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TECHNICAL MEMORANDUM

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PROJECT: Castroville and Eastside Canals and Alternatives Study

SUBJECT: Task 2 – Historical Documents Review and Summary

INTRODUCTION

This technical memorandum summarizes the results of a historical documents review conducted by Montgomery & Associates (M&A) and Wallace Group (WG) for the Castroville and Eastside Canals and Alternatives (C&E) Canals Study. The historical documents review is Task 2 of Phase 1 of the C&E Canals Study.

The Monterey County Water Resources Agency (MCWRA) holds water right Permit 11043, which provides a conditional right to divert Salinas River water for irrigation and municipal uses. Using the Permit to divert Salinas River water for beneficial use has been considered many times since it was issued in 1957, including in the Groundwater Sustainability Plans (GSPs) developed by the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) and partner agencies.

The C&E Canals Study is being conducted to better understand options and constraints for diverting Salinas River water under the Permit to achieve at least 1 of the following 4 goals:

1. Mitigate seawater intrusion
2. Raise groundwater levels in the northern Eastside and southern Langley Subbasins
3. Raise groundwater levels in the southern 180/400 and Eastside Subbasins
4. Raise groundwater levels in the Deep Aquifers

In the next phase of the study, project concepts will be developed for further analysis relative to specific sustainability goals.

Over the nearly 80-year history of the Permit, numerous projects have been proposed to divert and use surface water for beneficial uses. Given this extensive body of historical work, it is important to understand previously proposed projects to help inform development of future efforts to achieve groundwater sustainability goals. However, current conditions—including infrastructure, environmental regulations, permitting requirements, and costs—will influence the applicability of these historical project concepts.

The goals of the historical documents review were to:

- Compile a list of conceptual water resources projects that have been previously proposed to address undesirable conditions caused by groundwater overdraft in the Salinas Valley.
- Summarize conceptual Salinas River diversion projects that could be considered using the existing or modified Permit, or an alternative water right approach. Some of these projects will be further evaluated in later phases of the C&E Canals Study.
- Review previously identified project considerations and constraints to inform evaluation in later phases.

DOCUMENTS REVIEWED AND METHODS

SVBGSA, MCWRA, M&A, and WG worked together to identify documents relevant to Permit 11043 and, subsequently, to the C&E Canals Study. Table 1 lists 29 documents identified and reviewed by M&A and/or WG for this review. All documents are publicly available. The majority of the documents reviewed were prepared for MCWRA, with some for the State, and a few more recently for SVBGSA. Since the 1940s, MCWRA has been the main agency monitoring surface water and groundwater conditions. Fundamental to the MCWRA's mission to sustainably manage water resources while minimizing impacts from flooding, MCWRA owns and operates 2 dams on principal tributaries to the Salinas River—Nacimiento and San Antonio—along with associated reservoirs. These documents range from field studies to planning and technical studies related to the Permit. They span a wide variety of perspectives and approaches that have been considered over the last almost 80 years.

The historical document review was completed using the following 3 main steps:

1. **Review of Proposed Projects and Context:** The team examined the listed historical documents to identify previously proposed projects, with a focus on Salinas River Diversion projects that may use Permit 11043. This step also involved understanding the water resource challenges proposed projects sought to address and the strategies proposed to overcome them.

   This review first categorizes projects in terms of whether they are river diversion projects, which are projects that move water off a river or stream for use elsewhere. In

contrast, non-diversion projects address water resource management through other means, such as irrigation efficiency improvements or water importation. Of those, it identifies Salinas River diversion projects. These may involve modifications to the Permit, such as changes to the diversion location or addition of storage, but do not include projects on other streams aside from the Salinas River.

2. **Identification of Key Components:** Each proposed project was broken down into its main project components. This analysis revealed common elements across projects, highlighted differences in approach, and laid the groundwork for understanding potential constraints and implementation considerations.

3. **Summary of Constraints and Considerations:** While most proposed projects were documented at a conceptual level, some included additional details such as implementation challenges, constraints, and—where available—reasons certain projects were not pursued. This information was analyzed and summarized to inform future phases of the C&E Canals Study, which will further develop and refine project concepts for a Salinas River diversion.

