

SECTION 7

Alternatives to the Proposed Project

7.1 Introduction and Overview

The following section evaluates the alternatives to the proposed Ocean Water Desalination Project (Project). The Ocean Water Desalination Project proposed by the West Basin Municipal Water District (West Basin) includes a desalination facility capable of producing 20 million gallons per day (MGD) of potable drinking water (Local Project) and the potential future expansion of the facility to produce up to 60 MGD (Regional Project). The alternatives in this section (excluding the No Project Alternative) are evaluated based on their ability to accomplish most of the Project objectives (see Section 7.1.3) while avoiding or minimizing one or more of the Project's potentially significant impacts identified in Sections 5.1 through 5.15.

The Alternatives section is organized into the following three subsections:

- Section 7.1, *Introduction and Overview*: This section provides the requirements of alternative selection and analysis according to the California Environmental Quality Act (CEQA) process, a review of the Project objectives, and a description of significant and unavoidable impacts of the Project.
- Section 7.2, *Initial Screening of Alternatives*: This section incorporates a brief discussion of eight alternatives which were determined to fail to meet the objectives of the Project and/or are clearly infeasible. Thus, they were rejected from further evaluation.
- Section 7.3, *CEQA Alternatives*: This section addresses the No Project Alternative and three alternatives which have been determined to meet the basic Project objectives and/or avoid or substantially reduce the Project's significant and unavoidable impacts; these may be considered by the West Basin Board of Directors during Project deliberations. These alternatives' impacts are analyzed for each environmental issue area, as examined in Sections 5.1 through 5.15 of this Environmental Impact Report (EIR). In this manner, each alternative is compared to the proposed Project on an issue-by-issue basis. The four CEQA alternatives are as follows:
 - **No Project Alternative**: The No Project Alternative assumes that West Basin would continue to receive potable water supply from the existing sources that make up the West Basin water supply portfolio.
 - **AES Redondo Beach Generating Station Alternative**: The AES Redondo Beach Generating Station Alternative considers the development of the Ocean Water Desalination Project located at the AES Corporation (AES) Redondo Beach Generating Station (RBGS).

- **Reduced Capacity Alternative:** The Reduced Capacity Alternative considers the development of an ocean water desalination facility located at the El Segundo Generating Station capable of producing 10 MGD of desalinated supplies.
 - **Reduced Elevation – South Site Plan Alternative:** The Reduced Elevation – South Site Plan Alternative would install an ocean water desalination facility at the ESGS South Site that would have an aboveground roof elevation at-grade with the existing landscaped berm present at the site’s southern boundary. The Reduced Elevation – South Site Plan would involve extensive excavation activities in order to reduce the facility’s visibility from neighboring areas.
- Section 7.4, Environmentally Superior Alternative, identifies the “environmentally superior” alternative, as required by the CEQA Guidelines.

7.1.1 CEQA Requirements

Under CEQA, the identification and analysis of alternatives to a project is a fundamental part of the environmental review process. CEQA Public Resources Code Section 21002.1(a) establishes the need to address alternatives in an EIR by stating that in addition to determining a project’s significant environmental impacts and indicating potential means of mitigating or avoiding those impacts, “the purpose of an environmental impact report is ... to identify alternatives to the project.”

Direction regarding the definition of project alternatives is provided in the CEQA Guidelines as follows:

An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.¹

The CEQA Guidelines emphasize that the selection of project alternatives be based primarily on the ability to reduce impacts relative to the proposed project, “even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.”² The CEQA Guidelines further direct that the range of alternatives be guided by a “rule of reason,” such that only those alternatives necessary to permit a reasoned choice are addressed.³

In selecting project alternatives for analysis, potential alternatives must pass a test of feasibility. CEQA Guidelines Section 15126.6(f)(1) states that:

Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site. . .

¹ CEQA Guidelines Section 15126.6(a).

² CEQA Guidelines Section 15126.6(b).

³ CEQA Guidelines Section 15126.6(f).

Beyond these factors, CEQA Guidelines require the analysis of a “no project” alternative and an evaluation of alternative location(s) for the project, if feasible. Based on the alternatives analysis, an environmentally superior alternative is to be designated. If the environmentally superior alternative is the No Project Alternative, then the EIR shall identify an environmentally superior alternative among the other alternatives.⁴ In addition, CEQA Guidelines Section 15126.6(c) requires that an EIR identify any alternatives that were considered for analysis but rejected as infeasible and discuss the reasons for their rejection.

7.1.2 Project Objectives

The Project objectives of West Basin’s proposed Ocean Water Desalination Project as introduced in Section 3 are to:

- Diversify West Basin’s water source portfolio to increase reliability in the near and intermediate term (5–15 years) and the long term (15–30 years) while reducing reliance on imported water.
- Improve water security through West Basin’s increased local control of water supplies and infrastructure.
- Improve West Basin’s local control of future water costs and long-term price stability.
- Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability.
- Develop a potable water supply that is economically viable and environmentally responsible.

7.1.3 Significant Unavoidable Adverse Impacts of the Proposed Project

CEQA Guidelines Section 15126.6 requires that alternatives are considered that can avoid or substantially lessen significant impacts of a project. The proposed Project would result in significant and unavoidable impacts pertaining to the following environmental issue areas.

Local Project

Air Quality

- **Construction-related Air Emissions.** Construction-related air emissions associated with off-road and on-road diesel-powered construction equipment could exceed daily thresholds of significance established by the South Coast Air Quality Management District (SCAQMD) during Local Project construction activities despite implementation of mitigation measures.

Noise

- **Construction-related Noise.** Construction-related noise impacts associated with the Local Project ocean water desalination facility would be significant and unavoidable despite implementation of mitigation measures.

⁴ CEQA Guidelines Section 15126.6(e)(2).

Regional Project

Air Quality

- **Construction-related Air Emissions.** Construction-related air emissions associated with off-road and on-road diesel-powered construction equipment could exceed daily thresholds of significance established by the SCAQMD during Regional Project construction activities despite implementation of mitigation measures.

Noise

- **Construction-related Noise.** Construction-related noise impacts associated with the Regional Project ocean water desalination facility would be significant and unavoidable despite implementation of mitigation measures.

Refer to Sections 5.2, *Air Quality*, and 5.12, *Noise*, for an expanded discussion on these topics.

7.1.4 Alternatives Screening and Selection Process

The range of feasible alternatives identified in this EIR have been selected and discussed in a manner intended to foster meaningful public participation and informed decision-making. The range of potential alternatives to the proposed Project focuses on those that could feasibly accomplish most of the basic objectives of the Project and could avoid or substantially lessen one or more of the significant environmental effects. Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, General Plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (or the site is already owned by the proponent). Only locations that would avoid or substantially lessen any of the Project's significant environmental effects need be considered for inclusion. An alternative that's effect cannot be reasonably ascertained and that's implementation is remote and speculative need not be considered.

The alternatives selection process involved the following sequence of steps:

- Identification of the Project objectives.
- Identification and development of the Project, considering OPA requirements, including best available site, best available design, best available technology, and best available mitigation measures to determine the best combination of feasible alternatives to minimize intake and mortality of all forms of marine life.
- Identification of the potentially significant environmental impacts of the Project.
- Initial screening of alternatives (including water supply and conservation alternatives).
- Development of CEQA alternatives.
- Evaluation of alternatives.
- Identification of those alternatives that passed the initial screening evaluation, and an explanation of why alternatives were rejected and determined infeasible.

Various alternatives to the proposed Project were evaluated in the alternatives screening process. The alternatives were based primarily on West Basin’s initial siting studies, comments received through the public scoping process, written comments received on the Notice of Preparation (NOP), as well as California Ocean Plan requirements.

As part of the initial screening of alternatives, West Basin considered water supply and conservation alternatives to meet the Project objectives. The initial screening of alternatives and the development of CEQA alternatives to the proposed Project are analyzed at a level of detail commensurate with their: (1) ability to meet most of the basic Project objectives, (2) overall feasibility, and (3) ability to reduce or avoid the significant environmental impacts identified for the proposed Project.

Table 7-1 identifies alternatives analyzed for the proposed Project. Potential environmental impacts associated with the alternatives presented in Table 7-1 are compared to impacts from the proposed Project in the discussion below.

**TABLE 7-1
ALTERNATIVES CONSIDERED**

Screening Level	Alternative Considered	Screening Results
Initial Screening Alternatives	Increased Conservation Alternative	Rejected from Further Analysis
	Stormwater Capture Alternative	Rejected from Further Analysis
	Increased Non-Potable Recycling Alternative	Rejected from Further Analysis
	Indirect Potable Reuse Alternative	Rejected from Further Analysis
	Direct Potable Reuse Alternative	Rejected from Further Analysis
	Offshore Desalination Alternative	Rejected from Further Analysis
	Chevron Marine Terminal Alternative Site Alternative	Rejected from Further Analysis
CEQA Alternatives	No Project Alternative	CEQA Alternative
	AES Redondo Beach Generating Station Alternative	CEQA Alternative
	Reduced Capacity Alternative	CEQA Alternative
	Reduced Elevation	CEQA Alternative

7.2 Initial Screening of Alternatives

The following alternatives (some of which were suggested by stakeholders) were considered by West Basin and are no longer under consideration for the reasons noted below. In some cases, these “alternatives” are not new alternatives, as they are already part of West Basin’s ongoing commitment to conservation, recycling, and a diversified water supply portfolio.

The screening process to identify which alternatives warranted further evaluation considers the following criteria:

1. Potential to achieve at least 21,500 acre-feet per year (AFY) average annual additional potable water supply
2. Potential to contribute to enhanced reliability in the near, intermediate and long terms
3. Potential to meet the majority of Project objectives
4. Legal and institutional feasibility (process is allowable in California and institutional obstacles can be overcome)
5. Physical siting requirements (site is of an appropriate size)
6. Proven technology
7. Economic feasibility (i.e., that costs are clearly anticipated to not be exorbitant)
8. Site availability
9. Potential to reduce impacts compared to the proposed Project

If an alternative failed one or more of these criteria, then further evaluation was not pursued. However, while it is not necessary to perform any further analysis, given the interest expressed by the public in the alternatives to the Project, West Basin has included a discussion of Project objectives and a brief discussion of potential impacts for each of the screening alternatives. The following initial screening alternatives are organized in two subsections; supply alternatives and siting alternatives. A summary of the screening alternatives is provided in **Table 7-2**.

7.2.1 Supply Alternatives

Increased Conservation Alternative

Description of Alternative

Water conservation can permanently reduce the demand for water and reduce the amount of water supply needed to meet consumptive uses. The Increased Conservation Alternative assumes that West Basin would continue and expand existing conservation activities beyond those required to meet the Water Conservation Act of 2009 (SB X7-7) targets (The Water Conservation Act of 2009). As a regional wholesaler, West Basin is not required to provide SB X7-7 water use reduction targets; however, West Basin's retail water agencies are required to comply. All West Basin's retail customer agencies have established their required gallons per capita day (GPCD) targets for 2020 under SB X7-7; refer to West Basin's 2015 Urban Water Management Plan (2015 UWMP) Table ES-2 (Regional Alliance Revised 2020 Target). To assist several of its retail customer agencies, West Basin uses its 2015 UWMP as a "Regional Alliance" UWMP to establish regional demand reduction targets for five of its eight retail agencies.⁵ Under the Increased Conservation Alternative, West Basin's retail water agencies would reduce water use beyond their 2020 SBX7-7 reduction targets and the demand projections contained in West

⁵ West Basin's Regional Alliance partners include the California Water Service (Hawthorne Region), City of El Segundo, City of Lomita, City of Manhattan Beach, and the Los Angeles County Waterworks District #29. These agencies work with West Basin to establish a regional baseline of water use and conservation targets for 2015 and 2020.

Basin's 2015 UWMP to compensate for the water supply projected by the 2015 UWMP to be provided through seawater desalination (21,500 AFY for 2040).

Since 1992, West Basin has implemented successful water conservation programs to reduce water demand within its service area.⁶ Further, West Basin's eight retail agencies maintain and/or promote conservation programs which reduce water waste and manage demand, including passive conservation modifications to existing city ordinances pertaining to water use (West Basin 2016). West Basin is a long-term member of the California Urban Water Conservation Council (CUWCC) and aggressively implements some of the most important best management practices (BMPs) adopted by the CUWCC pertaining to: utility operations; public education and school outreach; residential programs; commercial, institutional, and industrial programs; and landscape programs. **Table 7-3** provides a listing of the programs West Basin administers and the level of participation of its retail customer agencies.

Beyond the conservation programs identified in Table 7-3, West Basin's *Water Efficiency Master Plan* identifies a broad range of available water conservation opportunities, which are defined and analyzed in seven chapters (West Basin 2015). The programs included in the *Water Efficiency Master Plan* have been designed to be as dynamic and flexible as possible in order to support West Basin's short- and long-term water efficiency goals, and the plan is updated every 5 years to account for any new or updated legislation, incentives, partnerships, and funding opportunities available.

West Basin's demand forecast contained in its 2015 UWMP is based on both Metropolitan Water District's (MWD) 2015 Integrated Resources Plan (IRP) and 2015 UWMP projections of potable water demand and conservation. MWD's projections contain the Southern California Association of Governments (SCAG) forecast of demographic projections and estimates for future water conservation based on a number of factors but not derived from estimates provided by their member agencies (SCAG 2016). MWD's estimates on conservation are based on three components: (1) active conservation, which includes the many programs noted above that West Basin and its retail agencies participate in; (2) passive or code-based conservation that uses water efficiency standards in water using devices; and (3) the effect of pricing water to send a signal to consumers to conserve and use less. The combination of these strategies has provided the means to realize significant reductions in water use especially over the last 10 years.

⁶ West Basin determines conservation consistent with the method used by the Metropolitan Water District (MWD). Conservation savings are commonly estimated from a base-year water-use profile. Beginning with the MWD 1996 Integrated Resources Plan (IRP), MWD identified 1980 as the base year for estimating conservation because it marked the effective date of a new plumbing code in California requiring toilets in new construction to be rated at 3.5 gallons per flush or less. Between 1980 and 1990, the MWD service area saved an estimated 250,000 acre-feet per year as the result of this 1980 plumbing code and unrelated water rate increases. Within the MWD planning framework, these savings are referred to as "pre-1990 savings." MWD's conservation accounting combines pre-1990 savings and estimates of more recently achieved savings from the following: active conservation, code-based conservation and price-effect conservation. SB X7-7 (20x2020) requires a 20 percent reduction in urban per capita water use by 2020 as compared to 2009. However, retail water suppliers (wholesalers are not subject to SB X7-7) receive partial credit for past efforts in conservation and recycled water, therefore not all agencies need to reduce per capita demand by an additional 20 percent.

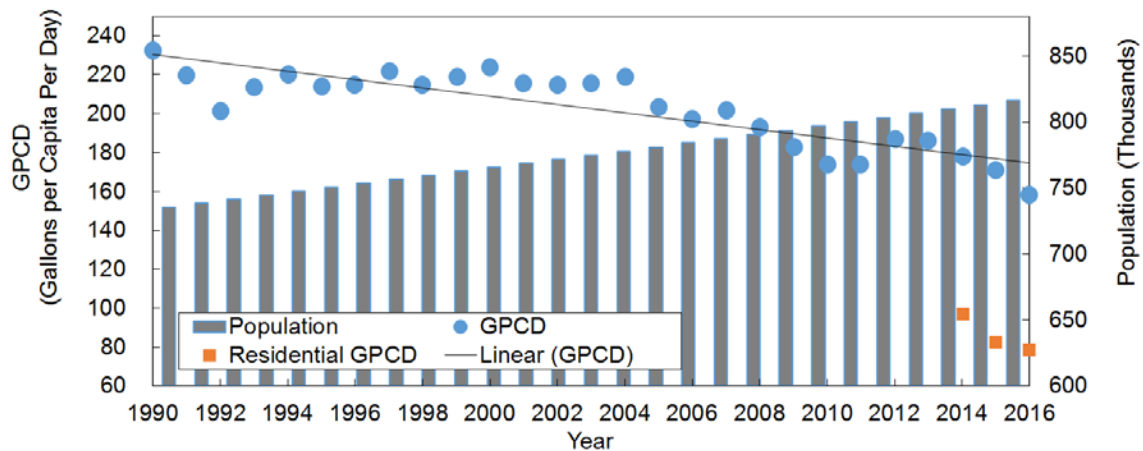
**TABLE 7-2
SCREENING OF ALTERNATIVES**

Screening Level	Supply Alternatives					Site Alternatives	
	Increased Conservation	Stormwater Capture	Increased Non-Potable Recycling	Indirect Potable Reuse	Direct Potable Reuse	Chevron Marine Terminal Site	Offshore Desalination
Achieves Additional 21,500 AFY of Potable Water Supply	No	No	No	No	No	N/A	Yes
Enhanced Potable Water Supply Reliability	No	No	No	No ¹	No	N/A	Yes
Meets majority of Project objectives	No	No	No	No	No	Yes	Yes
Legally and Institutionally feasible	Yes	Yes	Yes	No	No	Yes	Yes
Adequate site size	N/A	N/A	No	N/A	N/A	No	N/A
Proven technology	N/A	Yes	Yes	Yes	No ²	N/A	No
Economically feasible	No	No	Yes	Yes	N/A	Yes	No
Site availability	N/A	No	Unknown	N/A	Unknown	Unknown	N/A
Reduces impacts	Yes	No	Yes	Yes	Yes	No	Yes

N/A = Not Applicable.
 NOTES:
¹ West Basin does not have groundwater rights to the West Coast Groundwater Basin.
² No established treatment standards and no proven real time monitoring technology available to detection of pathogen breaches for direct potable reuse through treated drinking water augmentation.

When comparing average water use by West Basin retail agencies during the period of 2006 through 2010, there was a 16 percent reduction in actual 2015 water use. When comparing 2015 actual water use with SBX7-7 GPCD targets, water use was below both the 2015 interim and 2020 GPCD targets for both the West Basin Regional Alliance and other retail water agencies in West Basin’s service area.⁷ As shown in **Figure 7-1**, its service area’s historical water use, including Commercial, Industrial, and Institutional (CII) water use in GPCD has followed a downward trend despite an increasing population since 1990. The decline is a result of the long-term conservation effort as well as the recycled water programs implemented by West Basin. Furthermore, the residential GPCD (R-GPCD) data (available since 2014) show that the current residential water use is very low for 2014, 2015, and 2016 at 97, 83, and 79 GPCD, respectively. These averages were lower than the average R-GPCD for South Coast by 24 percent, 10 percent, and 18 percent for the same years (SWRCB 2017).

