Agenda Item No. 10.1
Application No. 10-013

THE CALIFORNIA DEBT LIMIT ALLOCATION COMMITTEE
January 27, 2010
REVISED
REQUEST FOR A QUALIFIED PRIVATE ACTIVITY BOND ALLOCATION FOR AN EXEMPT FACILITY PROJECT

Prepared by: John Weir

Applicant: California Infrastructure and Economic Development Bank

Allocation Amount Requested: $530,000,000

Project Information:

Name: **Poseidon (Carlsbad) Desalination Project**
Project Address: 4600 Carlsbad Blvd.
Project City, County, Zip Code: Carlsbad, San Diego, 92008

Project Sponsor Information:

Name: Poseidon Resources (Channelside) L.L.C.
Address: 501 W. Broadway, Suite 2020
San Diego, CA 92101
Principals: James M. Donnell, President; Andrew P. Kingman, Treasurer & Vice President; Peter Maclaggan, Vice President
Contact: Andrew Kingman
Phone: (203) 327-7740

Project User Information:

Name: Same as Project Sponsor
Address: Same as Project Sponsor
Same as Project Sponsor
Contact: Same as Project Sponsor
Phone: Same as Project Sponsor

Project Financing Information:

Bond Counsel: Orrick, Herrington & Sutcliffe LLP
Underwriter: Barclays Capital Inc.
Credit Enhancement Provider: See Attachment A
Private Placement Purchaser: Not Applicable
TEFRA Hearing Date: October 21, 2009

Project Sponsor's Principal Activity:

According to the Applicant, the principal activity of the project is the construction and operation of a reverse-osmosis seawater desalination plant and associated delivery of potable drinking water for the San Diego region.

First Tier Business (Yes/No): Yes

Regulatory Mandate (Yes/No): No

Details of Transaction:

Sources of Funds:		
Tax-Exempt Bond Proceeds	$	530,000,000
Contingency	$	25,000,000
Other Sources	$	85,000,000
Total Sources	$	640,000,000
Uses of Funds:		
Site Preparation and Improvements	$	3,000,000
Construction of New Buildings	$	30,000,000
Utilities Connection	$	18,500,000
New Equipment Purchase & Installation	$	258,000,000
Engineering/Architecture	$	90,000,000
Legal Permits	$	40,000,000
Cost of Issuance (incl. discount)	$	9,000,000
Letter of Credit or Bond Insurance Fee	$	25,000,000
Net Interest During Construction	$	93,500,000
Other	$	73,000,000
Total Uses	$	640,000,000

Description of Proposed Project:

According to the Applicant, the project consists of a 50 million gallon per day reverse osmosis desalination plant that draws raw seawater from the Encina Power Station cooling system to produce potable drinking water for transmission to the region. Contracts for water delivery are already in place and upon completion, the plant will provide San Diego County nearly 10% of its total water supply. The plant's salinated by-product ("brine"), will be discharged and mixed with the cooling water for dilution and eventual return to the ocean. See Desalination Technology Review summary attached.

Environmental Impact:

1) Air Quality:

According to the applicant, the desalination process will not involve heating and vaporization of the source water and thus does NOT create emissions of water vapor, carbon dioxide or other gases. The project will be powered by electricity purchased from SDG&E. Approximately 65% of the electricity supplied by SDG&E is generate from fossil fuels. As a result, the project will indirectly affect air quality with the increased use of electrical consumption.

2) Water Quality:

According to the applicant, the daily output of the project will produce about 50 million gallons per day of potable drinking water, sufficient to serve approximately 300,000 individuals annually or about 9% of San Diego County's water supply. Nine municipal water agencies in the county have executed 30 year purchase agreements for the full capacity of the project. The project will supply a reliable drought-resistant water supply that meets all State and Federal standards as well as a 30% to 50% reduction in total dissolved solids as compared to the water currently imported for other sources.