Table 1. Documents Reviewed for C&ES Project

No.	Title	Author	Recipient	Year	Reviewed By
1	Bulletin 52-B, Salinas Basin Investigation Summary Report	State of California - Department of Public Works Division of Water Resources	State of California	1946	M&A, WG
2	Bulletin 19, Salinas River Basin Investigation	State of California	State of California	1956	M&A, WG
3	Investigation of an Eastside Canal Project, Salinas Valley	MCF&WCD (MCWRA)	MCF&WCD (MCWRA)	1968	WG
4	Salinas River Well Field Evaluation	Koretsky	MCWRA	1976	M&A
5	Water Capital Facilities Plan	Boyle Engineers	MCWRA	1991	M&A, WG
6	Hydrogeologic Investigation of Arroyo Seco Cone	SGD, Inc.	MCWRA	1994	M&A
7	Hydrogeologic Investigation of Salinas River Enhanced Infiltration Well Field	SGD, Inc.	MCWRA	1994	M&A
8	Hydrogeology and Water Supply of Salinas Valley: A White Paper	Salinas Valley Ground Water Basin Hydrology Conference	MCWRA	1995	M&A
9	Salinas Valley Water Project Draft Master Environmental Impact Report SCH #97-121020	EDAW, Inc.	MCWRA	1998	M&A, WG
10	Draft Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project SCH #2000034007	EDAW, Inc.	MCWRA and USACE	2001	M&A, WG
11	Final Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project SCH #2000034007 – Volume I and Volume II	EDAW, Inc.	MCWRA and USACE	2002	M&A, WG
12	Salinas Valley Water Project Engineers Report	RMC	MCWRA	2003	M&A, WG
13	Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River	MCWRA	MCWRA	2005	M&A
14	National Marine Fisheries Service Biological Opinion	National Marine Fisheries Service, Southwest Region	MCWRA	2007	M&A
15	Salinas Valley Water Project EIR Addendum	ENTRIX & RMC Water and Environment	MCWRA	2007	M&A, WG
16	Order WR 2008-0037-DWR for Nacimiento and San Antonio Rivers	SWRCB	MCWRA	2008	M&A
17	Protective Elevations to Control Sea Water Intrusion in the Salinas Valley	GeoScience	MCWRA	2013	M&A
18	Order WR 2013-0030-EXEC Approving Settlement Agreement and Partial Revocation	SWRCB	MCWRA	2013	M&A

No.	Title	Author	Recipient	Year	Reviewed By
19	Application 13225, Permit 11043 Right to Divert and Use Water	SWRCB	MCWRA	2013	M&A
20	Regional Advisory Committee Meetings Summaries for 2013 (focused on use of 11043 Permit)	MCWRA	MCWRA	2013	M&A
21	Regional Advisory Committee Meetings Summaries for 2014 (focused on use of 11043 Permit)	MCWRA	MCWRA	2014	M&A
22	Notice of Preparation, Salinas Valley Water Project, Phase II	MCWRA	State Clearinghouse, Responsible Agencies, Trustee Agencies, Interested Parties and Organizations	2014	M&A, WG
23	Salinas Valley Water Project, Phase II – Timeline of Relevant Events	MCWRA	State Clearinghouse, Responsible Agencies, Trustee Agencies, Interested Parties and Organizations	2014	M&A
24	Recommendations to Address the Expansion of Seawater Intrusion	MCWRA	MCWRA	2017	M&A
25	Jerrett Reservoir Informational Report	MCWRA	MCWRA	2019	M&A
26	Recommendations to Address the Expansion of Seawater Intrusion: 2020 Update	MCWRA	MCWRA	2020	M&A
27	180/400 Subbasin and Eastside Aquifer Subbasin Groundwater Sustainability Plans	M&A	SVBGSA	2020 & 2022	M&A
28	Preliminary Feasibility Study: Aquifer Storage and Recovery Project Concepts to Address Seawater Intrusion	M&A and SVBGSA	SVBGSA	2025	M&A, WG
29	Salinas Basin Water Alliance Pipeline Proposal Alternatives	Salinas Basin Water Alliance	SVBGSA	2025	M&A, WG

REVIEW OF PREVIOUSLY PROPOSED CONCEPTUAL PROJECTS

Over the past 80 years, more than 120 conceptual projects or policy measures have been proposed to address undesirable groundwater conditions in the Salinas Valley. Terminology and language have changed over time, and the summary of project descriptions below tries to capture the essence of the proposal in standardized, contemporary terms.

The general understanding of the Valley's water challenges has remained largely consistent since the 1940s, though more recent analyses have refined and deepened that understanding. Most documents focused on 2 interrelated challenges: seawater intrusion along the coast and chronically depressed groundwater levels in what is now designated as the Eastside Subbasin. Documents linked these 2 issues through the landward hydraulic gradient, which has been caused by groundwater overdraft. Physical constraints—such as the presence of an aquitard that limits surface water recharge and clay-rich alluvial fans in the northern Valley—have long been acknowledged as challenges to addressing these issues. Since the application for Permit 11043 was originally filed in 1949 to address the groundwater and seawater intrusion challenges, these challenges have remained at the forefront of water management efforts and the key focus of proposed conceptual projects.

Table 2 catalogues all projects that have been proposed to address these groundwater challenges in the Salinas Valley, as documented since the publication of Bulletin 52 in 1946. Projects that do not involve diversion from the Salinas River are included for completeness but will not be further evaluated in the C&E Canals Study because they fall outside the scope of Permit 11043 and the river diversion alternatives considered in this study. However, some of these projects may warrant further consideration in separate, future studies. Some documents listed in Table 2 do not describe specific projects but are included to provide context, particularly regarding the permit revisions and discussions in relation to proposed projects.

Table 2 includes 2 columns that show the classification of proposed projects:

- **Diversion** – projects that move surface water away from a river, stream, or other source, including recycled, industrial, and stormwater; well field projects that could be drawing surface water are included, and it is assumed that the project would be designed to draw surface water from a water rights perspective.
- **Salinas River Diversion** – projects that divert surface water from the Salinas River; these could potentially use Permit 11043. Projects that redivert water previously stored in Nacimiento or San Antonio Reservoirs are not included.

In Table 2, diversion projects that are not Salinas River diversion projects are highlighted in blue, and Salinas River diversion projects are highlighted in yellow.