Although those reductions indicate an ability to save more water than SBX7-7 requires, a substantial portion of the savings since 2015 had been realized through the State Water Resources Control Board’s (SWRCB’s) Emergency Urban Water Conservation Regulation in response to the unprecedented severe state-wide drought.⁸



West Basin Ocean Water Desalination Project

Figure 7-1
West Basin Service Area Historical Water Use

In his Executive Order B-37-16, Governor Brown tasked the California Department of Water Resources (DWR) and the SWRCB with providing a new long-term framework for water conservation that builds upon SBX7-7 targets. DWR and the SWRCB worked with stakeholders to develop a framework for a new long-term program that will set state mandated standards for water conservation. Following the completion of that report several competing bills were introduced in the legislature to develop long term conservation standards. In July 2017, all but the legislative intent language from the competing bills were struck and the Legislature formed a

⁷ In 2015, West Basin’s Regional Alliance participants consumed 157 GPCD, well below the 2015 interim target of 198 GPCD and the 2020 target of 175 GPCD; refer to 2015 UWMP Table 3-18 (2015 Regional Alliance Compliance).

⁸ SWRCB Resolution Nos. 2014-0038 and 2015-0032.

workgroup to develop a single piece of legislation. Assembly Bill (AB) 1668 (Friedman) and Senate Bill (SB) 606 (Hertzberg) became 2-year bills in 2017 and are the focus of discussions between legislators and stakeholders. At this time several legislative listening sessions have occurred with stakeholders and amendments are being prepared but have not been released. If these pieces of legislation are approved, it is not understood at this time whether compliance will result in demand projections lower than forecast in West Basin’s 2015 UWMP. Additionally, the SWRCB is in the process of developing a permanent regulation on the prohibition of wasteful water uses. These are similar prohibitions to what was put in place for the Emergency Water Conservation Regulation in 2015 to address statewide drought conditions. It is also uncertain that this proposed regulation will result in reduced water use from that forecast in West Basin’s 2015 UWMP.

West Basin retail agencies are currently meeting or exceeding their 2020 GPCD target and the 2015 UWMP assumes continued efficient water use would occur through 2040. Under the Increased Conservation Alternative, West Basin would need to significantly increase its water conservation targets using the programs identified above as well as others not identified under the 2015 UWMP. Even with its already aggressive approach to conservation and track record of reduced water use, West Basin’s 2015 UWMP indicates that its retail agencies would have to reduce demand for potable water by an additional 15 percent by 2025 to make up for the 21,500 AFY to be produced under the proposed Project.

**TABLE 7-3
WEST BASIN AND RETAILER PROGRAM PARTICIPATION**

Programs	West Basin	California American Water Service	California Water Service	City of El Segundo	City of Inglewood	City of Lomita	City of Manhattan Beach	Golden State Water Company	Los Angeles County Waterworks District #29
Metropolitan Water District of Southern California									
Friendly Landscape Training Classes	x	x	x	x	x	x	x	x	x
Community Partnering Program (CPP)	x	x	x	x	x	x	x	x	x
Innovative Conservation Program (ICP)	x	x	x	x	x	x	x	x	x
Regional Landscape Surveys	x	x	x	x	x	x	x	x	x
SoCalWaterSmart Regional Rebate Program	x	x	x	x	x	x	x	x	x
Water Savings Incentive Program (for CII and large landscape projects)	x	x	x	x	x	x	x	x	x
West Basin									
Car Wash Coupon Program	x	x	x	x	x	x	x	x	x
Cash for Kitchens	x	x	x	x	x	x	x	x	x
General Education Programs	x	x	x	x	x	x	x	x	x
Greywater Workshops	x	x	x	x	x	x	x	x	x
Home Depot Water Conservation Plant Sales	x	x	x	x	x	x	x	x	x
Landscape Irrigation Efficiency Program (LIEP)	x	x	x	x	x	x	x	x	x

Programs	West Basin	California American Water Service	California Water Service	City of El Segundo	City of Inglewood	City of Lomita	City of Manhattan Beach	Golden State Water Company	Los Angeles County Waterworks District #29
Ocean Friendly Landscape Program	x	x	x	x	x	x	x	x	x
Rain Barrel Distribution Events	x	x	x	x	x	x	x	x	x
Regional Landscape Water Efficiency Program (Turf Removal)	x	x	x	x	x	x	x	x	x
School Education Programs	x	x	x	x	x	x	x	x	x
Teach and Test Student Education Program (in partnership with the Surfrider Foundation)	x	x	x	x	x	x	x	x	x
Weather-Based Irrigation Controller (WBIC) Events	x	x	x	x	x	x	x	x	x
Other Water Retailer									
Clothes Washer Rebates (CII)	NIA	x	x	-	-	-	-	-	-
Clothes Washer Rebates (Residential)	NA	-	x	-	-	-	-	-	x
General Education Programs	NIA	x	x	x	x	x	x	x	x
High Efficiency Dishwasher Rebate	NIA	x	-	-	-	-	-	-	-
High Efficiency Urinal Rebate	NA	-	x	-	-	-	-	-	-
Landscape Incentives	NIA	x	x	-	-	-	-	-	x
Landscape Surveys	NA	-	x	-	-	-	-	-	x
Pool Cover Rebate	NIA	x	-	-	-	-	-	-	-
School Education Programs	NA	x	-	-	-	-	-	-	x
Turf Removal Program	NA	-	-	-	-	-	-	-	x
Water Efficient Sprinkler Nozzle Rebates	NIA	-	x	-	-	-	-	-	x
Weather-Based Irrigation Controller Rebates	NIA	-	x	-	-	-	-	-	x

SOURCE: WBMWD, UWMP 2015

To accomplish the above drastic conservation measures, this would require a cumulative reduction in GPCD that includes:

- 1) 20 percent required by SBX7-7
- 2) Continued efficiency in the amount under SBX7-7 GPCD targets as reflected in West Basin's 2015 UWMP demand forecast
- 3) An additional 15 percent reduction in water use over and above the 2015 UWMP forecast amount

West Basin's service area's success in achieving significant savings over the last 25 years has resulted in a hardening of demand, making it increasingly more difficult to capture additional savings (American Water Works Association 2007). There is no evidence to indicate that such additional savings can be reasonably anticipated without significant rationing, imposed consumer lifestyle changes, and economic impacts.

Another limiting factor that impacts the feasibility of achieving the additional savings necessary under this alternative is the large amounts of CII water demand in West Basin's service area. Unlike residential and non-residential land uses that use a substantial percentage of water for landscaping, the CII sector provides much fewer opportunities to save water under existing circumstances let alone contribute to significantly more reductions in water use. Thirty-nine percent of water use in West Basin's service area is within the CII sector. Industrial water uses only, where the fewest opportunities for reductions in water use are present, accounts for 11 percent of West Basin's total water demand.

West Basin has been very successful in moving major industrial uses, such as oil refineries, to non-potable recycled water and offsetting the need for additional potable water. Since West Basin is a water wholesaler, it is up to its retail customers to achieve these conservation savings. In this regard it is helpful to highlight two of West Basin's larger retail customers as examples of hardened demand limiting the ability to successfully implement this alternative. The City of El Segundo, a member of West Basin's Regional Alliance, represents over 12 percent of West Basin's demand for water, yet only 12 percent of the City of El Segundo's demand is single-family residential, where savings from reduced outdoor landscaping are typically realized (City of El Segundo 2016). The City delivered 9,336 AFY of non-potable recycled water for industrial and landscape uses, or 54 percent of all water used for both potable and non-potable purposes within the city in 2015 (City of El Segundo 2016). Industrial uses also account for 60 percent of all potable water deliveries. The City's largest industrial customer, the Chevron Refinery, is served non-potable recycled water produced by West Basin. These non-potable uses and potable industrial uses are considered hardened demand which severely limits the amount of water that can be contributed to savings under this alternative (City of El Segundo 2016).

A similar example is demonstrated in the California Water Service's Dominguez District 2015 UWMP. California Water Service, an investor-owned utility, represents 26 percent of West Basin's current demand for water. Non-potable recycled water accounted for 24 percent of its total water use, most of which was used by oil refineries. Industrial users also totaled 34 percent of all potable water use in 2015. These two examples illustrate that both the industrial use of recycled water or industrial processes requiring potable water result in hardened demand that affects the feasibility of relying on unprecedented levels of water savings needed to implement this alternative.

Although expanded non-potable reuse results in lower GPCD under SBX7-7 implementation guidelines, not all manufacturing processes using potable water can use non-potable recycled water. Water quality requirements and health and safety standards for certain products limit the applicability of non-potable supplies to certain users. Invoking reductions in process water use across the board could be detrimental to industrial production and have severe economic consequences. Reducing indoor uses for commercial and institutional sectors also limit potential additional savings because of the current efficiencies in indoor water using devices. The need for institutions, such as hospitals and other medical facilities, to use water in the course of protecting their patients' health is another factor that reduces the amount of additional water that can be saved from this sector.

The fact that there are limitations and economic impacts on CII to conserve water was recognized by the State of California, and the ability to exclude process water was provided for by DWR in its implementation of SBX7-7 (DWR 2013). Similarly, the need for adjustments for CII use are also being considered by DWR and the SWRCB in the development of a new long-term urban conservation framework to implement Governor Brown's Executive Order B-37-16. It is important to note that code-based conservation requiring efficient indoor water-using devices is already factored into projections of future CII water use and contained in West Basin's 2015 UWMP demand forecast. The practical inability and economic cost of requiring CII users to cut back to the extent envisioned under this alternative would be costly and result in economic hardship that could have far reaching consequences in the community. Alternatively, to achieve these savings entirely from the residential sector would also be costly to both water providers and customers, raise issues of customer equity, have a significant effect on consumer lifestyle, and thus, would not be feasible.

Another factor to be considered is the demographic and economic makeup of West Basin's service area. Several of West Basin retail customer agencies have significant numbers of low-income residents. According to 2010 Census data, 12 percent and 22 percent, respectively, of residents living in the cities of Lomita and Inglewood are below the federal poverty line. Both cities have water use around or below 100 GPCD in 2015 and according to their individual 2015 UWMPs, both are projected to remain around the current number or lower in the future. The city of Hawthorne, another West Basin retail customer agency, has a total population of approximately 88,000 with 19 percent of its residents below the federal poverty line (2010 US Census). Low-income residential areas typically have very limited landscape and limited opportunities to save water without reducing to very low levels of indoor use. Recent studies have found that the primary driver of water use in Los Angeles County is household income and there are clear differences in water use between more affluent areas and economically poorer areas (Mini 2013). This is evidenced by the very low GPCD rates for all the cities noted above. Specifically, during the recent drought, the City of Hawthorne reported to the SWRCB in June 2016 a residential GPCD of 62 (SWRCB 2016). This is just 12 GPCD above the minimum assumed health and safety level for indoor use (SWRCB 2016).

The reliance on obtaining more water savings from these low-income communities that are already at very low GPCD levels may raise concerns over Environmental Justice issues. The California Attorney General has provided guidance that "[c]ities, counties, and other local governmental entities have an important role to play in ensuring environmental justice for all of California's residents" (SWRCB 2016). The Attorney General's guidance refers to Government Code Section 11135 and states that "[w]hile this provision does not include the words 'environmental justice,' in certain circumstances, it can require local agencies to undertake the same consideration of fairness in the distribution of environmental benefits and burdens." Under the Increased Conservation Alternative obtaining significantly more water conservation from these economically disadvantaged communities would impose an additional burden and would raise issues of fairness in water use requirements.

Although West Basin's GPCD water demands will continue to decrease in the near future as water conservation efforts and commitment to water use efficiency continues throughout the

region, West Basin's existing water supply portfolio would not be able to accommodate the conservation of an additional 21,500 AFY. Furthermore, conservation would not be able to further diversify West Basin's water portfolio by providing a new drinking water supply source to increase local water reliability as provided by the proposed Project.

Screening Criteria

Achieving additional conservation over the current 2015 UWMP projection in the amount contemplated under this alternative (21,500 AFY) would increase the risk of shortages since this alternative would require West Basin to depend on the actions of its retail water agency customers who in turn are relying on West Basin to maintain water supply reliability. As implementation of this alternative would largely fall upon West Basin's retail agencies, the reliability of this alternative would be largely outside of West Basin's control. According to the 2015 UWMP, the active and passive conservation programs currently in place are already anticipated to yield a conservation savings of approximately 42,773 AFY annually by the year 2040 (SWRCB 2016). There has been a significant level of demand hardening in West Basin's service area due to the industrial uses of recycled water, currently low consumption levels in lower income areas, and other factors.

It is not feasible to achieve the amount of conservation which could offset the water which would be produced under the proposed Project without imposing rationing and consumer lifestyle changes resulting in substantial economic impacts to the region. West Basin continues to include aggressive conservation as an integral component of its water supply portfolio; however, increased conservation over and above what is currently forecast in West Basin's 2015 UWMP cannot reasonably and foreseeably offset the water that would be produced by the proposed Project.

Ability to Meet Project Objectives

- **Diversify West Basin's water source portfolio to increase reliability by reducing future imported water allocation and rationing impacts:** Despite West Basin retail customer agency compliance with SBX7-7, including meeting its GPCD targets, imported water allocation was not avoided during this current drought. Although conservation beyond what is forecast in the 2015 UWMP would reduce the need for imported water during a shortage, it would not prevent extreme over-reliance on a single water resource strategy. This would contradict West Basin's objective of diversifying its water source portfolio and would potentially involve severe economic and lifestyle implications.
- **Improve water security through West Basin's increased local control of water supplies and infrastructure:** West Basin must rely on its retail customer agencies to implement conservation. As noted above, a large proportion of West Basin's retail water use occurs in service areas with substantial hardened demand from industrial use of non-potable recycled water and potable supplies. Additionally, many communities within West Basin have significant portions of its population below the federal poverty line. These communities already represent the lowest GPCD consumption rates which would limit any additional savings that could be realized above what is currently projected without imposing economic and lifestyle hardship. To avoid economic impacts to its service area, West Basin would have to rely disproportionately on just a few of its retail agencies and its customers to save the unprecedented amount of water envisioned under this alternative. The Increased Conservation

Alternative would not increase West Basin's local control of supplies and thus would not improve water security, as achieving the magnitude of conservation required under this alternative is reliant on actions taken by a limited number of retail water agencies and its customers.

- **Improve West Basin's local control of future water costs and increased long-term price stability:** The Increased Conservation Alternative could result in severe impacts to the local economy if local businesses are forced to permanently ration water use. Thus, this alternative would not improve West Basin's local control of future water costs and long-term price stability for the imported water it purchases from MWD.
- **Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** The Increased Conservation Alternative would not develop a water source; however, it would reduce water demand. This alternative would negatively affect West Basin's ability to respond to hydrologic variability in other supplies as demand will be extremely hardened and the likelihood of impacts to the local economy or public health may be increased especially in drier and hotter periods when water demand is highest.
- **Develop a potable water supply that is economically viable and environmentally responsible:** Although the Increased Conservation Alternative would avoid environmental impacts of developing a new water supply, it would not develop an economically viable potable water supply.

Environmental Impacts of the Proposed Alternative

Implementation of the Increased Conservation Alternative would reduce or avoid all significant impacts identified under the proposed Project, as no new construction or operational activities related to the proposed Project would occur.

Conclusion

Although none of the environmental impacts identified under the proposed Project would occur under the Increased Conservation Alternative, the alternative cannot achieve the amount of conservation necessary to make up for the water that would be produced by the proposed Project. However, West Basin is aggressively pursuing water conservation measures as a central part of the total water supply portfolio, embedded in the UWMP. Although, solely pursuing conservation would not achieve the Project objectives, West Basin is committed to continued conservation implementation into the future. As such, no further consideration is necessary.

Stormwater Capture Alternative

Description of Alternative

Under the Stormwater Capture Alternative, the water supplies projected by the 2015 UWMP to be provided through seawater desalination (21,500 AFY) would be made up through increased reliance on stormwater capture and use. Stormwater capture and use can be divided into two main types. The first type involves capture of stormwater and recharge into local groundwater basin through infiltration if local groundwater aquifer is unconfined and the underlying geology is relatively permeable. For example, in the Central Groundwater Basin or the San Fernando Basin rainwater runoff can be directed from impervious surfaces to designated recharge areas to percolate into unconfined aquifers through permeable soil layers. However, the local geology

overlying the confined aquifers of the West Coast Basin is not conducive to successful groundwater recharge without the use of injection wells.

Injection of stormwater into the aquifer would require advanced treatment to remove toxic hydrocarbons, heavy metals, and pathogens. In addition, since stormwater arrives over a short period of time, a large detention system would be required to capture and store rainwater when it is available. To meet water quality criteria for groundwater recharge through injection using captured stormwater, West Basin would need to develop an entirely new collection conveyance, treatment, and injection well system involving numerous wells, treatment systems, pump stations, and conveyance pipelines needed to inject the advanced treated stormwater into the Basin. It is noted that West Basin does not own any of the storm drain systems within its service area, such an endeavor would require extensive coordination with individual cities and Los Angeles County. Also, siting of storage systems would be limited by the topography and the availability public spaces, such as schools and public parks. Based on the above and the local hydrogeological conditions, centralized stormwater capture for groundwater recharge through injection is technologically and institutionally infeasible. Furthermore, West Basin does not have groundwater rights; once injected, West Basin would not have any authority to develop groundwater for potable use.

