ATTACHMENT 5

MARINE BIOLOGY ENTRAINMENT
IN
ADDITIONAL RESPONSES TO COMMENTS ON THE FINAL EIR-03-05 FOR THE PRECISE DEVELPOMENT PLAN AND DESALINATION PLANT PROJECT

JUNE 13, 2006

Exhibit 1

ADDITIONAL RESPONSES TO COMMENTS ON THE FINAL EIR-03-05 FOR THE PRECISE DEVELOPMENT PLAN AND DESALINATION PLANT PROJECT SCH #2004041081 June 13, 2006

1.0 INTRODUCTION

The Final EIR for the Precise Development Plan and Desalination Plant project contains a comprehensive disclosure and analysis of potential environmental effects associated with the implementation of the Precise Development Plan and Desalination Plant project. In addition, the Final EIR contains responses to public comments received during the public review period held on the Draft EIR. Following publication of the Final EIR and distribution of responses to commenting parties, certain parties continued to submit comments up to and including testimony given at the project's public hearing held by the City of Carlsbad Planning Commission on the project on May 3, 2006. In order to address all issues raised by the public on the proposed project and provide comprehensive disclosure and documentation of environmental issues associated with the project, the following additional responses to comments are provided and are hereby incorporated into the Final EIR for consideration by the Carlsbad City Council.

A review of the materials submitted to the City and of the draft minutes of the May 3, 2006, Planning Commission Hearing, identified two primary issues that would benefit from additional clarification:

1) Operation of the desalination plant independent of the Encina Power Station (EPS); and,

2) Water conservation as an "alternative" to the proposed project.

2.0 BACKGROUND

Issue 1: Operation of the Desalination Plant as a stand alone facility – separate from the EPS

The description of baseline conditions and the basis for the analysis in the Final EIR assumes the continued operation of the Encina Power Station (EPS) within the parameters of its historical operating conditions. This approach is based on a determination by the City that such a baseline condition reflects reasonably foreseeable circumstances, and therefore appropriately characterizes existing baseline conditions, in accordance with guidance provided by CEQA. Moreover, all relevant city permits

specify that if the desalination plant were to operate independently, Poseidon or its successors would have to obtain new permits and undergo new CEQA compliance.

Certain public comments received on the EIR reflect different opinions on what is considered to be "reasonable" relative to assumptions for the continued operation of the EPS. Certain commentors asserted that shut-down of the EPS is relatively certain within the foreseeable future. These commentors further assert that the EIR analysis should take into account operation of the desalination plant under a scenario in which the EPS is no longer operating. While as noted above, the City believes it is reasonably foreseeable that EPS will continue to operate, the EIR does contain information that analyzes operation of the desalination plant in the absence of EPS operation. The following summary and clarification is provided to demonstrate more clearly that even if the EPS were to shut down permanently or for extended periods of time, the analysis and conclusions of the Final EIR are still accurate and valid.

Issue 2: Water Conservation as an "Alternative" to the Proposed Project

Comments received as a result of review of the Draft EIR suggest that additional or more aggressive water conservation efforts than are now being employed within the City of Carlsbad and the region could eliminate the need for the proposed project and should be addressed as an alternative to the proposed project. The EIR contains a discussion of water conservation efforts and how they relate to the proposed project, and in addition makes reference to the County Water Authority's Regional Water Facilities Master Plan, which also includes consideration of water conservation efforts relative to regional water supply. However, the information presented in these additional responses provides additional clarification and amplification on this issue.

3.0 CEQA REQUIREMENTS

CEQA Guideline Section 15088.5 states that, where the Final EIR has not yet been certified, recirculation for public review is not required unless "significant new information" is added to the document (CEQA Guideline, § 15088.5, subds. [a], [b]).

"Significant new information" requiring recirculation includes, for example, a disclosure showing that:

(1) A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.

(2) A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.

(3) A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the significant environmental impacts of the project, but the project's proponents decline to adopt it.

(4) The draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

None of these conditions exist with respect to the information contained in these additional responses and revisions to the Final EIR. Instead, the information provided merely clarifies and amplifies discussion already contained in the EIR, and provides background information on past policy decisions direction taken by the Carlsbad City Council. This information does not identify any new significant environmental effects, nor does it identify any increase in a previously identified significant effect. Further, information provided on project alternatives does not reveal a new alternative that could feasibly reduce any of the identified significant effects of the project. Therefore, recirculation is not required because the new information added to the EIR only clarifies, amplifies and makes insignificant modifications to an adequate EIR (CEQA Guideline, 15088.5, subd. (b)).

4.0 DISCUSSION

Issue 1: Operation of the Desalination Plant as a stand alone facility – separate from the EPS

The Lead Agency and the Applicant have analyzed the impacts of the project with and without the operations of the Encina Power Station (EPS). This information is included in the Final EIR and Appendix E thereto. The resource areas potentially impacted under the "No Power Plant Operation" scenario are (1) Aesthetics; (2) Air Quality (3) Marine Biology - brine discharge; (4) Marine Biology - entrainment/impingement; and (5) Land Use. The baseline used by the lead agency for measuring potential environmental impacts of the project under CEQA is the current physical environment ("With Power Plant Operation" scenario), including current operating conditions. However, the worst case scenario in the Final EIR analyzed the No Power Plant Operation scenario to determine the level of significance in the "historical extreme." The Final EIR contains substantial evidence that shows that the impacts from a No Power Plant Operation scenario to have the same level of significance as the With Power Plant Operation scenario for all of the impact areas.

To provide further clarification on the analysis provided for the No Power Plant Operation scenario, Section 3 of the Final EIR has been revised, and the excerpted text edits are included in Section 5.0 of these Additional Responses.

Aesthetics – The significance criteria (section 4.1.3) for Aesthetics in the Final EIR do not take into consideration the surrounding land uses when assessing visual impacts and thus the significance analysis will not change with or without the power plant in operation. Section 4.1.4 – Impacts - states that, "the project is not considered to have a substantial adverse effect on a scenic vista, or a substantially damaging effect on scenic resources because the proposed structure would represent a visual enhancement over what is currently located on the site (Page 4.1-3)." This enhancement of the area would occur with or without the operation of the EPS. Mitigation measures are proposed so that the project features are acceptable to the City of Carlsbad and conform to the City's long-term vision for the surrounding property, which includes relocation of the power plant to the back of the property and the transition of the front of the property to more public uses.

In June of 2002 the Carlsbad City Council, and in October of 2002 the Carlsbad Housing and Redevelopment Agency, adopted six principals to pursue negotiations for the purchase of water from Poseidon:

1. Improved water reliability and quality in both normal and drought periods at CWA [County Water Authority] water rates.
2. Maximize beach and lagoon access for the public.
3. Maximize open space and recreational opportunities for the public.
4. Redevelop Encina Power Plant to maximize its best public and private uses.
5. Desalination facility protected from power market fluctuations.
6. Accrue a positive economic benefit from the increased industrial development of the coastal corridor.