3) Energy Efficiency:

According to the applicant, the plant will require 28 to 35 megawatts of power per day or the equivalent of what 40 to 46 houses would consume annually. Energy use is being limited by the installation of solar panels and the use of a pressure exchanger that recovers and reuses 33.9% of the energy associated with the reverse osmosis process. Carbon credits and LEED construction principles will also be used to offset energy consumption.

4) Recycling of Commodities:

None indicated.

5) Safety and Compliance:

According to the applicant, the project sponsor is in compliance with all applicable state and federal regulations.

6) Consumer Costs Savings and Efficiencies:

According to the applicant, the project will deliver water at or below the cost of imported water. In addition, the water delivered by the project will contain fewer dissolved solids which will extend the life of existing pipes used throughout the system.

Local Government Support:

See Attachment B for letters of support for the project.

Legal Questionnaire:

No information was disclosed that raised any question regarding the financial viability or legal integrity of the applicant.

Recommendation:

Staff recommends that the Committee approve $530,000,000 in tax-exempt bond allocation for the Carlsbad Desalination Project.

Attachment A – Description of Financing Structure

Poseidon Resources has engaged Barclays Capital as the financial advisor and underwriter for the purpose of securing debt financing for the Carlsbad Desalination Project. The proposed plan will be to market a BBB- rated, tax-exempt fixed rate limited public offering to qualified institutional investors without credit enhancement, issued in minimum denominations of $500,000. Poseidon is continuing to evaluate the economic feasibility of a monoline insurance policy from Assured Guaranty for all or a portion of the bonds.

The proposed financing structure meets the requirements of the Committee's Procedures for rated or non-rated bonds without credit enhancement (Section 9.III.A). Particular attention was given as to whether BBB- bonds would be marketable in today's investment climate. According to Barclays, the market for low investment grade tax-exempt bonds is strong. This is due in part to the success of taxable bonds which have pulled demand for mid to high rated bonds away from tax-exempt issues. Investors looking to meet higher yield targets have instead been targeting lower rated issues for investing. This market condition is evidenced by the increasing volume of these types of transactions over the last quarter of 2009. In addition, the financial strength of the Project and Project Sponsor was evaluated. In its ratings analysis, Standard & Poors evaluated the strength of the Project and all of the project counterparties, including equity sponsors, contractors, the operator and all nine of the water districts entering into purchase agreements. Through its review of Standard & Poors' analysis (as summarized in its Rating Determination Letter), CDLAC Staff believes that their conclusions were sound. Finally, attention was also given as to whether the proposed financing has reasonable protections in place for bond purchasers and issuers in case of default. All amounts due will be secured by a first priority security interest in all of the borrower's assets including, but not limited to rights to receive payments from all purchase agreements, construction guarantees secured by performance bonds, and all project related accounts and insurance policies of the borrower.

The Committee has previously approved two Exempt Facilities projects with non-rated bonds without credit enhancement in the past four years. This project would be the largest of its kind.

In addition, staff also recommends that the following be memorialized in the Resolution: (a) that prior to bond closing the Applicant agrees to report back to CDLAC with information on bond purchase commitments, (b) that bonds, if unenhanced, must be marketed to qualified institutional investors only, and (c) that bonds be issued in minimum $500,000 denominations. If the structure should change, the Applicant will be required to return to CDLAC for approval of the revised structure prior to issuance.

Attachment B – Evidence of Local Government Support

This sheet outlines the public support letters/documents in support of the Carlsbad Desalination Project that were included in the original Application to CDLAC or delivered to the Committee at a later date.

Support Letters To the California Debt Limit Allocation Committee (CDLAC) from:

Christine Kehoe (California State Senate, 39th District)
City of Carlsbad
City of Oceanside (Jim Wood, Mayor)
Martin Garrick (California State Legislature, 74th District)
Mary Salas (California State Legislature, 79th District)
Mary Block (California State Legislature, 78th District)
Olivenhain Municipal Water District (Edmund Sprague, Board President)
Rainbow Municipal Water District (Rua Petty, Board President)
Rincon del Diablo Municipal Water District
Santa Fe Irrigation District (Michael Hogan, Board President)
Sweetwater Authority (W.D. "Bud" Pocklington, Chair)
Vallecitos Water District (Dennis Lamb, Deputy General Manager)
Valley Center Municipal Water District (Gary Brommell, Board President)