Recognizing the importance of capturing rainwater for distributed non-potable reuse, West Basin currently offers free rain barrel distribution events using MWD funding. In 2015 and 2016, West Basin distributed over 4,000 rain barrels to the public. Other incentives for rain barrel water capture include MWD rebates for cisterns holding 200 or more gallons of water. Using rain barrels and cisterns to capture rainwater for direct non-potable uses is not feasible in the volumes required to replace the potable water supply reliability that the Project could provide. Furthermore, captured water cannot be used for potable purposes under current regulations (Los Angeles County of Public Health 2018). In August 2015, the City of Los Angeles published the *Los Angeles Department of Water and Power Stormwater Capture Master Plan* (Stormwater Plan) to analyze the cost-effectiveness of stormwater capture (Geosyntech Consultants 2015). The Stormwater Plan estimates that the potential offset of imported water in the city of Los Angeles through stormwater capture is 1,000 AFY by 2020 and 7,000 AFY by 2035 based on the city's area of 503 square miles. Given that West Basin's service area is approximately 185 square miles, 63 percent smaller than the city, the stormwater capture potential is expected to be significantly lower than what the City has envisioned as accomplishable which would amount to a fraction of the 21,500 AFY amount necessary for an alternative to the Project.

Screening Criteria

Stormwater captured under this alternative would need to be stored within the West Coast Groundwater Basin. However, as described above, the Basin's geology does not lend itself to traditional groundwater recharge and would require the process of injection—a very costly process that would require the installation of stormwater capture systems, several injection wells, treatment systems, and pump stations with associated distribution piping. Furthermore, West Basin does not have groundwater rights and does not have any authority to develop groundwater for potable use.

Most notably, whether diverted for indirect potable reuse (IPR) (i.e., groundwater recharge) or direct non-potable applications (rain barrels and cisterns), stormwater capture would not represent a hydrologically-independent water supply source. Given the high variability in Southern California's climate and amount of precipitation which is expected to become more variable in the future due to climate change, this alternative is not considered feasible for consistently obtaining the 21,500 AFY of potable water which would be provided under the proposed Project. In fact, a recent study on the Los Angeles Basin's ability to capture stormwater estimated that only 900 AFY of decentralized stormwater would be available for direct use within the Dominguez Channel/Los Angeles Harbor watershed (the major watersheds encompassing the West Basin service area). As such, further consideration of this alternative is not necessary. However, it is noted that West Basin is committed to reducing retail water use in its service area through its highly successful water conservation programs and will continue to provide its service area residents with free rain barrels.

Ability to Meet Project Objectives

- **Diversify West Basin's water source portfolio to increase reliability by reducing future imported water allocation and rationing impacts:** The Stormwater Capture Alternative would partially achieve the objective to diversify the West Basin water supply mix to increase reliability by reducing future imported water allocation and rationing impact, although the supply provided is substantially less than that provided by the Project and also the captured water could not be used for potable purposes (LA County 2018).
- **Improve water security through West Basin's increased local control of water supplies and infrastructure:** Southern California has a Mediterranean climate characterized by warm, dry summers and mild, wet winters that, as discussed above, would not be capable of consistently producing 21,500 AFY of stormwater through distributed capture. Furthermore, West Basin does not have groundwater rights and does not have any authority to develop groundwater for potable use. Thus, water security, along with West Basin's increased local control of water supplies, could not be achieved.
- **Improve West Basin's local control of future water costs and increased long term price stability:** The Stormwater Capture Alternative would not improve West Basin's local control of future water costs and long-term price stability as stormwater capture would be highly irregular and unpredictable.
- **Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** By definition, the Stormwater Capture Alternative is dependent upon precipitation and therefore would not represent a hydrologically-independent water supply source.
- **Develop a potable water supply that is economically viable and environmentally responsible:** The Stormwater Capture Alternative would not develop a potable water supply and West Basin does not have groundwater rights and does not have any authority to develop groundwater for potable use. Thus, this objective would not be satisfied.

Environmental Impacts of the Proposed Alternative

Implementation of the Stormwater Capture Alternative would require significant physical improvements including constructing an entirely new collection, storage, conveyance, and

treatment system and injection well system. As such, the Stormwater Capture Alternative would result in construction impacts that may be more widespread than the Project. The Stormwater Capture Alternative would not resolve the Basin's existing water quality issues and would not result in a new water supply, since West Basin does not have any groundwater rights and would not be able to retrieve stored stormwater.

Conclusion

The Stormwater Capture Alternative would require substantial infrastructure spread across the service area. Implementation of this alternative simply cannot produce the amount of highly reliable potable water supply that could offset the potable water produced by the proposed Project. West Basin continues to explore stormwater capture initiatives with regional partners, including Los Angeles County, which is developing potential funding support for these projects. Although, solely pursuing stormwater capture would not achieve the Project objectives, West Basin is committed to continued regional cooperation to explore stormwater capture in the future. As such, no further environmental analysis is necessary.

Increased Non-Potable Recycling Alternative

Description of Alternative

Under the Increased Non-Potable Recycling Alternative, West Basin would increase reliance on local non-potable recycled water supplies produced through its existing Recycled Water Program, reducing potable water demand by 21,500 AFY. West Basin's Recycled Water Program includes the Edward C. Little Water Recycling Facility (ECLWRF) and its satellite facilities including the Chevron Nitrification Plant, Torrance Refinery (formerly known as the Exxon Mobil Water Recycling Plant), and Juanita Millender-McDonald Carson Regional Water Plant.

The water quality of recycled water provided by West Basin to its recycled water customers varies, depending on the reuse purpose. The minimum water quality produced meets water quality objectives as specified in California's Title 22 Code of Regulations, Division 4, Chapter 3 for Water Recycling Criteria. End uses include irrigation, industrial cooling, industrial boiler feed, and the seawater intrusion barrier groundwater injection. To meet specific customers' needs, West Basin produces five distinct qualities of recycled water, including disinfected tertiary recycled water predominantly for irrigation, nitrified-disinfected tertiary recycled water for refinery cooling tower applications, single-pass reverse osmosis permeate for low pressure boiler feed applications, two-pass reverse osmosis permeate for high-pressure boiler feed application, and advance water treatment (AWT) for IPR within the West Coast Groundwater Basin (WCGB) seawater intrusion barrier.

During the 2016 to 2017 fiscal year, the West Basin Recycled Water Program treated 39,471 AFY (approximately 35 MGD) of secondary effluent from Hyperion to produce 36,359 AFY (approximately 32.5 MGD) of designer water for distribution within and outside of its service area. The breakdown of water qualities was as follows:

- Disinfected Tertiary for Irrigation: 4,072 AFY (3.6 MGD)
- Nitrified Disinfected Tertiary for Refinery Cooling Towers: 8,452 (7.5 MGD)

- Reverse Osmosis Permeate for Low Pressure Boiler Feed: 8,158 (7.3 MGD)
- Two-Pass Reverse Osmosis Permeate for High Pressure Boiler Feed: 2,663 (2.4 MGD)
- AWT for groundwater injection: 13,014 AFY (11.6 MGD)

West Basin's recycled water supply source is municipal secondary effluent from the City of Los Angeles' Hyperion Water Reclamation Plant (Hyperion). The secondary effluent originating from Hyperion has shown a significant increase in ammonia concentrations since the Recycled Water Program began (increasing from approximately 25 mg/L to more than 50 mg/L), which presents treatment challenges. The secondary effluent originating at Hyperion also has much higher levels of total dissolved solids (TDS) (upwards of 1100 mg/L) than the TDS allowed under West Basin's Title 22 disinfected tertiary effluent permit (800 mg/L). The relatively low-cost treatment technology employed to produce disinfected tertiary recycled water is not capable of removing salt residuals. West Basin anticipates significant cost associated with further treating Hyperion's secondary effluent to irrigation standards.

Under this alternative, the total existing customer demand of about 35 MGD capacity of West Basin's Recycled Water Program would be expanded/upgraded to accommodate the additional 20 MGD treatment capacity anticipated under the proposed Project. However, West Basin is already exploring the expansion of its Recycled Water Program that would increase capacity to allow for the recycling of 70 MGD of secondary effluent with 16 MGD of the total treated recycled water being conveyed to Los Angeles Department of Water and Power's (LADWP's) service area in the Harbor while the remaining recycled water to be utilized by West Basin's service area. To prepare for that eventuality, West Basin is currently under way with a construction project that will provide additional capacity and electrical reliability to its secondary effluent pump station located at Hyperion to allow 70 MGD to be delivered into West Basin's Recycled Water Program. West Basin has also entered a three-party Memorandum of Agreement (MOA) between West Basin, Los Angeles Bureau of Sanitation (LASAN) and LADWP to investigate treatment improvements at Hyperion that would allow for the optimization and expansion of the West Basin Recycled Water Program. Specifically, the MOA includes the design, construction, and operation of a Membrane Bio-Reactor (MBR) pilot project that would inform the design for a 70 MGD retrofit of a portion of the existing Hyperion treatment system. Actual implementation would be subject to negotiation and execution of interagency agreements on roles, responsibilities and cost sharing between West Basin, LADWP and LASAN. Although West Basin and the City of Los Angeles are working together to increase non-potable recycled water use, there are currently no firm plans or interagency and interjurisdictional implementation agreements in place. However, water quality concerns at Hyperion will need to be resolved prior to implementation of additional recycled water production.

Recycled water is a demonstrated, credible alternative water supply source capable of alleviating stress on imported water supplies caused by increased demands, and legal, environmental, water quality, and climate related factors. This is done in part by substituting potable (drinkable) supplies with recycled water supplies for various non-potable or IPR applications. West Basin's continued efforts in securing recycled water supply sources have successfully increased water reliability by augmenting local supplies and reducing dependence on imported water. The 2015

UWMP anticipates that future recycled water supplies and demand will increase as a result of planned system expansions, new applications, increasing public acceptance, and financial incentives.

However, for non-potable usage, West Basin's service area is limited by a finite customer base which would purchase recycled water for irrigation or industrial purposes. To date, approximately 350 customers are connected to West Basin's recycled water system and use a total of approximately 20.8 MGD of non-potable recycled water. With existing customer obligations both within and outside its service area, and the commitment for 16 MGD to be delivered to LADWP's LA Harbor customers, West Basin only anticipates an additional 7.6 MGD of non-potable recycled water expansion within its service area. Although West Basin's recycled water sales are anticipated to increase in the future, it is unlikely that West Basin will identify an additional demand for 21,500 AFY of non-potable recycled water.

Screening Criteria

The Increased Non-Potable Recycling Alternative is already underway and will only achieve 8,518 AFY in additional non-potable water supplies within West Basin's service area. It will require the completion of West Basin's Hyperion Secondary Effluent Pump Station construction Project, and cost sharing implementation agreements for the construction and operation of a potential maximum 70 MGD MBR retrofit at Hyperion that would serve a combination on non-potable and potable uses between the potential Project partners, West Basin, LASAN, and LADWP. This alternative ~~and~~ will also require construction and operation of additional downstream advanced water treatment facilities for TDS reduction. Recycled water is a proven technology that is legally feasible and an important component of West Basin's water supply portfolio. However, this alternative would only partially achieve one of the five objectives proposed by the Project; refer to the "Ability to Meet Project Objectives" section below. As described previously, West Basin's service area has a limited customer base that would purchase additional non-potable recycled water supplies. Thus, the economic viability of this alternative is reduced as it is unlikely that West Basin would have adequate demand for 21,500 AFY of additional non-potable recycled supplies.

Ability to Meet Project Objectives

- **Diversify West Basin's water source portfolio to increase reliability in the near and intermediate term (5–15 years) and the long term (15–30 years) by reducing future imported water allocation and rationing impacts:** The Increased Recycling Alternative would not effectively diversify the West Basin water supply mix due to being limited to only non-potable uses, although it could relieve pressure on imported supplies by replacing potable water with recycled water where practical.
- **Improve water security through West Basin's increased local control of water supplies and infrastructure:** The Increased Recycling Alternative would increase West Basin's local control of supplies to the extent that it could reduce potable water demands by shifting an additional 20 MGD of potable water use to reclaimed water.
- **Improve West Basin's local control of future water costs and increased long-term price stability:** The Increased Recycling Alternative would not improve West Basin's local control of future water costs and long-term price stability.

- **Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** The Increased Recycling Alternative would not develop a new water source. Instead, West Basin would increase its reliance on recycled water, which is dependent on recycling water that originated as imported potable water and is often at risk to hydrologic variability.
- **Develop a potable water supply that is economically viable and environmentally responsible:** The Increased Recycling Alternative would not develop a potable water supply that is economically viable since the anticipated non-potable water demand is than 20 MGD.

Environmental Impacts of the Proposed Alternative

Implementation of the Increased Recycling Alternative would involve the construction of new treatment facilities at Hyperion to improve source water quality for West Basin’s Recycled Water Program, additional treatment facilities at ECLWRF for TDS reduction, and the installation of more conveyance infrastructure to transport recycled water from the water recycling facility to West Basin’s future non-potable recycled water customers. As such, this alternative is anticipated to involve comparable onshore construction-related impacts as compared to the proposed Project. Operational impacts would be largely the same as the proposed Project, with the exception of those (less than significant impacts) related to marine biological resources and water quality. As no offshore components would be installed, this alternative would avoid the Project’s (less than significant) impacts to marine biological resources, but without achieving the goal of producing 21,500 AFY of new potable water.

Conclusion

The Increased Non-Potable Recycling Alternative would not satisfy the majority of the Project objectives identified for the proposed Project, and it is already being considered and advanced in parallel to the Project. Several obstacles exist in regards to increasing water supply through recycled water supply sources. The major obstacles of this alternative include current secondary effluent water quality, complex partnerships with neighboring jurisdictions, additional treatment and distribution costs, and finite customer availability. Although the 2015 UWMP accounts for future increases in recycled water demands, estimated future demand for non-potable recycled water is far less than 21,500 AFY. As this alternative would not meet the majority of the Project objectives identified above, no further environmental analysis is required. However, West Basin continues to invest heavily into non-potable recycled water as a less expensive alternative to potable water for appropriate applications.

Indirect Potable Reuse Alternative

Description of Alternative

Under the Indirect Potable Reuse Alternative, the water supplies projected by the 2015 UWMP to be provided through seawater desalination (21,500 AFY) would be made up through IPR of recycled wastewater. IPR is the process in which recycled wastewater effluent is treated to appropriate water quality and public health standards and incorporated into an environmental buffer such as a reservoir or groundwater aquifer. This alternative would consist of increased recharge of the West Coast Groundwater Basin through injection systems, and increased groundwater pumping by West Basin customer retail agencies with pumping rights in order to

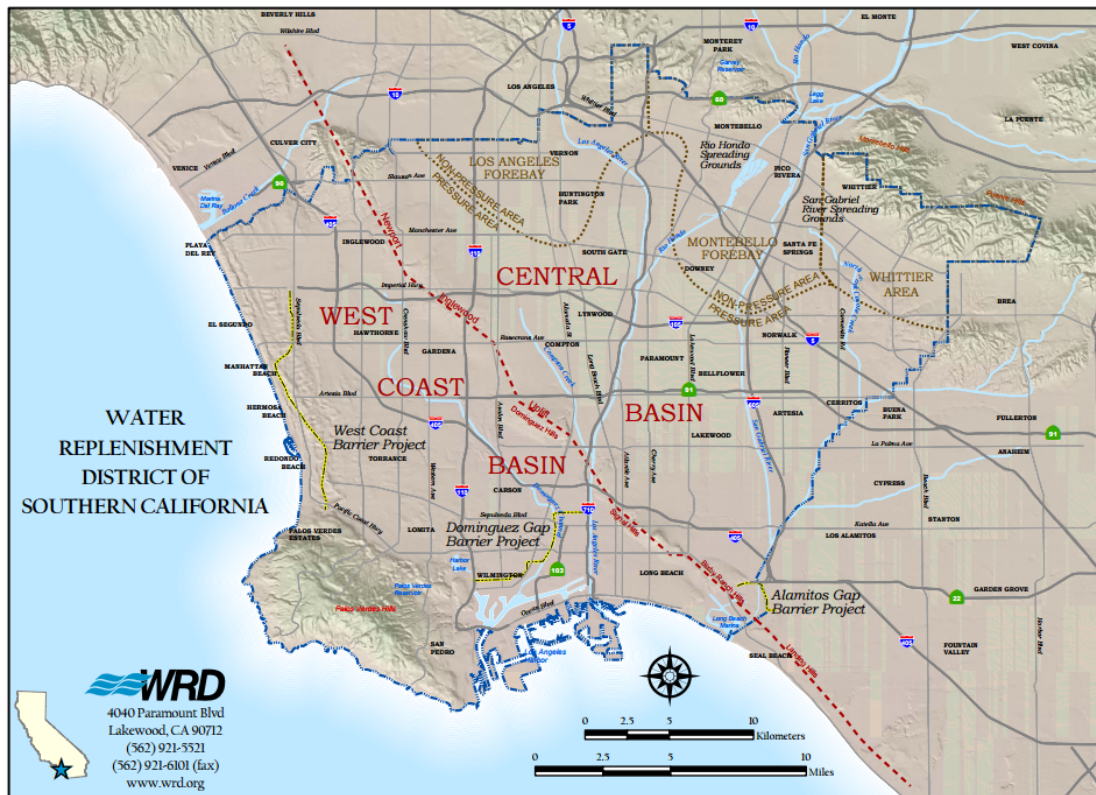
offset existing demand for imported water. West Basin does not have groundwater rights and does not have any authority to develop groundwater for potable use in the West Coast Groundwater Basin.

Under this alternative, approximately 25 MGD of secondary treated wastewater is required as source water to produce the 20 MGD of additional potable reuse water envisioned under the proposed Project. This alternative assumes that wastewater of an acceptable quality would be available from the City of Los Angeles Bureau of Sanitation's (LASAN's) Hyperion Water Reclamation Plant (Hyperion). Hyperion treats on average 225 MGD of sewage to secondary treatment levels for ocean discharge to Santa Monica Bay through an offshore outfall. As described above within Section 7.2.1.2, West Basin has entered into an MOU with LASAN and LADWP that includes the design, construction, and operation of an MBR pilot project that would inform the design for a 70 MGD retrofit of a portion of the existing Hyperion treatment system and potentially allow access to a maximum of 70 MGD for West Basin's existing and future Recycled Water Program. This partnership will allow West Basin to reliably increase its capacity from the current design capacity of 17,000 AFY (15.2 MGD) to 18,000 AFY (16.1 MGD) in order to completely meet the current flow demand of the WCGB seawater intrusion barrier.