These principals were used to evaluate the project in addition to the Strategic Goals and 5-Year Vision Statements approved by the City Council. The project was found to be consistent with goal number 4 shown above (see pages 4.8-16 – 4.8.18 of the Final EIR), and would therefore not interfere with any future change in operation at the EPS.

Based on the clarification provided in this response, no revisions to the Final EIR text are considered to be necessary to further clarify aesthetic effects.

Air Quality. The potential indirect air quality impacts due to emissions from power generation for the desalination facility are analyzed in the Final EIR with and without the EPS as the source of power. (See page 4.2-18 of the Final EIR). The Final EIR (page 4.2-18) notes that "the desalination plant will not contain any electrical power generation facilities, and will purchase this electrical power from the local electric utility, or a power generator, broker or seller. At this time no contract has been signed for power purchases from any supplier." Because no supplier of electricity has been designated, the Final EIR

analyzed the indirect emission impacts from power generation for three different scenarios: (1) if power were purchased from EPS; (2) the local utility; (3) or another power provider. The second and third scenario analyzed the No Power Plant Operation scenario impacts studied in the Final EIR, and therefore there would be no change in the Final EIR significance findings if EPS were not operational.

Based on the clarification provided in this response, no revisions to the Final EIR text are considered to be necessary to further clarify air quality effects.

Marine Biology Brine. The Final EIR for the desalination plant used the "historical extreme" operation and level of salinity to evaluate the impacts to the marine environment. In Section 4.3, Biological Resources, the Final EIR notes on page 4.3-44 that, "the EPS can run with an "unheated discharge" (i.e., no power plant operation)." The Final EIR modeled impacts of unheated "historical extreme" for flow scenarios using a discharge of 254 million gallons per day, which would represent conditions under the No Power Plant Operation scenario. Therefore the "historical extreme" conditions modeled account for impacts related to operation of the desalination facility without power plant operation and flow rates that would be generated by the desalination plant being operated independently.

On page 4.3-45, the Final EIR notes that in the "historical extreme" the "highest bottom salinities were noted with the 'unheated' [i.e., No Power Plant Operation scenario] condition due to its reduced buoyancy." Again on that page, the Final EIR states that, "...to determine worst-case conditions, the unheated conditions are examined." Therefore the No Power Plant Operation scenario is the worst case condition studied by the Final EIR.

The Analysis of Significance – Elevated Salinity Exposure Effects section of the Final EIR (page 4.3-50) indicates that significant impacts are found at an extended salinity exposure level of 40 parts per thousand (ppt). The Final EIR (page 4.3-50) indicates that under the "historical extreme" the end of pipe salinity of 40.1 ppt "...is diluted across the ZID [zone of initial dilution] to about 38.2 ppt..." Also on page 4.3-50, the Final EIR concludes that "extended exposure to salinity levels above 40 ppt would be avoided under all proposed operating conditions (emphasis added)." The Final EIR (page 4.3-51) goes on to conclude that "since the 'historical extreme' scenarios under all operating conditions would not result in salinity levels exceeding this threshold for an extended period of time, impacts related to elevated salinities would not be significant (emphasis added)."

Therefore the No Power Plant Operation scenario, or "unheated discharge" condition has been analyzed in the Final EIR and the impacts from brine discharge in this worst-case scenario were found to be less than significant.

Based on the clarification provided in this response, no revisions to the Final EIR text are considered to be necessary to further clarify effects of brine discharge on marine organisms.

Marine Biology Entrainment. Data presented in Appendix E of the Final EIR (see *Carlsbad Desalination Facility Intake Effects Assessment* (draft), dated March 3, 2005, and prepared by Tenera Enviromental) supports a finding of no significant impact for entrainment. The referenced study demonstrates that entrainment of marine organisms at the EPS is a function of the volume of water flowing through the intake. If the desalination facility were to operate at 106 million gallons per day (MGD) under the No Power Plant Operation scenario, there would be 100% mortality resulting from impingement of the larval fish caught on the desalination plant screens and filters (106 MGD represents a total maximum withdrawal volume, which represents a worst case volume, as compared to the average withdrawal volume of 104 MGD). As shown in Table 1, the entrainment loss would represent between 0.6% and 11.8% of the EPS source water supply of larvae, depending on the fish group modeled. Assuming an additional 200 MGD was allowed to flow through the intake to the discharge channel for dilution of the concentrated seawater discharge from the desalination facility, there could be additional entrainment losses. The level of impact to the organisms and associated mortality due to the diversion of the dilution water under the No Power Plant Operation scenario will be less than the impact had the water been pumped through the condensers as is modeled under the With Power Plant Operation scenario. However, lacking data to document actual mortality under the No Power Plant Operation scenario mode of operation, the possible range is 0% to 100% mortality of the larval fish in the dilution water. Under these conditions the minimum larval fish entrainment loss for the desalination facility (106 MGD) and associated dilution water (200 MGD) would be 0.6% to 11.8% and the maximum would be 1.7% to 34.1%, depending on the design of the facility and species modeled. (Table 1).

Table 1

Desalination Facility's Estimated Entrainment Loss

Under No Power Plant Operation

Fish Group	Desalination Facility Entrainment Loss	Dilution Water Entrainment Loss	Minimum Combined Entrainment Loss	Maximum Combined Entrainment Loss
CIQ gobies	11.8%	0% – 22.3%	11.8%	34.1%

Combtooth blennies	5.7%	0% - 10.8%	5.7%	16.5%
Northern anchovy	0.6%	0% - 1.1%	0.6%	1.7%

Significance of Entrainment Losses. The loss of larval fish entrained by the EPS cooling water flows, whether the EPS is operating or not, are a small fraction of marine organisms from the abundant and ubiquitous near-shore source water populations. Using standard fisheries models for adult fishes, the loss of larvae (99 percent of which are lost to natural mortality) due to the desalination facility entrainment at 306 MGD would have no effect on the species' ability to sustain their populations, including the gobies at 34.1%. As noted in Table 1 above, gobies are not substantially impacted because of their widespread distribution and high reproductive potential due to spawning several times a year and are able to sustain conditional larval stage mortality rates of 34% and higher without a decline in adult population level. This absence of population level effects for adult gobies is especially true for the species' early larval stages. The sheer numbers of larvae that are produced by the adult gobies are resistant to the effects of both natural mortality and reasonably high levels of conditional mortality.

