CHAPTER 5
Regional Project Description

5.1 Introduction

This introduction discusses the origin of the Monterey Regional Water Supply Program (Regional Project), places the Regional Project in the context of the Coastal Water Project (CWP) as a whole, describes the regional water supplies and needs, and provides an overview of the Phase 1 and Phase 2 Regional Project components.

5.1.1 Project Overview and Background

As explained in prior chapters, this environmental impact report (EIR) evaluates the potential environmental effects of a project proposed by California American Water Company (CalAm) to provide a new water supply for the Monterey Peninsula. The project is known as the Coastal Water Project. The water supply is needed to replace existing supplies that are constrained by recent legal decisions affecting the Carmel River and Seaside Groundwater Basin water resources, as described in more detail in Chapter 2. The CWP would produce desalinated water, convey it to the existing CalAm distribution system, and increase the system's use of storage capacity in the Seaside Groundwater Basin. The CWP would consist of several distinct components: a seawater intake system; a desalination plant; a brine discharge system; product water conveyance pipelines and storage facilities; and an aquifer storage and recovery (ASR) system.

Coastal Northern Monterey County has long faced water supply challenges (**Figure 3-1** shows the area referred to as Coastal Northern Monterey County). The problems of seawater intrusion and excess diversion have existed for decades. Seawater intrusion was identified in Monterey County in the late 1930s and documented by the State of California in 1946 as part of Bulletin 52. This report discussed methods to combat future seawater intrusion. As one of the primary custodians of potable water supplies in north Monterey County, Monterey County Water Resources Agency (MCWRA) took action based on these recommendations and has developed four important projects: Nacimiento and San Antonio Reservoirs, the Castroville Seawater Intrusion Project, and the Salinas Valley Water Project.

The first two projects, the Nacimiento and San Antonio Reservoirs, were put in place in the late 1950s and mid-1960s, respectively, to develop a new source of water for the needs of Monterey County. These dams are now owned and operated by MCWRA. The third project is the Castroville Seawater Intrusion Project (CSIP), developed by MCWRA in conjunction with the

Monterey Regional Water Pollution Control Agency (MRWPCA). This project delivers up to 14,000 acre-feet per year (afy) of recycled water to approximately 12,000 acres of agricultural lands surrounding Castroville. The recycled water is blended with groundwater to provide a supply adequate to meet the irrigation needs of the CSIP service area. The fourth project is the Salinas Valley Water Project (SVWP), which consists of modifying the Nacimiento Dam spillway, reoperating the storage and release schedules of the Nacimiento and San Antonio reservoirs, and the construction and operation of the Salinas River Diversion Facility (SRDF). The SRDF is under construction and is anticipated to become operational in 2010. The SRDF will direct Salinas River water for delivery to CSIP customers to replace the current use of groundwater.

These four projects provide critical infrastructure that will stop seawater intrusion, provide adequate water supplies to meet current and future (year 2030) needs in the Salinas basin, and improve the hydrologic balance of the groundwater basin in the Salinas Valley (Salinas Valley Groundwater Basin or Salinas Basin).

It is in response to the water supply challenges on the Monterey Peninsula that CalAm proposed the CWP and prepared, at the direction of the California Public Utility Commission's (CPUC's) administrative law judge (ALJ), a Proponent's Environmental Assessment (PEA) (CalAm and RBF Consulting, 2005). The PEA described the CWP assuming the proposed desalination plant would be situated at Moss Landing (this is referred to as the Applicant's Proposed Project, or the Moss Landing Project) to take advantage of the existing cooling water intake system at the Moss Landing Power Plant (MLPP) for source water, and the existing MLPP ocean outfall for the disposal of brine. Since that time, two alternative projects have been developed that are also capable of satisfying the objectives of the CWP. The first alternative project, known as the North Marina Project, includes most of the infrastructure improvements proposed for the CWP. The main differences between the Moss Landing and North Marina Projects are that the North Marina Project's desalination facility would be constructed at a different site (in North Marina) and the desalination facility's production capacity would be slightly greater than that of the Moss Landing Project's facility. The North Marina Project would also utilize subsurface seawater intakes for the desalination plant source water (slant wells at the end of Reservation Road), and would require fewer miles of product water conveyance pipeline than the Moss Landing Project. The North Marina Project was initially identified in the PEA and subsequently refined by CalAm and the CPUC. The North Marina Project would meet all of the project objectives of the CWP and is analyzed in this EIR at a level of detail equal to that devoted to the Moss Landing Project. Both the Moss Landing and North Marina Projects are analyzed in Chapter 4 of this EIR. CalAm would be the owner and operator of either of these two projects, and the CPUC, as the Lead Agency under the California Environmental Quality Act (CEQA), will use this document to approve one of the two projects to be implemented in the CWP.

The second alternative project analyzed in this EIR is the Monterey Regional Water Supply Project (referred to as the Regional Project), which is proposed by Water for Monterey County (formerly known as the Regional Plenary Oversight Group, or REPOG) as a community-developed long-term water supply alternative. The Regional Project, which is described in this chapter and analyzed in Chapter 6, would integrate the development and allocation of several water supply sources, including desalination, to address existing and projected future demands within the CalAm service area, as well as existing and future demands in other areas of northern Monterey County. (See Section 5.14 for further explanation about the origins and evaluation of the Regional Project.) The Regional Project, as proposed, would be implemented in phases and would incorporate most of the components of the North Marina Project, including the desalination facility at North Marina. However, instead of employing slant wells for source water as would the North Marina Project, the Regional Project would employ vertical wells to draw water from beneath the inland side of the beach dunes, and would add capacity to store additional water in the Seaside Groundwater Basin. Additionally, the Regional Project would utilize the existing Salinas River Diversion Facility (SRDF), and would include a new surface water treatment plant. As proposed in the Regional Project, the Marina Coast Water District (MCWD) would be the owner of the regional desalination facility and the surface water treatment plant. In order for the Regional Project to be implemented, it is assumed in this EIR that the MCWD would use this EIR in considering approval of some of the Regional Project facilities.

None of the three projects analyzed in the EIR standing alone would have sufficient capacity to meet total demand; any of the three projects would provide the majority, but not all, of the water required.

Certain other projects and measures capable of supplying additional water or reducing customer demand in the service area are assumed to be operational or in effect under all alternatives in this EIR. These projects and measures are not part of any of the three alternatives evaluated in this EIR; each of these projects and measures has been implemented or could be implemented independently of the alternatives analyzed in this EIR.[1]

The Sand City desalination facility, which will provide 300 afy, is one of these projects. Following certification of the EIR for the project, the Sand City desalination facility was approved and is expected to be under construction in 2009. Also, the Monterey Peninsula Water Management District (MPWMD) in partnership with CalAm has constructed and started operating two Seaside Groundwater Basin ASR injection/extraction wells that will deliver 920 afy on average. These existing projects are listed and discussed in this chapter to indicate how total demand for replacement water in the service area can be met.

In addition to these two existing water supply projects, two implementable measures could also support achievement of the total water supply objective for the service area in other ways. The first, implementation of feasible water conservation measures, would reduce water demand in the service area while the second, improved inspection and maintenance of water mains, would reduce current leakage and evaporative losses. These measures could be implemented independent of a decision to proceed with any of the three projects considered in the EIR.

[1] For summaries of the environmental impacts associated with those already-approved projects, please see Appendix J, which is included for informational purposes. The effects of these projects are taken into account in the cumulative analysis contained in Section 8 of this EIR.

Table 5-1 summarizes the facilities that would be included in each of the projects analyzed in this EIR. Certain facilities already exist while others are proposed as part of one or more of the alternatives. Consistent with CEQA and its guidelines, this EIR evaluates the significant adverse changes to existing conditions that would result from construction or operation of the project and the alternatives to it. Such changes may involve modifications to and/or changes in the use of existing facilities as well as construction and operation of new facilities.

TABLE 5-1
PROJECT FACILITIES

	Moss Landing Project	North Marina Project	Phase 1 Regional Project	Full Regional Project
Desalination Plant	10 MGD at Moss Landing	11 MGD at North Marina	10 MGD at North Marina	13 MGD (total) at North Marina
Source Water	Existing cooling water system at the MLPP	6 new subsurface intakes (slant wells)	5 new subsurface intakes (vertical wells)	10 (total) new subsurface intakes (vertical wells)
Brine Disposal	Existing MLPP Outfall	Existing Outfall at MRWPCA		
Product Water Conveyance	Transmission Main North			
	Transmission Main South			
Seaside Groundwater ASR	2 existing and 2 new injection/extraction wells			
			3 additional injection wells	
				2 additional injection wells
Surface Water Treatment			Existing Salinas River Diversion Facility and new 14 MGD Plant at North Marina	
				Expansion of Salinas River Diversion Facility
Salinas Basin Groundwater for North Monterey County				Expansion of the Castroville Seawater Intrusion Project, Perched water storage at the Armstrong Ranch, additional distribution pipelines

5.1.2 Objectives

As noted in Chapter 3, the primary objectives of the CWP are to:

- Satisfy CalAm's obligations to meet the requirements of SWRCB Order 95-10;
- Diversify and create a reliable drought-proof water supply;
- Protect the Seaside Basin for long-term reliability;
- Protect listed species in the riparian and aquatic habitat below San Clemente Dam;
- Protect the local economy from the effects of an uncertain water supply;
- Minimize water rate increases by creating a diversified water supply portfolio;

- Minimize energy requirements and greenhouse gas (GHG) emissions per unit of water delivered to the extent possible;
- Explore opportunities for regional partnerships, consistent with the Administrative Law Judge Decision (Decision 03-09-022, dated September 4, 2003); and
- Avoid duplicative facilities and infrastructure.

The Regional Project, as defined would meet all of these project objectives. In addition to the CWP objectives listed above, the Regional Project was designed to address and take advantage of these additional objectives and opportunities:

- Satisfy MCWD's obligations to provide a water supply adequate to meet the approved redevelopment of the former Fort Ord;
- Satisfy MCWRA's obligation to maintain hydrologic balance of the Salinas Groundwater Basin;
- Satisfy MCWRA's obligation to protect agricultural water users' utilization of water resources;
- Maximize regional reliability;
- Maximize use of recycled and freshwater sources;
- Maximize funding opportunities through regional cooperation; and
- Integrate urban, agricultural and environmental objectives.

5.1.3 Regional Water Supply and Demand

The Regional Project presumes the following MCWD and CalAm long-term water supplies continue to be utilized:

Marina Coast Water District

- 6,600 afy from Salinas Basin groundwater wells (for former Fort Ord area)[2]
- 2,630afy from Salinas Basin groundwater wells (for MCWD)[3]

California American Water

- 3,376 afy from the Carmel River[4]
- 1,494 afy from Seaside Basin groundwater wells[5]

2 Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands, March 1996

3 Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands, March 1996 and Marina Coast Water District Urban Water Management Plan, December 2005. The annexation agreement allows the MCWD to extract up to 3,020 afy of groundwater for use in the City of Marina. The MCWD has projected the future demand in the city of Marina as approximately 2,630 afy. Based on the annexation agreement, the additional 390 afy of available ground water (the difference between 3,020 and 2,630) cannot be delivered to the former Fort Ord area.

4 Sedimentation of the Los Padres Reservoir represents a loss of 762 acre feet of capacity since Order 95-10 was issued. This lost capacity of 762 afy has been included in the water gap (12,500 afy) discussed in Chapter 2 of this EIR.

5 The supply shown for the Seaside Basin groundwater wells is less than the supply estimate shown in the PEA for this source. The supply shown above represents the results of the Seaside Basin Adjudication, which had not been finalized when the PEA was written.

See Chapter 2 for a detailed analysis of the regional water supply and demand. The identified total difference between the regional supply and demand is 25,600 afy. This amount reflects domestic, commercial and industrial uses as follows:

- 12,500 afy needed for replacement of CalAm's Carmel River water and Seaside Groundwater Basin (Seaside Basin) supplies and for replacement of existing supplies of other Seaside Basin producers' whose rights were reduced by the adjudication[6].
- 2,700 afy additional water demand of MCWD[7],
- 4,500 afy demand for buildout of the Monterey Peninsula[8], and
- 5,900 afy of additional water demands of North Monterey County[9].

The Regional Project would provide a total incremental regional water supply of up to 25,600 afy for urban users. Due to the schedule constraints of the Seaside Basin adjudication and the Order 95-10 mandate ordering CalAm to diligently pursue a new water supply source to replace the water it currently produces above its permanent diversion rights from the Carmel River, the "regulatory replacement" supply is the first priority for project implementation. Delivery of new water supplies would be phased, with the first priorities being the 12,500 afy of regulatory replacement water and the 2,700 afy of Fort Ord demands.