Under this Indirect Potable Reuse Alternative, West Basin's existing seawater intrusion barrier facilities would be increased from 16.1 MGD to 36.1 MGD to achieve current seawater intrusion barrier needs and future aquifer recharge. This alternative would require expanded capacity at the facility to treat an additional 25 MGD with microfiltration, reverse osmosis, advanced oxidation, post-treatment, disinfection, product water pumping facilities, solids handling and brine and solids disposal, as well as other appurtenant facilities. The ECLWRF site is currently a fully built-out site and cannot accommodate an additional treatment capacity of 20 MGD to produce advance treated water for replenishment of the Basin. In order for this alternative to be viable, a separate treatment site would need to be identified, procured, and constructed. A new distribution network would also need to be constructed. Additionally, such an expansion would only be possible if additional source water is available from Hyperion.

Recognizing the uncertainties of relying solely on Hyperion for its source water for its recycling program, West Basin identified the Los Angeles County Sanitation District's (LACSD's) Joint Water Pollution Control Plant (Joint Plant) as a potential additional source of recycled water supply in its 2009 *Capital Implementation Master Plan for Recycled Systems* (2009 Plan) (Carollo Engineers 2009). The Joint Plant is located at 24501 S. Figueroa Street in the city of Carson, within the West Basin service area, and treats approximately 260 MGD of wastewater to secondary standards. The Joint Plant was considered in the 2009 Plan to be a potential supplemental source of effluent for water reuse expansion in portions of West Basin's service area. In November 2015, LACSD and Metropolitan executed an agreement to construct a 0.5 MGD demonstration plant and conduct feasibility studies to determine the potential for a large-scale IPR project between the two agencies. The concept being studied would involve a multi-phase IPR project that would treat and deliver up to 150 MGD of purified water to reduce dependency on less reliable imported supplies used to recharge groundwater basins in Orange County and in the Central and San Gabriel Basins in Los Angeles County. These areas are outside West Basin's service area and would not provide supplies to West Basin retail agency customers.

In 2014 regulations were adopted by the State of California for groundwater replenishment using recycled water. The SWRCB's Division of Drinking Water (DDW) administers the regulations which requires the use of an environmental buffer for any IPR project. Under the Indirect Potable Reuse Alternative, the only available environmental buffer within West Basin's service area is the West Coast Groundwater Basin (Basin). The Basin underlies 160 square miles in the southwestern part of the Los Angeles Coastal Plain in Los Angeles County. The Basin extends southwesterly along the coast from the Newport-Inglewood Uplift to the Santa Monica Bay; refer to **Figure 7-2**. The Basin provides groundwater to approximately 11 cities and unincorporated areas of Los Angeles County which accounts for roughly 20 percent of the area's total retail water demands.



West Basin Ocean Water Desalination Project

Figure 7-2
West Coast Groundwater Basin

Since 1961, the Basin has operated under a court judgment (Basin Judgment). The Basin Judgment serves to limit the allowable annual extraction of groundwater by each water rights holder to maintain protective elevations of the water table and prevent seawater intrusion. As part of the Basin Judgment, the Court appointed the DWR to serve as Watermaster and account for all water rights and groundwater extraction amounts per year. Since 2000, average annual pumping in the West Coast Basin has been 42,000 AFY, which is approximately two-thirds of total adjudicated rights, or about 22,500 AFY less than the adjudicated limit of 64,468 AFY (CH2M Hill 2016). Recent amendments to both the West Coast and Central Basin Judgments (Judgment Amendments) allow for more flexibility in the use of these basins' storage capacity, including

conjunctive use of the groundwater basins. The Judgment Amendments allow for increased optimization of the West Coast and Central Basin operations and contain elements that could provide for a more reliable and cost-effective water supply for the region.

The Judgment Amendments also resulted in a change in Watermaster responsibilities, from DWR to the Water Replenishment District of Southern California (WRD). WRD manages the groundwater resources of the West Coast and Central Basins, which includes purchasing and/or supplying water for replenishment, and implementing clean water programs. WRD annually purchases imported water from West Basin, and advanced treated recycled water from both West Basin and the City of Los Angeles, to replenish the West Coast Basin by direct injection into the aquifers using two extensive injection well systems—the (WCBBP) and the Dominguez Gap Barrier Project (DGBP). Both injection well systems are operated and maintained by the Los Angeles County Department of Public Works and used for the dual purpose of groundwater replenishment and prevention of seawater intrusion into the potable freshwater aquifer.

West Basin intends to increase the seawater intrusion barrier design capacity by 1,000 AFY (0.9 MGD) through the potential partnership with LASAN and LADWP. This would represent an increase of approximately 5,000 AFY (4.5 MGD) over current injection levels.

The Indirect Potable Reuse Alternative would need to be approved by WRD and many different stakeholders under the adjudication. The potential changes in Basin operation and the success of this alternative depend upon the cooperation and funding of many entities beyond West Basin and these institutional arrangements between West Basin and by and among the many other stakeholders to implement these operational changes, provide funding, and coordinate construction, will take years to develop and implement.

The advancement of IPR as a water supply for the region is occurring concurrently with the West Basin's proposed desalination Project. West Basin supports the continued multi-agency cooperation to maximize recycled water use in the region. However, since the approach requires multiple stakeholders outside of West Basin's control, implementation of IPR as an alternative to meet the objectives of a reliable drought-resistant and self-sufficient component of its water supply portfolio is uncertain.

Screening Criteria

West Basin remains committed to maximizing its recycled water programs and will continue to work with WRD, the City of Los Angeles, Los Angeles County Department of Public Works, and other Basin stakeholders to maximize long-term local water resources development in the Basin. The Indirect Potable Reuse Alternative is a long-range goal of West Basin and requires successfully addressing the many complexities and institutional issues of increasing utilization of the Basin, including further expanding non-potable reuse to increase Basin pumping and protect groundwater quality by requesting that current industrial groundwater pumpers switch supply sources at additional expense. The availability of source water for additional IPR, the source water quality, the lack of groundwater rights, and the location for a new advanced water treatment facility effects the feasibility of this alternative.

These factors in combination result in uncertainty of the feasibility, timing, and cost of this alternative in comparison to the Proposed Project.

Ability to Meet Project Objectives

- **Diversify West Basin’s water source portfolio to increase reliability in the near and intermediate term (5–15 years) and the long term (15–30 years) by reducing future imported water allocation and rationing impacts:** The Indirect Potable Reuse Alternative would expand an existing reliable water source but would increase dependence on Hyperion for source water and not further diversify the West Basin water source portfolio mix. It could aid in recharge activities for the West Coast Groundwater Basin; however, as IPR implementation is considered a long-term effort, the Indirect Potable Reuse Alternative would not reduce near-term or intermediate term water demands. Furthermore, West Basin does not have groundwater rights and does not have any authority to develop groundwater for potable use.
- **Improve water security through West Basin’s increased local control of water supplies and infrastructure:** Implementation of the Indirect Potable Reuse Alternative would require complex institutional arrangements between multiple public and private entities and involve numerous interagency agreements to guarantee quantity and quality of source water and coordinate the financing, construction and operation of facilities by several different public agency owners. It would also require agreement among public and private entities to significantly change historic Basin pumping practices. These actions are anticipated to take many years to negotiate and develop and involve entities other than West Basin, reducing the certainty and control of Project implementation. Thus, this Project objective would not be satisfied.
- **Improve West Basin’s local control of future water costs and increased long-term price stability:** Under the Indirect Potable Reuse Alternative, construction and operation of facilities would occur under multiple ownership. Treatment facilities would be owned and operated by both West Basin and the City of Los Angeles while conveyance and injection facilities would be owned and operated by West Basin. Extraction and potential wellhead treatment would be the responsibility of the municipal basin pumpers. Greater price certainty would be achieved for those Project components owned by West Basin but less so for the source water facilities owned by the City of Los Angeles.
- **Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** The Indirect Potable Reuse Alternative would satisfy the Project objective to improve climate resiliency as it would provide West Basin with a locally sourced water supply and would reduce dependence on imported water from the Colorado River and SWP.
- **Develop a potable water supply that is economically viable and environmentally responsible:** The Indirect Potable Reuse Alternative would not develop an indirect potable supply for West Basin given that West Basin does not hold any groundwater rights to the West Coast Groundwater Basin. The increased production in the West Coast Groundwater Basin would be limited to no more than the adjudicated amount of approximately 65,000 AFY. Certain areas within West Basin’s service have no groundwater rights. The Indirect Potable Reuse Alternative would not increase these communities’ drinking water sources. Furthermore, water quality problems at Hyperion as well as cost responsibility for investments in the Basin needed to maximize basin utilization present significant challenges. Given the above, this Project objective would not be satisfied under the Indirect Potable Reuse Alternative.

Environmental Impacts of the Proposed Alternative

Under the Indirect Potable Reuse Alternative, an additional property near ECLWRF would need to be acquired to allow for the treatment of municipal effluent to appropriate water quality standards for injection into the West Coast Groundwater Basin. Also, a system of conveyance pipelines would be installed to convey treated recycled water from the new IPR site location to the Basin expanded injection sites and additional extraction facilities for distribution into the local West Basin customer agencies water supply systems. The Indirect Potable Reuse Alternative is anticipated to yield similar, and possibly increased construction related impacts due the expanded footprint required for the construction of multiple additional facilities at multiple locations as compared to the proposed Project. It is noted that the Indirect Potable Reuse Alternative would avoid the Project's impacts to marine biological resources as well as impacts to all forms of marine life as it would avoid all offshore impacts.

Conclusion

Although the Indirect Potable Reuse Alternative would avoid all the proposed Project's offshore impacts, the Indirect Potable Reuse Alternative could have similar or greater onshore construction related impacts because of the large amount of additional facilities required as compared to the Project. West Basin is committed to pursuing increased recycled water use as an integral part of its water supply portfolio and will continue to work with WRD to increase its current seawater intrusion barrier injection with recycled water. However, implementation of an IPR alternative would require the cooperation and funding from many entities outside of West Basin's control. Institutional arrangements will take years to develop and implement and are not certain to be finalized. However, West Basin is actively participating in this process. Since West Basin would need to rely on many other agencies to approve implementation of IPR, the success and schedule is highly uncertain, outside of West Basin's control, and speculative. Furthermore, West Basin does not have groundwater rights to the adjudicated West Coast Groundwater Basin and some of its service area has no access to groundwater supply. This alternative would not satisfy the Project objectives listed above. As such, no further environmental analysis is necessary.

Direct Potable Reuse Alternative

Description of Alternative

Under the Direct Potable Reuse Alternative, the water supplies projected by the 2015 UWMP to be provided through seawater desalination (21,500 AFY) would be made up through direct potable reuse (DPR). Similar to IPR, DPR is the process in which recycled wastewater is treated to drinking water quality standards. DPR is currently not permissible by the State of California as being safe for human consumption and therefore this alternative is legally infeasible. However, DPR regulations are being developed in California for future implementation.

As being explored in California, DPR uses advanced water treatment processes to treat wastewater such that it can be used as a source of drinking water without the need for an environmental buffer as required in IPR. DPR allows for a more direct introduction of the advanced treated recycled water into the drinking water system. As currently contemplated in California, DPR could occur in two ways. The first way would be to blend advanced treated recycled water with other raw water supplies upstream of a Drinking Water Treatment Plant

(DWTP) in compliance with federal Safe Drinking Water Act standards, or introduce advanced treated recycled water directly into a drinking water distribution system downstream of DWTP's. As noted above, California currently has no regulations that permit DPR. Pursuant to California Water Code sections 13560 - 13569 [Senate Bill 918 (Pavley), 2010 and Senate Bill 322 (Hueso), 2013], the California Department of Public Health (CDPH) was required to investigate and report to the Legislature on the feasibility of developing uniform water recycling criteria (regulations) for DPR by December 31, 2016. An Expert Panel was created by the state in 2012 to advise the SWRCB on public health issues and scientific and technical matters regarding the feasibility of developing criteria for DPR. A final Report to the Legislature was transmitted by the SWRCB⁹ on December 29, 2016 (SWRCB 2016). The report which included recommendations from both an Independent Expert Panel and an Advisory Panel determined that it was feasible to develop uniform regulations governing DPR but it was necessary to conduct extensive research on critical knowledge gaps before undertaking the development of regulations. On October 6, 2017, Assembly Bill 574 was passed which mandates that SWRCB establish a framework for regulation of potable reuse projects by June 1, 2018. While there is not yet a clear timetable for the establishment of all DPR regulations, it is apparent that SWRCB will develop DPR regulations incrementally, in the order shown below for three potable water reuse approaches that are being considered:

- *Reservoir Water Augmentation*: The SWRCB adopted Surface Water Augmentation regulations in March 2018. This regulation provides specific dilution and residence time requirements for blending of advance treated recycled water with a surface water reservoir and further treatment by the public water system's surface water treatment plant before being distributed as drinking water.¹⁰ Currently, any reservoir augmentation project that cannot meet the proposed dilution and residence time would be considered under new regulations in response to AB 574 (Quirk). Since West Basin neither owns any drinking water reservoirs, nor does the densely built-out nature of West Basin's service area lend itself to identifying suitable surface water reservoir siting, such an approach would not be feasible even when regulations allow.
- *Raw Water Augmentation*: Raw water augmentation would convey treated recycled water into a untreated drinking water conveyance pipeline delivering raw untreated drinking water to a drinking water treatment plant that provides treated drinking water to a public water system. AB 574 requires SWRCB to adopt uniform water recycling criteria for DPR through raw water augmentation by December 31, 2023. As a water wholesaler of imported water supplies, West Basin does not currently own any drinking water treatment facilities.
- *Treated Drinking Water Augmentation* (or "flange-to-flange" reuse): Planned placement of advance treated recycled water into the treated drinking water distribution system of a public water system. This is commonly referred to as flange-to-flange reuse because advanced treated water would be introduced directly into the drinking water distribution system. This DPR option will face the heaviest scrutiny from a regulatory perspective due to potential system failures having the most immediate impact on public health. Proven real-time detection technology for pathogen breach in water systems is not yet available, thus any pathogen breach can only be detected using conventional laboratory analysis which requires

⁹ CDPH Drinking Water Program was transferred to the State Water Board on July 1, 2014.

¹⁰ Because reservoir augmentation provides some benefits, but not the full complement of benefits provided by IPR projects, the Expert Panel considers it DPR. *See id.* at p.17.

substantial lag time before results are available. The long lag time (usually multiple days) between sampling and reporting could pose a risk to public health. The State of California has not yet offered a timeline for developing and adopting regulations.

The general incremental approach to DPR being advocated by state health officials is to first consider projects using an environmental buffer and then consider raw water augmentation with final regulation development addressing flange-to-flange reuse. As a consequence, raw water augmentation is not currently allowed in California as a potable supply source and any assumption concerning potential regulatory requirements would be speculative.

In the future, if the ocean water desalination facility is constructed, West Basin could blend advanced treated recycled water directly with desalinated ocean water prior to delivering to the distribution system.¹¹ The implementation would require significant institutional coordination and agreements. This flange-to-flange approach to DPR considered to be the last step in implementation of DPR and at this point in time is highly speculative.

Screening Criteria

As DPR regulations are implemented in the State, West Basin will not be able to pursue projects that do not have existing raw water treatment facilities for blending.¹² The closest DWTPs to ECLWRF are the Jensen and Diemer Water Treatment Plants owned and operated by MWD, 33 and 43 miles from the ECLWRP. Direct introduction of advanced treated recycled water into the treated drinking water distribution system faces the greatest challenges in regulation development, technology development, and public health safeguards.

Based on the above, the implementation of the proposed Project would allow West Basin to position itself to consider DPR through raw water augmentation when such regulations are in place. The absence of the proposed Project makes this alternative infeasible and too speculative for obtaining the 21,500 AFY of potable drinking water which would be provided under the proposed Project. As such, no further consideration of this alternative is warranted.

Ability to Meet Project Objectives

- **Diversify West Basin’s water source portfolio to increase reliability in the near and intermediate term (5–15 years) and the long term (15–30 years) by reducing future imported water allocation and rationing impacts:** This alternative is not currently allowed in California as a potable supply source and therefore does not meet the Project objectives. However, assuming DPR regulations are:
 - Approved for Reservoir Water Augmentation, West Basin does not own any surface water reservoirs or surface water treatment plants and this approach to the Direct Potable Reuse Alternative does not meet the Project objective.

¹¹ West Basin currently does not own any treated drinking water pipeline.

¹² There is no surface water bodies (major rivers, lakes) within West Basin’s service area for producing drinking water. Additionally, as noted previously, West Basin is responsible for providing recycled water to replenish the West Coast Groundwater Basin, it doesn’t have groundwater rights that would allow it to utilize the resource to supply to its entire service area.

- Developed and implemented for Raw Water Augmentation by 2023, West Basin does not own a Drinking Water Treatment Plant or have access to raw water supply, so this Direct Potable Reuse Alternative does not meet the Project objective. The Project could position West Basin to consider this alternative, but the alternative could not replace the Project.
- developed and implemented for Treated Drinking Water Augmentation within 10 years, this Direct Potable Reuse Alternative does not meet the near and immediate term Project objective.
- **Improve water security through West Basin’s increased local control of water supplies and infrastructure:** This alternative is not currently allowed in California as a potable supply source and therefore does not meet the Project objectives. However, assuming DPR regulations are:
 - Approved for Reservoir Water Augmentation, West Basin does not own any surface water reservoirs or surface water treatment plants and this approach to the Direct Potable Reuse Alternative does not meet the Project objective.
 - Developed and implemented for Raw Water Augmentation by 2023, West Basin does not own a Drinking Water Treatment Plant or have access to raw water supply, so this approach to the Direct Potable Reuse Alternative does not meet the Project objective. The Project could position West Basin to consider DPR Raw Water Augmentation in the future.
 - Developed and implemented for Treated Drinking Water Augmentation within 10 years, DPR source water would originate from wastewater facilities owned by others and DPR source water would be beyond West Basin control. West Basin is not assured to have access to DPR as a source of potable supply. Therefore, it cannot be shown that this approach to the Direct Potable Reuse Alternative meets the Project objective.
- **Improve West Basin’s local control of future water costs and increased long-term price stability:** This alternative is not currently allowed in California as a potable supply source and therefore does not meet the Project objectives. However, assuming DPR regulations are:
 - Approved for Reservoir Water Augmentation, West Basin does not own any surface water reservoirs or surface water treatment plants and the cost to implement this DPR option would be extreme. Therefore, this approach to the Direct Potable Reuse Alternative does not meet the Project objective.
 - Developed and implemented for Raw Water Augmentation by 2023, West Basin does not own a Drinking Water Treatment Plant or have access to raw water supply, and the cost to produce or procure advanced treated water, procure a raw water supply and construct a drinking water treatment facility would be significant, but this approach to the Direct Potable Reuse Alternative could meet the Project objective.
 - Developed and implemented for Treated Drinking Water Augmentation within 10 or more years, DPR source water would originate from wastewater facilities owned by others, and West Basin would not have full institutional control over future water costs and long term price stability. Therefore, it cannot be shown that this approach to the Direct Potable Reuse Alternative meets the Project objective.