The most frequently entrained species are very abundant in the area of EPS intake, Agua Hedionda Lagoon, and the Southern California Bight so that the actual ecological effects due to any additional entrainment from the project at either level of plant operations are insignificant. Species of direct recreational and commercial value constitute a very small fraction (less than 1 percent) of the entrained organisms. Therefore, the operation of the desalination facility does not cause a significant ecological impact. California Department of Fish and Game (2002) in their Nearshore Fishery Management Plan provides for sustainable populations with harvests of up to 60 percent of unfished adult stocks. The incremental entrainment ("harvest") effect of larval fishes from the desalination facilities operations at 106 or 306 MGD is approximately 1 to 34 percent (depending on the species); losses that would have no significant effect on the source water populations to sustain themselves. Additionally, entrainment mortality losses are not harvests in the common sense, because the larval fish are not removed from the ocean, but are returned to supply the ocean's food webs – the natural fate of at least 99 percent of larvae whether entrained or not. Generally less than one percent of all fish larvae become reproductive adults.

Revisions to the Final EIR text have been made to provide additional clarification on entrainment effects under the No Power Plant Operation scenario. Excerpts of the revised text are included in Section 5.0 of these Additional Responses.

Marine Biology Impingement. The Applicant has calculated the approach velocity of the water flowing through the EPS intake under the No Power Plant Operation scenario and determined that the velocity would not exceed 0.5 feet per second. Under these

operating conditions, the intake would meet impingement mortality performance standards established in the revised 316(b) permitting requirements.

Revisions to the Final EIR text have been made to provide additional clarification on impingement effects under the No Power Plant Operation scenario. Excerpts of the revised text are included in Section 5.0 of these Additional Responses.

Land Use – The proposed project causes no significant impacts to land use and is consistent with existing land use plans with or without the existence and operation of the EPS. The project is consistent with the Public Utilities (U) land use designation in the General Plan and Zoning Ordinance and is consistent regardless of power plant operations.

In addition the project is consistent with the South Carlsbad Coastal Redevelopment Plan for the area and would continue to be consistent regardless of the operation of the power plant. The Final EIR (page 4.8-16) notes that, "The site of the desalination plant was specifically selected so as not to conflict with two redevelopment plan goals. The first goal relates to facilitating the conversion and possible relocation of the existing power plant to a smaller more efficient facility. The second goal relates to the enhancement of commercial and recreational opportunities in the plan area." Although any changes in the power plant configuration will require additional environmental review and approval, a siting study was conducted for the desalination plant in which five sites within the EPS property were reviewed to find a location for the desalination facility that was sensitive to the redevelopment plan goal and would "create the least amount of constraints on any future conversion of the Encina Power Station." (See pages 4.8-16 – 4.8.18 of the Final EIR for details.) Therefore any future changes to the EPS will not be affected by the siting of the desalination plant.

Based on the clarification provided in this response, no revisions to the Final EIR text are considered to be necessary to further clarify land use effects

Issue 2: Water Conservation/Recycled Water Only and Increased Conservation/Recycled Water as "Alternatives" to the Proposed Project

As discussed in Section 9 of the Final EIR (pages 9-1 to 9-7), a baseline assumption incorporated in the Final EIR analysis is that the water conservation and water recycling elements included in Carlsb ad Municipal Water District's 2000 Urban Water Management Plan (UWMP) and San Diego County Water Authority's 2004 Regional Water Facilities Master Plan (RWFMP) will be fully implemented. However, even with the targeted conservation and recycling in place, both the San Diego County Water Authority (CWA) and Carlsbad Municipal Water District (CMWD) identified a need for

additional local water in an amount equal to or greater than the project capacity. The update to the 2000 UWMP, approved in December 2005, continues to identify that need.

The RWFMP projected that in 2002, approximately 13,700 acre-feet of recycled water was used within CWA's service area annually. This number is projected to increase to over 53,000 acre feet per year by 2020. As noted in the Final EIR, while conservation is not technically a water supply "source", it is also an important strategy employed within the region to reduce demand for water supply. Water conservation programs are maintained by MWD, CWA and local water agencies.

Even though the Final EIR references the role of conservation and recycling in local and regional water supply management and the policy direction that has been pursued relative to water conservation and recycling, certain commenting parties indicated that additional conservation/recycling should be considered as a project alternative. A discussion of water conservation and recycling efforts is provided in the Final EIR to further clarify how conservation was a consideration that helped shape policy that relates to the proposed project. Specifically, consideration of water conservation and recycling as alternatives to the proposed project has been given in past policy making. However, the level of water conservation and recycling necessary to replace the need for the proposed project has been rejected as alternatives to the project primarily for public policy reasons that are further explained in the Final EIR.

Section 15126.6(c) of the CEQA Guidelines provides for discussion of any alternatives that were considered by the lead agency but were rejected as infeasible. Additionally, Section 15132(e) states that a Final Environmental Impact Report may consist of "any other information added by the Lead Agency." Staff has included revisions to the Final EIR text to provide additional clarification on the rationale for rejection of alternatives to the proposed project that involve additional conservation and/or recycling. The revised text is included in Section 5.0 of these Additional Responses.

5.0 FINAL EIR TEXT EDITS

The following are excerpts of portions of text from the EIR that have been revised as a result of these Additional Responses. Revisions that have been made as a result of these Additional Responses are noted in strike-through (deletions) and underline (additions) text.

The following text replaces text that appears in Section 3.3 of the EIR (Starting on Page 3-14, under the Subheading "Power Plant Baseline Operating Conditions"):

Power Plant Baseline Operating Conditions

The PDP will not modify the Encina power plant's permitted operating capacity. However, the following information is provided to accomplish the City's objective of establishing baseline conditions for identifying existing facilities and operations on site for the purpose of increasing knowledge and understanding about station operation and onsite facilities. It should be noted this project does not include any modifications that would affect the power plant's operating capacity.

Power generation capacity, as described in the NPDES Permit, is provided by a total of six power generator units[1]:

- Unit 1 – 107 megawatts (MW)
- Unit 2 – 104 MW
- Unit 3 – 110 MW
- Unit 4 – 287 MW
- Unit 5 – 315 MW
- Gas Turbine – 16 MW

All of these generating units have been designated as "Reliability Must Run" (RMR) by the ISO.[2] The RMR Generation designation represents the minimum generation (number of units or MW output) required by the ISO to be available to maintain system reliability. At full production output, the Encina power plant has the capability to directly or indirectly serve roughly half of the power demand for San Diego County.

Units 1 through 5 are steam turbine generators, each with its own boiler that generates heat up to 1005 degrees Fahrenheit. Purified water runs through the boilers turning to high-pressure steam that is used to spin the turbines to generate electricity. The plant relies on seawater to cool and condense the steam after its energy is expended spinning the turbine. Seawater flows into the Agua Hedionda Lagoon through the jetty west of Carlsbad Boulevard into the outer lagoon and into an intake channel located at the southwestern end of the lagoon. The seawater is then pumped into condensers to condense the steam on a non-contact heat transfer basis, and then is returned to the ocean via a discharge channel located to the south of the lagoon's confluence with the ocean.