Desalination Technology Review for the Carlsbad Desalination Project (Poseidon)
January 27, 2010

Prepared by: *Samantha Russell, California Pollution Control Financing Authority*

Summary. California Pollution Control Financing Authority (CPCFA) was asked to prepare a technology review of desalination for the California Debt Limit Allocation Committee (CDLAC). CPCFA staff reviewed the application submitted to CDLAC from the I-Bank on behalf of Poseidon Resources (Channelside), LLC (Poseidon), to be heard at the January 27, 2010 CDLAC Board meeting. During this review process, staff consulted with the applicant and various interested parties.

Background. Seawater desalination is being explored as a way of providing people with drinking water in California. A project is proposed for the Carlsbad/San Diego area to use desalination as a means of generating drinking water. Desalination is already in use at several locations in Southern and Central California. Seawater desalination is among the options for providing a reliable fresh water source. Other options include water conservation, watershed restoration and desalination of waste water.

Poseidon, a water infrastructure development company that focuses on public-private partnerships, is financing the construction of a desalination facility to be built at the Encina Power Station, in Carlsbad, near San Diego. Poseidon has 30-year contracts (and two potential 30-year contract extensions) with nine San Diego County public water agencies to provide potable water. Upon completion, the project will provide San Diego County just under 10% of its total water supply and deliver up to 50 million gallons a day.

Project Description. The Carlsbad Desalination Plant will be a Reverse Osmosis seawater treatment facility that will be located at the Encina Power Station in Carlsbad on a 6-acre site currently partially occupied by unused fuel storage tanks. The desalination plant will take raw seawater from the power station cooling water system, produce potable drinking water for transmission to the regional water supply system, and discharge the brine (the waste product of the desalination process, water with a higher salinity concentration) back into the power station cooling water discharge channel for dilution and discharge into the ocean.

The Carlsbad Desalination Plant will not have a separate ocean intake and discharge system. Instead, the desalination plant will use the Encina Power Station existing cooling system to collect seawater for fresh water production. Under typical operational conditions, seawater enters the power station cooling system and is pumped through the power station's condensers to cool the condensers. The Carlsbad Desalination Plant intake structure is connected to the end of the power station' cooling system discharge canal and would divert the cooling water for production of fresh water (see Figure 1, on the next page).

Approximately half of the diverted cooling seawater would be converted to fresh drinking water via Reverse Osmosis membrane separation. The remaining half would have salinity approximately two times higher than that of the ocean water. This seawater concentrate would be returned to the Encina Power Station discharge canal downstream of the point of intake for blending with the remaining cooling water prior to conveyance to the Pacific Ocean. According to Poseidon, under average conditions, the blend of cooling water and concentrate would have discharge salinity of within the 10% natural variation of the ocean water salinity in the vicinity of the existing power plant discharge.[1]

NRG Energy, the Company that owns the Encina Power Station has recently applied to change part of its cooling system from water cooled to air cooled. The Encina Power Station has five units that use the water cooling system. NRG is proposing to retire the three most inefficient units and replace them with an air cooled system. The two other units will continue to operate as normal.

Permits issued to Poseidon authorize the Encina Power Station to operate its seawater intake and discharge for the benefit of the Carlsbad Desalination Plant. If the Carlsbad Desalination Plant intake requirements ever exceed the volume of water being discharged by the Encina Power Station, the permits allow Encina Power Station to maintain the amount of water needed for the Carlsbad Desalination Plant system. In addition, Poseidon has a long-term lease agreement that grants the company the right to use or purchase NRG's once-through cooling system in the event that the power station ever permanently decommissions its system. The Carlsbad Desalination Plant energy consumption would increase approximately 11% if Poseidon took over all of the seawater pumping. Poseidon still needs to meet a number of the "prior to permit issuance" and "prior to construction" conditions of its Coastal Development Permit.