- **Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** This alternative is not currently allowed in California as a potable supply source and therefore does not meet the Project objectives. However, assuming DPR regulations are:
 - Approved for Reservoir Water Augmentation, West Basin does not own any surface water reservoirs or surface water treatment plants and this approach to the Direct Potable Reuse Alternative does not meet the Project objective.
 - Developed and implemented for Raw Water Augmentation by 2023, West Basin does not own a Drinking Water Treatment Plant or have access to raw water supply, and this approach to the Direct Potable Reuse Alternative could meet the Project objective. The Project could position West Basin to consider this alternative, but the alternative could not replace the Project.
 - Developed and implemented for Treated Drinking Water Augmentation within 10 or more years, this approach to the Direct Potable Reuse Alternative would meet the Project objective.
- **Develop a potable water supply that is economically viable and environmentally responsible:** This alternative is not currently allowed in California as a potable supply source and therefore does not meet the Project objectives. However, assuming DPR regulations are:
 - Approved for Reservoir Water Augmentation, West Basin does not own any surface water reservoirs or surface water treatment plants and the cost to implement this DPR option would not be economically viable nor environmentally responsible. Therefore, the DPR Reservoir Water Augmentation alternative does not meet the Project objective.
 - Developed and implemented for Raw Water Augmentation by 2023, West Basin does not own a Drinking Water Treatment Plant or have access to raw water supply, and the cost to produce or procure advanced treated water, procure a raw water supply, and construct a drinking water treatment facility would not be economically viable, and this approach to the Direct Potable Reuse Alternative would not meet the Project objective.
 - Developed and implemented for Treated Drinking Water Augmentation within 10 or more years, environmental effects could be less than the Project. Therefore, this approach to the Direct Potable Reuse Alternative would meet the Project objective.

Environmental Impacts of the Proposed Alternative

All of the approaches to the Direct Potable Reuse Alternative would require a partnership with a wastewater facility owner, the construction of a new water recycling facility to accommodate the additional wastewater treatment needs, as well as the installation of conveyance infrastructure to transport treated wastewater from the water recycling facility to the point of use. Two of the approaches to the Direct Potable Reuse Alternative would also require the construction of drinking water treatment facilities. As such, all of the approaches to the Direct Potable Reuse Alternative are anticipated to involve comparable or worse onshore construction-related impacts as compared to the proposed Project although the location and proximity to sensitive receptors is unknown. Other than impacts to marine biological resources, operational impacts could potentially be similar to the proposed Project. Impacts to aesthetics, land use and noise impacts to sensitive receptors would be increased depending on facility siting.

Conclusion

DPR is not currently permitted in California as a potable supply source and is therefore legally infeasible. As such, the Direct Potable Reuse Alternative is not currently under consideration for the reasons noted above. However, West Basin remains committed to maximizing its conservation, and recycled water programs.

7.2.2 Siting Alternatives

Chevron Marine Terminal Alternative

Description of Alternative

The Chevron Marine Terminal Alternative would involve siting the ocean water desalination facility on a 3-acre portion of the El Segundo Chevron Refinery, which is located adjacent to the Project site's eastern boundary across Vista Del Mar Boulevard. Similar to the proposed Project, this alternative would withdraw feedwater using a screened ocean intake. However, concentrate discharge would be blended with the secondary treated effluent produced at the Chevron Refinery and discharged into the Pacific Ocean using the Chevron Refinery's existing active outfall structure, thereby achieving the California Ocean Plan's recommendations for brine discharge technology.

The Chevron Refinery is located at 324 W. El Segundo Boulevard in the city of El Segundo. Originally built in 1911, the Chevron Refinery encompasses approximately 1,000 acres and features a marine terminal which encompasses an approximate 221-acre footprint (marine and onshore) of public land leased from the California State Lands Commission (CSLC) as a barge and tanker facility for crude oil and petroleum products. Onshore portions of the marine terminal are owned by Chevron and are located on a small strip of beach immediately west of the Chevron Refinery and Vista Del Mar, immediately north of ESGS along the coast. This site, adjacent to Dockweiler State Beach and designated Critical Habitat for snowy plover, currently supports pump stations, a control house, two substations, and a helicopter landing pad (CSLC 2010). The onshore marine terminal is not protected by a seawall. Offshore components include active Berths 3 and 4, which are composed of a series of moorings and pipelines that connect the active berths to onshore marine terminal pumping and storage areas. Berths 3 and 4 are situated in water ranging from 63 feet to 76 feet in depth, and terminate approximately 1.4 and 1.5 miles offshore, respectively. In addition, an active outfall is located between Berths 3 and 4. The outfall structure extends approximately 0.7 miles offshore to terminate roughly halfway to the marine terminal moorings at a diffuser structure sited at a water depth of 42 feet. The outfall currently discharges wastewater treated to secondary standards and is regulated by NPDES permit requirements.

Screening Criteria

The Chevron Refinery site, at roughly 3 acres, would be too small even for the Local Project. Furthermore, West Basin does not have site control and site availability is uncertain. It is also unclear as to whether or not the Chevron outfall possesses available excess capacity to support the additional flows produced under the Project in addition to its existing discharges. As such, no further consideration of this alternative is necessary.

Ability to Meet Project Objectives

- **Diversify West Basin’s water source portfolio to increase reliability in the near and intermediate term (5–15 years) and the long term (15–30 years) by reducing future imported water allocation and rationing impacts:** The Chevron Marine Terminal Alternative does not provide suitable space for a facility and would not be feasible. The alternative would satisfy the Project objective to diversify West Basin’s water source portfolio by reducing future imported water allocation.
- **Improve water security through West Basin’s increased local control of water supplies and infrastructure:** As for the proposed Project, this alternative would satisfy the Project objective to improve water security through West Basin’s local control of water supplies.
- **Improve West Basin’s local control of future water costs and increased long-term price stability:** This alternative would introduce a locally-controlled water supply that would improve West Basin’s control of future water costs and increased long-term price stability the same as with the proposed Project.
- **Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** As for the proposed Project, the Chevron Marine Terminal Alternative would improve climate resiliency by developing a water source that is less susceptible to hydrologic variability.
- **Develop a potable water supply that is economically viable and environmentally responsible:** The same as for the proposed Project, the Chevron Marine Terminal Alternative would satisfy the Project objective to develop a potable water supply that is economically viable and environmentally responsible.

Environmental Impacts of the Proposed Alternative

Implementation of the Chevron Marine Terminal Alternative would likely yield similar land-based construction-related and operational impacts across all impact areas, as compared to the proposed Project ESGS North Site. This alternative would construct and operate the same components proposed under the Project. The Marine Terminal is surrounded by similar, industrial land uses (i.e., ESGS and Scattergood Generating Station). There are no residential uses bordering this site. For this reason, a desalination facility sited at the Marine Terminal would reduce the Project’s significant and unavoidable construction-related noise impacts.

Although this site is not bordered by residential uses on one side as is ESGS South, a desalination facility here would be visible from Dockweiler State Beach, the Marvin Braude Coastal Bike Trail, and Vista Del Mar. The site would be slightly lower in elevation than Vista Del Mar and roughly at grade with the bike trail. Construction activities may affect the bike path for longer duration than the proposed Project. The offshore components proposed under this alternative would likely increase the Project’s marine impacts. Unlike the proposed Project, this alternative would not install the screened ocean intake and feedwater pipeline in an existing abandoned tunnel. Instead, the feedwater pipeline would likely be installed belowground to eventually terminate at a screened ocean intake extending from the seafloor offshore at a similar or greater depth as the existing ESGS tunnels. As a result, this alternative would likely result in significant construction-related impacts to the seafloor and the organisms it supports.

Conclusion

Implementation of the Chevron Marine Terminal Alternative would satisfy the Project objectives and could likely achieve the California Ocean Plan's recommendations for a blended discharge. However, the Chevron Refinery site would be too small even for the Local Project. West Basin also does not have site control and site availability is uncertain. It is unclear as to whether or not the Chevron outfall possesses available excess capacity to support the additional flows produced under the Project in addition to its existing discharges. For these reasons, this alternative is not considered feasible pursuant to CEQA Guidelines Section 15126.6 (a) and is thus rejected from further consideration.

Offshore Desalination Alternative

Description of Alternative

An Offshore Desalination Alternative would involve deployment of an offshore platform or a mobile vessel with treatment capacity of 20 MGD. The offshore desalination facility would withdraw and treat seawater to produce drinking water using existing desalination technologies, such as reverse osmosis with concentrate being discharged offshore. Product water would either need to be shipped to an onshore storage facility or a pipeline connecting the offshore facility and the onshore facility would need to be constructed in order to store and distribute the product water to customers.

The utilization of offshore desalination is constrained by many factors. The unpredictability of wave and current conditions in the Pacific Ocean makes access to the offshore difficult if emergency repairs are needed. For mobile vessels, storm surges in unprotected Pacific Ocean could pose significant risks. Product water conveyance is another challenge. If a pipeline was used, its construction would be technically challenging and the product water pumping would require significant energy in addition to the energy required for production of the product water. If a vessel was used to transport product water back to the shore, these trips would cause significant emissions from marine vessels. Similarly, the need to ship chemicals, fuel, and other supplies to remote offshore locations would generate more air emissions and also increase risks for spillage in case of an accident. Providing sufficient energy to power the treatment processes is found to be the main barrier for technology adoption (WateReuse 2012). It has been estimated that an offshore platform and mobile vessel facilities would be at least 48 percent and 91 percent more expensive than a land-based facility. To date, neither the offshore-platform-based facility nor the mobile-vessel-based facility has been implemented in California.

The construction footprint for these facilities would be smaller than the Project, but would still result in onshore construction-related impacts and require Coastal Act compliance and possibly a Conditional Use Permit or other approvals from the local land use authority depending on location and specific design.

Screening Criteria

Offshore desalination has not been implemented in California or even in other parts of the world. Given that this is not a proven technology coupled with the potential regulatory hurdles and the high costs, no further consideration of this alternative is necessary.

Ability to Meet Project Objectives

- **Diversify West Basin’s water source portfolio to increase reliability in the near and intermediate term (5–15 years) and the long term (15–30 years) by reducing future imported water allocation and rationing impacts:** The Offshore Desalination Alternative would satisfy the Project objective to diversify West Basin’s water source portfolio by reducing future imported water allocation and rationing impacts.
- **Improve water security through West Basin’s increased local control of water supplies and infrastructure:** This alternative would satisfy the Project objective to improve water security through West Basin’s local control of water supplies. However, given the remoteness of the facility and the challenge concerning accessibility, West Basin’s ability to control its water supply infrastructure using this method is unknown.
- **Improve West Basin’s local control of future water costs and increased long-term price stability:** This alternative would introduce a locally-controlled water supply that would improve West Basin’s control of future water costs and increased long-term price stability.
- **Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** The Offshore Desalination Alternative would improve climate resiliency by developing a water source that is less susceptible to hydrologic variability.
- **Develop a potable water supply that is economically viable and environmentally responsible:** Implementation of this alternative would represent a potable water supply of unproven feasibility and undetermined environmental consequences (with respect to marine life and aesthetics in particular). This alternative would represent substantially higher capital and O&M costs as well as the increased risks for more frequent replacement and repair of offshore components compared to the proposed Project, which would reduce the economic viability of this alternative. This Project objective would not be satisfied.

Environmental Impacts of the Proposed Alternative

Implementation of the Offshore Desalination Alternative would reduce all the land-based construction and operational impacts identified under the proposed Project, with the exception of those related to installation and operation of the onshore desalinated water conveyance and related facilities (construction noise would be significant under the proposed Project).

Implementation of this alternative would likely increase offshore construction and operational aesthetic impacts, as installation of an offshore desalination facility could impact views of the Santa Monica Bay and its horizon (conceptualized at being located 3 miles offshore, the facility would be visible from much of the Los Angeles area coastal area). In addition, the Offshore Desalination Alternative would increase the construction-related impacts to marine biological resources resulting from this alternative’s impacts to the seafloor during installation of a 3-mile product water pipeline connecting the facility to an onshore storage, pumping, and distribution system. This alternative would also increase operational impacts on benthic infauna compared to the Project (less than significant).

This alternative is anticipated to have higher operational air quality and greenhouse gas impacts than the proposed Project based on the alternative’s operational characteristics (seawater desalination facility, shipping or pumping of product water to onshore facilities, shipping of supplies).

Conclusion

As described above, selection of the Offshore Desalination Alternative would reduce the land-based construction and operational impacts identified under the proposed Project, and could reduce brine toxicity to benthic infauna due to the offshore desalination discharge location would be in the mid water column. However, the Offshore Desalination Alternative would impact views of the Santa Monica Bay and horizon for a large number of people in the area. Furthermore, this alternative would also result in the greater long-term air emissions and greenhouse gases from marine vessels. Given that there are no known examples of permitted offshore desalination facilities in the world, such an approach is considered to have very high risk⁵ and not considered as proven. Lack of precedence and the high capital and O&M costs associated with offshore desalination make implementation of this alternative both highly speculative and infeasible (CEQA Guidelines Section 15126.6 (a)). For the reasons above, this alternative is not currently under consideration.

7.2.3 Ocean Plan Amendment Alternatives Analysis

The California Ocean Plan Amendment (OPA) Section 13142.5(b) requires that ocean desalination projects demonstrate the “best available site, design, technology and mitigation” available prior to implementing a project. Consistent with the OPA, West Basin has conducted assessments over more than a decade to determine the best treatment technology, facility location, and intake and discharge system for optimizing the District’s proximity to the coast and investigating the feasibility of ocean water desalination. The proposed Project represents the culmination of West Basin’s stepwise approach in evaluating ocean desalination’s feasibility. This stepwise approach has included extensive pilot testing, siting studies, subsurface intake feasibility assessment, and demonstration testing of full-scale processes. Results of the investigations were compiled into a comprehensive *Ocean Water Desalination Program Master Plan* (PMP). Since 2002, research gathered from these studies has helped formulate various implementation alternatives for the inclusion of a desalinated water supply source into West Basin’s water supply portfolio, and has further refined the proposed Project’s basic components and objectives. Numerous studies have analyzed alternative locations for the siting of an ocean water desalination facility, alternative intake/discharge technology, and alternative treatment processes. The research gathered from these studies concerning facility siting is summarized in Appendix 10, which includes a discussion of how West Basin considered the OPA for Project site and the intake and discharge method selection, and **Appendix 11, Ocean Water Desalination Discharge Feasibility Study**.

As a coastal water district, committed to its mission of providing reliable cost-efficient water supplies for its customers, West Basin has investigated the feasibility of ocean water desalination to enhance the region’s water supply reliability. Numerous coastal sites have been evaluated along the Santa Monica Bay coastline, with the most promising sites evaluated as Site Location Alternatives in this EIR. Similarly, West Basin conducted a detailed assessment of the feasibility of installing a subsurface intake system in 2016. The study outlined the local geology and proximity to subsurface ocean water and evaluated numerous technologies that could access subsurface ocean water. As described in Appendix 10, the assessment concluded that due to the local geology, existing coastal development, subsurface water quality, potential for interference

with the operation of the West Coast Seawater Barrier Project, and untested expensive technology, subsurface intakes would be infeasible. In addition, to evaluate the best technology for the specific site conditions, West Basin completed a pilot study and then a demonstration facility to collect data and determine the feasibility of proposed treatment technologies.

Because this EIR is intended to support a Water Code section 13142.5(b) determination, West Basin has included a summary of the efforts conducted to identify the best available site, design, and technology used to develop the proposed Project, consistent with OPA requirements. Consistency with OPA requirements regarding ocean water quality and marine biology is discussed Sections 5.2 *Hydrology* and 5.11 *Marine Biological Resources*.

7.2.4 Overall Conclusion

In conclusion, the supply and siting alternatives, discussed in detail above, were screened out as alternatives because they failed to meet one or more of the Project objectives and criteria. For these reasons described above, these alternatives are not considered feasible pursuant to CEQA Guidelines Section 15126.6 (a) and are thus rejected from further consideration.

7.3 CEQA Alternatives

The following alternatives are evaluated per CEQA requirements and, with the exception of the “No Project” Alternative, appear to be potentially feasible and meet at least some of the basic Project objectives.

7.3.1 No Project Alternative

Description of Alternative

The No Project Alternative evaluates the impacts and water supply implications which would occur if West Basin did not pursue ocean water desalination. The No Project Alternative represents a “future-without-Project” benchmark in which decision-makers can compare any environmental impacts identified under the “Action Alternatives.” Implementation of this alternative assumes that West Basin would continue to receive potable water supply from the existing sources which make up the West Basin water supply portfolio; refer to **Table 7-4**.

However, imported water from MWD is subject to a number of constraints that would likely result in MWD not being able to continue to supply the same volume in the future, as it supplied in 2015.

**TABLE 7-4
WEST BASIN'S SERVICE AREA CURRENT WATER SUPPLIES**

Wholesale: Water Supplies – Actual			
Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume (AFY)	Water Quality
Desalinated Water	Brackish groundwater ¹	690	Drinking Water
Purchased or Imported Water	Direct Use and Replenishment	105,569	Drinking Water
Recycled Water	Delivery for the West Basin service area only	29,110	Recycled Water
Total		135,369	-

NOTES:

¹ West Basin does not have groundwater pumping rights; the pumping rights belong to CalWater. This water is from a remediation project to remove a saline plume from seawater intrusion; water is distributed to CalWater's customers.