The power plant cooling water discharge is regulated under a National Pollutant Discharge Elimination System (NPDES) permit, issued with the Regional Water Quality Control Board. The plant is currently permitted to discharge a maximum of

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1 NPDES Permit, Order No. 2003-03, Regional Water Quality Control Board, February 16, 2000.
2 California Independent System Operator website: www.caiso.com, accessed July 29, 2004.

approximately 860 million gallons per day (mgd) of cooling water. For purposes of this analysis, data for power plant operation includes records dating from 1980 to 2000. The generators identified above were phased in from the plant's initial construction in 1952 through 1978. Therefore, the dataset used in the EIR analysis represents operation of all production units, and is considered to provide data representing the current operational characteristics from which to analyze existing baseline conditions. With that being said however, the analysis of effects associated with seawater intake and discharge are evaluated based on conditions that represent two separate scenarios, with and without operation of the EPS. The average cooling water discharge rate over the 20-year period was 576 mgd. Daily average flow rates have not fallen below 304 mgd in the 20-year dataset. As noted in the analysis presented in Section 5 of this EIR, the 304 mgd flow rate is used as the worst case operating condition, under the assumption that the discharge is "unheated", which therefore represents conditions without operation of the EPS. For purposes of this discussion, this scenario is referenced as the "No Power Plant Operation" scenario.

The following text replaces text that appears in Section 4.3.4 of the EIR (Starting on Page 4.3-35, under the Subheading "Impingement Effect"):

Impingement Effect

- The desalination plant operation does not require the power plant to increase the quantity of water withdrawn nor does it increase the velocity of the water withdrawn.

- The Carlsbad Desalination Plant will not have a separate direct lagoon or ocean intake and screening facilities, and will only use cooling water that is already screened by the EPS intake.

- Under the No Power Plant Operation scenario, approach velocity of the water flowing through the EPS intake would not exceed 0.5 feet per second. Under these operating conditions, the intake would meet impingement mortality performance standards established in the revised 316(b) permitting requirements.

- Therefore, the Carlsbad Desalination Plant will not cause any additional impingement losses to the marine organisms impinged by the EPS, under the assumed baseline EPS operating conditions, and would not result in significant impingement effects under the No Power Plant Operation scenario.

The following text replaces text that appears in Section 4.3.4 of the EIR (Starting on Page 4.3-36, under the Subheading "Entrainment Losses"):

Entrainment Losses

- Based on in-plant testing, the average observed entrainment mortality of the power plant was 97.6 percent (2.4 percent survival). Living fish larvae entrained by the Carlsbad desalination plant would represent an incremental loss of approximately 0.01 to 0.28 percent of the larvae present in the power plant source water, assuming continued operation of the EPS. Under the No Power Plant Operation scenario, living fish larvae entrained by the Carlsbad desalination plant would represent a loss of approximately 0.6% to 34.1% of the source populations, depending on the final design of the desalination facility and on the species.

The cooling water intake structure is part of the EPS existing operations and is presently regulated under Section 316(b). The desalination plant feedwater withdrawal does not include a cooling water intake structure. Therefore, it is not subject to intake regulation under the Federal Clean Water Act (CWA) Section 316(b). However, since the desalination plant will withdraw intake seawater from the EPS discharge flow, the study was conducted consistent with the intent of Section 316(b), which requires that baseline conditions be established. ~~The desalination plant feedwater intake will not increase the volume, nor the velocity of the EPS cooling water intake nor will it increase the number of organisms entrained or impinged by the EPS cooling water intake structure. Therefore, the project would not result in any additional impingement effects of the EPS and therefore, impingement effects are not considered as significant impacts attributable to desalination plant operations.~~For purposes of this analysis, baseline conditions reflect quantities of larvae present in the sewater intake, regardless of whether the EPS is in operation or not.

Study Methodology: The study required an assessment of both the source water for the EPS (lagoon and ocean) and the discharge from the EPS (the desalination plant's feedwater supply). The source water was analyzed to establish population characteristics (relative abundance) for species potentially impacted by the desalination plant. The desalination plant feedwater was characterized to determine the baseline conditions for potential impacts associated with the desalination facility. Specifically, the feedwater characterization examined the type and quantity of organisms that survive entrainment through the EPS cooling water intake structure that could subsequently be impacted by the desalination plant operations.

The EPS source water was partitioned into lagoon and nearshore ocean areas for modeling purposes; ten sampling stations were chosen so that all source water community types would be represented, including five lagoon stations and five nearshore stations. Samples were also collected from EPS's discharge (desalination plant feedwater supply) just before the water flows into the power station's discharge pond.

Laboratory processing for both the feedwater and source water consisted of sorting (removing), identifying, and enumerating all larval fishes, pre-adult larval stages of *Cancer* spp. crabs, and California spiny lobster larvae from the samples. Identification of larval fishes was done to the lowest taxonomic level practicable.

Source Water Larval Abundance Estimates: Data collected from three source water surveys conducted on June 10, June 24, and July 6, 2004, included a total of 27,029 larval fishes, with 4,750 specimens collected from the five nearshore stations and the remaining 22,279 specimens from the lagoon stations. Two taxa comprised 84 percent of the total number of larval fishes collected from all surveys and source water stations combined: three species from the goby family (*Clevelandia ios, Ilypnus gilberti, Quietula y-cauda*) hereinafter referred to as CIQ gobies comprised 65 percent and combtooth blennies (*Hypsoblennius* spp.) comprised 19 percent. In addition, four species of target invertebrates were collected in the samples from both the lagoon and nearshore sampling stations: California spiny lobster (*Panulirus interruptus*, 93 specimens), yellow rock crab (*Cancer anthonyi*, 31 specimens), brown rock crab (*Cancer antennarius*, 4 specimens), and slender crab (*Cancer gracilis*, 2 specimens).

The mean concentration of CIQ goby larvae from all source water stations and surveys combined was approximately 4,900/1,000 m^3 and the mean concentration of combtooth blennies was approximately 1,200/1,000 m^3.

Feedwater (EPS Discharge) Larval Abundance Estimates: A total of 1,648 fish larvae was collected during two surveys of the EPS discharge water conducted on June 16 and July 6, 2004 (*Table 4.3-3*). Four taxa comprised 95 percent of all of fish larvae in the EPS discharge flows from which the proposed desalination plant would withdraw its feedwater supply. They were combtooth blennies, CIQ gobies, labrisomid kelpfishes (*Labrisomidae unid.*), and garibaldi (*Hypsypops rubicundus).* Gobies and blennies combined accounted for nearly 72 percent of the larvae identified in the feedwater. No target invertebrate larvae were found in any of the samples from the EPS discharge.