Metropolitan Water District of Southern California (MWD) has committed to contributing funds in the amount of $250 per acre foot for seawater desalination projects within their service area. There is also incentive financing available though San Diego County Water Authority (SDCWA). Poseidon public agency partners could obtain up to $200 per acre foot though the Local Water Supply Development Plan. Poseidon's public agency partners have yet to apply to the SDCWA board for this financing option.

[1] "Carlsbad Desalination Project: Facility Description and Operations," Poseidon Resources (April 7, 2009) pg. 4

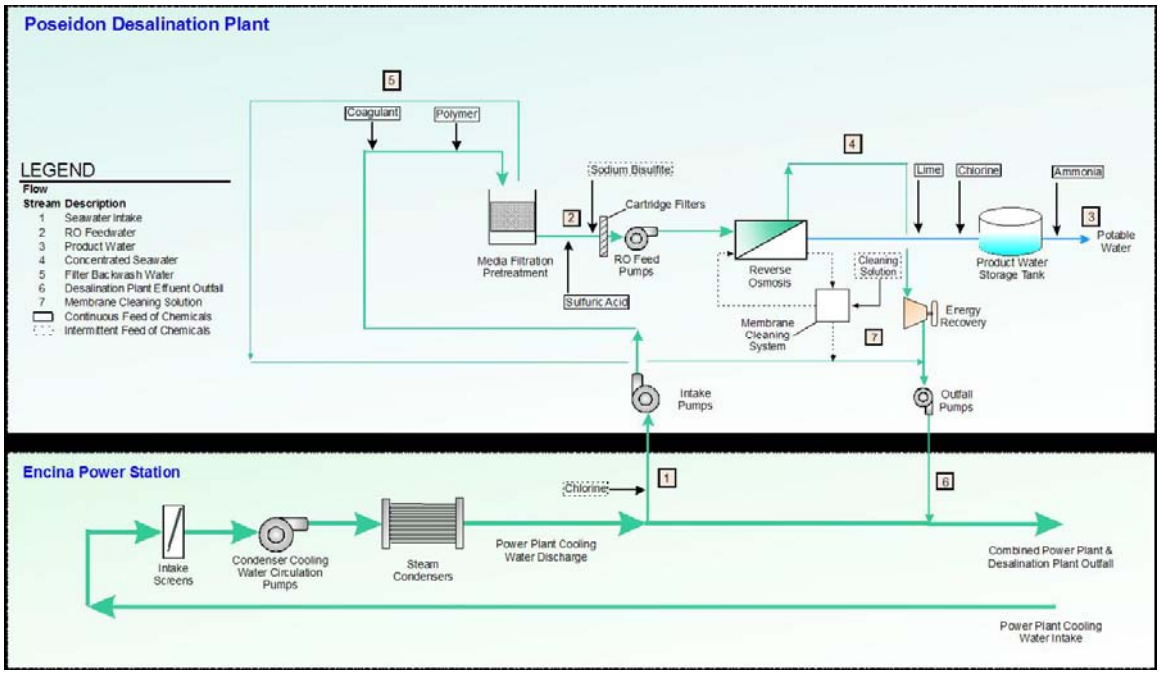

Figure 1 – Poseidon Provided Facility Schematic

Desalination. There are multiple ways of desalinating various types of water. The most well known are distillation and Reverse Osmosis. In this case, seawater desalination is using a Reverse Osmosis process which takes water from the ocean and purifies it. Only a handful of desalination plants have been built in California, because of the high cost of desalination vs. other water supply alternatives. However, as water becomes scarce, desalination is becoming attractive to some communities. Salt water desalination locations in California include Santa Catalina, Marina, Sand City and the Chevron Gas and Processing Plant outside of El Segundo.

Reverse Osmosis removes approximately 95 to 99 percent of the dissolved salts and inorganic material found in seawater, resulting in salt-free drinking water. In the desalination process, seawater is pre-treated, which helps to preserve the filtration membranes from damage as seawater is pushed through them under pressure to remove the salt. The water then filters through a microscopic strainer (the membranes) that further removes any impurities, bacteria, and remaining dissolved salts in the water.