SOURCE: West Basin 2016, Table 4-1 (West Basin's Service Area Current Water Supplies), page 4-2, June 2016.

Metropolitan Water District Planning

MWD analyzed at length the impact of the No Project alternative or as described in its 2015 IRP the “Do Nothing Alternative.” According to MWD:

Constructing a “Do Nothing” water balance provides a picture of what future reliability would look like with no additional actions or investments in water supply or demand management. The “Do Nothing” analysis determines whether additional developments that help to balance supplies and demands are needed to ensure reliability into the future.” (MWD 2015)

MWD further states that:

A rigorous modeling analysis of supply and demand scenarios under the 2015 IRP Update points to two fundamental findings: ... if Southern California stopped adapting and rested on its existing supply assets and achievements in conservation, shortages would likely occur at an unacceptable level of frequency in the years ahead. This finding is not a surprise. It is a reminder that working to maintain a reliable water supply is never complete. (MWD 2016)

MWD indicates that:

Under severe drought conditions it can be necessary and prudent to call for greater reductions in the use of limited water supplies and reduce reliance on storage reserves. The challenge is how to allocate supplies to avoid acute and harmful localized shortages amongst the member agencies. ... Few planning tools embody Metropolitan's role as regional provider as much as Metropolitan's Water Supply Allocation Plan (WSAP). (MWD 2016)

The WSAP has 10 levels of water supply allocations, each corresponding to an additional 5 percent reduction of supply. A Level 2 allocation, for example, reflects what is essentially a 10 percent reduction in overall water supply available to each member agency. (MWD 2016)

MWD's 2015 IRP analyzed the occurrence of shortages of imported supplies from the State Water Project and Colorado River under a variety of weather and climatic conditions. The analysis incorporated the current availability of local water supplies and conservation goals and looked at shortages before MWD resorted to withdrawals of its storage reserves to meet unmet demand for water. It also analyzed the occurrences of shortages after MWD took actions to withdraw water from its stored reserves. According to MWD's analysis:

Modeling results show that under a "Do Nothing" case, the probability of supply allocation increases dramatically over time, reaching an 80 percent likelihood in 2040. Doing nothing is not an option. (MWD 2016)

As the SWP is the most vulnerable of MWD's two imported supplies and the imported supply that West Basin's Proposed Project would reduce a demand upon, MWD's IRP noted the following:

Under a "Do Nothing" or no new investment forecast for the SWP, there are notable changes that will occur through time. The most notable is the decline in SWP supplies due to climate change and the likelihood of more restrictive regulatory and operating conditions. Average SWP deliveries in 2016, given underlying climate and regulatory and operating conditions, were estimated to be 1.2 million acre-feet. Without significant actions and investments to protect these supplies against new regulations and flow restrictions from biological opinions, a sharp and permanent decline in pumping and exports could occur. These declines are projected to become more severe in 2020, consistent with the scheduled timetable for the review of Biological Opinions for key fisheries in the Delta. More restrictive regulations and operating conditions, combined with the impacts of projected climate change, could reduce average year SWP deliveries to 837,000 acre-feet. (MWD 2016)

MWD's 2015 Recommendation for an Adaptive Management Approach to water supply reliability incorporates the implementation of a California WaterFix-type solution to stabilize Delta exports and continues to rely on the diversification and heavy reliance on the region's local supply and conservation activities and specifically recommends that the region should:

Develop 230,000 acre-feet of additional local supplies produced by existing and future projects. The region would reach a target of 2.4 million acre-feet by 2040, a key to providing water supply reliability into the future. (MWD 2015)

The pool of future local supply projects includes water recycling, groundwater recovery and seawater desalination projects. West Basin's proposed Local Project is included among the local supply projects noted in the IRP from where the additional 230,000 acre-feet in additional local supplies will be developed (MWD 2016). The following provides more details on MWD's imported water supplies and their respective capabilities and vulnerabilities in meeting future deliveries.

State Water Project Supplies

As described in Section 2, the SWP is a water storage and delivery system that is primarily intended to store and distribute water to urban and agricultural water suppliers throughout

California. The SWP is also operated to prioritize fish protection and improve water quality in the Sacramento-San Joaquin Delta (Delta), which functions as the hub of the State's water distribution system.

SWP supply availability depends largely on the amount of rainfall, snowpack, runoff, water in storage, Delta pumping capacity, demand for supply, and legal and environmental constraints. According to the California Water Plan (CWP), the Delta is highly susceptible to significant water supply restrictions to many areas of the State (DWR 2014). In 2015, the DWR released its *State Water Project Final Delivery Capability Report 2015* which provides current and future (2035) estimates of water delivery by the SWP. This report includes potential factors that can affect SWP deliveries and include: climate change, sea-level rise, restrictions of SWP operations from State and federal regulations protecting endangered and threatened species, and vulnerability of delta levees to floods and earthquakes. As of November 2015, DWR estimated that in 2033, SWP deliveries could be 62 percent of long-term average Table A deliveries, with extended drought periods producing as low as 11 percent of Table A deliveries (DWR 2015). In its IRP, MWD is relying on implementation of California WaterFix to ensure stability in its SWP supplies and to manage its water storage to ensure sufficient water is available for its member agencies during extended dry weather and imported water shortages.

Colorado River Supplies

A portion of West Basin's water supplies also originate from MWD Colorado River Supplies. MWD has a Priority 4 entitlement of 550,000 AFY of Colorado River water under the 1931 Seven Party Agreement that allocated California's share of Colorado River water. MWD plans to maintain a full Colorado River Aqueduct over and above its Priority 4 entitlement. However, as acknowledged by MWD and the State of California, there is the potential that MWD (and therefore West Basin as an MWD member agency) will be entitled to less water from the Colorado River in the future (West Basin 2016). As asserted by the U.S. Secretary of the Interior, California has had to limit its total use of Colorado River supplies to 4.4 Million AFY (MAF) per year (plus any available surplus water) of which MWD's legal entitlement is 550 TAF per year. MWD has actively developed programs that are intended to provide water above its basic apportionment through land fallowing programs in the Palo Verde Irrigation District (PVID) and through water storage, water exchanges and water conservation activities. These activities are required as part of California as a whole staying within its total 4.4 MAF entitlement while MWD seeks to keep its 1.2 MAF Colorado River Aqueduct (CRA) as full as possible.

The Colorado River Compact of 1922, which established the division and apportionment of water supplies from the Colorado River Basin, was created based on a relatively short hydrologic record of unusually high annual flows that did not necessarily reflect long term hydrology of the Basin. As a result, MWD (and therefore West Basin as an MWD member agency) may not be able to maintain a full Colorado River Aqueduct. The Colorado River Basin has experienced an extended drought from 2000 to present (USDOI 2017) that has created a need for various alternative options of water supply. In a recent study measuring Colorado River Basin groundwater reserves, researchers found that the Basin had lost 53 MAF of freshwater from December 2004 to November 2013 alone. Of the 53 MAF, 77 percent of this loss was accredited to groundwater depletion (Castle 2014). Lake Mead and Lake Powell, which together can store approximately 50

MAF of Colorado River supplies, have experienced historically low levels due to issues such as decreases in snowpack and extraordinary drought conditions, and have consequently impacted water supply allotments to Colorado River stakeholders, including MWD (and therefore West Basin as an MWD member agency) access to water over its basic apportionment. In a system reliability analysis executed by the U.S. Bureau of Reclamation, it was estimated that without the implementation of options and strategies to balance future Colorado River supply and demand, Lake Mead and Lake Powell storage would decline and the probability of water delivery shortages would increase (USBOR 2012) and become severe enough to affect MWD's basic apportionment.

Ability to Meet Project Objectives

- **Diversify West Basin's water source portfolio to increase reliability in the near and intermediate term (5–15 years) and the long term (15–30 years) by reducing future imported water allocation and rationing impacts:** The No Project Alternative would not reduce future imported water allocation and rationing impacts as it would not diversify West Basin's water supply portfolio. In fact, future water allocation and rationing could worsen through implementation of this alternative, as this alternative would increase West Basin's dependence on MWD and SWP supplies. Additionally, in the best of circumstances, if California WaterFix proceeds as anticipated, the project proponents acknowledge that it will take 15–20 years to construct and begin operations. During that period, current vulnerabilities to shortage from prolonged drought and regulatory restrictions will continue. The “*No Project Alternative*” would prevent West Basin from achieving any of its future diversification goals. As such, this Project objective would not be satisfied.
- **Improve water security through West Basin's increased local control of water supplies and infrastructure:** The No Project Alternative would not increase West Basin's local control of supplies and infrastructure and thus would not improve water security.
- **Improve West Basin's local control of future water costs and increased long-term price stability:** The No Project Alternative would not improve West Basin's local control of future water costs and long-term price stability.
- **Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** The No Project Alternative would not develop a water source. Instead, West Basin would continue reliance on conservation and imported water supplies, both of which are often at risk to hydrologic variability.
- **Develop a potable water supply that is economically viable and environmentally responsible:** The No Project Alternative is inherently much more uncertain than the Proposed Project in its ability to develop a potable water supply that is economically viable and environmentally responsible. Questions over the number of agencies that will participate financially in WaterFix and the cost to member agencies of MWD is uncertain at this time. Although WaterFix is intended to be environmentally responsible current conflicts between SWP water operations and listed and threatened species continue to exist. Therefore, continued dependence on imported water supply would not satisfy this Project objective.

Environmental Impacts of the Proposed Alternative

Although implementation of the No Project Alternative would reduce or avoid all significant impacts identified under the proposed Project, as no new construction or operational activities related to the proposed Project would occur, the No Project Alternative would subject West Basin

to continuing supply reliability risks associated with existing supplies. The reliability of West Basin's current supplies is greatly affected by climatic or infrastructure changes as well as water use efficiency during average and dry periods (West Basin 2016). Although West Basin is recognized as a leader in both supply diversification and water use efficiency programs, roughly 78 percent of West Basin's existing water supply portfolio is composed of imported supplies originating from the State Water Project and/or Colorado River (West Basin 2016).¹³ It is noted that imported water is the only drinking water supply available for West Basin to provide to its service area. Changing climate patterns resulting in more frequent and prolonged occurrences of drought, combined with increasing regulatory restrictions on SWP exports from the Sacramento-San Joaquin Delta, have challenged the reliability of West Basin's imported supply. Imported supplies are subjected to many other reliability risks, including, but not limited to, seismic risks, ecological constraints, and water quality issues. The Project would reduce the amount of imported water necessary to meet West Basin's demands. Water conservation and the recycled water programs as well as groundwater development would continue with or without the Project.

Refer to Table 7-4 for a comparison of this alternative's impacts in relation to the proposed Local Project.

Conclusion

The No Project Alternative is not presently under consideration because it fails to meet the proposed Project objectives. The Ocean Water Desalination Project represents an important long-term water supply component of West Basin's Strategic Business Plan, and the No Project Alternative would not provide the benefits of a local water supply to fulfill the long-term needs of the region. The No Project Alternative would directly conflict with local and regional water supply planning studies that identify the need for a more balanced water portfolio, including seawater desalination. These studies include adopted plans by West Basin, MWD, and the State of California. In particular, the No Project Alternative directly conflicts with the West Basin's *Strategic Business Plan* commitment to innovative planning and investments to provide water reliability and drought protection.

This alternative would also fail to achieve the water reliability goals to improve immediate, near-, and long-term supply described under West Basin's 2015 UWMP. Beyond local applications, selection of the No Project Alternative would not achieve the objectives described under the *California Water Action Plan* to incorporate more reliable water supplies, further the restoration of important species and habitat, and implement a more resilient, sustainably managed water resources system that can better withstand inevitable and unforeseen pressures in the coming decades. This alternative would also conflict with objectives identified under MWD's *Integrated Resources Plan*, including those related to improving local supplies and planning for a new suite of supplies should they be necessary.

Currently water supplies from the SWP and Colorado River to Southern California have become increasingly unreliable based on hydrologic and biological conditions (MWD 2016). Imported

¹³ 105,569 AFY imported water out of 135,369 AFY total supply in 2015; refer to West Basin 2016, Table 4-1, June 2016.

water sources are also susceptible to interruption, particularly in the case of seismic activity or extended facility maintenance. The No Project Alternative would risk water security. Moreover, the No Project Alternative could either create the need for a new water supply elsewhere (i.e., imported supplies) or increase consumption of existing supplies, which could result in environmental impacts in other locations; refer to the discussion above pertaining to the environmental challenges involved with imported water supplies. As a coastal water agency, West Basin is obligated to assess the viability of incorporating desalinated supplies into its existing water supply portfolios in order to liberate the more-limited imported freshwater supplies for inland water agencies that lack coastal access. In the absence of the Project, West Basin would also be prevented from exploring DPR through raw water augmentation once the DPR regulations are in place.

7.3.2 Site Alternative: AES Redondo Beach Generating Station

Description of Alternative

The AES Redondo Beach Generating Station Alternative considers the development of the Ocean Water Desalination Project located at the AES Corporation (AES) Redondo Beach Generating Station (RBGS). The RBGS encompasses approximately 54 acres and is located at 1100 North Harbor Drive, Redondo Beach, California. The RBGS site has a long history of controversy regarding future land uses and many local residents' desire to see open space uses or redevelopment for tourism and economic benefit. As of December 2016, AES's petition to the CEC to repower the RBGS power plant is suspended and the City was working with AES on selling the property; therefore, its availability for West Basin use is uncertain at this time. Nevertheless, given the extensive prior evaluation of this site and the amount of land potentially available, this alternative is evaluated.

Like the ESGS, the RBGS is located within the West Basin service area, is situated close to the ocean, and possesses available ocean water intake and discharge facilities. Surrounding land uses at the RBGS include commercial development and the Redondo Beach Marina and King Harbor to the west, commercial development and public right-of-way to the east, residential uses to the north, and commercial and mixed-use development to the south.

The RBGS was originally designed with eight natural gas generating units sited along the property's western extent. Currently, the RBGS operates four steam generating units, called Units 5 through 8, which are fully contracted through May 31, 2018 and are expected to remain in operation until that time (AES Southland 2016). Four non-operational steam generating units (Units 1 through 4) are present at the site's northwestern extent.

A conceptual preliminary grading and utility plan have been created for implementation of a 20 MGD or 60 MGD ocean water desalination facility sited at the RBGS in West Basin's *Ocean Water Desalination Program Master Plan* (PMP). This alternative assumes that an ocean water desalination facility at the RBGS would be sited as described in the PMP; however, it is noted that these site plans are subject to change based on future AES site development and repowering activities.

The RBGS has three existing nearshore intake structures and pipelines which could potentially accommodate a screened ocean intake structure. The first is a 3-meter inside diameter intake located north of the Redondo Beach Marina and terminates approximately 1,600 feet offshore (retired). The second is a 3-meter-inside-diameter intake located in the Redondo Beach Marina and terminates approximately 1,600 feet offshore (Units 5 and 6). The third is a 4.25-meter inside diameter intake located just south in King Harbor and terminates approximately 2,000 feet offshore (Units 7 and 8).¹⁴

Additionally, the RBGS has three existing nearshore discharge structures which run parallel to the facility's intake structures and pipelines and could potentially accommodate a concentrate discharge structure. The first discharge is located north of the Redondo Beach Marina and terminates approximately 1,400 feet offshore (retired). The second discharge structure is comprised of two conduits, each extending to the north of King Harbor to terminate approximately 1,600 feet offshore (Units 5 and 6). The third discharge structure is composed of one conduit which extends to the south of King Harbor to terminate approximately 300 feet offshore in the Santa Monica Bay (Units 7 and 8).¹⁵ In compliance with the Statewide Water Quality Control Policy on Coastal and Estuarine Waters for Power Plant Cooling (Once-Through Cooling Policy), the RBGS will retire once-through cooling by December 31, 2020. Thus, the AES Redondo Beach Generating Station Alternative assumes that the ocean water intake and concentrate discharge facilities would be accommodated using one (or a combination of) the available intake and discharges structures present at the RBGS.

The RBGS previously sited the West Basin Ocean Water Desalination Demonstration Facility (OWDDF) and Water Education Center. The RBGS site has been previously evaluated for its capability to support different alternative intake technologies as well as its co-location compatibility, isolation from current site operations, utilization and preservation of existing facilities, and accessibility for public education in a technical memorandum produced for the OWDDF (TM-2, Process Requirements and TM-6, Physical Siting) (MWH 2007). TM-2, Process Requirements, of the *Temporary Ocean Water Desalination Demonstration Project Phase A – Preliminary Design Development* report presents recommendations for the selection of the most feasible intake technology for a full-scale facility located at the ESGS and RBGS locations. The various intake technologies analyzed in TM-2 included subsurface intakes, surface intakes with offshore methods to reduce impingement and entrainment, and surface intakes with onshore methods to reduce impingement and entrainment. The alternative intake technologies were also compared to site-specific physical, geological, and institutional constraints present at the RBGS.

TM-6, Physical Siting, considers wide range of potential sites evaluated for overall implementation feasibility including availability, site size, physical constraints, social constraints, environmental permitting constraints and other factors. In developing TM-6, West Basin studied multiple site options within RBGS and ESGS, among others. The site evaluation provided in TM-6 identified potential siting constraints for implementation of the OWDDF at the RBGS, as well as those for the potential future siting of a full-scale facility at the RBGS. According to

¹⁴ California RWQCB Los Angeles Region, Order No. 00-085, NPDES No. CA0001201, Waste Discharge Requirements for AES Redondo Beach, LLC., (Redondo Beach Generating Station), June 29, 2000.

¹⁵ Ibid.

TM-6, similar to the proposed Project, the existing RBGS ocean water intake and discharge facilities would provide an advantage for co-location. TM-6 also notes that the RBGS has considerably more available space than the ESGS (approximately 15 acres), and thus could potentially provide for greater design flexibility and better accommodate construction activities for the ocean water desalination facility and its appurtenant facilities.