TABLE 4.3-3
Total Counts and Mean Concentrations of Larval Fishes from EPS Discharge

Taxon	Common Name	Total Count	Percent	Cum. Percent	Mean Concentration (#/1,000 m³)
Hypsoblennius spp.	combtooth blennies	766	46.48%	46.48%	1,119.89
CIQ gobies	CIQ goby complex	426	25.85%	72.33%	630.94
Labrisomidae unid.	labrisomid kelpfishes	205	12.44%	84.77%	291.66
Hypsypops rubicundus	garibaldi	174	10.56%	95.33%	230.14
Rimicola spp.	kelp clingfishes	13	0.79%	96.12%	17.54
Gibbonsia spp.	clinid kelpfishes	12	0.73%	96.84%	16.38
Engraulidae	anchovies	12	0.73%	97.57%	15.83
Gobiesocidae unid.	clingfishes	8	0.49%	98.06%	10.15
Sciaenidae	croakers	8	0.49%	98.54%	11.38
Blennioidei	Blennies	7	0.42%	98.97%	9.21
Atherinopsidae	Silversides	6	0.36%	99.33%	7.36
larval/post-larval fish unid.		3	0.18%	99.51%	3.50
Heterostichus rostratus	giant kelpfish	1	0.06%	99.58%	1.14
Syngnathus spp.	Pipefishes	1	0.06%	99.64%	0.92
Paralichthys californicus	California halibut	1	0.06%	99.70%	1.28
Chaenopsidae unid.	Clinids	1	0.06%	99.76%	0.92
Labridae	Wrasses	1	0.06%	99.82%	1.28
larvae, unidentified yolksac		1	0.06%	99.88%	2.45
Typhlogobius californiensis	blind goby	1	0.06%	99.94%	1.96
Agonidae unid.	Poachers	1	0.06%	100.00%	2.19
Total		1,648			

Feedwater Larval Survival Results: Eleven surveys to estimate the survival of larval fishes in the EPS discharge flow were conducted from June through November 2004. A total of 1,989 fishes was collected from the eleven surveys (*Table 4.3-4*). Larvae that were alive immediately after collection were placed in separate containers and observed for up to three hours after collection. Approximately half of the larvae continued swimming for up to two hours after collection while the others died between 0.5–1.5 hours after collection. The species of larvae that survived entrainment and sampling were CIQ gobies, combtooth blennies, and unidentified clingfishes. The highest concentration of larval fishes (2,444/1,000 m^3) was collected July 6, 2004, and the lowest concentration (93/1,000 m^3) was collected on October 21, 2004.

The average survey percent survival ranged from 0 percent (November 2 survey) to 9.2 percent (November 30 survey) (*Table 4.3-4*). The overall average percent survival based on an average of survival data from each sample containing fish (n=223 out of a 291 total surveys) is 2.40 percent with a standard deviation of 11.22. The average percent survival based on each survey's (n=11) average survival data is 2.71 with a standard deviation of 11.24 among survival averages for the 11 surveys. The surviving larvae that enter the desalination plant will be retained on the pretreatment filters, which could be either granular media facilities or membrane filters. The retained organisms will be removed from the pretreatment filters with the filter media backwash.

TABLE 4.3-4
Summary Of Larval Fish Data Collected During In-Plant Survival Studies From EPS Discharge Flows During June Through November 2004.

Date Collected	Number of Samples[1]	Total Volume Filtered (m^3)	Average Larval Fish Concentration (#/1,000 m^3) per Survey[2] (s.d. in parenthesis)	Total # Larvae Collected	Total # Alive upon Collection	Average % Survival per Survey[3] (s.d. in parenthesis)
6/16/2004	8	117	1,289.4 (754.2)	140	2	1.8 (4.7)
7/06/2004	9	112	2,443.8 (875.0)	276	13	4.3 (4.1)
7/20/2004	30	301	1,053.3 (674.6)	315	7	1.6 (4.0)
8/13/2004	30	339	564.4 (632.9)	192	2	0.005 (0.02)
8/26/2004	32	284	415.4 (350.9)	112	1	0.6 (3.2)

9/09/2004	31	342	2,027.5 (2,246.4)	590	4	0.5 (1.8)
9/23/2004	30	344	668.8 (1,134.6)	200	2	1.2 (5.5)
10/21/2004	31	347	93.0 (123.9)	31	1	5.9 (24.3)
11/02/2004	30	257	182.3 (161.9)	47	0	0
11/18/2004	30	271	132.9 (166.7)	34	2	4.6 (13.8)
11/30/2004	30	216	264.5 (291.6)	52	4	9.2 (24.2)

1. The number of samples per survey increased beginning July 20, 2004 when the duration of sampling increased to cover 24-hour periods.
2. The average larval fish concentration per survey was calculated by summing the individual sample concentrations and dividing by the number of samples in each survey.
3. The average percent survival per survey was calculated by summing the individual sample survival percentages and dividing by the number of samples containing fish larvae in each survey.

In order to assess any potential effects of the desalination facility feedwater withdrawal on local fishery resources, three taxa were selected: CIQ goby complex, combtooth blennies, and northern anchovy. These taxa were some of the most commonly entrained species in the EPS cooling water intake structure or were species (northern anchovy) that may be of interest to fishery managers. Larvae of species with high value to sport and commercial fisheries such as California halibut were entrained in such low numbers (approximately 0.06 percent of the total number of EPS-entrained larvae) that any effects on source water populations of these species could not be modeled.

Entrainment Effects Model: The Empirical Transport Model (*ETM*) used in the analysis is based on principles used in fishery management. To determine the effects of fishing on a population, a fishery manager needs an estimate of the number of fishes in the population and the number of fishes being *removed* by the fishery. ETM is recommended and approved by the California Energy Commission (CEC), California Coastal Commission (CCC), Regional Water Quality Control Boards and other regulatory and resources agencies for analyzing impacts to fisheries. This assessment assumes 100 percent mortality of all organisms surviving the EPS upon withdrawal into the desalination facility.

The *ETM* first takes the estimate of daily mortality (also known as Proportional Entrainment (*PE*)), and expands the estimate over the number of days the larvae from a single cohort, or batch of larvae, would be exposed to entrainment. The ETM thereby predicts regional effects on appropriate adult populations. Finally, the effects of

entrainment are examined in the context of survival data collected from the EPS discharge.

The estimate of daily incremental mortality, or proportional entrainment (*PE*), was computed as the ratio of the number of larvae in the water withdrawn by the proposed facility to the number of larvae in the surrounding source water. The average concentration of larvae in the feedwater, as noted in Table 4.3-4, was multiplied by desalination facility's maximum feedwater withdrawal volume of 401,254 m^3/day (106 mgd). A total maximum withdrawal volume of 106 mgd (as compared to average withdrawal of 104 mgd) was used as a worst case volume, under a scenario where maximum backwash water volumes would be used during a period of maximum RO production.

Average concentrations of larval fishes from the source water survey data were multiplied by the volume estimates for each of the water body segments (total of three lagoon and nine nearshore areas) and then combined to estimate the average source water population.