Table 2 illustrates how proposed projects have evolved over time. The earliest documents date back to the 1940s, shortly after seawater intrusion was first identified in the Salinas Valley. In the 1950s and 1960s, much of the focus centered on the development of the Nacimiento and San Antonio Reservoirs. A surge of documents in the 1990s reflects renewed interest in launching another major project likely driven by the worsening seawater intrusion, the state's notices of potential Salinas Basin adjudication, the State Water Resources Control Board's notice of proposed revocation of Permit 11043, and the introduction of new pollution regulations requiring wastewater treatment.

The 1990s saw the development of the Monterey County Water Recycling Projects and the Castroville Seawater Intrusion Project (CSIP). In 1998, tertiary treated wastewater began to be delivered as an in-lieu water supply through CSIP to much of the seawater-intruded area. Concurrently, attention shifted to the Salinas Valley Water Project (SVWP). The SVWP Draft Environmental Impact Report (EIR) produced in 1998 was refined for the 2002 Master EIR. The 1998 Draft EIR originally described a river diversion near Spreckels, and became the Salinas River Diversion Facility (SRDF) in the 2002 Final EIR after multiple iterations of stakeholder feedback, CEQA analyses, and project development. The SRDF rediverts stored water from Nacimiento and San Antonio Reservoirs to support CSIP and became operational in 2010. Diversion of Salinas River water with Permit 11043 was still viewed as a potential component for SVWP Phase II.

In 2013, there was a Settlement Agreement between MCWRA and the State Water Resources Control Board involving Permit 11043, through which there was a partial reduction of the total allowable volume of water for diversion and a revised timeline for project implementation. In 2013 and 2014, MCWRA led Regional Advisory Committee (RAC) meetings to (1) update and retain Permit 11043, (2) determine feasibility of utilizing water pursuant to this permit within the context of the original permit, and (3) identify the water available pursuant to Permit 11043 and work together to identify feasible projects that put those water resources to beneficial use. Membership included MCWD, Monterey County Farm Bureau, Monterey One Water, Salinas Valley Water Coalition, California Water Service, Castroville Community Services District, City of Salinas, Grower-Shipper, MCWRA Board members, and a few members of the public representing North County and the Eastside area.

RAC meetings focused on project proposals and selection with no conclusions reached. In 2015, an extreme drought and the prior year's passage of the Sustainable Groundwater Management Act (SGMA) introduced new state-level pressure to manage groundwater sustainably, as well as uncertainty about how it would affect local management. Since then, MCWRA has been working closely with the SVBGSA on groundwater sustainability efforts, which include discussions on using Permit 11043.

A key theme across the majority of the documents was a comprehensive approach to solving the challenge. This primarily meant implementing a diversion project along with demand management measures. Most of the documents acknowledge groundwater overdraft in the Basin is the primary cause of both coastal seawater intrusion and chronically depressed groundwater levels in the Eastside Subbasin. To address the challenge and ensure it does not worsen or repeat itself, most studies described the importance of coupling demand management with diversion solutions.

Table 2. Summary of Proposed Projects and Associated Documents by Report

Year	Document Title	Proposed Project(s)	Diversion (Y/N?)	Salinas River Diversion Project? (Y/N?)
1946	Bulletin 52-B, Salinas Basin Investigation Summary Report	Determine if appreciable groundwater storage in shallow sediments	N	N
		Reservoir sites - Arroyo Seco, Nacimiento, and San Antonio	N	N
		Increase irrigation efficiency	N	N
		Groundwater adjudication	N	N
		Mix effluent from City of Salinas with 400-Foot Aquifer Water for Irrigation	Y	N
		Recover industrial water outflow	Y	N
		Increase percolation/recharge	N	N
		Salvage some waste from Forebay area	N	N
		Cyclic storage of underground reservoirs	N	N
		Prohibit construction of defective wells that may allow for comingling of waters with contamination	N	N
		Repair existing defective wells	N	N
		Abandon defective wells	N	N
		Create a central government well filing agency	N	N
		Divert surplus (45,000 AFY) spring flows in Salinas River into canal along Gabilan Range and deliver to Eastside and Pressure Areas, allowing ~35% to go into cyclic underground storage	Y	Y
1956	Bulletin 19, Salinas River Basin Investigation	Reservoir Sites: 17 viable options, 23 non-viable options	N	N
		Develop surface and groundwater storage capacity	N	N
		Convey water through conduit, not Salinas River, to prevent losses	Y	Y
		Conservation of water during wet periods for subsequent use during drought	N	N
		Import 300,000 AFY from outside Basin, from Feather River Project	N	N
		Planned operation of groundwater storage in Forebay Area to service Pressure and Eastside areas in coordination with upstream storage	Y	Y
1968	Investigation of an Eastside Canal Project, Salinas Valley	Low diversion dam near Soledad into canal for irrigation. Noted percolation ponds and streambeds to replenish aquifers could also be considered.	Y	Y