Phase 1 of the Regional Project, which would provide a total regional water supply of up to 15,200 afy, is described in more detail in Section 5.2 below. Phase 2 Project components, which would provide the remaining 10,400 afy for the Monterey Peninsula and North Monterey County, are summarized in Section 5.3. The needs of the City of Salinas were considered as a part of this planning effort[10]. However, the incremental water supply needs for the City of Salinas are being addressed outside of the Regional Project described here.

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6 See Chapter 2 of this EIR for additional information on the need for water supply to replace a portion of CalAm's existing Carmel River and Seaside Basin supplies. As discussed in Chapter 2, MPWMD adjusted the PEA estimate of replacement water needed to meet existing demand from 11,730 afy (estimated by CalAm in the PEA) to 12,500 afy.

7 The Marina Coast Water District (MCWD) serves the City of Marina and former Fort Ord. According to MCWD's Final Environmental Impact Report (EIR) for the Regional Urban Water Augmentation Project (RUWAP) (September 2004), demand within Fort Ord, under current development restrictions, is 2,400 afy. In addition, at that time MCWD's water supply included 300 afy from a desalination facility that is not currently in operation. Therefore the total identified water gap for this service area includes an additional 300 for the total of 2,700 afy.

8 The MPWMD in consultation with the jurisdictions, estimated future water needs for Monterey Peninsula water users within the CalAm service area (i.e., beyond the estimates of replacement supply needed to meet current demand); refer to Chapter 2 for a more detailed discussion. This component of the Regional Project is based on the adopted land use plans of the jurisdictions within the CalAm service area.

9 North Monterey County projected water gap is based on information available from MCWRA, the Castroville Community Services District (CCSD), and Pajaro/Sunny Mesa Community Services District (PSMCSD). Refer to Chapter 2 for more information on the components of this estimate. The use of Salinas Basin Groundwater by overlying North County customers is discussed in the Cumulative analysis in Chapter 9.

10 The increased groundwater pumping required to meet the City of Salinas' projected future needs has been included in the hydrologic analyses of the Salinas Groundwater Basin.

5.1.4 Regional Project Overview

CalAm's Proponent's Environmental Assessment included an analysis of an alternative regional project that would provide for the then-identified regional supply needs beyond those of CalAm. Since January 2007 the Division of Ratepayer Advocates (DRA) of the CPUC has been working in conjunction with the University of California Santa Cruz, Center for Integrated Water Research (CIWR) to evaluate whether there is an alternative regional approach that would be less expensive for ratepayers and could be presented as an alternative to the CWP. The DRA and the CIWR viewed public participation as critical to the development of an implementable water supply program and facilitated a series of public meetings which led to the establishment of the Regional Plan Technical Work Group, Public Information and Involvement Work Group, and Regional Plenary Oversight Group (REPOG). The meetings[11] for each group were attended by a wide range of agencies, general public, interest groups, and other parties and provided a forum for identifying project components, confirming criteria, evaluating alternatives, assembling portfolios, and establishing a preferred community-based regional water supply alternative that addresses the regulatory replacement needs of SWRCB Order 95-10 and the Seaside Basin Adjudication. Through that process, the Regional Project was developed.

The Regional Project described herein is proposed to provide 25,600 afy to serve the water needs of northern Monterey County, including:

- The CalAm service area, including Carmel, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside, and the unincorporated areas of Pebble Beach, Carmel Valley, Monterey-Salinas Highway Corridor, and the airport district;
- The Marina Coast Water District (MCWD) service area, including the former Fort Ord and Marina;
- Northern Monterey County rural and urban areas, including Castroville, Prunedale, Granite Ridge, Moss Landing, and Pajaro.

The Regional Project would be developed in two phases to ultimately provide up to 25,600 afy to serve the water needs for parts of northern Monterey County. The Phase 1 Monterey Regional Water Supply Program (the Phase 1 Project) includes 15,200 afy to meet the immediate needs of the Monterey Peninsula, the former Fort Ord, and Marina. The Phase 1 Project consists of components that have been approved and are underway by local agencies, expansion of some existing projects, as well as the proposed Regional Desalination Facility. Implementation of the Phase 1 Project components would occur in phases over a time span of three years. The Phase 1 Regional Project includes the following components:

- Conservation
- Sand City Desalination Facility
- Regional Urban Water Augmentation Project (RUWAP)

[11] Appendix I lists the water and wastewater agencies, other government agencies and stakeholders that participated in one or more meetings of the REPOG, Technical Work Group, and/or Outreach Work Group.

- Seaside Basin Aquifer Storage and Recovery (Seaside ASR)
- Seaside ASR Expansion I
- Surface Water Delivery to Urban Users (Salinas River diversions and surface water treatment plant)
- Regional Desalination Facility (including conveyance and storage facilities)

The second phase of the Regional Project (the Phase 2 Project) would include some combination of the following components to supply an additional 10,400 afy of water to meet the anticipated regional water demand. The actual components and their contribution to the water supply will be determined in the future. The Phase 2 Project components may require further evaluation of cost-effectiveness, technical, and implementation issues, as well as further environmental review. These Phase 2 project components are described in Section 5.3 of this chapter, and include:

- Pacific Grove Stormwater Collection and Treatment Project;
- Salinas River Diversion Facility Expansion;
- Castroville Seawater Intrusion Project (CSIP) Expansion;
- Regional Desalination Facility Expansion;
- Seaside Groundwater Basin Replenishment Project;
- Seaside Basin ASR Expansion II; and
- Salinas Basin Groundwater for North Monterey County.

Figure 5-1 shows all Regional Project component locations; **Figure 3-2a** identifies the land use jurisdictions in the Regional Project area and **Figure 3-2b** identifies the water agencies in the Regional Project area.

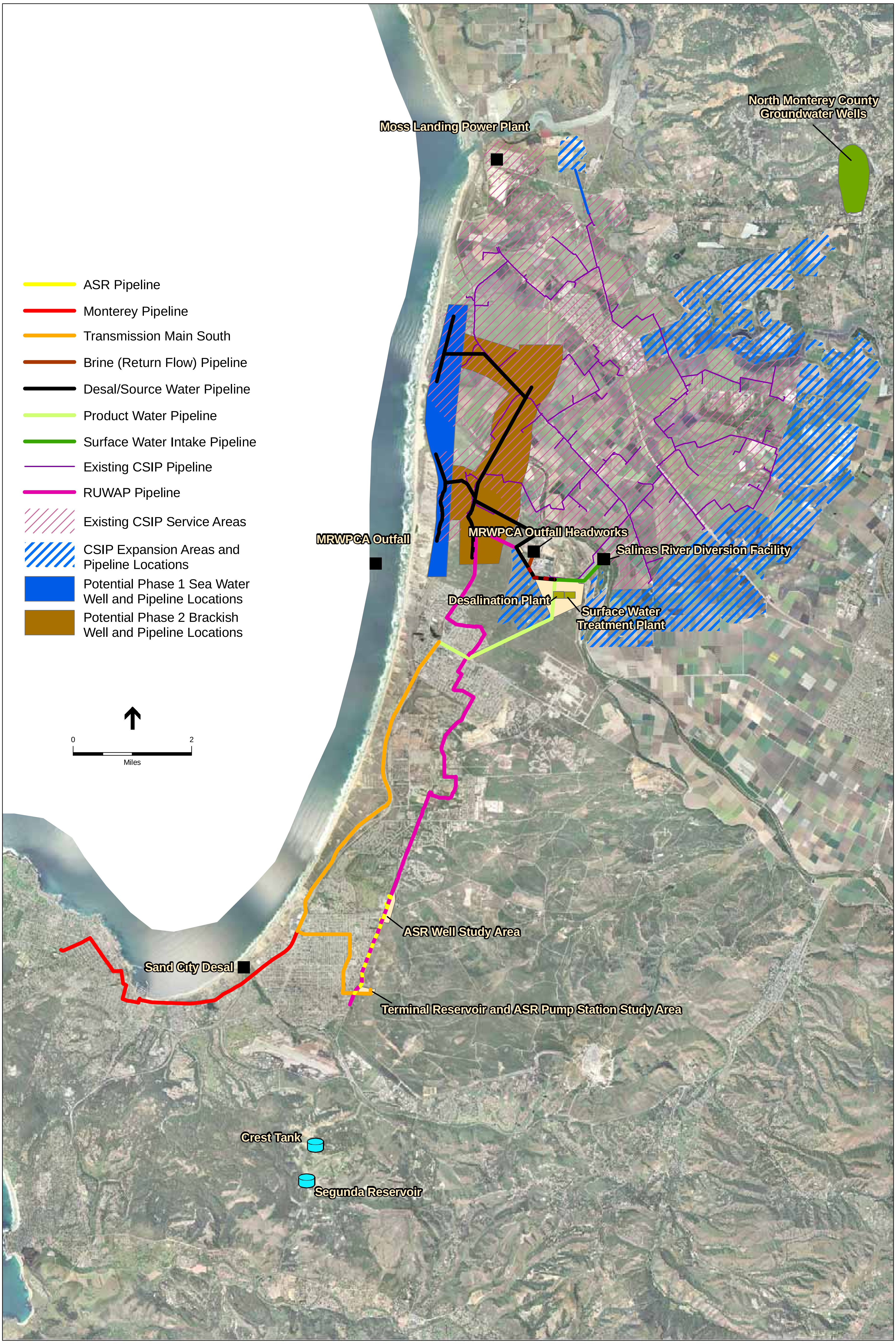
5.1.5 Regional Location

The Regional Project location is defined as the CalAm service area, including the Peninsula Cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside, and the unincorporated areas of Pebble Beach, Carmel Valley, and Monterey; the Highway 1 Corridor; the Marina Coast Water District service area, including the former Fort Ord and Marina; the City of Salinas; and the Northern Monterey County rural and urban areas, including Castroville, Prunedale, Moss Landing, and Pajaro.

5.1.6 Previously Analyzed Projects

The Phase 1 Regional Project consists of various project components that are either existing, permitted and/or under construction; proposed under the Moss Landing/North Marina Projects, or; proposed for this Regional Project.

Table 5-2 describes the water supply that would be provided by each of the Phase 1 Regional Project components. Several of the components of the Phase 1 Regional Project have already undergone CEQA review and have been approved by the relevant public agencies. Specifically,



SOURCE: ESA, 2008; RMC, 2008

CalAm Coastal Water Project . 205335

Figure 5-1

Proposed and Existing Regional Alternative Project Facilities

TABLE 5-2
COMPONENTS OF THE PHASE 1 MONTEREY REGIONAL WATER SUPPLY PROGRAM

Component	Supply (afy)	Notes
Conservation	Potential demand offset	Water conservation efforts represent a potential demand reduction on the Monterey Peninsula. While it does not produce additional supply or yield, it is an important component of the analysis and was supported by public stakeholders. CalAm and MPWMD have proposed a conservation program that identified up to 1,000 AF of savings.
Sand City Water Supply Project	300	Reverse osmosis desalination plant and water conveyance pipelines. EIR certified and project currently under construction.
RUWAP	1,000	Delivery of recycled water from Salinas Valley Reclamation Plant for urban irrigation uses. EIR certified and currently in design phase.
Carmel River via Seaside Basin ASR	Long-term Average of 1,300	Consists of injecting water from the Carmel River into the Seaside Groundwater Basin for later recovery. EIR certified for 2 injection/extraction wells which are completed and project is anticipated to begin implementation in 2009. Two additional injection/extraction wells needed. Supply shown is long-term average with higher supply available during wet years and lower supply available during dry years.
Seaside ASR Expansion I	NA	Construction of three additional injection wells would facilitate water storage.
Surface Water Delivery to Urban Users	Long-term Average of 2,980	EIR certified for Salinas River Diversion Facility which is under construction. Additional Phase 1 infrastructure includes Surface Water Treatment Plant (SWTP), distribution pumping and transmission pipelines. Supply shown is long-term average with higher supply available during wet years and lower supply available during dry years.
Regional Desalination Facility	10,000	Reverse osmosis desalination plant with five vertical seawater intake wells. Other components include distribution pumping and transmission pipelines.
Total Potable Supply	15,200	A combination of the water supply components above would be utilized to meet previously quantified regional water demands in wet, dry, and average water years.

this includes Sand City Desalination, RUWAP and two of the ASR wells. These previously analyzed water supply projects will be undertaken whether or not the CWP is approved and implemented.[12] Essentially, they are each part of the framework within which the CWP will be undertaken, whether the project ultimately approved is the Moss Landing Project, the North Marina Project, the Regional Project, or some other alternative. These pre-existing projects are listed and discussed in this chapter in order to accurately calculate how, and in what amounts, water could be supplied consistent with the broader regional supply objectives, so as to determine what other components of the Regional Project are needed to meet regional water demand.