The estimated effects of withdrawal for desalination operations on a single cohort of larvae were calculated using the *ETM* as: $P_M = 1-(1-PE)^{duration}$, where P_m is the proportional level of mortality resulting from the water withdrawals by the proposed desalination facility. A larval duration of 23 days from hatching to entrainment was calculated from growth rates using the length representing the upper 99th percentile of the length measurements from larval CIQ gobies collected from entrainment samples during 316(b) studies (Tenera 2004).

The results of the analysis are contained in *Table 4.3-5.* Estimates of *PE* ranged from 0.01 percent for northern anchovy to 0.55 percent for CIQ gobies.

TABLE 4.3-5
Estimates of Average Daily Mortality (*PE*)
(Standard Error in parentheses)

Fish Group	Feedwater Volume – Maximum Flow 401,254 m^3/day (106 MGD)
CIQ gobies	0.55% (2.08)
Combtooth blennies	0.36% (0.87)

Northern anchovy	0.01% (0.05)

Fish larvae entrained by desalination plant represent an incremental loss of the EPS source water supply of larvae. The average observed entrainment mortality of the EPS was 97.6 percent (2.4 percent survival). Since 97.6 percent of the larvae are dead at the point of the desalination plant intake, the incremental entrainment loss on source water populations is the 2.4 percent survival rate times the desalination plant proportional entrainment for each specific species in the EPS discharge. These incremental effects range from 0.01 percent for northern anchovy to 0.28 percent for CIQ gobies (*Table 4.3-6*). The incremental mortality assumes 100 percent mortality of all organisms surviving the EPS upon withdrawal into the desalination facility. However, under the No Power Plant Operation scenario, no mortality is attributed to EPS operations and all entrainment effects are assigned to the desalination plant.

TABLE 4.3-6
Estimates of Proportional Mortality (P_m)

Fish Group	P_m based on Maximum Length at Entrainment Desalination Plant Entrainment from EPS Discharge Flow Maximum flow - 106 MGD (401,254 m³/day)	Estimate When Applying The Overall Average Survival Estimate Of 2.4 Percent[1] Incremental Entrainment Loss Due to Desalination Plant Operations Maximum flow - 106 MGD (401,254 m³/day)	P_m Based on No Power Plant Operation Scenario Desalination Plant Entrainment with Maximum flow – 306 MGD
CIQ gobies	11.8%	0.28%	34.1%
Combtooth blennies	5.7%	0.14%	16.5 %
Northern anchovy	0.6%	0.01%	1.7%

1. The overall average percent survival (2.4 percent with a standard deviation of 11.22) was based on an average of each sample that contained fish (n=223).

The role of turbulence and temperature and how larvae are affected were not evaluated at the EPS. It is noted that mortality from entrainment through the cooling water intake structure may be primarily due to pressure and turbulence in the water flow, rather than temperature increases resulting from the cooling operation. Since the desalination plant feedwater will be subject to the same turbulence whether or not the EPS is operating, it is reasonable to estimate incremental mortality for the heated and unheated desalination scenarios using the survival data presented in Table 4.3-4 Using those data, and based on typical operation of the EPS, the entrainment loss rate ranges from 0.01 percent to 0.28 percent.

If the desalination facility were to operate at 106 million gallons per day (MGD) under the No Power Plant Operation scenario, there would be 100% mortality resulting from impingement of the larval fish caught on the screens and filters. The No Power Plant Operation scenario would increase the flow volume attributable to the desalination plant by an additional 200 MGD for dilution of the concentrated seawater discharge from the desalination facility. The level of impact to the organisms and associated mortality due to the diversion of the dilution water under the No Power Plant Operation scenario will be less than the impact had the water been pumped through the condensers as is modeled under the With Power Plant Operation scenario. However, lacking data to document actual mortality under the No Power Plant Operation scenario, the possible range is 0% to 100% mortality of the larval fish in the dilution water. Under these conditions the minimum larval fish entrainment loss for the desalination facility (106 MGD) and associated dilution water (200 MGD) would be 0.6% to 11.8% and the maximum would be 1.7% to 34.1%, depending on the design of the facility and species modeled. (*Table 4.3-6*).

Although combtooth blennies had higher *PE* estimates, CIQ gobies had higher estimates of P_m because their larvae were exposed to entrainment for a longer period of time (either from multiple spawnings of one species or from different species spawning at different times). Adult CIQ gobies and combtooth blennies are very common in Agua Hedionda Lagoon habitats and these levels of mortality would not be expected to result in any population-level effects because these fishes are adapted to estuarine environments where large percentages of their larvae are exported into nearshore areas during tidal flushing. Gobies are abundant in the shallow mudflat and eelgrass habitats that are common in Agua Hedionda middle and inner lagoons. A significant proportion of the CIQ goby larvae in the outer lagoon at the point of entrainment likely originated in the inner and middle lagoon segments and would be exported from the lagoon system on the following

tidal cycle. Adult combtooth blennies are common in outer lagoon habitats including rock jetties, docks, pilings, and aquaculture floats, as well as some sandy areas in the lagoon, which explains the large numbers of the larvae found in the EPS discharge flows. The estimates for northern anchovy are much lower than the other two taxa because they are more common in the nearshore areas than the lagoon. In fact, the estimates for northern anchovy are very conservative because these fish are distributed over a large area and therefore the estimate of their source water population would be much larger than the estimate used in the calculation of *PE*.

Significance of Entrainment Losses: The small proportion of marine organisms lost to entrainment as a result of the desalination plant would not have a substantial effect on the species' ability to sustain their populations because of their widespread distribution and high reproductive potential. The most frequently entrained species are very abundant in the area of EPS intake, Agua Hedionda Lagoon, and the Southern California Bight, and therefore, the actual ecological effects due to any additional entrainment from the desalination plant are less than significant. California Department of Fish and Game (2002) in their Nearshore Fishery Management Plan provides for sustainable populations with harvests of up to 60 percent of unfished adult stocks. The incremental entrainment (or "harvest") effect of larval fishes from the desalination plant operations between 0.01 and ~~0.28 percent~~ up to 34.1% under the No Power Plant Operation scenario depending on the design of the facility and species modeled.

The loss of larval fish entrained by the EPS cooling water flows, whether the EPS is operating or not, are a small fraction of marine organisms from the abundant and ubiquitous near-shore source water populations. Using standard fisheries models for adult fishes, the loss of larvae (99 percent of which are lost to natural mortality) due to the desalination facility entrainment at 306 MGD would have no effect on the species' ability to sustain their populations, including the gobies at 34.1%. Gobies are not substantially impacted because of their widespread distribution and high reproductive potential due to spawning several times a year, are able to sustain conditional larval stage mortality rates of 34% and higher without a decline in adult population level. This absence of population level effects for adult gobies is especially true for the species' early larval stages. The sheer numbers of larvae that are produced by the adult gobies are resistant to effects of both natural mortality and reasonably high levels of conditional mortality.

