effect on groundwater conditions resulting from those projects or management actions.	Table 6-2 of this Bridge Document presents an updated status of program implementation. A similar table was included in the 2014 Status Report.
356.4c	Elements of the Plan, including the basin setting, management areas, or the identification of undesirable results and the setting of minimum thresholds and measurable objectives, shall be reconsidered and revisions proposed, if necessary.	The 2014 Status Report reviewed growth forecasts in light of review population projections
356.4d	An evaluation of the basin setting in light of significant new information or changes in water use, and an explanation of any significant changes. If the	The 2014 Status Report indicated that slow growth resulting from the 2008 recession coupled with water conservation efforts resulted in reduced water demands. Figure 3

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
	Agency's evaluation shows that the basin is experiencing overdraft conditions, the Agency shall include an assessment of measures to mitigate that overdraft.	of the 2014 Status Report showed declining water levels in the central portion of the Indio Subbasin and recommended continued implementation of golf course conversion to recycled and imported water.
356.4e	A description of the monitoring network within the basin, including whether data gaps exist, or any areas within the basin are represented by data that does not satisfy the requirements of Sections 352.4 and 354.34(c). The description shall include the following: (1) An assessment of monitoring network function with an analysis of data collected to date, identification of data gaps, and the actions necessary to improve the monitoring network, consistent with the requirements of Section 354.38. (2) If the Agency identifies data gaps, the Plan shall describe a program for the acquisition of additional data sources, including an estimate of the timing of that acquisition, and for incorporation of newly obtained information into the Plan. (3) The Plan shall prioritize the installation of new data collection facilities and analysis of new data based on the needs of the basin.	A review of the monitoring network with respect to the requirements of Sections 352.4 and 354.34(c) will be performed in conjunction with the next WMP update.
356.4f	A description of significant new information that has been made available since Plan adoption or amendment, or the last five-year assessment. The description shall	A comprehensive review of available data and growth forecasts will be performed in conjunction with the next WMP update.

Regulation Section	Regulation Text	Discussion of Plan Content for SGMA Compliance
	also include whether new information warrants changes to any aspect of the Plan, including the evaluation of the basin setting, measurable objectives, minimum thresholds, or the criteria defining undesirable results.	
356.4g	A description of relevant actions taken by the Agency, including a summary of regulations or ordinances related to the Plan.	A summary of regulations, ordinances, or other actions taken relative the Plan will be incorporated in the next WMP update.
356.4h	Information describing any enforcement or legal actions taken by the Agency in furtherance of the sustainability goal for the basin.	A summary of enforcement or legal actions taken relative the Plan will be incorporated in the next WMP update.
356.4i	A description of completed or proposed Plan amendments.	No Plan amendments are proposed at this time.
356.4j	Where appropriate, a summary of coordination that occurred between multiple Agencies in a single basin, Agencies in hydrologically connected basins, and land use agencies.	A summary of agency coordination relative the Plan will be incorporated in the next WMP update.

7.2 ANNUAL REPORTING (§356.2)

Annual reporting of the groundwater basin has been conducted since 1978. CVWD has published an annual Engineer's Report on Water Supply and Replenishment Assessment for the West Whitewater River AOB since 1978 and East Whitewater River AOB since 2004. DWA has published an annual Engineer's Report on the Groundwater Replenishment and Assessment Program for the Whitewater River Subbasin since 1978 and the Garnet Hill subarea (considered a part of the Indio Subbasin by CDWR and this report for continuity) since 2015. The Engineer's Reports detail the groundwater levels, annual water balance, artificial and natural recharge, and groundwater pumping, as well

as establish the replenishment assessment charged for production within each designated AOB for the following fiscal year. CVWD, DWA, IWA, and CWA prepare annual public notices (Consumer Confidence Reports) on the water quality of their urban water systems.

The contents of the existing annual Engineer's Reports will be reviewed during 2017 in light of the SGMA reporting requirements. The annual reports to be submitted in April 2018 will comply with SGMA reporting requirements to the extent of available data. Annual reporting is currently performed on a calendar year basis as required by CVWD's and DWA's enabling legislation, which conflicts with SGMA's requirements for water year reporting.

7.3 PERIODIC EVALUATIONS (§356.2)

The WMP itself is periodically reviewed and evaluated. CVWD and stakeholders regularly meet to assess the progress of management strategy implementation and evaluate their impacts; for example, the original 2002 WMP was updated in the 2010 WMP Update and a 2014 Status Update was published thereafter. This bridge document presents a 2016 status update of the WMP. The GSAs together will continue to perform periodic evaluations of the WMP, which allows for adaptive management based on changes in hydrologic conditions, customer needs, and data collected as a result of monitoring activities in the Basin. As required by SGMA, this alternative plan will be reviewed, updated, and submitted to DWR in January 2022.

Section 8
References

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Appendices – Separately Attached

Appendix A-1	2002 Water Management Plan
Appendix A-2	2002 Draft and Final Program EIR
Appendix A-3	2010 Water Management Plan Update
Appendix A-4	2010 Draft and Final Subsequent Program EIR
Appendix A-5	2014 Status Report for the 2010 WMP Update
Appendix A-6	CVWD 2016 Engineer's Report on Water Supply and Replenishment Assessment
Appendix A-7	DWA 2016 Engineer's Report on Water Supply and Replenishment Assessment
Appendix B	GSA Formation Notices of Election
Appendix C-1	City of Coachella Memorandum of Understanding
Appendix C-2	Indio Settlement Agreement

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