Approximately 50 percent of the feed-water (water that is pulled from the ocean for treatment) that passes through the Reverse Osmosis filtration system will be used as the finished product. The remaining 50 percent becomes a brine solution that contains the concentrated salts and impurities that were removed through the filtration process, which is diluted and released back to the ocean. The portion that will become drinking quality water will pass through a post-treatment process, during which the alkaline levels of the water are raised and balanced in order to protect the water's distribution system from corrosion.[2]

[2] C.J. Lunquist, Desalination Process, eHow, http://www.ehow.com/how-does_5008594_desalination-process.html (July 22, 2009)

Pros. According to proponents, seawater desalination is a solution to the state's low water supply. Additionally, it can be a preferable option to other forms of "water harvesting" as it is less disruptive to the source water. Poseidon argues that it is also economical and nine local municipal agencies in San Diego have committed to purchase substantially the entire Carlsbad project for a minimum of 30 years. The desalination process does not entail heating and/or vaporizing the source seawater, consequently it does not directly create emissions of water vapor, carbon dioxide, methane, nitrous oxide hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride.

There are several advantages to the reverse osmosis process over other forms of desalination. Reverse osmosis requires less energy than distillation. The discharge has lower thermal impacts because the water is not heated. It has fewer corrosion problems, and higher recovery rates, up to 50% for seawater.[3]

Proponents also argue that in San Diego, since there is very little local ground water, almost 90% of its water is imported from hundreds of miles away from either the State Water Project (SWP) or the Colorado River. These imported water delivery systems consist of a complex system of intakes, dams, reservoirs, aqueducts, pump stations and water treatment facilities – all of which require energy. Thus, like seawater desalination, San Diego's imported water also has high electricity needs. The project's desalinated water will displace imported water from the SWP, the more expensive and more energy intensive water of the two primary sources. The SWP imports water from the Sacramento-San Joaquin Delta area. This is a system with its own significant energy load, estimated at approximately 80% of the energy used by the Carlsbad Desalination Project.[4]

In response to the idea that desalination should be used on wastewater rather than seawater the proponents argue that wastewater desalination is socially infeasible. While this alternative is feasible in many ways – can be done technologically, it is less expensive than desalting seawater, and it may result in fewer environmental impacts due to the reduction in discharging the wastewater in the ocean – it is also viewed by many members of the public as less desirable, thus more difficult to implement.[5]

The Poseidon team has attempted to meet and mitigate many of the other environmental concerns. They have made a commitment to restore 66 acres of coastal wetlands in the Carlsbad area and plant $1 million worth of trees in areas damaged by 2007 wildfires. Most ambitiously, Poseidon is attempting to minimize the Project's energy demand and offset the Project's net carbon emissions associated with the purchase of electricity from Sand Diego Gas and Electric Company. Poseidon intends to do this through a combination of increased energy efficiencies within the facility, employing Leadership in

[3] "Seawater Desalination and the California Coastal Act," California Coastal Commission, March 2004. Pg 32
[4] Kingman, Andrew. "Re: Poseidon Policy Review." Environment Now. Email to Author. August 26, 2009
[5] "Seawater Desalination and the California Coastal Act," California Coastal Commission, March 2004. Pg 25

Energy and Environmental Design (LEED) principles in the construction of the facility, and the purchase of carbon credits.

The energy efficiency improvements within the facility include construction and use of a pressure exchanger based energy recovery system that allows recovering and reusing 33.9% of the energy associated with the Reverse Osmosis process.

Cons. The criticisms of the Poseidon Carlsbad Desalination plant tend to be similar to those raised against desalination in general. These include energy usage, waste products, and the cost of the water to users.

For Poseidon's project specifically, there are concerns regarding the impacts on sea-life during the filtration process. At intake, organisms are swept in with the water and, whether colliding with screens or exposed to the chemicals and force of the plant's processes, can be killed. Other desalination intakes do not cause this type of significant impact.