12 For summaries of the environmental impacts associated with those already approved projects, please see Appendix J, which is included for informational purposes. The effects of these projects are taken into account in the cumulative analysis contained in Section 9 of this EIR.

5.1.6.1 Sand City Water Supply Project

Environmental analysis for the Sand City Water Supply Project was prepared in June 2004 (City of Sand City, 2004). In 2005, the City of Sand City certified the Final EIR and in September 2007, an addendum was prepared to analyze interconnections of the CalAm system and other project modifications. The Sand City Water Supply Project comprises a desalination facility and a potable water distribution system, which CalAm has leased to operate for the first 15 years to provide 300 afy of new potable water to address its Carmel River regulatory and Seaside Basin adjudication constraints. Source water will be drawn from the shallow, brackish Aromas Sands Formation aquifer near Monterey Bay. Facilities include a reverse osmosis (RO) desalination plant to treat the brackish water and a 7,000 foot pipeline to deliver the treated water to users in Sand City; two water storage tanks; and a connection to the CalAm distribution system.

The Sand City Water Supply Project has obtained the necessary construction permits, including a coastal development permit approval and permit amendment from the California Coastal Commission, and a distribution permit from MPWMD. Construction of the project began in 2008 and is expected to be completed and operational in 2009.

5.1.6.2 Regional Urban Water Augmentation Project (RUWAP)

This project was proposed by MCWD in a certified EIR (MCWD, 2005) and Addendum (MCWD, 2006), and is currently in design. The RUWAP project consists of construction of a recycled water distribution system to provide 1,000 afy of recycled water from the existing Salinas Valley Reclamation Plant (SVRP) to urban users within the former Fort Ord (see **Figure 5-2**). The project includes a connection to the SVRP, a new distribution system, one storage tank located at an MCWD existing water storage tank site, and two pump stations.

The recycled water system would service many existing and new water users within the Fort Ord community and the City of Marina. Existing users' irrigation systems would be disconnected from the potable water system and would tie directly into the new recycled water system. Cross connection testing would be performed at all facilities in accordance with California regulations.

5.1.6.3 Seaside Basin Aquifer Storage and Recovery (ASR)

The Monterey Peninsula Water Management District (MPWMD) is currently conducting an ASR project in the Seaside Groundwater Basin. An EIR (MPWMD, 2006) and EIR Addendum have been completed and certified for this project, which is estimated to provide a long-term average supply of 920 afy of water. The purpose of the ASR project is to store excess water from the Carmel River and Carmel Valley aquifer in the sandstone aquifer of the Seaside Groundwater Basin for use during periods of peak demand. This existing ASR program includes two injection/extraction wells, initially known as Santa Margarita Test Injection Wells 1 and 2 (now referred to as Production Wells 1 and 2). Well 1 is 18 inches in diameter, 780 feet deep, with a perforated well screen situated approximately 480 to 700 feet in depth. Well 2 is 20 inches in diameter, 790 feet deep, with a perforated well screen situated approximately 540 to 770 feet deep The combined injection capacity of these two wells is approximately 4.3 million gallons per

SOURCE: ESA, 2008; RMC, 2008

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Figure 5-2
Proposed RUWAP Distribution System

day (mgd) (3,000 gpm) into the sandstone aquifer. Only one well will be used for extraction at approximately the same rate. Construction of these two injection/extraction wells has been completed and testing of the wells is underway as of January 2009. Operation of the ASR project is scheduled to begin in 2009.

As described in Chapter 3, two additional ASR injection/extraction wells, a pump station and pipeline have been proposed for the Coastal Water Project to store and extract additional excess Carmel River water in the Seaside Basin; they have been analyzed in Chapter 4 of this EIR. Together, these 4 ASR injection/extraction wells would be operated over the long term to store and extract an average of 1,300 afy. Three additional injection wells are proposed in the Phase 1 Regional Project, as described in Section 5.2.9.

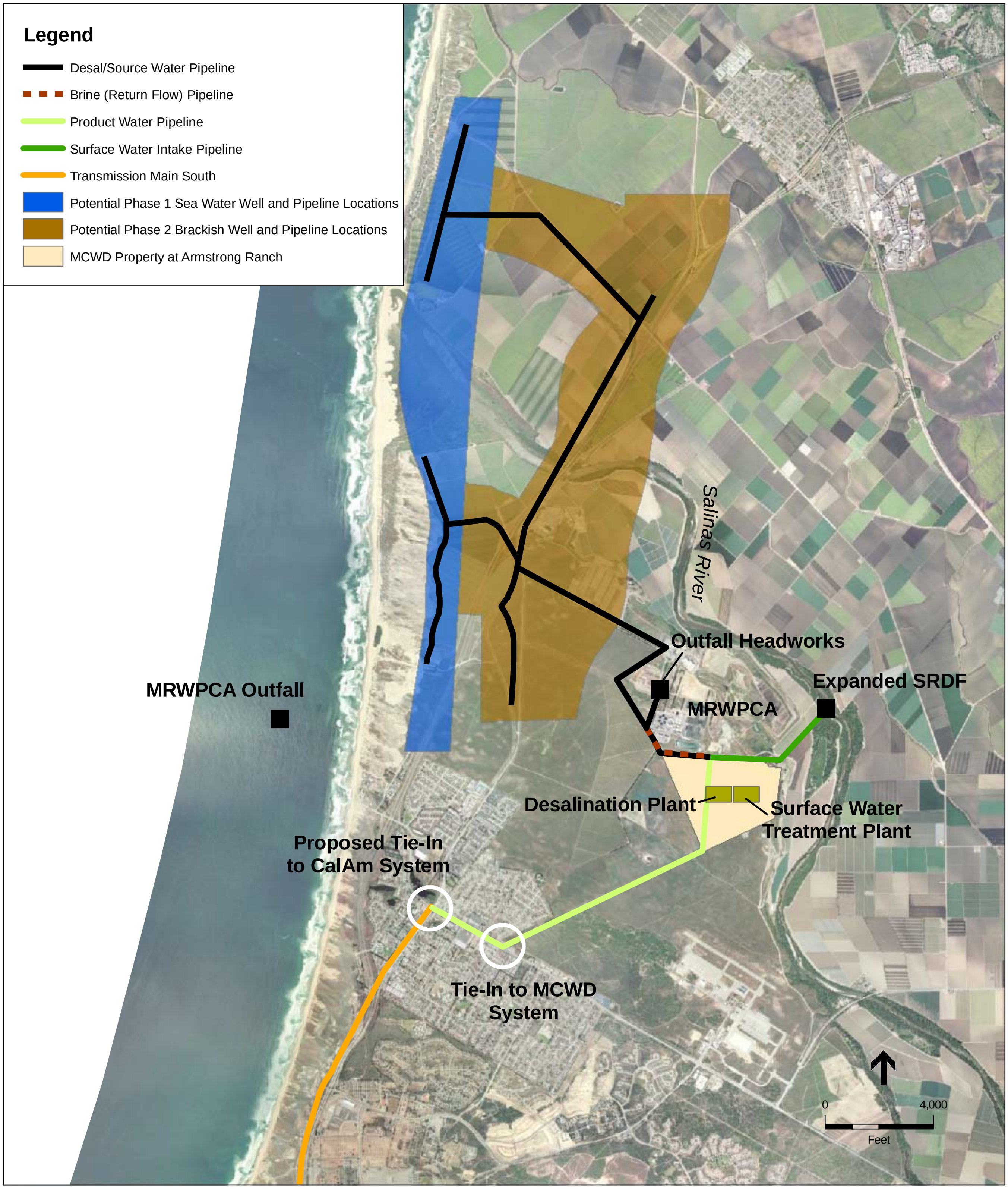
5.2 Phase 1 Regional Project

In order to portray the actual change to the environment that would result from the Regional Project, and to meaningfully compare the Phase 1Regional Project to the other water supply options analyzed in this EIR, the analysis of the Phase 1 Regional Project focuses on and is limited to those elements that would indeed be new.[13] These are: Surface Water Treatment Plant, five vertical intake wells (as source water for a 10mgd desalination plant at North Marina), and three new ASR Injection wells. In summary, the Phase 1 Regional Project consists of the North Marina Project analyzed in Chapter 4, altered to use vertical wells rather than slant wells, a new SWTP and three injection wells to facilitate additional storage in the Seaside Basin. These components are described below.

5.2.1 Surface Water Delivery to Urban Users

A surface water treatment plant (SWTP) would use run-of-the-river surface water diversions from the Salinas River to provide urban users with a potable supply. Diversions would be of winter-time runoff, non-reservoir release water, and would occur between November 1 and April 30. Diversion would occur only when river flows exceed the instream requirements as set by NOAA Fisheries as part of the Salinas Valley Water Project EIR Addendum (ENTRIX, Inc. 2007) and the Biological Opinion (US Army Corps of Engineers and National Marine Fisheries Service, 2007), when the SRDF is not being used for irrigation. During the six month winter-time operational period when water is available in the river, water would be diverted from the Salinas River at the SRDF facilities currently under construction. The maximum diversion rate would be 36 cfs since that is the capacity of the first phase of SRDF facilities and the water would be treated at a SWTP co-located with the Regional Desalination facility on a 10-acre parcel on Armstrong Ranch south of the existing MRWPCA regional treatment plant. A pipeline would connect the SRDF to the SWTP. The proposed location of these facilities is shown in **Figure 5-3**.

[13] This is likewise true of the analysis in Chapter 4 of the impacts of the Moss Landing and North Marina, which naturally does not include the effects of the previously approved water supply projects.



SOURCE: ESA, 2008; RMC, 2008

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Figure 5-3
Co-located North Marina Desalination Facility &Surface Water Treatment Plant

On average, 2,980 afy of potable water would be provided by the Salinas River SWTP. The production rate for each year and each month will vary depending on the rainfall and the resulting flow available for diversion from the Salinas River. The treatment plant size of 14 mgd will allow the diversion and treatment of the intermittent large flows in the river. The flows will be stored in the Seaside Basin ASR for use during dry years when less Salinas River flow is available for diversion, or during the summer. During the wettest years, a maximum of 1,300 acre feet (AF) per month would be diverted between November and April. On long-term average, approximately 75 percent[14] of the surface water production would be stored and extracted in the Seaside Basin. The remainder of the production would be distributed directly to MCWD and CalAm customers. The actual monthly diversion is highly variable and dependent on river flow. These flows are expected to be available based on Salinas Valley Integrated Groundwater Surface Model (SVIGSM) hydrologic modeling of the Salinas Basin under the Regional Project conditions, and represent approximately 1 percent of the average annual runoff from the Salinas River to Monterey Bay, which is estimated at approximately 250,000 afy average.

Implementation of the Surface Water Delivery to Urban Users component includes the following infrastructure:

- SRDF facilities (currently under construction)
- Water Treatment Facilities
- Distribution Pumping and Transmission Pipelines

Because the SRDF facilities have been described and analyzed in the 2007 EIS/EIR and this facility is under construction, the discussion below focuses on the new components proposed for the Regional Project.

5.2.1.1 Surface Water Treatment Plant

The SWTP would have a capacity of up to 14 mgd, it would be owned by the MCWD and would include the following processes. Pilot testing may be conducted to confirm the process design:

- Pretreatment system
- Microfiltration (MF) membrane system
- Disinfection
- Post-treatment system
- On-site residuals handling

The treatment train would consist of pretreatment, MF membrane treatment, post treatment; a membrane flushing system and membrane clean-in-place system. The proposed treatment processes would remove particulate matter and pathogens from the raw surface water. The Salinas River water quality at Chualar Bridge was used as the basis for the identification of the

[14] Source: Storage and Extraction of Surface Water Treatment Plant Production in the Seaside Basin, RBF, January 2009

treatment plant components as well as the determination of the treated water quality requirements. **Table 5-3** provides a summary of the surface water treatment plant and desalination facilities.