The siting information gathered from TM-2 and TM-6 served as a foundation for the development of a full-scale design, permitting, and operations approach, which is presented in the PMP. The PMP further analyzed locating a full-scale ocean water desalination facility at the RBGS, as well as the site's compatibility with alternative intake and discharge facilities (including the feasibility of subsurface intakes), treatment process engineering and technological requirements, conveyance and distribution requirements, system integration and treated water quality requirements, environmental and permitting requirements, power supply development, capital and operations and maintenance costs, Project delivery, and operational requirements (Malcolm Pirnie 2013). Overall, the RBGS site ranked similar to the ESGS based on selected performance criteria including technical, environmental, economic, and social considerations. As noted above, the RBGS site has a long history of controversy regarding future land uses and many local residents' desire to see open space uses or redevelopment for tourism and economic benefit. Therefore, its availability for West Basin use is uncertain at this time (The Beach Reporter 2016).

The discussion below explains the analysis of the environmental impacts which would occur for implementation of an ocean water desalination facility located at the RBGS as compared to those identified for the Ocean Water Desalination Project.

Ability to Meet Project Objectives

- **Diversify West Basin's water source portfolio to increase reliability in the near and intermediate term (5–15 years) and the long term (15–30 years) by reducing future imported water allocation and rationing impacts:** The AES Redondo Beach Generating Station Alternative Site would satisfy the Project objective to diversify West Basin's water source portfolio by reducing future imported water allocation and rationing impacts.
- **Improve water security through West Basin's increased local control of water supplies and infrastructure:** This alternative would satisfy the Project objective to improve water security through West Basin's local control of water supplies and infrastructure.
- **Improve West Basin's local control of future water costs and increased long-term price stability:** This alternative would introduce a locally controlled water supply that would improve West Basin's control of future water costs and increased long-term price stability.
- **Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** The AES Redondo Beach Generating Station Alternative would improve climate resiliency by developing a water source that is less susceptible to hydrologic variability.
- **Develop a potable water supply that is economically viable and environmentally responsible:** The AES Redondo Beach Generating Station Alternative would satisfy the Project objective to develop a potable water supply that is economically viable and environmentally responsible.

Environmental Impacts of the Proposed Alternative

Unless noted otherwise, the analysis below compares this alternative's impacts to each respective environmental topic area compared to both the Local and Regional Projects. Refer also to Table 7-4 for a comparison of this alternative's impacts in relation to the proposed Local Project.

Aesthetics

As with the proposed Project, implementation of the AES Redondo Beach Generating Station Alternative would include land uses similar in character and scale to the area's existing industrial nature and would not result in any substantial new sources of light or glare. The siting of a desalination facility at the RBGS would also be subject to Coastal Act Section 30251, which states that, "[t]he scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas."

The RBGS is separated from the Pacific Ocean by approximately 500 feet, and views of the Redondo Beach Marina and the Santa Monica Bay are not afforded from the RBGS due to the existing development west of the property including condominiums, SEALab, a beach club, and parking areas (MWH 2007). Accordingly, a desalination facility sited at the AES RBGS property would have less than significant impacts related to visual impacts. The impacts would be similar to the Proposed Project.

Air Quality

The AES Redondo Beach Generating Station Alternative would have a similar construction duration and scope of activities as those proposed under the Project. Construction and operational air emissions would be similar compared to the ESGS North Site, as both sites are roughly at-grade with ultimate pad elevations. However, the RBGS site would require substantially less grading than the Project's ESGS South Site, with associated substantial reductions in grading-related dust, air emissions, and off-site emissions from truck hauling.

Biological Resources – Marine

Historically, the RBGS intake/discharge areas have possessed higher resident ichthyoplankton abundances than the ESGS site, due to the King Harbor's well-documented artificial and rocky reef habitat. The ESGS intake/outfall structures are situated in a sandy bottom habitat with minimal rocky reef habitat. The sandy bottom habitat type supports only a small fraction of the biomass supported by traditional rocky reef habitat. In 2006, fish abundance counts documented higher levels of marine life present at the RBGS Intakes Units 7 and 8 than present at the ESGS intake. Sampling efforts at the RBGS Intake 7 and 8 yielded a mean fish density of 828 fish/1,000 m³ while intake sampling at the ESGS yielded a mean fish density of 516 fish/1,000 m³. The RBGS Units 1-6 intake, which is located within King Harbor, had a mean fish density of more than 1000 fish/1,000 m³. Due to the increased fish density, selection of the AES Redondo Beach Generating Station Alternative would increase the Project's impacts to marine biological resources, but impacts would remain less than significant under CEQA.

Biological Resources – Terrestrial

Like the ESGS, the industrial setting of the RBGS property is generally not supportive of biological resources. As such, construction and operation of an ocean water desalination facility at the RBGS would result in similar less than significant impacts on terrestrial biological resources as those identified under the proposed Project. In contrast to the ESGS, the RBGS is entirely surrounded by developed land uses and does not directly border open space land uses (i.e., the narrow strip of shoreline west of the ESGS fence line). As such, this alternative would further reduce the Project's less than significant impacts to special status species.

However, several areas of the RBGS have been delineated as coastal zone wetlands based on the California Coastal Commission's "one parameter definition" that only requires evidence of a single parameter to establish a wetland condition (CEC 2014).¹⁶ The RBGS supports five areas totaling 5.93 acres which meet this definition, including a constructed pit and former Fuel Tank Basins 1 through 4. This area includes the area contemplated for the RBGS desalination facility in the northern portion of RBGS. It should be noted that the wetlands occurring in the basins are the result of the removal of Fuel Tank Basins 1 through 4, where groundwater seeping through the bottom of the wetland has allowed brackish water to pond and wetland vegetation to grow. As such, this alternative would likely involve significant impacts to California Coastal Commission wetlands.

The AES Redondo Beach Generating Station Alternative would also involve the installation of desalinated water conveyance infrastructure within existing paved rights-of-way that are generally devoid of terrestrial biological resources. As such, it is anticipated that installation of the AES RBGS conveyance infrastructure would involve less than significant impacts to terrestrial biological resources that are comparable to the proposed Project.

Similarly, onshore installation activities related to the screened ocean intake and concentrate discharge structures would occur in developed areas that avoid terrestrial biological resources. As with the proposed Project, a similar, less than significant impact would occur in this regard with implementation of the mitigation measures.

Cultural Resources

Like the proposed Project, development of the AES Redondo Beach Generating Station Alternative would occur at an existing developed power plant site. The RBGS main power building has local cultural importance (with a Wyland painting/mural on the side of the building),¹⁷ although this singular unique feature could likely be retained should the RBGS site be chosen for the Project's desalination facility. For this reason, it is likely that the AES Redondo

¹⁶ Note that Coastal Commission staff have asserted that a small portion of the RBGS site (four concrete-lined retention basins and a constructed pit) contains Coastal Commission jurisdictional wetlands (approximately 5.9 acres), which is disputed by AES (August 27, 2015 letter from the Coastal Commission to AES). This area in question includes areas contemplated for the RBGS desalination facility in the northern portion of the RBGS.

¹⁷ "Artist Wyland's famous 87' x 622' mural depicting the California gray whale may be viewed on the exterior wall of the AES Redondo Generating Station, 1100 North Harbor Drive, Redondo Beach, California. The mural is one of the artist's largest and most extraordinary works. It was created in 1991 as # 31 in a projected series of 100 life-size murals in 100 different cities around the world by the year 2011" (<http://www.seecalifornia.com/art/redondo-beach-wyland-whale-mural.html>).

Beach Generating Station Alternative would have similar less than significant impacts to cultural resources as compared to the proposed Project with the same or similar mitigation incorporated.

Geology and Soils

Both the ESGS and the RBGS are underlain by typical coastal geology comprised of sandy loam and clay that are suitable for construction. According to the Alquist-Priolo Earthquake Fault Zone Map – Redondo Beach Quadrangle, the RBGS site is not affected by a state-designated AP Earthquake Fault Zone (CGS 2016a). However, the RBGS is delineated by the Alquist-Priolo Earthquake Fault Zone Map – Redondo Beach Quadrangle as being in a Zone of Required Investigation for Liquefaction (CGS 2016b). The RBGS is not located in a Zone of Required Investigation for properties affected by lateral spreading or seismically-induced landslides. Implementation of an ocean water desalination facility sited at the RBGS would be subject to the same mitigation measures as identified for the Ocean Water Desalination Project. Like the proposed Project, construction and operation of an ocean water desalination facility at the RBGS is not anticipated to involve significant impacts to geology and soils with mitigation incorporated.

Greenhouse Gas Emissions

The AES Redondo Beach Generating Station Alternative would involve a similar construction duration and scope of activities as those proposed under the Ocean Water Desalination Project at the ESGS North Site, and slightly less GHG emissions compared to the Project at the ESGS South Site due to reduced construction-related GHG emissions as compared to the ESGS South Site. The RBGS site would have similar GHG emissions as the proposed Project with similar impacts and mitigation.

Hazards and Hazardous Materials

Like the proposed Project, construction and operation of the AES Redondo Beach Generating Station Alternative would also require the transportation, use, and disposal of hazardous materials. There are several known or suspected sources of contamination present at the RBGS Site, and the RBGS is listed as a Department of Toxic Substances Control (DTSC) EnviroStor site. According to the DTSC, the RBGS has historically stored hazardous waste materials in non-permitted wastewater retention ponds which have subjected the site to soil contamination. Potential contaminants of concern include total chromium, polychlorinated biphenyls (PCBs), vanadium and other compounds (DTSC 2016). As the RBGS currently entails a similar land use to the proposed Project (electrical generating station), the site's industrialized nature may reveal similar sources of contamination as those identified at the proposed Project location. As with the proposed Project, any soils disturbance activities for a desalination facility at the RBGS may potentially result in the exposure of construction workers or facility employees and the public to hazardous materials. As such, construction and operation of the AES Redondo Beach Generating Station Alternative would also be subject to the same or similar mitigation measures proposed under the proposed Project. For these reasons, it is likely that an ocean water desalination facility sited at the RBGS would have similar less than significant impacts to hazards and hazardous materials with mitigation incorporated as compared to the proposed Project.

Hydrology and Water Quality

Selection of the AES Redondo Beach Generating Station Alternative would involve similar less than significant construction-related impacts to onshore hydrology and water quality, as implementation of this alternative would involve a construction intensity and duration comparable to the proposed Project. Onshore activities occurring at the AES RBGS would be subject to the same hydrology and water quality mitigation measures, and as such, this alternative would also involve less than significant impacts to hydrology and water quality. The RBGS site would have less exposure to coastal hazards due to its location further inland and protection afforded by the wider beach section, intervening structures, and King Harbor.

Receiving water quality at the RBGS is affected by local hydrology, currents, stormwater runoff, industrial discharges, and ship traffic. In addition, receiving water within King Harbor is generally isolated from open coastal circulation as well as from normal wave and surf-induced turbulence, and is greatly affected by anthropogenic activities such as boating. The ambient receiving water quality at the RBGS is inferior to that at the ESGS due to the site's intake location at the head of the Redondo Beach Submarine Canyon. Regular occurrences of nutrient upwelling from the Redondo Beach Submarine Canyon would subject an ocean intake to the effects of detritus and nutrient loading; therefore, source water would require more extensive pretreatment as compared to the proposed Project. As such, it would likely be more difficult to achieve compliance with the California Ocean Plan water quality objectives for protection of marine aquatic life and NPDES wastewater treatment effluent limits under this alternative.

Land Use and Planning

The proposed Project is anticipated to have no impacts or less than significant impacts related to dividing an established community or conflicting with applicable land use plan, policy, or regulation. The RBGS site is zoned P-GP (Generating Plant) which is a "conditionally permitted use" in the city of Redondo Beach LCP. Construction and operation activities for the AES Redondo Beach Generating Station Alternative would be required to comply with the same mitigation measures described under the proposed Project and thus this alternative would yield similar land use impacts to the proposed Project.

Noise

The AES Redondo Beach Generating Station Alternative would have similar construction and operational noise impacts as those identified for the ESGS, as the RBGS would require similar construction and would adhere to the same mitigation measures prescribed for the Project. The AES RBGS property is generally surrounded by commercial development on three sides, with residential uses that abut the site's northern boundary and one mixed-use area at the property's southern boundary (hotel).

Thus, implementation of this alternative would also subject sensitive receptors to ocean water desalination facility construction noise. Similar, significant and unavoidable temporary construction-related noise impacts would occur in this regard as compared to the proposed Project.

Public Services

The AES Redondo Beach Generating Station Alternative would have similar construction and operational impacts to public services as those identified for the proposed Project. Like the proposed Project, implementation of an ocean water desalination facility at the RBGS would require compliance with several regulations, including those related to fire, police, parks, and library services. West Basin would pay all applicable development impact fees. Thus, this alternative would also involve similar less than significant public services impacts as compared to the proposed Project.

Recreation

The proposed Project would not significantly impact recreational facilities. Similar to the proposed Project, impacts would be less than significant.

Transportation and Traffic

Implementation of this alternative would involve significant increase in traffic on PCH during construction. This would result in greater traffic impacts (which would be less than significant) than the Proposed Project. Like the proposed Project, operation of an ocean water desalination facility at the AES RBGS would not involve significant operational impacts to transportation and traffic, as facility operation would require minimal staffing levels and thus would not generate a significant increase in trips.

Utilities and Service Systems

The AES Redondo Beach Generating Station Alternative would entail similar construction-related and operational impacts to utilities and service systems as those identified for the proposed Project. Construction of the AES Redondo Beach Generating Station Alternative would assume a similar intensity and duration as the proposed Project, and operation of an ocean water desalination facility at the RBGS would involve identical daily operations as the proposed Project. Construction and operation of the AES Redondo Beach Generating Station Alternative would be required to comply with the same mitigation measures described under the Ocean Water Desalination Project and thus this alternative would yield similar less than significant impacts to utilities and service systems as those identified for the proposed Project.

Conclusion

Implementation of the AES Redondo Beach Generating Station Alternative would generally result in similar construction-related and operational impacts across a majority of the 15 environmental topic impact areas discussed in this EIR, as this alternative would construct and operate a screened ocean intake, concentrate discharge structure, ocean water desalination facility, and desalinated water conveyance system at a site involving similar land uses as the proposed Project.

As described previously, the PMP provides an assessment of the RBGS and ESGS using several technical, economic, environmental, and social performance criteria; refer to PMP Tables 3-7 through 3-10. According to the PMP, the available space at the RBGS site (approximately 15 acres) could allow for greater construction site access and design flexibility as compared to the

proposed Project. It should be noted that the Redondo Beach Energy Project proposes to use a portion of this area for temporary construction staging activities as well as permanent aboveground facilities (CEC 2014). Therefore, the available acreage is likely much less than previously identified in the PMP, and, as noted previously, the site's availability and regulatory constraints are questionable given current efforts to sell and redevelop the site.

The PMP also explains that a desalination facility located at the RBGS site would require a more widespread network of conveyance facilities, as the ESGS site is located in closer proximity to existing MWD feeders. The PMP notes that a desalination facility sited at the RBGS could entail more extensive site redevelopment restrictions from AES (the RBGS property owner) as opposed to those stipulated by NRG for use of the ESGS site, and Project permitting is anticipated to be more extensive at the RBGS site due to current site availability uncertainty.

This alternative would satisfy the Project objectives as identified above. The RBGS site would generally have greater marine impacts as compared to the ESGS site due to greater larval abundance and associated increased mitigation requirements, but impacts would remain less than significant. The RBGS site would generally have reduced onshore environmental impacts as compared to the ESGS South Site and similar impacts when compared to the ESGS North Site. If the site were to become available, the 5.9-acre area of disputed coastal wetlands were to be satisfactorily resolved, and site development were to be supported by the City of Redondo Beach, the RBGS Site would remain under consideration by West Basin as an alternative to the ESGS South Site.

7.3.3 Design Alternative: Reduced Capacity Alternative

Description of Alternative

As noted above, the proposed Project could be implemented to meet the West Basin service area demands at a local scale (20 MGD Local Project) or a regional scale (60 MGD Regional Project). For the purposes of the Reduced Capacity Alternative, the Project would only produce 10 MGD of desalinated water to be distributed to the West Basin local service area. Project component siting would remain unchanged under the Reduced Capacity Alternative; however, this alternative would not involve any of the Project components identified for implementation of the Regional Project (e.g., regional pump station, regional pipeline optional alignments). The remaining water projected by the 2015 UWMP which would have been produced through implementation of a Local Project would be provided through continued increased reliance on imported water supplies.

The PMP compares the future implementation of a 10 MGD facility versus a 20 MGD or 60 MGD facility, and notes that a 10 MGD desalination facility would entail reduced total capital costs and operational-related costs as compared to those required for larger implementation alternatives. Also, a 10 MGD facility would reduce operational power demands (approximately 6.1 MW) as compared to implementation of a 60 MGD facility (approximately 36.9 MW). However, the construction costs would only be slightly reduced, resulting in the 10 MGD project costing slightly more than the 20 MGD project on a per acre-foot basis or a per MGD basis, when factoring in design, construction, and operation/maintenance.

Ability to Meet Project Objectives

- Diversify West Basin’s water source portfolio to increase reliability in the near and intermediate term (5–15 years) and the long term (15–30 years) by reducing future imported water allocation and rationing impacts:** The Reduced Capacity Alternative would partially satisfy the Project objective to diversify West Basin’s water source portfolio by reducing future imported water allocation and rationing impacts, though not to the extent of the Local Project or Regional Project due to the smaller amount of produced potable water and would not meet the reliability goal for multiple dry years stated in the 2015 UWMP.
- Improve water security through West Basin’s increased local control of water supplies and infrastructure:** This alternative would partially satisfy the Project objective to improve water security through West Basin’s local control of water supplies, though not to the extent of the Project or Regional Project due to the smaller amount of produced potable water.
- Improve West Basin’s local control of future water costs and increased long-term price stability:** This alternative would introduce a locally controlled water supply that would improve West Basin’s control of future water costs and increased long-term price stability.
- Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** The Reduced Capacity Alternative would improve climate resiliency by developing a water source that is less susceptible to hydrologic variability.
- Develop a potable water supply that is economically viable and environmentally responsible:** The Reduced Capacity Alternative would satisfy the Project objective to develop a potable water supply that is economically viable and environmentally responsible, although to a lesser extent than the Project.