Year	Document Title	Proposed Project(s)	Diversion (Y/N?)	Salinas River Diversion Project? (Y/N?)
1976	Salinas River Well Field Evaluation	Construct and operate groundwater production wellfields along the Salinas River to provide a supplemental water supply for the Castroville Irrigation Project	Y	Y
1991	Water Capital Facilities Plan	Urban conservation	N	N
		Agricultural water management - Phase 1	N	N
		Agricultural water management - Phase 2	N	N
		SWIP – Castroville Irrigation Water Supply Project	N	N
		SWIP – Regional Water Reclamation Supply Project	N	N
		SWIP – Fort Ord-Marina Potable Water Supply Project	N	N
		Widen San Antonio Spillway	N	N
		Widen Nacimiento Spillway	N	N
		Arroyo Seco Dam – Greenfield Site (Low)	N	N
		Arroyo Seco – Salinas River Conveyance Canal	Y	N
		Salinas Valley M&I Water Delivery Project	N	N
		Nacimiento – San Antonio Interlake Tunnel	N	N
1994	Hydrogeologic Investigation of Arroyo Seco Cone	Reduce pumping in the sea water intruded areas	N	N
		Basin redistribution project: capture excess surface water flows in south and transfer via pipeline to north, where "excess surface water flow" is unmanaged streamflow that does not naturally percolate and become stored groundwater, rather it flows to the ocean as loss	Y	Y
		Spreading basins on Arroyo Seco Cone to capture Arroyo Seco flows coupled with extraction program for operational targeted groundwater levels	Y	N
		Retention structure on upper Arroyo Seco to control extreme variations in flow, coordinated with basins	Y	N
1994	Hydrogeologic Investigation of Salinas River Enhanced Infiltration Well Field	Well field along Salinas River between Greenfield and Chualar to induce recharge/infiltration in this reach, and use pumped water for direct or artificial recharge in the north	Y	Y
1995	Hydrogeology and Water Supply of	Recommend solution proposed in 1946: Divert Salinas River near Soledad and send water in canal to north	Y	Y

Year	Document Title	Proposed Project(s)	Diversion (Y/N?)	Salinas River Diversion Project? (Y/N?)
	Salinas Valley: A White Paper	Determine relationship between fertilizer application, irrigation practices, plant growth, and groundwater contamination	N	N
		Evaluate seawater intrusion monitoring	N	N
		Continue MCWRA surface water and groundwater monitoring program for quantity and quality	N	N
1998	Salinas Valley Water Project Draft Master Environmental Impact Report SCH #97-121020	Salinas Valley Water Project:		
		Nacimiento Spillway modification	N	N
		Reoperation of Nacimiento and San Antonio Reservoirs	N	N
		Storage and use of recycled water from Monterey County Wastewater Recycling Plant (MCWRP, now Monterey One Water) with storage at Merritt Lake location	Y	N
		Subsurface diversion, storage, and use of previously-stored Salinas River water, for 80 cfs and diversion near Hwy 68 (early version of SRDF)	Y	N
		Treatment and delivery to balance agricultural and urban deliveries	N	N
		Delivery area pumping restrictions	N	N
		Nitrate management	N	N
2001	Draft Environmental Impact Report/ Environmental Impact Statement for the Salinas Valley Water Project SCH #2000034007	Salinas Valley Water Project Revised:		
		Nacimiento Spillway modification	N	N
		Reoperation of Nacimiento and San Antonio Reservoirs	N	N
		Subsurface diversion, storage and use of previously-stored Salinas River water	Y	N
		Storage and use of recycled water from the MCWRP	Y	N
		Treatment and delivery (to Ag and possibly urban uses)	N	N
		Delivery area pumping restrictions	N	N
2002	Final Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project SCH #2000034007 – Volume I and Volume II	Salinas Valley Water Project: Final Project Revision		
		Nacimiento Spillway modification	N	N
		Reoperation of Nacimiento and San Antonio Reservoirs	N	N
		Salinas River recharge, conveyance of additional flows, and surface rediversion of stored water (SRDF)	Y	N
		Distribution and delivery of surface water in combination with recycled water	Y	N
		Pumping management in delivery area	N	N
		Total demand management (Alternative)	N	N

Year	Document Title	Proposed Project(s)	Diversion (Y/N?)	Salinas River Diversion Project? (Y/N?)
		Demand management through State adjudication (Alternative)	N	N
2003	Salinas Valley Water Project Engineers Report	Salinas Valley Water Project: Implemented		
		Operation and maintenance of the existing reservoirs for ~29,000 AFY	N	N
		Construction of the Nacimiento Dam Spillway Modifications	N	N
		Construction of the Salinas River Diversion Facility (SRDF) for ~12,800 AFY	Y	N
2005	Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River	Flow prescription for Steelhead trout for SVWP	N/A	N/A
2007	National Marine Fisheries Service Biological Opinion	National Marine Fisheries Service Biological Opinion for impacts on the Salinas River Diversion Facility	N/A	N/A
2007	Salinas Valley Water Project EIR Addendum	EIR for SVWP (2003 version)	N	N
		Includes modified flows regimes from flow prescription	N	N
		Revises SRDF capacity from 85 cfs to 45 cfs	Y	N
2008	Order WR 2008-0037-DWR for Nacimiento and San Antonio Rivers	Permit changes Order from SWRCB	N	N
2013	Protective Elevations to Control Sea Water Intrusion in the Salinas Valley	Use Permit 11043 to help increase groundwater levels in pressure and Eastside subareas to control seawater intrusion	Y	Y
		Groundwater recharge, direct and in-lieu, to Forebay and Eastside areas	N	N
		Report determined groundwater levels needed to control seawater intrusion, and determined Basin needed ~60,000 AFY to achieve that	N	N
2013	Order WR 2013-0030-EXEC Approving Settlement Agreement and Partial Revocation	Settlement of Permit 11043 with SWRCB's revocation order	PERMIT	PERMIT
		400 cfs instantaneous		
		135,000 AF annual, as partial revocation of right		
		MCWRA agrees to bypass flows		
		MCWRA agrees to identified milestones toward implementation of SVWP Phase 2		