TABLE 5-3
SURFACE WATER TREATMENT PLANT AND DESALINATION PROJECT FACILITIES SUMMARY

Facility	Quantity	Size and Characteristics
Surface Water Treatment Plant		
Pretreatment	1	Chemical Coagulation (ferric chloride and anionic polymer)
Microfiltration System	1	14 mgd, membranes
Disinfection/Post Treatment	1	UV Disinfection Sodium Hypochlorite
Desalination Facilities		
Intake Wells	5	Conventional well drilled up to into the 180 Ft. Aquifer Well Depth: up to 300', well diameter: up to 18 In Type: Vertical Turbine, Open Line Shaft Flow: 2,800 gpm Motor Horse Power: 200 – 250 hp Well Casing Material: Fiberglass
Intake Pipeline	Up to 45,000 LF	12 -36 inch (ID)
Pretreatment System	1	Chemical pretreatment (threshold inhibitor) Cartridge Filtration
Reverse Osmosis System	1	10 mgd, membranes
Disinfection/ Post Treatment	1	UV Disinfection Carbonation Sodium Hypochlorite Sodium Hydroxide
Brine Pipeline to MRWPCA Outfall Headworks	3,500 LF	Up to 30 inch, no pumping required
Distribution System (Shared Facility with SWTP and Desalination):		
Clearwells	2	2.5 MG (each)
Pump Station	1	24 mgd (16,700 gpm), 2100 installed hp
Pipeline	56,000 LF	36 in (ID)
Terminal Reservoir	2	3 MG (each)

LF = linear feet; MG = million gallons; mgd = million gallons per day; HP = horsepower; gpm = gallons per minute

SOURCE: RMC, 2008.

Pretreatment

Pretreatment, consisting of chemical coagulation with ferric chloride and anionic polymer, high rate sedimentation using ballasted flocculation, and automatic self-cleaning strainers would be used to remove turbidity prior to membrane treatment. Turbidity in the Salinas River varies over time and has been recorded as high as 90 nephelometric turbidity units (NTU). Flash mixing of the ferric chloride, to be stored onsite, would be achieved using a pump diffusion flash mixer or high rate mixer in the coagulation tank of the ballasted flocculation system. When raw water turbidity is very low, the ballasted flocculation system can be bypassed.

MF Membrane Treatment

The pretreated raw water would then pass through the MF membrane treatment system that would include feed pumps, automatic self-cleaning strainers, clean-in-place system, and air compressors. The MF system is anticipated to have a 90 percent recovery rate. The other 10 percent will be backwash. A backwash system would be implemented to remove particulate matter collected on the membrane surface which could result in membrane plugging and reduced flow through the membrane. Specific pump details would be determined during design. Even with a backwash system present, over time the membranes become fouled and must be cleaned. Two types of cleaning would occur on a regular basis: enhanced flux maintenance and clean-in-place. Sodium hypochlorite and sodium bisulfite, the chemicals for enhanced flux maintenance, would be stored on site, whereas the chemicals for clean-in-place would be ordered specifically for each cleaning event.

Disinfection/Post Treatment

Once the water passes through the membrane, disinfection is required. Disinfection requirements for treated water are dependent upon the type of water such as surface water, groundwater, or groundwater under the direct influence of surface water. To meet the stringent disinfection requirements for surface water, both primary and secondary disinfection is required. It is expected that ultraviolet (UV) irradiation would be the primary disinfectant for inactivation of *Giardia* and *Cryptosporidium* and sodium hypochlorite would be used as the primary disinfectant to inactivate viruses. Because the treated surface water and the desalinated product water from the adjacent desalination facility would be blended and delivered to urban users, they would also undergo the same post treatment process.

Residuals Handling

The approximately 1.4 mgd of backwash from the SWTP would be handled by on-site residuals management, including dewatering by a belt filter press or centrifuge and on-site drying beds. The filtrate would be returned as influent to the SWTP.

5.2.1.2 Distribution Pumping and Transmission Pipelines

As shown on Figure 5-3, a pipeline would connect the SRDF and the SWTP. The combined product water from the SWTP and regional desalination facility would follow the product water pipeline alignment described for the North Marina Project and tie in to the Transmission Main South, also described in Chapter 3 for the North Marina Project.

5.2.2 Regional Desalination Facility

The Regional Desalination Facility is similar to the North Marina desalination facility described in Chapter 3, Project Description, with the exception of the source water intakes and the capacity: the North Marina desalination facility analyzed in Chapter 4 is an 11 mgd facility and the Regional Desalination facility would be 10 mgd. The Regional Desalination facility would also be located on 10-acre site in the northwest portion of a 220 acre parcel of the Armstrong Ranch.

The potential environmental impacts of the North Marina Project desalination plant are analyzed in Chapter 4 of this document. The description of the Phase 1 Regional Desalination Facility that follows highlights only the new and different components of the Regional Project desalination facility. The location of these facilities is shown on Figure 5-3.

5.2.2.1 Seawater Wells

The Regional Desalination facility would utilize five vertical seawater wells located on the inland side of the coastal dunes (see Figure 5-3). The source water for these five vertical wells would be the seawater intruded portion of the 180-Foot Aquifer of the Salinas Basin, creating a source water supply with an average salinity of 27- 30 ppt.

The exact location of the individual wells has not been determined pending detailed geotechnical investigations. However, five seawater wells would be located at least 500 feet apart along the coast in an area approximately 0.25 mile wide (starting on the inland side of the coastal dunes) by 4.5 miles long (starting north of the MCWD property at Reservation Road to 1.5 miles north of the Salinas River). For reference, Figure 5-3 also includes the potential locations of brackish wells that may be installed as a Phase 2 project in the future (refer to Section 5.3.5).

Groundwater modeling results indicate that, over the long term, source water pumped from the vertical seawater wells would include approximately 15 percent of intruded groundwater from the Salinas Valley Groundwater Basin (SVGB). The Regional desalination plant would be operated such that, on an annual average basis, the plant would deliver desalinated water to the MCWD service area within the SVGB in an amount equal to the volume of SVGB-groundwater that was extracted from the vertical seawater wells, as indicated by the initial salinity of the source water. During extremely dry years, if inadequate surface water or Seaside ASR is available for the CalAm service area, the MCWD would rely on their existing groundwater supplies and allow full delivery of the desalination plant to the CalAm service area. During wetter years, the MCWD would take a larger portion of the desalination water to maintain the long-term balance and restriction on groundwater export. Additional discussion of groundwater modeling is presented in Chapter 4.

5.2.2.2 Intake Pipeline

The sourcewater intake wells would each require a 50-foot x 50-foot fenced area that contains a 10-foot x 10-foot concrete pad for the vertical well, air release valve, check valve, and butterfly valve. The fenced area would also contain the required electrical facilities. As the water is pumped from the vertical wells it would be combined into a larger single pipe and delivered to the desalination facility. In general the pipelines would follow public rights-of-way, existing railroad easements, and agricultural roads. It is anticipated that easements on private lands would be required for the intake wells and portions of the pipeline, and that the remaining pipeline would be constructed within the TAMC right-of-way. If the intake pipeline requires a crossing at the Salinas River this would be done by supporting the pipe on the piers of the Monte Road bridge, which is the same method proposed in Chapter 3 for Transmission Main North.

5.2.2.3 Treated Water Storage and Conveyance

A capacity of up to 5 million gallons (MG) of combined product water storage (treated surface water and desalinated water) is proposed at the Regional Desalination facility / SWTP site. The capacity consists of two 2.5 MG circular above-ground concrete tanks, also known as clearwells. The tanks were sized to provide storage for approximately five hours of product water when the desalination plant and SWTP facilities are both operating concurrently at full capacity. Treated water stored in these tanks (or clearwells) would then be pumped via a 24 mgd pump station to urban users through a new treated water conveyance pipeline.

The treated water conveyance pipeline for the Regional Water Supply Project would be a 36-inch-diameter force main with the same characteristics and alignment as the Transmission Main South described in the North Marina Project (shown in **Figure 3-27a** through **Figure 3-27c**). It would convey product water from the proposed Regional Desalination facility and SWTP to the Monterey Pipeline and/or Terminal Reservoir and ASR, depending on customer demands. Please refer to **Section 3.2.5**, for a description of this alignment.

5.2.3 Terminal Reservoir and Seaside Conveyance and Storage Facilities

The Terminal Reservoir and Seaside Conveyance and Storage Facilities encompass the various existing and proposed infrastructure components that would be used to move water between Terminal Reservoir storage tanks, the ASR system, and the rest of the CalAm Monterey District service area. These facilities are the same as described for the Moss Landing and North Marina Projects in **Sections 3.2.6** and **3.3.5** of **Chapter 3, Project Description**, with the following exceptions:

- Implementation of the SWTP will require increasing the capacity of the ASR pump station to 14 mgd to match the capacity of the SWTP.
- Implementation of the SWTP will require three new ASR injection wells for storage of the SWTP during the intermittent high flow periods.

5.2.3.1 Seaside Basin ASR Expansion I

In addition to the four ASR injection/extraction wells described in Section 5.1.6, (two existing wells and two proposed as part of both the Moss Landing Project and North Marina Project), three additional injection wells are proposed to provide the capability to inject water in the Seaside Basin when the combined production rate from the Regional Desalination/SWTP is in excess of customer demand. The two existing and two planned injection/extraction wells would be sufficient to meet extraction capacity requirements.

The three new injection wells would be located within the ASR study area along General Jim Moore Boulevard, as described in the Moss Landing and North Marina projects. These wells would have a casing diameter of up to 24-inch, a total depth of 1050 feet with a casing depth of

700 feet, and 300 feet of stainless steel continuous slot, wire wrapped well screen Each well would be capable of injecting approximately 1,500 gpm into the aquifer.

5.3 Phase 2 Project

The second phase of the Regional Project would include some combination of the following components to provide 10,400 afy of anticipated water needs for northern Monterey County. The actual components and their contribution to the water supply will be determined in the future. The Phase 2 Project components may require further evaluation of cost-effectiveness, technical, and implementation issues, as well as further environmental review. **Table 5-4** summarizes the Phase 2 Projects.

5.3.1 Pacific Grove Stormwater Project

The City of Pacific Grove has already implemented the first two phases of their Urban Runoff Diversion project, which collects urban storm water runoff during dry weather months and diverts it into the sanitary sewer system for deliver to, and treatment by, the MRWPCA. The potential to capture, treat and use up to about 200 afy of wet weather runoff for urban irrigation needs in Pacific Grove is the subject of a July 2008 Feasibility Study (City of Pacific Grove, 2008). Because this project is in the feasibility stage and does not have readily available design information, this potential 200 afy of recycled water is uncertain; however, when implemented, this project is expected to reduce the incremental water supply needed (or offset additional demand) from the Regional Project by up to this amount.

5.3.2 Expanded Salinas River Diversion Facility

One component of MCWRA's Salinas Valley Water Project (SVWP), is the construction of the 36 cfs Salinas River Diversion Facility (SRDF) which will offset groundwater pumping by providing approximately 7,120 afy of disinfected Salinas River water to be blended with the available recycled water from the SVRP and distributed to the existing CSIP customers. The environmental impacts of this project were analyzed in the Draft Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project (MCWRA, 2001). Construction of the SRDF began in spring 2008 and is anticipated to be operational by 2010.

The MCWRA SRDF facility under construction has a design capacity of 36 cfs. This Phase 2 project would increase the size of the 36 cfs SRDF facility by 24 cfs to a total capacity of 60 cfs. The 36 cfs diversion facility and pump station are smaller than the facilities originally assumed and analyzed in the Salinas Valley Water Project EIR/EIS. The original design had a capacity of 85 cfs and could accommodate future expansion up to 135 cfs. The 36 cfs SRDF facility currently under construction is not designed to accommodate future expansion. Therefore, the proposed Phase 2 expansion of the SRDF may require demolition of a portion of the 36 cfs diversion structure, in addition to construction of a new pump station adjacent to the existing pump station.

TABLE 5-4
COMPONENTS OF THE PHASE 2 MONTEREY REGIONAL WATER SUPPLY PROGRAM

Component	Additional Supply (above Phase 1) (afy)	Notes
Pacific Grove Stormwater Project	Potential demand offset up to 200 afy	Project is in feasibility phase.
Salinas Basin Groundwater	5,900	Expanded CSIP distribution system would result in reduced groundwater pumping for agriculture, providing a high quality, low cost source of domestic water supply for users overlying the Salinas Groundwater Basin. Auxiliary components needed for implementation: • SRDF Expansion • CSIP Expansion • 7,000 AF of perched aquifer storage of recycled water
Surface Water Treatment Plant Expansion	2,800	The long-term average yield from the 14 mgd SWTP would increase to 5,800 afy after expansion of the 36 cfs SRDF to 60 cfs and after implementation of the following auxiliary components needed for implementation: • SRDF Expansion to 60 cfs • 3,000 AF of perched aquifer storage of Salinas River
Regional Desalination Facility Expansion	4,400	Expansion of the proposed Regional Desalination facility to include brackish intake water wells. Desalination plant capacity would be increased using additional reverse osmosis modules.
Seaside Groundwater Basin Replenishment Project	Up to 6,720	This project would include reverse osmosis treatment of recycled water from MRWPCA treatment plant at an Advanced Water Treatment Plant (AWTP) and injection of treated water for groundwater recharge.
TOTAL POTABLE SUPPLY	Up to 10,400	Some combination of the water supply components above would be utilized to meet previously quantified regional water demand of 10,400 afy

Auxiliary Components Needed for Implementation of Phase 2

Salinas River Diversion Facility Expansion	Water supply for CSIP Expansion or Surface Water Treatment Plant Expansion. Expansion of the 36 cfs SRDF currently under construction to a 60 cfs facility is covered by the original EIR.
CSIP Expansion	Expansion of the existing CSIP project would include an expanded SRDF and perched storage of recycled water. Up to 3,000 afy of storage is needed for Salinas River storage for the SWTP. Up to 7,000 afy of recycled water storage is needed for the Salinas Basin and CSIP expansion. These components provide availability of groundwater for Castroville, Moss Landing and North County water users.
Seaside Basin ASR Expansion II	Construction of two additional ASR injection wells and expansion of the ASR pump station capacity by 4 mgd may be required to accommodate the Phase 2 CalAm demand, depending on the combination of water supply components implemented in Phase 2.
Terminal Reservoir Expansion	Construction of up to 4 MG of additional reservoir storage may be required to accommodate the Phase 2 CalAm demand, depending on the combination of water supply components implemented in Phase 2.