There are also several disadvantages to the Reverse Osmosis process. It is generally more sensitive to poor water quality, resulting in the need to shut down facilities during severe storms or a period of high runoff when there are increased amounts of suspended particles in the feedwater. The membranes are sensitive to fouling due to bacterial contamination or other causes, which may require more frequent replacement and result in higher costs. Also, the process and its use of cleaning agents generates wastes that may include toxic chemicals, metals, and other constituents that are either discharged to surface waters or are separated and sent to a wastewater facility or landfill.[6]

Another concern is that regardless of the method used, there is always a highly concentrated waste product, typically called brine, consisting of everything that was removed in the desalination process. This problem can be alleviated, however, by diluting the brine with another stream of water entering the ocean, such as the outfall of a waste water treatment plant or power plant reducing the salinity. Another method is to spread the brine over a very large area so there is only a slight increase in the salinity.[7]

The electricity needs are considerably higher to run desalination plants and extract drinkable water compared to obtaining like water from recycled water, groundwater pumping, and other sources. The proposed desalination plant will require 28 to 35 mega-watts of power to operate. Based on 24-hours per day operation, the daily energy consumption of the Reverse Osmosis facility is estimate to be between 720 and 840 megawatt hours per day.[8] The amount of energy used in a day would power 40-46 houses for a year.

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[6] "Seawater Desalination and the California Coastal Act," California Coastal Commission, March 2004. Pg 32

[7] Peter H Gleick, et al., "Waste Not, Want Not: The Potential for Urban Water Conservation in California," Pacific Institute for Studies in Development, Environment, and Security (November 2003) http://www.pacinst.org/reports/urban_usage/waste_not_want_not_full_report.pdf

[8] "Carlsbad Desalination Project: Facility Description and Operations," Poseidon Resources (April 7, 2009) pg. 14

Opponents argue that the energy costs will be even higher than originally estimated because of regulation changes that foresee the discontinuation of all Once Through Cooling (OTC) at Encina Power Station by 2017. The OTC system being decommissioned would make the Carlsbad Desalination Plant a stand alone facility which would require new permitting. Poseidon will have to revise the Environmental Impact Report (EIR) and apply for a revised intake permit. If Poseidon becomes a stand alone facility or if the power station operates below a certain level, the State Lands Commission lease requires a new California Environmental Quality Act (CEQA) review and the Regional Water Board approval requires Poseidon to apply for a new permit. If Poseidon had to operate separately from Encina Power Station it is estimated that total energy consumption would increase by 28%[9].

Another concern is the price of water due largely to the high usage of electricity. In Poseidon's case, they intend to provide water to water districts at or below the cost of imported water. The costs for treated water delivered into San Diego County, as of September 1, 2009, is approximately $750 per acre foot.[10] An acre-foot is equivalent to 325,851 gallons, enough water for four people for one year.

According to the Poseidon the costs of water from the Project would cost approximately $1,300 per acre sq ft. At the California Coastal Commission hearing on November 15, 2007, Poseidon stated that it intends to absorb any losses for an unknown number of years until the costs of imported water increase to match or exceed Poseidon's costs.[11]

Opponents also argue that there are many water producing or water saving alternatives to desalination. Conservation efforts, such as rebate programs and aggressive public relations efforts, have resulted in the installation of low-flow showerheads and toilets, as well as water saving clothes washers and dishwashers – among other conservation practices. These programs have, in several major urban centers like Los Angeles, resulted in no increased demand for fresh water despite population increases. Opponents also argues that an emphasis on watershed restoration and low impact development would reduce flooding, improve land values and quality of life – while recharging aquifers and surface storage of freshwater.[12]

Lastly, opponents argue that using the same technology proposed for ocean desalination could be used on the 1.5 billion gallons of partially treated waster water that is discharged per day in Southern California. This water source could be cheaply and safely purified to drinking water standards. Properly planned, this water source could replace the water currently imported from the San Joaquin Delta and Colorado River.[13]