Year	Document Title	Proposed Project(s)	Diversion (Y/N?)	Salinas River Diversion Project? (Y/N?)
		Purpose of water appropriated under Permit 11043 will continue to be for municipal and agricultural uses		
		Points of diversion and places of use identified in Permit 11043 will remain unchanged		
		Revocation order rescinded		
2013	Application 13225, Permit 11043 Right to Divert and Use Water	Defining Permit 11043 post-Settlement, including terms and conditions	PERMIT	PERMIT
2013	Regional Advisory Committee Meetings Summaries for 2013	Summary of Regional Advisory Committee (RAC) meetings to provide input for best options to utilize water under Permit 11043, and move projects forward, and provide MCWRA staff guidance to start NOP	CONVERSATIONS ABOUT PERMIT	CONVERSATIONS ABOUT PERMIT
2014	Regional Advisory Committee Meetings Summaries for 2014	Continuation of 2013 RAC meetings		
		Primary project proposal to use Permit 11043		
		Urban & Ag Use: Deliver River water during winter months, similar to SVWP	Y	Y
		ASR of diverted Salinas River water	Y	Y
		Delivery to Eastside groundwater depression of diverted Salinas River water	Y	Y
		Surface water treatment plant of diverted Salinas River water	Y	Y
		Interlake pipeline	N	N
		Interlake tunnel	N	N
		Eastside pipeline, multiple configurations, for diverted Salinas River water	Y	Y
		Armstrong Ranch below ground storage of diverted Salinas River water	Y	Y
		Eastside hybrid: shorter canal using 2nd diversion point, part of multiple configurations for diverted Salinas River water	Y	Y
		Jerrett Reservoir site	N	N
		San Lorenzo retention dam and diversion of Salinas River water	Y	Y
		Armstrong Ranch above ground storage of diverted Salinas River water	Y	Y
		Topo Ranch reservoir storage for diverted Salinas River water	Y	Y
		Eastside canal for diverted Salinas River water	Y	Y
		Pump water from Salinas River into San Antonio Reservoir	Y	Y
2014	Notice of Preparation, Salinas Valley Water Project, Phase II	Offset groundwater pumping in northern and coastal portions of the Basin using Surface Water supply with Permit 11043 by implementing Phase 2 of SVWP	Y	Y

Year	Document Title	Proposed Project(s)	Diversion (Y/N?)	Salinas River Diversion Project? (Y/N?)
2014	Salinas Valley Water Project, Phase II – Timeline of Relevant Events	Timeline of SVWP Phase 2	N/A	N/A
2017	Recommendations to Address the Expansion of Seawater Intrusion	Six recommendations:		
		1. Immediate moratorium on groundwater extraction from new wells in Pressure 400-Foot Aquifer within Area of Impact	N	N
		2. Enhance and expand CSIP	N	N
		3. Terminate all pumping from existing wells in 180- and 400-Foot wells in Area of Impact (exceptions: municipal, CSIP, or MCWRA monitor wells)	N	N
		4. Destroy wells in MCWRA Zone 2B	N	N
		5. Moratorium on GW extraction from new wells in Deep Aquifers in 180/400- and Monterey Subbasins	N	N
		6. Deep Aquifers Investigation	N	N
2019	Jerrett Reservoir Informational Report	Alternative proposal to Interlake Tunnel project		
		Jerrett Reservoir to encompass 2 dams within Nacimiento watershed, upstream of Nacimiento Reservoir, potentially to impound ~130,000 AF	N	N
2020	Recommendations to Address the Expansion of Seawater Intrusion: 2020 Update	Nine Recommendations		
		1. Immediate prohibition of groundwater extraction from new wells in 180- and 400-Foot Aquifers in Area of Impact	N	N
		2. Install new groundwater level and water quality monitoring locations in coastal region	N	N
		3. Implement new methodologies for groundwater level and water quality characterization	N	N
		4. Enhance and expand CSIP service area	N	N
		5. Terminate all pumping within Area of Impact after expansion of CSIP service area	N	N
		6. Destroy wells in Zone 2B	N	N
		7. Prohibition of groundwater extractions from new wells within entirety of Deep Aquifers until Deep Aquifers Study completed	N	N
		8. Conduct Deep Aquifers Study	N	N
		9. Participate in coordinated efforts with other Agencies for beneficial management of aquifers in coastal Salinas Valley	N	N

Year	Document Title	Proposed Project(s)	Diversion (Y/N?)	Salinas River Diversion Project? (Y/N?)
2020 & 2022	180/400 Subbasin and Eastside Aquifer Subbasin Groundwater Sustainability Plans	Pump 3,000 AF/yr. via 3 new wells from near Somavia Road to Eastside Subbasin for agricultural irrigation or groundwater recharge.	Y	Y
2025	Preliminary Feasibility Study: Aquifer Storage and Recovery Project Concepts to Address Seawater Intrusion	Seasonal releases from the reservoirs with Aquifer Storage and Recovery (ASR) wells; to include a treatment plant, ASR wells, and CSIP distribution of recovered water	Y	Y
2025	Salinas Basin Water Alliance Pipeline Proposal Alternatives	Three diversion and pipeline proposals:		
		1. Divert at Bradley, convey in pipeline to Chualar/Gonzales, operate in conjunction with rubber dam at Somavia Road	Y	Y
		2. Divert at King City, convey in pipeline to Somavia Road	Y	Y
		3. Diversion via shallow wellfield in Forebay Subbasin, as originally proposed in Bulletin 52	Y	Y
		Total Diversion and Permit 11043 Project Proposals	**39**	**27**