The most frequently entrained species are very abundant in the area of EPS intake, Agua Hedionda Lagoon, and the Southern California Bight so that the actual ecological effects due to any additional entrainment from the project at either level of plant operations are insignificant. Species of direct recreational and commercial value constitute less than 1 percent of the entrained organisms, and considering the fact that in general, less than one percent of all fish larvae become reproductive adults, the operation of the desalination plant would not result in significant impacts on those species. California Department of Fish and Game (2002) in their Nearshore Fishery Management Plan provides for sustainable populations with harvests of up to 60 percent of unfished adult stocks. The incremental entrainment ("harvest") effect of larval fishes from the desalination facilities operations at 106 or 306 MGD is approximately 1 to 34 percent (depending on the species); losses that would have no significant effect on the source water populations to sustain themselves. Additionally, entrainment mortality losses are not harvests in the common sense, because the larval fish are not removed from the ocean, but are returned to supply the ocean's food webs – the natural fate of at least 99 percent of larvae whether entrained or not. Generally less than one percent of all fish larvae become reproductive adults.

The following text replaces text that appears in Section 6.0 of the EIR (Starting on Page 6-1):

SECTION 6.0
ALTERNATIVES TO THE PROPOSED ACTION

In order to fully evaluate proposed projects, CEQA requires that alternatives be discussed. Section 15126.6 of the State CEQA Guidelines requires the discussion of "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." The alternatives discussion is intended to "focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives as listed in Section 3.0 of this EIR. The alternatives discussion focuses on the desalination plant aspect of the PDP.

The Alternatives discussion in this EIR focuses on four project alternatives: a No Project/No Development Alternative, an Alternative Site Location Alternative, a Modified Intake Design Alternative, and a Reduced Project Capacity Alternative.

Along with the Alternatives identified in this Section, previous consideration has been given to policy options that are discussed as alternatives that have been considered and rejected for the purposes of this EIR. These alternatives include the Recycled Water Only Alternative and Increased Water Conservation/Recycled Water Alternative. These alternatives are not currently considered to be feasible project alternatives, and for that reason, are not put forward as alternatives that the City Council may select as alternatives actions to project approval. However, based on comments received on the EIR, the City of Carlsbad believes it important to emphasize and clarify past policy decisions relative to water recycling and conservation, and how those water management strategies relate to the proposed project.

Alternatives Considered but Rejected as Infeasible

Section 15126.6(c) of the CEQA Guidelines provides for discussion of any alternatives that were considered by the lead agency but were rejected as infeasible. The alternatives, identified as the Recycled Water Only Alternative and Increased Water Conservation/Recycled Water Alternative, have been considered in past decision making by the City and both have been determined to be infeasible, because they require recycling and conservation practices that go beyond what is considered to be acceptable from a public policy perspective. The following discussion provides information that explains how water recycling and conservation have and will continue to play an important role in local and regional water management. This discussion is also intended to provide a framework for understanding past policy decisions that limit the extent to which recycling and conservation can be taken without causing unacceptable social and economic effects.

Water conservation and recycling has long been a part of local and regional water supply strategies. Conservation and recycling involve social and economic impacts that are given consideration by policy makers in terms of how much these strategies are feasibly able to contribute to reducing and/or satisfying demand.

The Department of Water Resources' draft California Water Plan Update 2005 acknowledges that local efforts to conserve and reuse water must continue to be implemented *and* new water supplies must be developed (including up to 500,000 acre-feet of desalination) to ensure an adequate water supply for California's future. (California Water Plan Highlights, page 15.) Update 2005 states that if recent growth trends continue, water conservation and reuse alone will not be adequate to meet Southern California's future needs. More than 600,000 acre-feet of new supply will be needed to meet the South Coast region's needs by the year 2030.

The San Diego County Water Authority's Regional Water Facilities Master Plan has projected that an additional one million people will be added to the county over the next three decades. To keep up with this growth, it is expected that by 2020 water demands will grow by 107,000 acre feet (AF) over 2005 total projected demands to 813,000 acre feet per year (AFY). The contribution from water conservation efforts account for 54,900 AFY of estimated reduced demand today and is expected to grow by nearly 75% to a potential 93,200 AFY in reduced demand over the next 15 years. The increased demand projection of 107,000 AFY is net of the 93,200 AFY of projected savings due to ongoing and planned water conservation efforts, but still requires additional supply to meet the demands of growth in the region.

The City of Carlsbad currently imports 100% of its potable water supply. The City of Carlsbad's pursuit of seawater desalination is in direct response to growing concern over water supply reliability. This concern is driven by several factors, including climate, limited surface and groundwater supplies, expected population growth, and decreasing reliability of imported water resources stemming from the Colorado River 4.4 Plan and QSA, Sacramento-San Joaquin Bay-Delta Accord, and other regional, state and federal water issues. Conservation programs defer or limit the rate of demand for water; however, these programs cannot reliably address the City's long-term water supply needs.

The Carlsbad Municipal Water District ("CMWD") considered a variety of actions to improve its water supply reliability, diversify supplies, and reduce dependence on imported water. These actions include a commitment to implement all cost-effective water conservation and recycling opportunities. Today, CMWD has one of the most aggressive conservation and recycling programs in the San Diego region.

CMWD is also a signatory to the California Urban Water Conservation Council Memorandum of Understanding ("MOU"). Signatories to the MOU implement 14 Best Management Practices that have received a consensus among water agencies and conservation advocates as the best and most realistic methods to produce significant water savings from conservation.

Conservation on a local level is implemented through strategies identified in the Urban Water Management Plan (UWMP). The goals of the City's water conservation program are to: reduce demand for more expensive, imported water; demonstrate continued commitment to the Urban Best Management Practices (BMPs); and to ensure a reliable

future water supply. The UWMP includes water demand management measures, consisting of:

- Best Management Practices / Audits
- Low consumption toilets / showerheads / faucets
- Leak detection / Metering
- Landscape programs / Drought tolerant plantings
- Public information / School education
- Commercial & Industrial conservation measures
- Water waste prohibitions

In 1991, Carlsbad adopted a five-phase Recycled Water Master Plan designed to save potable water. The result is that CMWD has the most aggressive water recycling program in the region when measured in terms of percent of supply derived from recycled water. The Recycled Water Master Plan is referenced herein.

The implementation of the water conservation and water recycling elements included in CMWD's UWMP are on schedule and are achieving the desired reduction in potable water use. These programs are designed to work in tandem with the proposed seawater desalination project to accomplish the City Council's water supply reliability goal of 90 percent water availability during a severe drought. This goal could not be met through conservation and recycling alone.

The CMWD's current UWMP, approved in 2005 and referenced herein, projects that in the year 2020 the City of Carlsbad will have 102,536 residents in the CMWD Service Area, an increase of almost 22,000 people from the 2005 Service Area population estimate. The projected water demand for the Service Area in 2020 is 28,907 acre feet (AF) per year. The UWMP has projected that 1,945 AF, or approximately 7% of the demand, will be met by conservation, a 500 AF increase over 2005 projected conservation savings. Further, recycled water is estimated to constitute 6,300 AF, or 21%, of CMWD water demand in 2020. This represents a 6% increase over recycled water supplies in 2020 estimated by the 2000 UWMP.