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[9] O'Day, Terry. "Re: Treasurer Update." Environment Now. Email to Author. August 27, 2009.
[10] News/Publications: Water Rates. San Diego County Water Authority. September 3, 2009. <http://www.sdcwa.org/news/finances.phtml>
[11] Tom Luster. August 5, 2008. Staff Recommendations to The Revised Findings for the California Coastal commission. Attachment H8 of Poseidon Resources, LLC application to I-Bank. Pg 32
[12] O'Day, Terry. "Re: Treasurer Update." Environment Now. Email to Author. August 27, 2009.
[13] O'Day, Terry. "Re: Treasurer Update." Environment Now. Email to Author. August 27, 2009.

Legal.
There have been four lawsuits and one request for revocation of the Coastal Development Permit directly involving the Poseidon project. These are:

Surfrider Foundation vs. California Coastal Commission, et al.: The Surfrider Foundation, which is involved in three pieces of litigation, is a nonprofit headquartered in San Clemente. In this lawsuit, they challenge the Coastal Commission's approval of the Coastal Development Permit for the Carlsbad Desalination Plant, claiming that the plant does not comply with the Coastal Act. In May 2009 the court denied the petition and upheld the Coastal Commissions' approval of the permit. Judgment was entered on May 28, 2009. On July 1 a Notice of Appeal was filed with the CA Court of Appeals by Surfrider. Subsequently Surfrider agreed to dismiss their appeal after all parties agreed to waive the court costs.

Surfrider Foundation vs. California Regional Water Quality Control Board, San Diego Region (CRWQCB), et al.: This action was filed by the Surfrider Foundation in tandem with the San Diego Coastkeeper, another nonprofit focusing its efforts in the San Diego region. The suit challenges the CRWQCB's conditional approval of the Carlsbad Desalination Plant's Revised Flow, Entrainment and Impingement Minimization Plan. The suit claims the approval violated the Porter-Cologne Act, alleging that the CRWQCB did not require the Carlsbad Desalination Plant to utilize the best available site, design, technology, and mitigation measures available. Additionally, the suit claims the CRWQCB failed to provide the public with adequate notice of the meeting where the plan was approved. On June 8, 2009 Surfrider filed for a dismissal of the Case with the San Diego Superior Court. On June 11 and 12, 2009 Surfrider and San Diego Coastkeeper separately filed petitions with the California State Water Resources Control Board (CSWRCB) administratively challenging the CRWQCB's approval. A decision on these petitions by the CSWRCB is pending. The Regional Board's order is not stayed by the pending appeal.

Surfrider Foundation vs. California State Lands Commission (Lands Commission): This action was again filed jointly by the Surfrider Foundation and the San Diego Coastkeeper. This action challenges the Lands Commission's approval of an amendment to the lease to allow Poseidon to use the Encina Power Station's existing intake and outfall structures, located on tidelands within the jurisdiction of the Lands Commission. The suit claims the approval violated the CEQA as the State Lands Commission should have required a supplemental or subsequent EIR as opposed to relying on the City of Carlsbad's previously-certified EIR. On August 4, 2009 the judge issued a written Tentative Statement of Decision (TSD) denying the Petition and upholding the lease agreement. Surfrider filed objections to the Tentative Decision on August 19, 2009. The Court rejected the objections and Poseidon submitted a Proposed Judgment to the Court on October 21, 2009. It is expected the judge will sign a final judgment within the second week in November 2009.

Coastal Environmental Rights Foundation v. City of Carlsbad: On October 16, 2009 Coastal Environmental Rights Foundation (CERF) and San Diego Coastkeeper filed a

Petition in which they challenged the September 15, 2009 approvals of the following city permit amendments: Precise Development Plan, Encina Specific Plan, Development Agreement, Habitat Management Plan, and Redevelopment Permit. No briefing or hearing date has been scheduled for this case.