NOTE: Water supply yields for each component are estimates. Actual components and supply will be determined in the future to meet the estimated demand.

The expanded SRDF would serve dual purposes: it would divert water for urban consumption in the winter months and for expansion of CSIP irrigation between April and October. Diversions of up to 60 cfs (about 3,500 AF per month) would be possible with the expanded facility. The expanded diversion structure and new pump station (combined with the existing facilities) would occupy a footprint of up to, but most likely less than, 5,000 square feet; therefore, the total footprint would not exceed the 5,000 square-foot footprint of the 85 cfs facility evaluated in the SVWP EIR/EIS. Specifically, the diversion structure would be expanded by:

- Increasing the length of the facility parallel to the river by approximately 30 feet. This would include expanding the length of sheet piling, concrete wall and footing, scour protection across the river channel, and scour protection along the shoreline.
- Installing two new intake fish protection screens. Each screen would be capable of diverting a maximum of 12 to 15 cfs. A common standby intake screen would be shared with the existing SRDF facility.
- Installing a new 42-inch discharge manifold pipeline. This pipe would connect to the existing manifold pipe via a closable valve allowing for the two diversion systems to be operated independently.

During winter months if it is determined the dam structure needs to be partially inflated, fish-handling facilities consisting of an exit structure, fishway chute, attraction flow pipe, and entrance structure would be operated to minimize impacts on migrating steelhead. The fish-handling facilities provide upstream and downstream fish passage and are designed to comply with NOAA Fisheries and CDFG criteria. The fish ladder provides adult fish upstream passage when the diversion dam is inflated and will provide passive conditions for safely transporting returning adults and juvenile steelhead from the SRDF impoundment to the Salinas River Lagoon. While it is assumed that modifications of the fish-handling facilities would not be needed, this assumption would need to be confirmed and revised if needed in later stages of design. Water diverted at the SRDF would be transported via a 30-inch diameter pipeline to the SWTP for distribution to urban customers, or to MRWPCA's 80 AF pond for distribution to CSIP. The CSIP Expansion is discussed in more detail below in **Section 5.3.3**.

Construction methods similar to those used for the 36 cfs SRDF would be utilized for the expansion. A maximum of three acres would encompass the construction zone, including a pipeline construction easement, a general construction staging area, and a small area for stockpiled soil storage. During construction an existing agricultural field would be disturbed. To ensure that the disturbed area is restored to farmable condition equivalent to conditions prior to the start of construction, the top two feet of soil would be removed from the construction area and replaced at the end of construction.

5.3.3 CSIP Expansion

The existing Castroville Seawater Intrusion Project (CSIP) offsets groundwater pumping in the Salinas Basin by delivering 14,000 acre-feet per year of recycled water for agricultural use throughout the Castroville area (MCWRA, 1993). The current CSIP distribution system and surrounding agricultural land is shown in **Figure 5-4**. Since 1998, the CSIP has played a crucial role in curbing seawater intrusion. Under a Title 22 Permit, tertiary-treated water produced at the SVRP is pumped to a nearby 80 AF storage pond located on MRWPCA property, from which it is distributed via gravity through a 51-inch transmission main to the CSIP system. Because not enough recycled water is available to meet peak summer agricultural demands, groundwater is pumped during summer months to fill this gap.

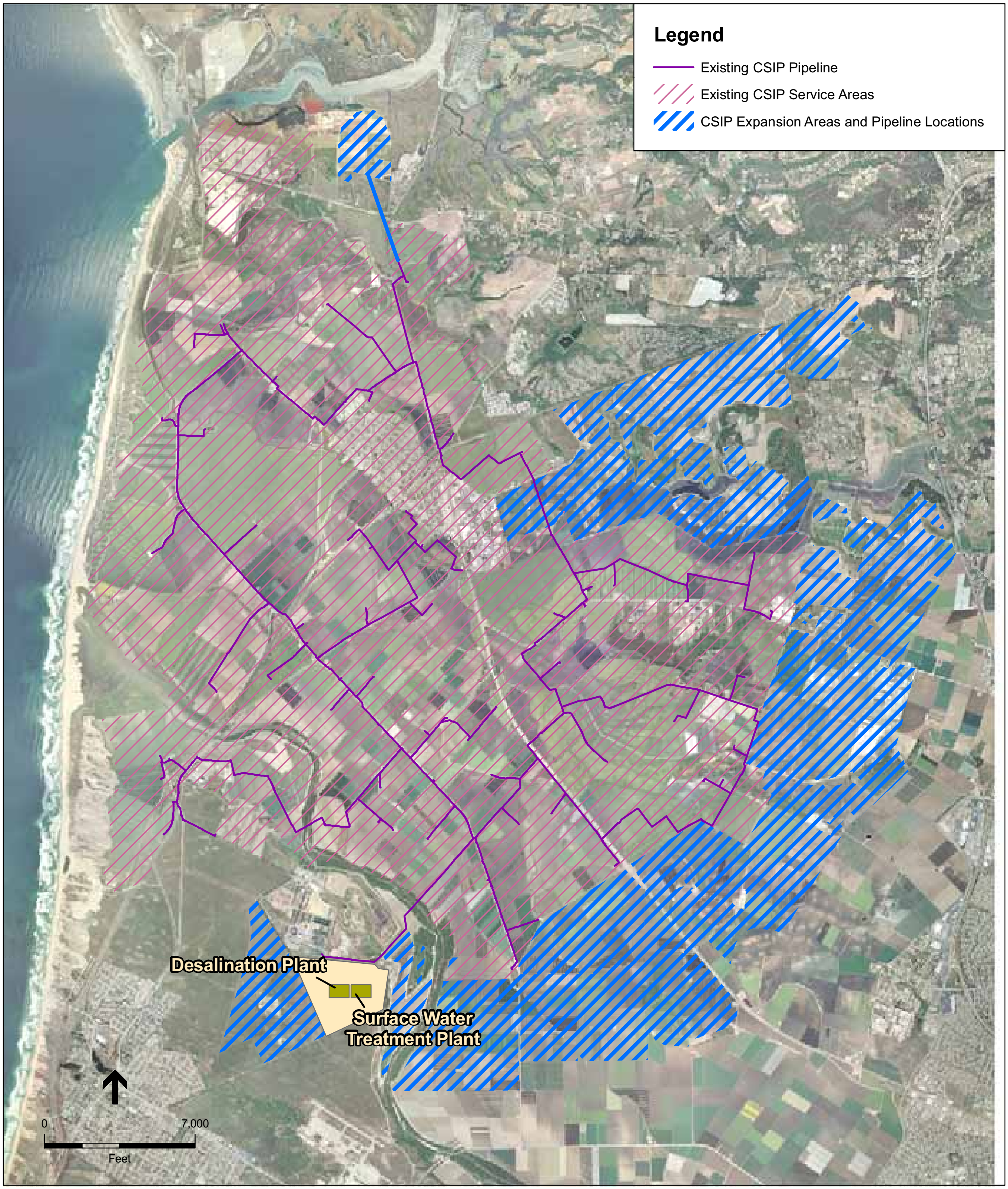
5.3.3.1 CSIP Expansion Facilities

Additional agricultural areas to the south and east of the existing CSIP service area have been identified using the Salinas Valley Integrated Groundwater Surface Model (SVIGSM) as areas that would significantly benefit from reduced groundwater extraction. The CSIP Expansion project would provide additional surface water and recycled water to the CSIP, and would offset an additional 14,000 afy of agricultural groundwater pumping. This offset would balance the Regional Desalination Facility's brackish water intake (discussed in Section 5.3.5), which also creates a seawater intrusion barrier along the coast. In addition, the CSIP expansion would balance future planned urban groundwater withdrawals from North Monterey County, City of Salinas and City of Castroville. Up to 5,000 afy of surface water would be provided to agricultural customers between April and October by expanding the capacity of the SRDF, as discussed in the previous section. An additional 2,000 afy of recycled water would be available from increased wastewater influent flow resulting from the Phase 2 increase in water supply.

The pipelines in the existing CSIP distribution system are not large enough to accommodate significantly larger flows. Because there is little additional hydraulic capacity in the existing CSIP network, new CSIP customers would be supplied by a mostly independent distribution system (see Figure 5-4). This new system would include a 48-inch transmission main which would decrease in size as it provides water to customers along its path, in addition to a separate 14-inch pipeline to deliver to an area southwest of the MRWPCA property. The relative elevations of the 80 AF pond and the service area allow the system to be completely gravity fed.

Some agricultural demands, at elevations higher than approximately 80 feet mean sea level, would require booster pumping to provide sufficient irrigating pressure. Demands that fall in this category are concentrated to the east of Castroville along Highway 156. These demands would total approximately 3,000 afy out of the total 14,000 afy proposed expansion. The transmission network would be located to the north, south, and east of the existing distribution system and would require crossing the Salinas River, similar to the existing CSIP transmission main.

Any significant increase of recycled water deliveries to CSIP from the SVRP would require seasonal storage during winter months for use during the irrigation season. Approximately 7,000 afy would be provided by the perched recycled water subsurface storage, as described in the following section.



SOURCE: ESA, 2008; RMC, 2008

Figure 5-4
Expanded CSIP Distribution System

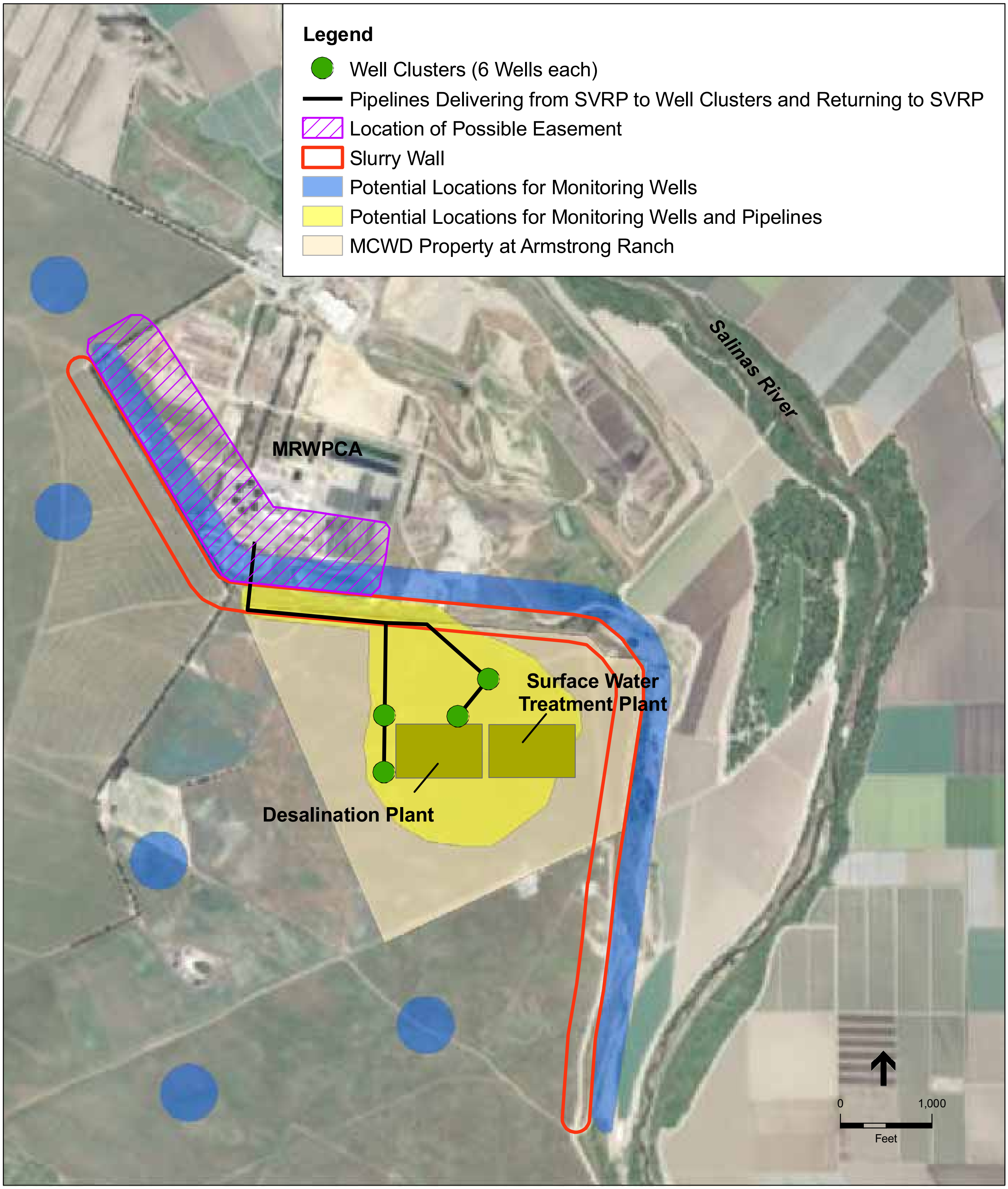
5.3.3.2 Perched Recycled Water Storage for CSIP Expansion