As an alternative to use of desalinated water for the 72% of the City's water needs that would not be supplied by conservation (7%) and recycled water (21%) in 2020, certain commentors have claimed that it is possible for the City to increase conservation or use of recycled water in a manner which eliminates the need for desalinated water from the desalination facility.

The Recycled Water Only Alternative would involve a situation where the City of Carlsbad would not utilize any external source of potable water. Under this scenario, the residents and businesses in the City would reduce their consumption of water, and only utilize water which is recycled from the City's wastewater system. The current water supply projection for 2020 – 21% recycled water and 7% conservation – would increase by some combination to 100% under this alternative. A variety of different combination of conservation and use of recycled water could be imagined under this alternative.

With this alternative, there would be no need for the desalination facility. The significant effects of the desalination facility related to air quality and growth inducement would be avoided.

Under the Recycled Water Only and Increased Conservation/Recycled Water alternatives, the City would implement more aggressive conservation measures that go beyond current BMPs as a means to meet future water demands. The City would more aggressively apply BMPs going beyond what is locally cost-effective and implement new restrictions on water use, such as limitations on residential landscape irrigating, washing vehicles, irrigating golf courses and parks and other uses, and have appropriate penalties for failure to comply with restrictions.

To more aggressively implement conservation measures beyond the current industry standard, the City would have to implement non-cost-effective BMPs, non-proven potential BMPs, and would have to enforce restrictions that could harm the City's economy and result in a drastic change in life styles. Even with the aggressive conservation measures the City has taken, coupled with planned future conservation projects, the savings would not be sufficient to offset the estimated demand forecast for 2020.

The Recycled Water Only Alternative appears to be infeasible as it does not take into account water loss and replacement. Inevitably, some water will be lost through evaporation, transportation, leaks, application to soil, and water treatment processes in industrial and public utility uses, such as waste treatment systems. Eventually, this lost water will require replacement from another water source "outside" the recycled water system. Accordingly, an argument could be made that this replacement could come from sources other than imported and desalinated water, such as stormwater. However, the City has no way of capturing stormwater for use as a potable supply as the City does not have any stormwater impoundment reservoirs.

No community in the world has achieved the level of recycling and conservation presented in the Recycled Water Only Alternative. Furthermore, the California

Department of Health Services has health based restrictions on the use of recycled water which prevent its use as a complete replacement for potable water. In addition, the general public is unwilling to use recycled water as a complete replacement for water used in cooking, bathing, washing and drinking.

The City has also previously analyzed the Increased Conservation/Recycled Water Alternative, whereby the combined level of conservation and recycled water supply would total somewhere between UWMP projections as used as the baseline assumption in this FEIR and a level of 100%, which is the level analyzed in the Recycled Water Only Alternative discussed above. (The 2000 UWMP estimates 15% of the City's water demand in 2020 would be meet by recycled water; an estimate is not provided for conservation, although the 2000 UMWP discusses conservation, the components to achieve it, and recognizes conservation as a critical part of CMWD's long term water supply needs.) A variety of different combinations of increased use of recycled water and increased conservation are covered within this alternative. Commentors did not describe a specific level of conservation or use of recycled water that they felt the City could achieve.

The Increased Conservation/Recycled Water Alternative was not presented as an actual alternative to the proposed project. No matter what level of conservation or recycled water is proposed below 100%, the City and other jurisdictions in San Diego County still face a need for potable water from some source. As a result, this is not a feasible alternative to the proposed project. For example, reaching a theoretical goal of supplying water needs through conservation and use of recycled water to meet 50% of the City's water needs still requires a source of water for the remaining 50% of the water needs. The desalination facility is still needed to supply that remaining 50%, even under this type of Conservation/Recycled Water Alternative. Thus, this Alternative would not eliminate the need for the desalination facility, nor would it eliminate the potential adverse effects of the desalination facility related to a contribution to cumulative air quality or a contribution to regional growth inducement.

An Increased Conservation/Recycled Water Alternative would permit the City to purchase less desalinated water from the desalination facility. If Carlsbad were the only customer for the desalination facility, this could result in a reduced capacity desalination facility. The impacts of a Reduced Project Capacity Alternative are analyzed in Section 6.4 of the EIR. As noted in Section 6.4 of the EIR, a Reduced Project Capacity Alternative would reduce but not eliminate the project's contribution to a cumulative air quality and cumulative regional growth inducing impacts.

In summary, the City concludes that the Increased Conservation/Recycled Water Alternative also appears to be infeasible for public policy reasons because it would require a level of conservation and use of recycled water that is unacceptable as a matter of public policy. The City previously determined the maximum acceptable levels of conservation and recycled water use that should be mandated by the City in the approval of the UWMP and the Recycled Water Master Plan, and does not believe these levels can or should be increased for many reasons, as set forth in the record before the City Council when those plans were approved. For example, due to current legal restrictions, recycled water cannot be used for bathing, cooking and other household domestic needs. Current mandated low flow toilets, showerheads and other plumbing fixtures represent the maximum feasible level of conservation from these fixtures, and at this time it is infeasible to mandate fixtures which provide higher levels of conservation.

Single family residential households use a large portion of the CMWD water supply. The 2005 UWMP estimates that in 2020, 38% of the total water supply, or 11,013 AF, can be attributed to use by these households. Single family residential water demand includes both indoor and outdoor water usage with 60% of the water usage attributed to outdoor use, primarily for landscaping. Increasing the percentage of water supply available through conservation, above the 7% conservation projection in 2020, would require an equal reduction in demand.

While reduction of water demand could occur through use of recycled water for landscape irrigation for single-family residences, this would present concerns. Installing the public infrastructure and retrofitting all single-family residences to enable use of reclaimed water for irrigation purposes would be economically infeasible. Moreover, use of reclaimed water for irrigation by private residences is also discouraged by some county health officials.

Further restrictions on outdoor water use, such as a ban on all outdoor water usage, are not acceptable as a matter of public policy. If all outdoor water usage from single family residences were prohibited, for example, a conservation of approximately 6,607 AF of water (60% of 11,013 AF) or 22% of total 2020 demand would be achieved, enhancing the total conservation supply for the City of Carlsbad in 2020 to 29% (7% + 22%). However, among other things, this alternative would require the City of Carlsbad to enact ordinances that allow only non-irrigated landscaping within the City of Carlsbad, and ordinances that ban the use of outdoor irrigation for single family residences.

The City of Carlsbad has determined that prohibition of single family residential outdoor irrigation and most outdoor landscaping is not a desired public policy goal of the City of

Carlsbad, and the City Council does not believe that this action would be in the best interest of the quality of life, or health and well being of the residents of Carlsbad.