Environmental Impacts of the Proposed Alternative

Unless noted otherwise, the analysis below compares this alternative’s impacts to each respective environmental topic area compared to both the Local and Regional Projects. Refer also to Table 7-4 for a comparison of this alternative’s impacts in relation to the proposed Local Project.

Aesthetics

As with the proposed Project, implementation of the Reduced Capacity Alternative would involve siting an ocean water desalination facility at the ESGS and would not result in any substantial new sources of light or glare. This alternative would also be subject to Coastal Act Section 30251. The 10 MGD Reduced Capacity Alternative would be expected to have similar, less than significant impacts after incorporation of mitigation measures, somewhat reduced in comparison to the Local Project due to a slight reduction in overall building massing and opportunities to shift some facilities further north away from the residential uses located south of 45th Street.

Air Quality

As with the proposed Project, the Reduced Capacity Alternative would result in significant temporary construction emissions, slightly reduced in comparison to the proposed Project due to potentially reduced construction-related grading and reduced operations-related indirect air emissions.

Biological Resources – Marine

The Reduced Capacity Alternative would involve similar, yet reduced, less than significant impacts to marine biological resources due to reduced ocean water intake and associated reduced levels of ichthyoplankton entrainment and reduced amounts of concentrate discharge. Implementation of this alternative would be subject to the same mitigation measures identified for the proposed Project.

Biological Resources – Terrestrial

Construction and operation of the Reduced Capacity Alternative would involve similar less than significant impact to terrestrial biological resources as compared to the proposed Project and would be required to demonstrate compliance with the mitigation measures identified for the Ocean Water Desalination Project. Conveyance infrastructure and terrestrial installation activities for the screened ocean intake and concentrate discharge structure would also be similar to those described under the proposed Project (although conveyance lines may be slightly reduced in diameter, the construction-related impacts would be similar). Less than significant impacts to terrestrial biological resources would occur in this regard.

Cultural Resources

Development of the Reduced Capacity Alternative would occur in the same footprint as the proposed Project. For this reason, selection of this alternative would result in similar less than significant impacts to cultural resources as compared to the proposed Project.

Geology and Soils

Implementation of the Reduced Capacity Alternative would occur in the same geologic setting as the proposed Project. As such, this alternative would be subject to the same mitigation measures as identified for the proposed Project. Like the proposed Project, construction and operation of the Reduced Capacity Alternative is not anticipated to involve significant impacts to geology and soils with mitigation incorporated.

Greenhouse Gas Emissions

Construction and operation of a Reduced Capacity Alternative would have fewer greenhouse gas emissions. Total GHG emissions would be reduced in comparison to the proposed Project due to a slight reduction in construction emissions and approximately 50% reduction in operational GHG emissions (prior to mitigation) due to reduced water production and hence reduction in the overall energy demands. However, the embedded GHG intensity, expressed in terms of MT CO₂e per volume of water produced would remain the same. In addition, this alternative could result in increased imported water as compared to the proposed Project (although not increased compared to existing conditions).

Hazards and Hazardous Materials

Like the proposed Project, construction and operation of the Reduced Capacity Alternative would also require the transportation, use, and disposal of hazardous materials. As such, construction and operation of this alternative would also be subject to the same mitigation measures as the Ocean Water Desalination Project. Therefore, it is likely that the Reduced Capacity Alternative

would also entail similar less than significant impacts to hazards and hazardous materials as compared to the proposed Project.

Hydrology and Water Quality

Selection of the Reduced Capacity Alternative is anticipated to yield similar, yet slightly reduced, construction-related and operational impacts to hydrology and water quality, as the ocean water desalination facility would encompass the same footprint as identified for the proposed Project, with a reduction in the total volume of concentrate discharge due to reduced ocean water intake and brine production. Activities occurring under this alternative would be subject to the same hydrology and water quality mitigation measures as the proposed Project. As such, the Reduced Capacity Alternative would also involve less than significant impacts to hydrology and water quality.

Land Use and Planning

The proposed Project is anticipated to have no impacts or less than significant impacts related to applicable land use plans, policies, or regulations. Construction and operation activities for the Reduced Capacity Alternative would be required to comply with the same mitigation measures described under the Ocean Water Desalination Project and thus this alternative would generally yield similar less than significant land use impacts as compared to the proposed Project.

Noise

Implementation of Mitigation Measures identified for the proposed Project would reduce noise from Project construction and operations. Construction of the ocean water desalination facility would result in significant construction-related noise impacts to adjacent noise sensitive receptors (residential uses). The Reduced Capacity Alternative would involve the same construction activities as the proposed Project, thus this alternative would yield similar construction and operational noise impacts as those identified for the ESGS and would adhere to the same mitigation measures prescribed for the Project.

Public Services

The Reduced Capacity Alternative would involve similar construction and operational impacts to public services as those identified for the proposed Project. Like the proposed Project, West Basin would pay all applicable development impact fees, including those related to fire, police, parks, schools and library services. Thus, this alternative would also involve similar less than significant public services impacts as compared to the proposed Project.

Recreation

Selection of the Reduced Capacity Alternative would involve similar construction and operational impacts to existing and proposed recreational facilities as identified under the Local Project, and would be subject to the mitigation measures as the proposed Project. Similar, less than significant impacts would occur in this regard.

Transportation and Traffic

Implementation of the Reduced Capacity Alternative would involve similar construction duration as proposed for the Ocean Water Desalination Project. As such, implementation of this alternative would also involve less than significant construction-related impacts to transportation and traffic. Like the proposed Project, operation of a 10 MGD ocean water desalination facility would not involve significant operational impacts to transportation and traffic, as facility operation would require minimal staffing levels and would generate few peak hour trips.

Utilities and Service Systems

The Reduced Capacity Alternative would entail similar construction-related and operation impacts to utilities and service systems as those identified for the proposed Project. Construction and operation of the Reduced Capacity Alternative would be required to comply with the same mitigation measures as the proposed Project, and thus this alternative would yield similar less than significant impacts to utilities and service systems.

Conclusion

The Reduced Capacity Alternative would not eliminate the Local Project's significant and unavoidable impacts to temporary construction noise or air emissions. Most of the physical improvements for the Local Project would still be required and, as such, construction-related impacts would remain largely the same.

The Reduced Capacity Alternative would not reduce West Basin's dependence on imported water as substantially as the proposed Project. For these reasons, the Reduced Capacity Alternative is not presently under consideration.

7.3.4 Layout Alternative: Reduced Elevation – ESGS South Site Plan Alternative

Description of Alternative

Under the Reduced Elevation – South Site Plan Alternative, West Basin would develop an ocean water desalination facility at the ESGS South Site that would have an aboveground roof elevation approximately at-grade with the existing landscaped berm present at the site's southern boundary. The Reduced Elevation—South Site would involve substantial additional excavation activities in order to further reduce impacts to public views along 45th Street and the Marvin Braude Coastal Bike Trail. The conceptual site plan design is based on reducing the building rooftops by approximately 10 feet along 45th Street West as compared to the proposed Project. For the Local Project, this would even further reduce potential impacts that are already reduced to less than significant levels. For the Regional Project, this additional excavation would reduce building rooftop visibility such that visual impacts of the Regional Project would be reduced.

Ability to Meet Project Objectives

- **Diversify West Basin's water source portfolio to increase reliability in the near and intermediate term (5–15 years) and the long term (15–30 years) by reducing future imported water allocation and rationing impacts:** The Reduced Elevation – South Site

Plan Alternative would satisfy the Project objective to diversify West Basin’s water source portfolio by reducing future imported water allocation and rationing impacts.

- **Improve water security through West Basin’s increased local control of water supplies and infrastructure:** This alternative would satisfy the Project objective to improve water security through West Basin’s local control of water supplies and infrastructure.
- **Improve West Basin’s local control of future water costs and increased long-term price stability:** This alternative would introduce a locally controlled water supply that would improve West Basin’s control of future water costs and increased long-term price stability.
- **Improve climate resiliency by developing a water source that is less susceptible to hydrologic variability:** The Reduced Elevation – South Site Plan Alternative would improve climate resiliency by developing a water source that is less susceptible to hydrologic variability.
- **Develop a potable water supply that is economically viable and environmentally responsible:** The Reduced Elevation – South Site Plan Alternative would likely be economically viable. However, substantial additional construction costs associated with the increased volume of excavated soils required for this alternative would reduce the economic viability of this alternative in comparison to the Project. In addition, while this alternative reduces the visual impacts of the Regional Project, it would eliminate visual impacts. Finally, this alternative would substantially increase construction-related environmental impacts, such as grading emissions, off-site truck haul traffic and associated emissions, dewatering, noise, and vibration.

Environmental Impacts of the Proposed Alternative

Unless noted otherwise, the analysis below compares this alternative’s impacts to each respective environmental topic area compared to both the Local and Regional Project. Refer also to Table 7-4 for a comparison of this alternative’s impacts in relation to the proposed Local Project.

Aesthetics

As with the proposed Project, implementation of the Reduced Elevation – South Site Plan Alternative would involve a land use similar in character and scale to the area’s existing industrial nature and would not result in any substantial new sources of light or glare.

Under the Reduced Elevation – South Site Plan Alternative, West Basin would construct an ocean water desalination facility with a roof elevation roughly at-grade with the existing landscaped berm that forms the site’s southern boundary. Accordingly, the Reduced Elevation – South Site Plan Alternative would reduce the proposed Project’s less than significant aesthetic impacts related to existing scenic views.

Air Quality

The Project would result in similar significant impacts to air quality even after implementation of mitigation measures. The Reduced Elevation – South Site Plan Alternative would increase the Project’s potential air quality impacts, due to increased construction-related emissions due to additional grading and off-site truck hauling required. Total construction duration at the ESGS site would be extended due to the additional excavation, prolonging the time that adjacent residential uses are exposed to construction-related dust and emissions.

Biological Resources – Marine

The Reduced Elevation – South Site Plan Alternative would not alter any of the offshore components identified for the proposed Project. For this reason, selection of this alternative would involve identical impacts to marine biological resources as compared to the proposed Project and would be subject to the mitigation measures required for the proposed Project. No significant impacts are anticipated with this alternative with respect to marine biological resources, similar to the proposed Project.

Biological Resources – Terrestrial

The industrial setting of the ESGS property is not supportive of biological resources. As such, construction and operation of the Reduced Elevation – South Site Plan Alternative would involve similar less than significant impact to terrestrial biological resources as compared to the proposed Project and would be required to demonstrate compliance with the and mitigation measures required for the proposed Project. Conveyance infrastructure and terrestrial installation activities for the screened ocean intake and concentrate discharge structure would be identical to those described under the proposed Project. Less than significant impacts to terrestrial biological resources would occur in this regard.

Cultural Resources

Development of the Reduced Elevation – South Site Plan Alternative would occur within the same footprint as the proposed Project. This alternative would involve excavations greater than 8 feet, which would extend into Quaternary alluvial deposits that have the potential to reveal significant vertebrate fossil remains. As with the proposed Project, standard construction practices and EIR mitigation measures are anticipated to reduce this impact to less than significant levels. For this reason, selection of this alternative would result in similar less than significant impacts to cultural resources as compared to the proposed Project after compliance with the mitigation measures required for the proposed Project.

Geology and Soils

Implementation of the Reduced Elevation – South Site Plan Alternative would occur in the same geologic setting as the proposed Project (ESGS property), and as such would likely involve similar impacts to geology and soils. This alternative would be subject to the same mitigation measures as the proposed Project. Construction activities for the El Segundo Power Facility Modification have previously identified the presence of shallow groundwater levels ranging from 7 to 11 feet below ground surface on the ESGS site, and the final engineering geology report prepared for the redevelopment of Units 5 through 8 indicate that subsurface soil conditions at the ESGS are likely conducive of liquefaction. Construction would require special measures to address dewatering, vibration, construction noise, and increased depths for sheet metal and other temporary construction shoring. Impacts would be slightly greater than the proposed Project.

Greenhouse Gas Emissions

This alternative would increase GHG emissions associated with construction due to additional construction-related grading. GHG impacts during operational phase would be similar to the proposed Project.

Hazards and Hazardous Materials

Like the proposed Project, construction and operation of the Reduced Elevation – South Site Plan would also require the transportation, use, and disposal of hazardous materials. As such, construction and operation of this alternative would also be subject to the mitigation measures required for the proposed Project. The increased excavation activities required for implementation of this alternative would increase the Project's less than significant impacts related to sources of contaminated soils, soil gas, and groundwater at the ESGS due to increased excavation and dewatering of areas known to contain contaminated groundwater. Therefore, it is likely that the Reduced Elevation – South Site Plan would increase construction-related impacts of the proposed Project but not to a level of significance. This alternative would result in similar less than significant operational impacts to hazards and hazardous materials as compared to the proposed Project.

Hydrology and Water Quality

Selection of the Reduced Elevation – South Site Plan Alternative would involve similar construction-related and operational impacts to hydrology and water quality, as the ocean water desalination facility would encompass the same footprint as identified for the proposed Project. Activities occurring under this alternative would be subject to the same hydrology and water quality mitigation measures as the proposed Project. The increased excavation activities required for implementation of this alternative would exacerbate the Project's less than significant impacts related to sources of contaminated groundwater at the ESGS. As such, the Reduced Elevation – South Site Plan Alternative would increase the Project's construction-related impacts to hydrology but not to a significant level. This alternative would result in similar less than significant operational impacts to hydrology and water quality.

Land Use and Planning

The Ocean Water Desalination Project at the ESGS site is anticipated to have no impacts or less than significant impacts related to land use and planning. Construction and operation activities for the Reduced Elevation – South Site Plan Alternative would be required to comply with the same mitigation measures described under the Ocean Water Desalination Project and thus this alternative would yield similar less than significant land use impacts as compared to the proposed Project.

Noise

Implementation of mitigation measures described for the proposed Project would reduce Project construction and operational noise. Ocean water desalination facility construction-related noise impacts would be significant for the proposed Project. The Reduced Elevation – South Site Plan Alternative would involve increased grading and soils export activities that would extend the ocean water desalination facility's construction duration. As such, this alternative would increase the Project's significant and unavoidable construction-related noise impacts for the ocean water desalination facility at the South Site, even with adherence to the same mitigation measures prescribed for the Project.

Public Services

The Reduced Elevation – South Site Plan Alternative would have similar construction and operational impacts to public services as those identified for the proposed Project, and West Basin would make a best faith effort to pay all relevant development impact fees, including those related to fire, police, parks, schools and library services. Thus, this alternative would also involve similar less than significant public services impacts as compared to the proposed Project.

Recreation

Selection of the Reduced Elevation – South Site Plan Alternative would involve similar construction and operational impacts to existing and proposed recreational facilities as identified under the proposed Project, and would be subject to the mitigation measures required for the proposed Project. Similar, less than significant impacts would occur in this regard.

Transportation and Traffic

The increased excavation and materials export necessary for implementation of Reduced Elevation – South Site Plan Alternative would extend the Project's construction duration and would involve additional truck trips to accommodate the alternative's additional soils export. The Reduced Elevation – South Site Plan Alternative would increase export of material compared to the proposed Project. The additional materials export required for the Reduced Elevation – South Site Plan Alternative would increase the Project's construction-related impacts to transportation and traffic. Like the proposed Project, operation of the Reduced Elevation – South Site Plan Alternative would not involve significant operational impacts to transportation and traffic, as facility operation would require minimal staffing levels and thus would not generate a significant increase in trips.

Utilities and Service Systems

The Reduced Elevation – South Site Plan Alternative would entail similar construction-related and operation impacts to utilities and service systems as those identified for the proposed Project. Construction and operation of the Reduced Elevation – South Site Plan Alternative would be required to comply with the same mitigation measures required for the proposed Project and thus this alternative would yield similar less than significant impacts to utilities and service systems as identified for the proposed Project.

Conclusion

The Reduced Elevation – South Site Plan Alternative could be selected in order to minimize the aesthetic impact to neighboring residential land uses. The proposed Project would incorporate mitigation measures to ensure the ocean water desalination facility is designed and operated in a manner that reduces potential conflict with the existing visual character and aesthetic quality of the ESGS site and its surroundings.

Although this alternative would satisfy the Project objectives identified above, it would not eliminate the Project's potentially significant impact to air emissions and construction noise. The additional excavation and materials export would substantially increase the Project's construction-related impacts to air quality, greenhouse gases, dewatering, noise/vibration, and

traffic and transportation. The Reduced Elevation – South Site Plan Alternative remains under consideration and may be considered by the West Basin Board of Directors for approval.

7.4 Environmentally Superior Alternative

Pursuant to CEQA Guidelines Section 15126.6(e)(2), “If the environmentally superior alternative is the ‘no project’ alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.” The “No Project” Alternative is environmentally superior to the proposed Project. Based on the alternatives analysis in this chapter and that of the EIR as a whole, West Basin has concluded that the ESGS North Site is environmentally superior to the ESGS South Site, among Project site alternatives evaluated throughout this section.

Although both the ESGS South and North sites are under consideration, the ESGS North Site is considered environmentally superior for the following reasons:

- Substantially less grading, with associated reduction in construction-related noise and vibration, air emissions, dewatering, and off-site truck hauling.
- Overall lower profile visually, reducing the ESGS South Site (less than significant) visual impacts to local residences.
- Avoidance of proximity impacts to the Manhattan Beach community of El Porto, south of 45th Street.
- Reduced total construction time because of reduced grading and reduced length of ESGS interior raw water and brine conveyance lines.

The Reduced Capacity Alternative would reduce most or all of the Project’s identified (less than significant) impacts associated with ocean water intake, brine discharge, and energy consumption due to reduced product water production. However, this alternative would not avoid any of the proposed Project’s significant and unavoidable impacts related to air emissions and temporary construction-related noise; though impacts would occur over a slightly reduced duration. This alternative would not meet the reliability goal for multiple dry years contained in the adopted 2015 UWMP, which relied upon a 20 MGD facility. The Reduced Capacity Alternative would partially achieve the Project’s objectives, although at a proportionately reduced level by providing only 10 MGD of ocean desalination, thereby increasing (relative to the Project) West Basin’s continued reliance on imported water with associated reduction in relief toward constrained water supplies such as the Bay Delta, CRA, and groundwater and freshwater resources. For these reasons, West Basin is not considering the Reduced Capacity Alternative.

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