Up to 7,000 afy of water would be provided by winter storage of recycled water followed by summer-time withdrawals from a perched aquifer storage and recovery system. This component of the Regional Project includes the subsurface storage of recycled water at a 220-acre portion of the Armstrong Ranch property, south of MRWPCA property and southwest of the Monterey Regional Waste Management District (MRWMD) property. The MRWPCA SVRP would provide the recycled water for storage in the shallow unconfined aquifer (A-Aquifer) underlying Armstrong Ranch. In general, the SVRP would supply recycled water to the storage project during winter months (approximately November through March) when demand from CSIP is minimal. The recycled water would be conveyed from the plant and placed into the underlying unconfined aquifer through a series of well clusters located on the 220-acre parcel.

Modeling of the Perched Recycled Water Storage project indicated the feasibility of storing between 3,000 AF and 7,000 AF of recycled water per year, based on varying infrastructure needs. These preliminary modeling efforts have demonstrated that stored water would be contained within the project area by an underlying aquitard, approximately 120 feet below the surface, and by a hydraulic barrier (referred to as a slurry wall or cutoff wall) on the downgradient edges of the site. Facilities would include injection/extraction wells, monitoring wells, pipelines, booster pump station, and slurry wall. Injection/extraction wells would be located in the artificial 'basin' formed by the slurry wall and the Salinas Valley Aquitard. In summer months (approximately May through September), stored water would be extracted using the same (or adjacent extraction) wells and conveyed back to the SVRP for disinfection and blending with other supplies prior to irrigation distribution via the CSIP system. These facilities are shown on **Figure 5-5**.

Storage Aquifer

The Armstrong Ranch parcel and the SVRP overlie the Salinas Valley Groundwater Basin. This groundwater basin encompasses approximately 561 square miles and generally has been separated into five hydrologically-linked subareas: the Pressure Area, East Side Area, Forebay Area, Arroyo Seco Area, and the Upper Valley Area. These areas were defined based on the sources of groundwater recharge and the nature of the stratigraphy. The project site overlies the Pressure Area, which extends from offshore beneath Monterey Bay to Gonzales. The Pressure Area consists of four aquifers, and the area itself is sometimes referred to by the names of these aquifers: the Shallow or 'A'-Aquifer, the Pressure 180-Foot Aquifer, the Pressure 400-Foot Aquifer, and the Deep Aquifer (also referred to as the 900-Foot Aquifer). The Pressure 180-Foot Aquifer and 400-Foot Aquifer are the zones used predominantly for water supply, though no known current supplies are taken from the 180-Foot Aquifer near the project area. The Shallow or 'A'-Aquifer is typically not used for municipal supply due to water quality and/or quantity issues, and is separated from the Pressure 180-Foot Aquifer by the Salinas Valley Aquitard, a blue or yellow sandy clay formation ranging from 30 feet to 55 feet in thickness overlying and confining the Pressure 180-Foot Aquifer.



SOURCE: ESA, 2008; RMC, 2008

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Figure 5-5
ASR for CSIP Expansion

The subsurface storage project component involves the storage and recovery of recycled water in a shallow unconfined aquifer. Water would be stored during times when recycled water is available, and recovered from the same aquifer when it is needed during the irrigation season. This project would use the A-Aquifer for such processes, reducing or eliminating the need to construct large and expensive surface reservoirs. The recycled water would be transmitted from the SVRP through a series of pipelines that connect the SVRP to four clusters of wells. Each well cluster is composed of six wells which are able to both inject and extract recycled water. There would be 24 wells in total, but only 20 wells would operate regularly with flows of approximately 500 gallons per minute (gpm) each. The remaining four wells would be redundant and would allow well rehabilitation and maintenance activities to occur without affecting the overall project operation.

Extracted water would be returned to the SVRP through a series of pipelines that parallel the injection pipelines and connect to the SVRP upgradient of the plant’s existing disinfection facilities. Existing and planned infrastructure would disinfect the extracted water and transport it to the 80-AF pond for blending with other supplies prior to distribution via the CSIP system.

The construction of extraction and injection wells would occur on the MCWD property at Armstrong Ranch property. The monitoring wells would be located on MRWPCA property and locations surrounding the MCWD property (both up- and down-gradient of the site). Exact locations, numbers of wells, and sizes are not yet known but would be further analyzed during design. The construction of monitoring wells would require temporary and/or permanent easements which could be shared for use during construction of the slurry wall as described in the following section. The easements would extend approximately 3,000 feet along the southwestern border of the MRWPCA/MRWMD property and 3,500 feet south of the Armstrong Ranch Parcel toward the airport.

Slurry Wall

A slurry wall would be constructed at the downstream (northern) edge of the Armstrong Ranch property and extend to the northwest and south. The slurry wall would be located along the north and east boundaries of the MCWD property at Armstrong Ranch and continue northwest along the southwestern border of the SVRP/MRWMD property for approximately 3,000 feet. The slurry wall would also continue in the southern direction off of the eastern boundary for approximately 3,500 feet as shown in Figure 5-5. The slurry wall would be keyed into the underlying Salinas Valley Aquitard, a low-permeability clay zone underlying the A-Aquifer located at approximately 10 feet MSL, providing both downgradient and vertical barriers to stored water migration to the adjacent Salinas River and underlying 180-Foot Aquifer. The wall would act as a subsurface barrier (or groundwater dam), creating subsurface storage and minimizing losses to the Salinas River or other downgradient properties. The wall itself would have a maximum permeability of 1×10^{-7} cm/sec.

The slurry wall would be located along the north and east boundaries of the 220 acre portion of Armstrong Ranch. It would have a maximum length of 13,000 feet with a width of approximately 3 feet and a depth ranging from 120 to 140 feet below the ground surface. A contractor was consulted to determine the constructability and feasibility of the slurry wall. The slurry wall would be constructed utilizing a "slurry trench" method. Excavation would be performed in two phases with specialized equipment. First, a specialized hydraulic excavator, equipped with an extended stick capable of reaching 90-feet deep into the hole is used to dig the trench to depth. Once the maximum depth of the excavation is complete with the hydraulic excavator, a clamshell is used to remove the balance of the trench material down to the desired depth. Ultimately, the slurry wall would be keyed into the underlying Salinas Valley Aquitard. Following trench completion, a 9-foot by 3-foot deep compacted clay cap is constructed atop the wall with filter fabric between the cap and slurry trench. The cap would be entirely beneath the ground surface and would be topped by approximately 3 feet of soil so it can be seeded and planted to blend with local landscaping. Construction of the slurry wall would require the same temporary and/or permanent easements used for placement of the monitoring wells.

Well Clusters

In general, each well would be approximately 20- to 36-inches in diameter and constructed from stainless steel casing with well screening and filter pack over the desired recharge zones, approximately 20 to 40 feet above mean sea level. An injection tube made of flexible tubing would run through an orifice plate at the wellhead, allowing the recharge of water under a vacuum (to minimize air entrainment during cascading). The injection tubing would be made of flexible materials so that could be reeled up and removed to allow for well redevelopment. Well redevelopment and flushing of the injection tube would minimize the retardation effects of suspended solids on the well screen, filter pack, and adjacent subsurface formation.

Key advantages of the well-cluster approach include the direct placement of recharge water in the deeper permeable zones, expedited movement of recharge horizontally in the target recharge zone (and therefore minimal impacts from siltier layers that may otherwise impede the vertical migration of water) allowing for a potentially higher recharge rate, and the ability to maintain parts of the recharge system without having to take the whole project offline. Additionally, this approach would allow the transport of water through retarding layers (as previously reported in landfill hydrogeological reports) without requiring excavation and backfill of soil as would be required for a percolation pond.

Monitoring Wells

A total of 12 to 15 monitoring wells would also be installed as part of the project. These wells would be located throughout the project area, upgradient of the project area, and immediately downgradient of the slurry wall as part of a monitoring program to minimize potential impacts from the subsurface storage project. The monitoring program would include measurement of water levels in both the monitoring and injection/extraction wells and stored water/groundwater sampling for general water quality parameters such as nitrate, total dissolved solids and chloride. The purpose of the monitoring program would be to ensure lack of downgradient and/or upgradient impacts from elevated and/or changing water levels as well as to monitor water quality. Monitoring wells would be six- to eight-inches in diameter and may be constructed of either stainless steel or PVC. Monitoring wells would be completed at or above grade (depending on the location) and would be fitted with locking caps and traffic-rated Christy boxes or standpipes (where appropriate) to ensure security.

Well Pipelines

The injection pipelines flowing from the SVRP to the well field and extraction pipelines flowing from the well field to the SVRP would range from 18- to 30-inches in diameter for the main pipelines, and 12- to 24- inches for the delivery pipelines from the main to each well cluster. The injection pipeline would tie in at the downstream end of the SVRP's chlorine contact basin (i.e., divert recycled water after disinfection but prior to placement in the 80-AF pond). Injection of chlorinated water (i.e. formation of disinfection by-products (DBP)) would be analyzed along with other possible geochemical reactions as project design progresses; but overall DBP formation is not anticipated to be a problem based on pilot test analyses conducted elsewhere in the State (including DBP formation analyses conducted as part of a pilot program conducted in the Seaside Groundwater Basin by Monterey Peninsula Water Management District). Only recycled water meeting Title 22 requirements (not blended water) would be delivered to the well clusters.

The extraction pipeline would tie in at the upstream end of the SVRP's chlorination facilities to allow for disinfection, if needed, of the extracted stored water. A mix of recycled water and groundwater from A-Aquifer would be delivered to the plant. The composition of the mixed water would vary depending on the volume of water extracted, groundwater elevations at the time of extraction and subsurface retention time for injected recycled water.

The project's injection and extraction pipelines would be buried in and share the same trench. At the location where pipelines cross the slurry wall, near the SVRP tie-in, the pipes would either cross the wall within the upper 10 feet of subsurface (with pipeline placement during barrier wall construction) or go over top of the slurry wall. Actual pipe sizing and length would vary by "branch." Branches would be determined by the geographic segment of piping relative to the entire piping structure, ground surface elevation, and how much recycled water would be flowing through the particular segment. Pipeline pressures at wellheads are expected to be approximately 20 psi. One booster pump station would be required, capable of pumping in both directions, to overcome elevation differences between the SVRP and well cluster locations.

5.3.4 Surface Water Treatment Plant Expansion

The annual yield from the 14 mgd surface water treatment plant constructed in Phase 1 could be increased to up to 5,800 afy in Phase 2 through:

- Expansion of the SRDF to 60 cfs as described in Section 5.3.2, which would divert more of the peak wet weather flows into the SWTP facility, and
- Addition of an upstream storage basin to store the diverted peak wet weather flows when they exceed the SWTP capacity of 21.7 cfs. The diverted river flow would be pretreated to remove sediments, would be stored in the perched aquifer described in Section 5.3.3, and would be extracted for treatment in the Surface Water Treatment plant after the storm surge when the diversion rate drops below 21.7 cfs.