NOTE: Non-Salinas River diversion projects highlighted in blue

NOTE: Salinas River diversion projects highlighted in yellow

IDENTIFIED KEY COMPONENTS

Those projects identified as Salinas River diversion projects were examined in greater depth, since they may potentially be used with Permit 11043. Many of the proposed Salinas River diversion projects effectively have the same structure: divert, convey, and deliver. Sometimes storage is included and sometimes treatment is included, depending on the project description and end user. Among the previously proposed Salinas River diversion projects, there are variations in these core components:

- **Diversion** – all conceptual projects included some form of diversion of excess Salinas River flows during high-flow, low-demand winter months. The permitted locations are the Eastside Canal Intake near Soledad and the Castroville Canal Intake downstream of Chualar.
    - **Location:** Proposed diversion locations fall into 3 primary groups: the Northern group, which includes the Castroville Intake, Spreckels, and Armstrong Ranch diversions; the Central group, which includes the Eastside Intake and anything within the Forebay Subbasin; and the Southern group, which includes San Ardo, Bradley, San Lorenzo Creek, and King City.
    - **Method:** There are a variety of diversion methods that have been proposed, such as Ranney collectors, infiltration galleries, shallow wellfields, retention structures, and rubber dams.
    - **Capacity:** The diversion methods have been proposed with a wide range of capacities, from 30 cfs up to 400 cfs, which is the maximum permitted diversion capacity.
- **Conveyance** – Most of the conceptual projects included conveyance of the diverted surface water to the end use via canal, pipeline, or both depending on ease of implementation. This may connect directly to delivery if no storage or treatment is required.
- **Storage** – The Permit currently allows for direct diversion, which generally means water must be used and cannot be stored for longer than 30 days. Other projects have been proposed with long-term storage components, which would require modification to the Permit and/or a new water right.
    - **Method:** Several historical documents proposed regulating reservoirs for diverted water to better join supply and demand, even with the direct-use timeframe limitations. If water is stored for less than 30 days, it would not be considered stored by the water rights. These regulating reservoirs have often been proposed

as surface storage in the form of small lakes or tank storage. Longer-term storage components include surface reservoirs, spreading basins, or an ASR style project.

  - **Capacity:** The capacity of proposed storage has ranged from 90 AF to over 9,000 AF, depending on the method and timing of storage.

- **Treatment** – For several of the proposed direct-use projects, treatment of the water was discussed where the defined end-user was municipal users. These projects would require treatment of the water to drinking water standards. The projects that included ASR components would also require treatment of diverted water to Title 22 standards as injection into aquifers used for drinking water needs to meet drinking water standards. Some of the proposed projects mentioned a lower level of treatment for some agricultural users.

- **Delivery** – All proposed conceptual projects included some form of delivery of diverted surface water to the end users. In some cases, new distribution systems would be needed for delivery. For tie-ins with municipal users, coordination with the providers, direction of flow in main service lines, and water chemistry analyses would need to be analyzed extensively to ensure public safety and infrastructure protection when surface water is introduced into a traditionally groundwater-supplied system.

Each of these components has many important and potentially constraining considerations related to end uses and users, project size, permitting, land acquisition, and engineering feasibility, among others. These considerations will be further evaluated in later phases of the C&E Canals Study. For the purposes of Phase 1, these are described in more detail in the WG's technical memorandum on technical components.

The WG's review of the historical documents focused on the technical components of the proposed Salinas River diversion projects, if information about these components were available in the documents. Table 3 summarizes the results of the historical documents review for conceptual Salinas River diversion projects that included information on the components. Most proposed conceptual Salinas River diversion projects did not include discussion of components and are therefore not included in this table.

Table 3. Summary of Technical Components for Previously Proposed Salinas River Diversion Projects