Request to Coastal Commission for Revocation of Coastal Development Permit: On October 9, 2009 CERF, San Diego Coastkeeper and Surfrider Foundation filed a Request for Revocation of Poseidon's Coastal Development Permit (CDP) with the Coastal Commission. Poseidon submitted a response to the revocation request and expects the Coastal Commission to schedule a hearing in late 2009.

Global Climate Change. The California Legislature and Governor Schwarzenegger approved Assembly Bill 32, the California Global Warming Solutions Act of 2006, which requires the State to cut total Green House Gas emissions (GHG), such as CO_2 by 25 percent by 2020. Continuing California's long-standing tradition of innovation on environmental issues, Assembly Bill 32 has given The California Air Resources Board (CARB) a leadership role working with other State agencies to forge new approaches to diminishing the State's carbon footprint.

The Project's sole significant source of GHG emissions will be indirect emissions resulting from purchased electricity. All the electricity supply for the desalination plant operations will be provided by San Diego Gas & Electric (SDG&E). In its Green House Gas Emissions Reduction Plan, Poseidon has committed to implement certain measures to reduce the Project's energy requirements and GHG emissions.

Poseidon has been required to reduce its GHG emissions by The California Coastal Commission and the State Lands Commission. The California Coastal Commission estimates that the Project's proposed electrical use would result in about 90,000 metric tons of carbon dioxide emissions per year. Poseidon contends it will be closer to 61,000 metric tons per year. Poseidon committed to bring the Project's indirect GHG emissions to net zero.[14] This essentially means that Poseidon is required to offset any additional indirect greenhouse gases emitted as a result of supplying power to its plant over and above those greenhouse gases emitted as a result of the State Water Project's power requirements. Poseidon has also been required by the State Lands Commission to offset construction and operational impacts by obtaining an additional 25,000 tons of Carbon offset/Renewable Energy Certificates.[15]

The Project's high-energy efficiency design incorporates features minimizing plant energy consumption. One such feature is the use of a pressure exchanger based energy recovery system that allows recovery and reuse of 33.9% of the energy associated with the Reverse Osmosis process. The installation of premium-efficiency motors and

[14] Tom Luster. August 5, 2008. Staff Recommendations to The Revised Findings for the California Coastal commission. Attachment H8 of Poseidon Resources, LLC application to I-Bank. Pg 95

[15] Judy Brown. February 25, 2009. State of California State Lands Commission Amendment of Lease PRC 8727.1. Attachment H4 of Poseidon Resources, LLC application to I-Bank. Pg 2

Variable Frequency Drives on large pumps would result in additional 4% of power savings.

The potential energy savings associated with the implementation of the green building design as compared to that for a standard building design are in a range of 300 MWh/yr to 500 MWh/yr. The potential carbon footprint reduction associated with this design is between 106 and 177 tons of carbon dioxide (CO_2) per year. Because the facility is an industrial facility, LEED-level certification will not be feasible; but to the extent reasonably practicable, building design will follow the principles of the LEED program.

Poseidon is exploring the installation of a rooftop photovoltaic (PV) system for solar power generation as one element of its green building design. If installed, the electricity produced by the onsite PV system would be used by the Project and therefore would reduce the Project's electrical demand on SDG&E. The corresponding reduction of the Project's indirect emissions would be 275 tons of CO_2 per year.

Approximately 2,100 tons of CO_2 per year are planned to be used at the Project for post treatment of the product water (permeate) produced by the Reverse Osmosis system. CO_2, in a gaseous form, will be added to the Reverse Osmosis permeate in combination with calcium hydroxide or calcium carbonate in order to form soluble calcium bicarbonate which adds hardness and alkalinity to the drinking water for distribution system corrosion protection. To the extent that it is reasonably available, Poseidon intends to acquire the carbon dioxide from a commercial supplier. Use of recovered CO_2 at the Project would sequester 2,100 tons of CO_2 per year in the Project product water.

The Project also includes the restoration and enhancement of marine wetlands. The restoration project will be in the proximity of the Project. These wetlands will be set-aside and preserved for the life of the Project. Once the wetlands are restored they will act as a carbon "sink" or carbon sequestration project trapping CO_2.