The volume of storage needed for surface water storage would be 3,000 AF and would require similar, but smaller facilities than the 7,000 AF perched aquifer storage needed for recycled water storage described in Section 5.3.3. The two uses of the perched aquifer zone are mutually exclusive and further analysis will be needed in Phase 2 to determine which combination of water supply options is preferable in terms of cost-effectiveness, technical, and implementation issues, as well as further environmental review

5.3.5 Regional Desalination Facility Expansion

In Phase 2, source water for the Regional Desalination Facility would be ocean water combined with brackish water (seawater intruded groundwater) from a second a line of brackish wells near Highway 1 or an expansion of the seawater coastal wells. The increased intake would require expansion of the desalination plant as well.

5.3.5.1 Additional Intake Wells

Five vertical brackish wells would be located parallel to, but inland of, the seawater wells in an area approximately 1 mile wide (just west of highway one) and 4 miles long (starting west of Armstrong Ranch to 2 miles north of the Salinas River along Hwy 1), as shown on Figure 5-3. The two sets of wells would work in conjunction to allow the seawater wells to extract water at a quality near ocean water and the brackish wells extract only the brackish portion of the 180-Foot Aquifer. The inflow salinity is projected to be approximately 30 ppt.

The use of brackish water as the desalination water supply and the effects of the drawdown profiles from the parallel well fields would:

- Provide a desalination water supply that requires less energy per unit water to treat.
- Create a brine waste that has salinity closer to that of ambient ocean water.
- Create a seawater intrusion barrier on the ocean-side of the dual well field.
- Accelerate the cleanup of the Salinas groundwater basin by extracting brackish water from the currently-intruded 180’ aquifer.

5.3.5.2 RO Plant Expansion

The desalination plant, as described in Chapter 3, includes the RO system housed in a 32,400 sf building. The RO membranes would be modular, with each module sized to produce 2 mgd, although the exact size and configuration of the RO membranes is still being determined. Expansion of the plant capacity from 10 mgd (Phase 1 Project) to 13 mgd would require a number of modules to be added to the existing RO system and potentially an expansion of the building, which would be evaluated in later design phase.

5.3.5.3 Brine Disposal

The additional source water would produce approximately 3 mgd of brine (in addition to the 10 mgd that would be produced by the Phase 1 Regional Desalination Facility). Approximately 13 mgd of brine from the expanded desalination plant would be gravity fed via a 30-inch pipeline from the desalination plant to the MRWPCA outfall approximately 3,500 feet away. The brine, with a predicted salinity of 54 - 60 ppt, would be discharged through the MRWPCA outfall, as described in Section 3.3.3.

5.3.6 Seaside Basin Groundwater Replenishment

The primary objectives of the Seaside Groundwater Replenishment Project are to provide a year - round source of supply to the Seaside Groundwater Basin in support of both the Seaside Basin Watermaster and to allow that basin to be the source of meeting peak demands. The project would include replenishment of the Seaside Groundwater Basin with advanced treated recycled water from the MRWPCA Regional Treatment Plant (RTP) blended with water from one or more of the following sources: the Salinas Industrial Treatment Ponds; the Salinas Reclamation Ditch; or the Blanco Drain system. All groundwater replenishment water would be treated through a proposed 6 mgd advanced water treatment plant (AWTP) which would include microfiltration, reverse osmosis and advanced oxidation/disinfection using ultraviolet light with hydrogen peroxide.

Pump stations at the water sources would convey the water to the Marina RTP site. The groundwater replenishment project would contribute up to 2,800 afy to the Regional Project in the winter, plus up to 3,920 afy during the summer. Therefore, the total recycled water contribution to the regional water supply program would be up to 6,720 afy.

The Seaside Groundwater Basin Replenishment Project would have wells located at inland and/or coastal locations in the Seaside Basin. Treated water from the AWTP would be conveyed to the Seaside Basin through a pipeline to be constructed as part of the Regional Urban Water Augmentation Project (RUWAP). If the RUWAP pipeline is not constructed, MRWPCA would explore other approaches to transmit the recycled water to the Seaside Basin.

5.3.6.1 Advanced Water Treatment Plant

MRWPCA proposes two treatment trains within the new 6 mgd AWTP facility. The two trains would be used to treat two different water sources. This would allow for optimization of anti-scalants, other chemicals, and other treatment parameters for a particular water. This would also allow for sampling of the product water from the SIWTP (or possible future Blanco Drain) water before it mixes with the other train of AWTP product water. By providing separate treatment and sampling, either the SIWTP or Blanco Drain water would be considered diluent water by CDPH.

For the groundwater replenishment projects, MRWPCA proposes to eventually produce approximately 6,912 afy of AWTP product water, 6,823 afy of which would be used for replenishment of the Seaside groundwater basins. This would equate to approximately 6 mgd of product water over the full year. The source water from MRWPCA will be either secondary or tertiary treated wastewater from the MRWPCA Salinas Valley Reclamation Plant. This water will be given advanced treatment to meet regulatory water quality objectives for indirect potable reuse. The AWTP facilities will consist of pre-treatment (e.g., prescreening), membrane filtration, reverse osmosis, and advanced oxidation in order to produce high quality effluent meeting State, local, and federal drinking water quality standards.

The AWTP site will be constructed primarily on a slope south of the existing SVRP and west of the storage pond. The required area is approximately 700 feet long by 100 feet wide. The Membrane Filtration system is located between the SVRP and the entrance parking area for the RTP. The other major processes are located south of the SVRP. To construct the process facilities, a flat pad will be required. Therefore, sloped excavation or retaining walls will be required to construct the AWTP foundations. For the AWTP, long term erosion control using berms, landscaping, and drainage facilities will be provided.

The construction duration for the AWTP should be approximately 18-24 months. The construction schedule is significantly influenced by the operational requirements of the existing RTP and SVRP, labor availability, equipment delivery, and the weather. Because undeveloped space directly adjacent to the AWTP site is small and sloped, construction staging will be located elsewhere on the RTP. Existing roads in the immediate vicinity of the AWTP site will be closed to facilitate construction, with on-site detours and temporary construction roads constructed to maintain plant operation. Daily construction traffic will include contractor, engineer and operator employee vehicles, equipment/material delivery, chemical delivery and waste disposal. Construction traffic is dependent on the schedule, the number of construction labor. No off-site grading or waste earth disposal is anticipated.

5.3.6.2 Conveyance Pipelines

As indicated previously, recycled water from MRWPCA's proposed AWTP facility is anticipated to be conveyed to the Seaside Basin area through joint use of a MCWD pipeline proposed as part of the RUWAP. If the RUWAP pipeline is not constructed, MRWPCA would explore other approaches to transmit the recycled water to the Seaside Basin. For the inland location, an additional pipeline, called the Inland Recharge Supply Pipeline, is needed to extend from the RUWAP up Eucalyptus Road. For the coastal location, an additional pipeline, called the Coastal Recharge Supply Pipeline, is needed to extend from the RUWAP to the GWR site, following existing streets (Normandy Road to Monterey Road). Separate turnouts with isolation valves would be provided to each individual well site. Owing to the pressure in the RUWAP pipeline in General Jim Moore Boulevard, there may need to be a pressure reducing station somewhere along the Coastal Recharge Supply Pipeline prior to the first recharge well.

Pipelines will be constructed by open trench construction methods using a combined backhoe for excavation and front end loader for moving of dirt around the construction site. Maximum trench width will be 36 inches for 20- inch pipe and narrower for smaller pipe. Production rates assumed are 500 feet per day for the pipeline in the Eucalyptus Road right-of-way and 250 feet per day for all other locations. Actual field construction of pipeline work is estimated to take about 6 to 8 weeks for the inland recharge area and about 12 to 14 weeks for the coastal area, including repaving the areas in roadways. The main portion of the construction period is for the preparation, review/approval of shop drawing and fabrication of the pipe, valves, meters and electrical starter cabinets for the injection wells.

5.3.6.3 Recharge Locations and Wells

Groundwater conditions in the basin suggest that both the Santa Margarita and Paso Robles aquifers would benefit from recharge. Although declines in groundwater levels have been more pronounced in the Santa Margarita Aquifer, groundwater storage has also been lost from the Paso Robles Aquifer. In addition, a preliminary evaluation indicates that replenishment could occur at either the inland or coastal locations with slightly different objectives. The inland location provides upgradient recharge for downgradient extraction at production wells in an area of large available storage in the vadose zone. The coastal location provides more direct protection from future seawater intrusion and could allow for increased inland extraction while maintaining coastal water levels above sea level. The selection of which wellfield to utilize will be based, in part, on site investigations, environmental review, ongoing operation of the MPMWD ASR project, and other factors. For the purposes of this project description, both locations are included for a potential groundwater recharge site and both sites include vadose zone wells and injection wells. Vadose zone wells would be used for recharge of the unconfined Paso Robles Aquifer and injection wells would directly replenish the confined Santa Margarita Aquifer.

Four vadose zone wells are expected to take about two weeks to drill and install. Total well depths are shallow (60 to 75 feet) and no well development is anticipated. Injection wells will be drilled with the reverse rotary method. Well development (if required) and injection testing will also occur at each well. Given the depth, deep seal, and development requirements, each well is expected to take approximately one month to install and develop. Drilling fluids will be containerized onsite.

5.3.7 Seaside Basin ASR and Terminal Reservoir Expansion

The Phase 1 Regional Project includes four ASR injection/extraction wells (two existing as part of the ongoing Seaside Groundwater ASR project and two proposed as part of either the Moss Landing, North Marina or Regional Desalination Facility projects) and three injection wells (as part of the Surface Water Treatment plant component). Two additional injection wells and increasing the ASR pump station capacity by 4 mgd may be required to accommodate the Phase 2 CalAm demand, depending on the combination of water supply components implemented in Phase 2. The four Phase 1 ASR (see Section 5.2.8, above) injection/extraction wells would be sufficient to meet extraction capacity requirements. The two new injection wells would be located within the ASR study area along General Jim Moore Boulevard, as described in the Moss Landing and North Marina projects. These wells would have similar construction as the existing ASR wells, the size and depth would be established after further evaluation in Phase 2.

In addition the Terminal Reservoir may require construction of up to 4 MG of additional reservoir storage depending on the Phase 2 water supply components.

5.4 Approach to Analysis

The analytical and organizational approach to the analysis of environmental impacts of the Regional Project Alternative, which is set forth in detail in Chapter 6, is intended to enable the public and decision-makers to meaningfully compare the impacts of the Regional Project with those of the Moss Landing Project and the North Marina Project, both of which have been analyzed in Chapter 4.

As described, the Regional Project includes two separate but related phases. As noted, the Phase 1 elements taken together would satisfy the replacement demand function of the CWP (in the same manner as the Moss Landing Project or the North Marina Project) and could also satisfy broader regional objectives to coordinate water supply for both CalAm and Marina Coast Water District customers. The components of Phase 1 are either already approved (with some being currently implemented) or are sufficiently defined so as to lend themselves to relatively near-term implementation and analysis at a project level of detail. This project level analysis is provided in Chapter 6, in the manner described below. On the other hand, the components within Phase 2 represent a set of actions that could be taken to satisfy longer term regional water demand, but may also require more detailed CEQA review at the appropriate time if and when they are formally considered for approval. The Phase 2 components are included in the Regional Project for informational purposes since they would not function as an alternative to strictly meeting the objectives of the CWP and none of them would be subject to CPUC approval at this juncture. As such, the Phase 2 components are studied at a more general, programmatic level, consistent with the available information and level of detail associated with those elements.

Several of the components of the Phase 1 Regional Project have already undergone CEQA review and have been approved by the relevant public agencies. Specifically, this includes Sand City Desalination, RUWAP, SRDF, and two of the ASR wells. These previously analyzed water supply projects will be undertaken whether or not the CWP is approved and implemented.[15] Essentially, they are each part of the framework within which the CWP will be undertaken, whether the project ultimately approved is the Moss Landing Project, the North Marina Project, the Regional Project, or some other alternative. These pre-existing projects are listed and discussed in this Chapter in order to accurately calculate how, and in what amounts water could be supplied, consistent with the broader regional supply objectives, so as to determine what other components of the Regional Project are needed to meet regional water demand. The same type of analysis, albeit for CalAm customers only, was undertaken within Chapters 3 and 4 of this EIR to explain the formulation and sizes involved in the Moss Landing Project and the North Marina Project.