Report	Date	Project Title	Estimated annual yield, AF	Diversion Location (Approx)	Diversion Method	Diversion Capacity, cfs	Conveyance	Storage Method	Storage capacity	Treatment Required	Infrastructure Notes	Additional Notes
Bulletin 52 - DWR	1946	Proposed Diversion System	45,000	Soledad	Shallow well field	250 cfs	Concrete canal to East Side and Pressure units	Regulating Reservoir (to balance supply & demand of diverted water close to end use)	Heins Lake - 300 AF	None specified	- 36 diversion wells, 16" casings, up to 200' deep - Conveyed to regulating reservoir, where concrete pipe used for tie into distribution systems. Also utilizes Espinosa Slough to the Salinas-Castroville Hwy crossing	For direct use in overdraft areas in lieu of local groundwater pumping
Bulletin 19 - SWRCB	1956	San Lucas-East Side Alternate Conduit	86,000	San Lucas	Surface river diversion	250 cfs	Concrete canal 63 mi to East Side and Pressure units	Several Reservoir sites identified, majority in southern basin	Not quantified	None specified	- This is an alternative to exclude the San Lucas Dam, which would be an in-stream Salinas River reservoir - San Lucas location is much farther south than Soledad Bulletin 52 diversion	This report also notes that Forebay well field not desirable due to stakeholder concern over lowered groundwater levels
East Side Canal - MCWRA	1968	East Side Canal	Not Quantified	Soledad	Surface river diversion and, when river is low, well field	220-400 cfs	37 mi long canal, concrete lined for first 19.5 mi, then earth lined through the Chualar-Quail and Alisal fans to help aquifer, and then distribution system for direct use	Utilizes underground storage for 2 of 3 plans	Not quantified	None specified	- Low diversion dam 3 mi SE of Soledad, pumping plant to lift water to head of canal - 50' long concrete lined intake channel off side of river - Direct use via pipes to fields - 3 plans varying on direct delivery, percolation ponds, and natural stream channels to replenish aquifers - Well field used when river is low, pumps into the reservoir behind the diversion dam	- Groundwater levels in Pressure Area would be improved - In lieu surface delivery in the Chualar-Quail and Alisal fan areas could be percolated to replenish the underground water supply
Capital Facilities Plan - Boyle Engineering	1991	#31 East Side Irrigation Water Supply Project - Alt A	21,000	Spence Road	Surface river diversion	130 cfs intake pumping plant	15" to 60" pipelines	Regulating Reservoirs (x2)	90 AF combined	None specified	Intermediate booster stations (x3)	Assumes water for project purposes is released from the Nacimiento and San Antonio reservoirs on a continuous 24 hour/day basis. Assumes operational storage in the Salinas River upstream of diversion dam to buffer daily demand
Capital Facilities Plan - Boyle Engineering	1991	#31 East Side Irrigation Water Supply Project - Alt B	34,000	Spence Road	Surface river diversion	200 cfs intake pumping plant	15" to 72" pipelines	x2 Regulating Reservoirs and groundwater recharge	90 AF combined	None specified	- Intermediate booster stations (x3) - Turnouts for groundwater recharge at Gabilan Creek, Natividad Creek, Alisal Creek, and Quail Creek	None
SVWP Draft Master EIR - EDAW, Inc.	1998	Salinas River Conveyance & Diversion	27,400	Spreckels	Ranney collectors and/or infiltration galleries	80 cfs	Pipeline	Regulating reservoir up to 3,000 AF	Merritt Lake ~3,000 AF to 9,600 AF, dam-location dependent	End-use dependent, but likely	-Ranney Collector proposal estimated at $36 million (1998) -Infiltration Gallery proposal estimated at $58 million (1998) -Total construction timeline ~2-3yr	-Subsurface collector types selected to accommodate for endangered fish species in River

Report	Date	Project Title	Estimated annual yield, AF	Diversion Location (Approx)	Diversion Method	Diversion Capacity, cfs	Conveyance	Storage Method	Storage capacity	Treatment Required	Infrastructure Notes	Additional Notes
Eastside Aquifer Subbasin Groundwater Sustainability Plan	2022	Eastside Irrigation Water Supply Project	3,000	Somavia Road	Extraction Wells	3,000 gpm or 6.7 cfs total	15" to 72 " Pipelines	Steel storage tanks	Not quantified	None specified	New extraction wells, pump stations, and storage tanks. Could potentially use existing distribution systems. Original project described in 1991 Boyle Report.	Extracted water expected to be replaced by winter flows in Salinas River due to gap in Salinas Valley Aquitard at this location.
ASR Feasibility Study - M&A	2025	ASR Feasibility Study	12,900	SRDF	Surface river diversion	Utilize exist SRDF, about 36 cfs	Pipelines from SRDF to storage and treatment, to inject in ASR wells, and then extract and send to CSIP system	Utilizes underground storage	Not quantified	Title 22 Treatment Required	Initially proposed shifting reservoir releases to winter/spring. Divert to treatment plant to be conveyed to ASR wells in both 180- and 400-Ft Aquifers, and direct municipal use. Additional groundwater pumping would be needed to meet CSIP demands since SRDF would no longer be used for CSIP supply	None
ASR Feasibility Study - M&A	2025	ASR Feasibility Study - Alt 1	6,700	Diversion site was not evaluated	Ranney collector wells	Up to 45 cfs	Pipelines from radial Ranney collector wells to storage and treatment, to inject in ASR wells, and then extract and send to CSIP system	Utilizes underground storage	Not quantified	Title 22 Treatment Required	New diversion facility instead of changing SRDF and reservoir operations	None
ASR Feasibility Study - M&A	2025	ASR Feasibility Study - Alt 1A	6,700	Diversion site was not evaluated	Ranney collector wells	Up to 45 cfs	Pipelines from radial Ranney collector wells to storage and treatment, to inject in ASR wells, and then extract and send to CSIP system	Utilizes underground storage	Not quantified	Title 22 Treatment Required	Same as above, except 1A only injects into 400-Ft Aquifer as seawater intrusion has slowed in the 180-Ft Aquifer	None

IDENTIFIED CONSTRAINTS AND OTHER CONSIDERATIONS IN HISTORICAL DOCUMENTS

Several historical documents identified implementation considerations and constraints that could affect the feasibility and development of diversion projects. Key constraints include:

- **Cost**: Capital cost, operating cost, and cost per acre-foot of water are critical factors in determining project feasibility and scale. For example, the 1998 Master EIR for the SVWP eliminated a pipeline project from consideration in part due to its estimated cost of $400 million for approximately 20,000 AF/yr. of water In today's dollars, this is equivalent to nearly $800 million.
- **Environmental Impacts**: Environmental considerations of any project are a major constraint. For example, the 2008 Biological Opinion associated with the SVWP highlights the key ecological sensitivities associated with River-related activities, which must be addressed in any diversion project.
- **Permitting**: Multiple documents reference the complex, multi-agency permitting requirements at the federal, state, and local levels. The 1998 Master EIR outlines the regulatory framework applicable to the Salinas Valley Water Project, which will similarly affect future diversion efforts, together with new permitting requirements since then.
- **Land Acquisition**: Any project with diversion, conveyance, treatment, and/or delivery will require purchasing or legal access (e.g., easements) to land for infrastructure. For example, if the Permit is modified to include underground storage and this approach is considered, access to land will be required for the conveyance system, recharge basins, and recovery wells. Acquiring land can be expensive and time-consuming.
- **Interested Party Acceptance**: Gaining public support is a critical factor in project development and implementation, particularly for securing funding. Project ideas are informed through feasibility studies. Project concepts, costs, and benefits are developed while receiving interested party input and assessing impacts on the community. A recent example of a public process prior to SGMA was demonstrated in records of the 2013-2014 MCWRA-hosted RAC meetings, which documented conversations where many ideas were offered, but no consensus around selection or direction were provided from the committee to MCWRA staff to move forward with.
- **Project Development Timeframe**: The amount of time it will take to bring a diversion project online will be a significant consideration, as is demonstrated in the time it took to develop, permit, and construct Phase 1 of the SVWP. Before a project can be selected, it will require a series of steps that all require substantial time to complete including selecting the project, gaining public support, determining funding mechanisms, securing

water rights, environmental and regulatory permitting, and designing, constructing, and begin operations of the project. Timely action is needed to select a project and begin the implementation process to minimize the continuing impacts of groundwater overdraft.

In addition to these constraints identified in historical documents, several new considerations have emerged over time that will affect project development. Since the publication of Bulletin 52 and other early studies, MCWRA has constructed and operates the Nacimiento and San Antonio Reservoirs. The management of these facilities stores water that otherwise may have flowed down the Salinas River and been available for diversion under the Permit.

Furthermore, new federal and state environmental laws—such as the National Environmental Policy Act, California Environmental Quality Act, and the Endangered Species Act—have introduced regulatory requirements that did not exist in the early to mid-20th century. For example, river flow obligations associated with the construction and operation of the SVWP must now be considered. At the time of this C&E Canals Study, MCWRA is also developing a Habitat Conservation Plan for Salinas River Operations, which may quantitatively affect the availability of water for diversion from the Salinas River and will further affect the environmental review process and requirements for any future diversion projects. The passage of the SGMA added another layer of complexity, requiring local agencies to achieve groundwater sustainability by 2040 or 2042 according to specific indicators.

These additional considerations—none of which were in place when Bulletin 52 was published, when early conceptual projects were proposed, or when the Permit was issued in 1957—now play a critical role in shaping the feasibility and design of potential projects. Furthermore, Nacimiento and San Antonion Reservoirs are in need of maintenance, without which groundwater conditions may become more severe, and groundwater sustainability as a long-term goal. Further evaluation of constraints and considerations will be performed in later phases of the C&E Canals Study.

KEY FINDINGS

The historical document review conducted by M&A and WG revealed the following key insights that are relevant to potential use of the Permit and development of a Salinas River diversion project:

- Many of the 120 conceptual projects identified in the historical documents were high-level ideas or concepts that lacked specificity, including details on the project components. The majority were not diversion projects from the Salinas River and/or related to the Permit. Projects not related to diverting the Salinas River are not considered for further evaluation within this C&E Canals Study. Approximately 30 Salinas River diversion projects were described in the historical documents.

- A key finding from the historical documents review is the majority of Salinas River diversion projects were proposed along with demand management measures. Most documents described the importance of coupling demand management with diversion solutions to address the groundwater overdraft, the root of seawater intrusion, and chronically depressed groundwater levels. Most noted the confined aquifer system and clay-rich alluvial fans as physical constraints that make addressing these challenges difficult.
- Previously proposed projects are effectively one project structure with variations on the following components: diversion, conveyance, and delivery, sometimes with storage and treatment before delivery. A common challenge noted in more recent documents is the mismatch between wet-season river flows and peak summer demand, underscoring the need for substantial seasonal storage.
- Identified constraints that will need to be considered to select projects include cost, environmental impacts, permitting, land acquisition, interested party acceptance, and project development timelines. Several federal and state environmental laws—many of which were enacted after publication of most of the historical documents—are expected to present significant constraints.
- Since the Permit was issued in 1957 and many of the conceptual projects were proposed, a number of new considerations have emerged that affect the design and feasibility of a river diversion project, such as new infrastructure (e.g., the reservoirs and SVWP) that require specific operating conditions, new regulatory requirements (e.g., NEPA, CEQA, ESA, and SGMA) that require extensive and uncertain permit approval processes, and growing public participation in water resource decision making. These considerations, and potentially others, will be further evaluated in later phases of the C&E Canals Study.

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