In order to portray the actual change to the environment that would result from the Regional Project, and to meaningfully compare the Regional Project to the other water supply options analyzed in this EIR, the analysis of the Phase 1 Regional Project focuses on and is limited to

[15] For summaries of the environmental impacts associated with those already approved projects, please see Appendix J, which is included for informational purposes. The effects of these projects are taken into account in the cumulative analysis contained in Section 8 of this EIR.

those elements that would indeed be new.[16] These are: Surface Water Treatment Plant, five vertical intake wells (as source water for a 10mgd desalination plant at North Marina), and three new ASR Injection wells. In summary, the Phase 1 Regional Project consists of the North Marina Project analyzed in Chapter 4, altered to use vertical wells rather than slant wells, a new SWTP and wells to facilitate additional storage in the Seaside Basin.

Where appropriate and straightforward, the Phase 1 Regional Project impact analyses in Chapter 6 simply examine the whole of these Phase 1 Regional Project elements and make one significance determination. As in Chapter 4, however, where it is clearer and simpler first to break out project elements and consider the environmental effects stemming from the changed elements of (and additions to) the North Marina Project, the impacts of the altered and new elements of the Phase 1 Regional Project are first evaluated, with the impacts of the totality of the Phase 1 Regional Project components then summed so as to present and make significance determinations based upon the collective impacts of the Phase 1 Regional Project (which includes the North Marina Project but with vertical wells, plus the other elements of the North Marina Project studied in Chapter 4, and as the other not-yet-approved elements outlined in this Chapter as being within the Phase 1 Regional Project). This collective impact determination is referred to as the Phase 1 Regional Project Impact.

Each impact analysis also addresses at a programmatic level the effects of the actions outlined in Phase 2 of the Regional Project. This impact determination is referred to as the Phase 2 Regional Project Impact.

In order fully to present a picture of the potential environmental effects associated with both phases of the Regional Project, a final significance determination is made that takes into account full implementation of all new (not previously analyzed and approved, as explained above) elements of both Phase 1 and Phase 2 of the Regional Project. This is referred to as the Full Regional Project Impact. Where it is appropriate and efficient to combine the impacts of both Phases 1 and 2 into one discussion because the impact conclusions do not vary between the phases, that is done and is simply accounted for in the Full Regional Project Impact determination.

5.5 Power Requirements

Overall, power supply needs for the Regional Water Supply Desalination and Surface Water treatment plants are summarized in the **Table 5-5**.

5.5.1 Power Supply Options

The power supply for the project components will be from one or more of the following potential sources. In addition, the power supply options for the North Marina project described in Chapter 3 are also applicable for the Regional Facilities.

[16] This is likewise true of the analysis in Chapter 4 of the impacts of the Moss Landing and North Marina, which naturally does not include the effects of the previously approved water supply projects.

TABLE 5-5
POWER REQUIREMENTS FOR PHASE 1 TREATMENT PLANTS

	Regional Desalination Facility	Surface Water Treatment Plant	Total
Peak Demand			
Intake (kW)	400	-	1,550
Treatment (kW)	425	150	4,275
Distribution (kW)	275	225	1,200
Total Peak Demand (kW)	5,925	1,100	7,025
Annual Average (kW)	4.875	290	5,165

5.5.1.1 Monterey Regional Waste Management District Landfill Gas Power Project

The MRWMD provides integrated waste management services to the greater Monterey Peninsula (for specific details on their service area and capacity please see Section 4.11 Public Services and Utilities). The District's facilities are located on its 475-acre property, 3,000 feet north of the proposed regional water facilities at the MCWD facility at Armstrong Ranch. The District's primary purpose is to manage the Monterey Peninsula area's solid waste stream and is the recipient of most of Monterey County's sewage sludge. The MRWMD captures methane produced in their landfill and uses it as fuel in an existing 5,000 kW co-generation facility The MRWMD is also evaluating plans to construct a new 5,000 kW co-generation plant on the southern side of the landfill site.

On-going discussions with MRWMD have indicated an interest in their providing electrical power to the Regional Project from the existing and planned co-generation facilities. The power would be delivered to the Regional Project through a new power transmission line running directly from the co-generation facilities to a substation at the regional facilities, providing an "over-the-fence" power delivery of up to 10,000 kW.[17]

5.5.1.2 MCWRA Hydroelectric Plant

The MCWRA operates two hydroelectric units at the Nacimiento Hydro Power Plant. Unit 1 is rated at 3976 kW, Unit 2 is rated at 375 kW. The Plant has produced an average of 15,000,000 kilowatt-hours (kWh) per year since 1998. The power is currently sold to PG&E. The power could be purchased for use at the regional facilities. If so, the power would be wheeled through the grid.

17 Information on MRWMD co-generation is based on communication with MRWMD staff in December 2008. Ongoing evaluation of the co-generation capacity and feasibility will be undertaken by MRWMD.

5.5.1.3 PG&E

PG& E, the local purveyor of power, could provide a direct feed of power from the grid.

5.6 Operation and Maintenance Procedures

General operation and maintenance procedures would be developed for the Project's system components, including pipelines, pump stations, the desalination plant, and the surface water plant. Examples of typical operation and maintenance procedures for the Regional facilities are the same as those described in Section 3.6 for the Moss Landing or North Marina projects.

5.7 Construction Methods

General construction methods for the different project components would be similar to those described in section 3.5. Special consideration will need to be given to foundation design during the Phase 1 SWTP and Regional Desalination facility design to accommodate potential Phase 2 perched aquifer storage of either recycled water or pretreated Salinas River water.

5.8 Permits, Approvals, and Regulatory Requirements

Numerous federal, state and local regulations and permit requirements would apply to construction and operation of the Regional Project. **Table 5-6**, Potential Permits and Approvals for the Project, lists the major Federal, State, and local permits, approvals, and consultations identified for the construction and operation of the Regional Project.

TABLE 5-6
FOR SUMMARY OF POTENTIAL PERMITS AND APPROVALS

Agency or Department	Permit or Approval	Required for: Desalination	Surface Water	Treated Water Conveyance Pipeline	CSIP Expansion (Phase 2)	Groundwater Replenishment (Phase 2)
Federal Agencies						
U.S. Environmental Protection Agency (EPA)	Class V Underground Injection Control Program (Part C, Safe Drinking Water Act [SDWA])					X
Monterey Bay National Marine Sanctuary (MBNMS)	Review and coordination of all RWQCB 404, Section 10, and NPDES permits	X	X	X	X	X
U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act compliance (ESA Section 7 consultation)	X	X	X	X	X
	Fish and Wildlife Coordination Act (16 U.S.C. 661-667e; the Act of March 10, 1934; ch. 55; 48 stat. 401)	X	X	X	X	X
National Oceanic & Atmospheric Administration (NOAA) – Fisheries	Endangered Species Act compliance (ESA Section 7 consultation)	X	X		X	
Army Corps of Engineers (Corps)	Nationwide Section 404 Permit (CWA, 33 USC 1341)	X	X	X	X	
	Section 10, Rivers and Harbors Act Permit (33 U.S.C. 403)	X	X		X	
Federal Aviation Administration	Form SF 7460-1 Notice of Proposed Construction and Alteration for Airport Airspace Aeronautical Study	X				
State Agencies						
California Public Utilities Commission	Certificate of Public Convenience and Necessity (PUC Article 1)			X		
State Water Resources Control Board, Regional Water Quality Control Board	General Construction Activity Storm Water Permit (WQO 99-08-DWQ)	X	X	X	X	X
	Waste Discharge Requirements. (Water Code 13000 et seq.)	X	X			X
	401 Water Quality Certification (CWA Section 401)	X	X	X	X	
	National Pollutant Discharge Elimination System (NPDES) Permit (CWA Section 402)	X	X			X
California State Lands Commission	Right-of-Way Permit (Land Use Lease) (California Public Resource Code Section 1900); Lease amendment	X		X		
California Department of Fish and Game (CDFG)	Incidental Take Permits (CESA Title 14, Section 783.2)	X	X	X	X	X
	Streambed Alteration Agreement (California Fish and Game Code Section 1602)	X	X	X	X	
California Coastal Commission (CCC)	Coastal Development Permit. (Public Resources Code 30000 et seq.)	X	X	X	X	X

TABLE 5-6 (Continued)
FOR SUMMARY OF POTENTIAL PERMITS AND APPROVALS

Agency or Department	Permit or Approval	Required for: Desalination	Surface Water	Treated Water Conveyance Pipeline	CSIP Expansion (Phase 2)	Groundwater Replenishment (Phase 2)
State Agencies (cont.)						
California Department of Health Services (CDPH)	Permit to Operate a Public Water System (California Health and Safety Code Section 116525)	X	X	X	X	X
California Department of Transportation (Caltrans)	Encroachment Permit (Streets and Highway Code Section 660)	X	X	X	X	
California State Historic Preservation Officer (SHPO)	Section 106 Consultation, National Historic Preservation Act (16 USC 470)		X	X	X	X
Fort Ord Reuse Authority / Army (FORA)	Coordination with FORA for Right of Entry (FOST/FOSL)			X		
Local Agencies						
Monterey County Public Works Department	Encroachment Permit (Monterey County Code (MCC) Title 14 Chapter 14.040)	X	X	X	X	X
Monterey County Health Department, Environmental Health Division	Well Construction Permit (MCC, Title 15 Chapter 15.08, Water Wells)	X				X
	Hazardous Materials Business Plan (Health and Safety Code Chapter 6.95)	X	X		X	X
	Hazardous Materials Inventory (Health and Safety Code Chapter 6.95)	X	X		X	X
	Permit to Construct Desalination Facility (MCC Chapter 10.72)	X				
	Variation on Monterey County Noise Ordinance (MCC 10.60.030)	X	X	X	X	X
Monterey County Planning and Building Inspection Department	Use Permit (MCC Chapter 21.72 Title 21)	X	X	X	X	X
	Coastal Development Permit. (Public Resources Code 30000 et seq.)	X	X	X	X	X
	Grading Permit (M.C.C., Grading and Erosion Control Ordinance, Chapter 16.08 – 16.12)	X	X	X	X	X
	Erosion Control Permit (MCC, Grading and Erosion Control Ordinance, Chapter 16.08 – 16.12)	X	X	X	X	X
Monterey Peninsula Water Management District (MPWMD)	Water System Expansion Permit (MPWMD Board of Directors Ordinance 96)			X		
Monterey Regional Water Pollution Control Agency	Participation agreements / Sewer Connection Permit	X	X		X	X

TABLE 5-6 (Continued)
FOR SUMMARY OF POTENTIAL PERMITS AND APPROVALS

Agency or Department	Permit or Approval	Required for: Desalination	Surface Water	Treated Water Conveyance Pipeline	CSIP Expansion (Phase 2)	Groundwater Replenishment (Phase 2)
Local Agencies (cont.)						
Monterey Regional Waste Management District	Electric Power Purchase Agreement	X	X	X		X
Monterey Bay Unified Air Pollution Control District (MBUAPCD)	Authority To Construct. (Local district rules, per Health and Safety Code 42300 et seq.)	X	X	X	X	X
	Permit To Operate. (Local district rules)	X	X		X	X
City of Monterey, City of Seaside, City of Marina, Sand City, Del Rey Oaks	Use Permits, encroachment/easement permits, grading permits and erosion control permits are issued pursuant to local city/County codes.			X		X
CalAm and Local Water Agencies	Participation/purchase agreements	X	X	X	X	X
Transportation Agency of Monterey County	Easement	X	X	X	X	X
Private Entities						
Landowners	Land lease/sale; Easements and encroachment agreements	X	X	X	X	X

5.9 References

City of Pacific Grove, *P. G. Stormwater Recycling Feasibility Study*, July 2008, http://www.sustainablepg.org/rainwater/Stormwater-Report.pdf, accessed November 24, 2008.

City of Sand City, *Sand City Water Supply Project Draft Environmental Impact Report*, June 2004.

Monterey Peninsula Water Management, *Draft District Aquifer Storage and Recovery Project Environmental Impact Report/Environmental Assessment*, prepared by Jones and Stokes, March 2006.

Marina Coast Water District, *Regional Urban Water Augmentation Project Final Environmental Impact Report*, 2005.

Marina Coast Water District, *Regional Urban Water Augmentation Project Environmental Impact Report Addendum*, prepared by Denise Duffy and Associates, October 2006.

Monterey County Water Resources Agency, *Salinas Valley Seawater Intrusion Program: Castroville Irrigation Water Supply Project and Water Reclamation Facility for Crop Irrigation Final Environmental Impact Statement/Environmental Impact Report*, March 1993.

Monterey County Water Resources Agency, *Draft Environmental Impact Report/Environmental Impact Statement for the Salinas Valley Water Project*, June 2001.

RMC, *Monterey Regional Water Supply Program: EIR Project Description – Proposed Alternative to a Desalination Facility at Moss Landing*, June 2008.

RMC, *Monterey Regional Water Supply Program Phase 1 Project Summary*, December 2008.