Salt of the Earth Energy LLC

www.saltoftheearthenergy.com
23705 I-10 West Suite 207
San Antonio, Texas 78257
(713) 614-0640

August 15, 2014

State of California
Water Control Board
Sacramento, California

REF: Comments to Draft Amendment to the Water Quality Control Plan for Ocean Waters of California

Ladies and Gentlemen:

Summary of Technology. Our company is commercializing a desalination technology that has no brine discharge/effluent. Our technology uses a new technology to convert the salt harvested from ocean water to produce chemicals that are used by industry for numerous industrial processes and for water and wastewater plants. The chemicals produced are foundational, essential chemicals such as sodium hydroxide, bleach, hydrochloric acid, chlorine and chlorine dioxide, hydrogen, and oxygen gases. As examples of some uses, sodium hydroxide and hydrogen are used by petroleum refineries to remove sulfur from fuels so that no sulfur dioxide is emitted during combustion, and chlorine, chlorine dioxide and bleach are used in water disinfection. Fresh water production is increased to 90%-95% of the intake because the only water not resulting in freshwater is the dilution for the chemicals produced.

Power Consumption and GHG Emissions. As part of our process, we have incorporated an exclusively licensed fuel cell technology that uses the chlorine and part of the hydrogen produced from the harvested salt to manufacture hydrochloric acid and produce electrical power. As a result of this recovery of power, our company's process uses 50% of the power compared to conventional desalination methods, produces nearly twice the fresh water and therefore 50% less GHG emissions if supplied by nonrenewable power. In addition, we plan to use a subfloor intake system licensed from a company that has built more subfloor intake systems for desal plants than any other company in the world.

Comments, suggested revisions. As a result of our technology's combination of attributes for desalination and possibly other technologies that may be similar to ours, our company makes the following comments and suggested revisions to the proposed Amendment:

1. **No Brine Discharge Exemption**. Our company requests that desalination technologies with no brine discharge be exempted from the requirements of the proposed Amendment especially the extended permitting delays caused by unnecessary studies.
2. **Expedited Permitting**. Our company suggests that permitting be expedited/accelerated for proposed zero brine discharge with subfloor intake desalination plants. For desal plants that have no brine discharge AND a subfloor intake system, our company requests that Desal Plant sizes not exceeding 5 MGD be statutorily required to be granted permits in no greater than 6 months.
3. **Designated Best Available Desalination Technology**. Our company requests that desalination technologies that have no brine discharge AND utilize subfloor intake systems be designated "State of the Art", "Best Available" and/or "Best Practices" for Desalination especially when their power requirements are less than conventional desalination methods.
4. **1 MGD Limit for Temporary Plant with No Brine Discharge**. Our company requests temporary desalination plants WITH NO BRINE DISCHARGE be granted a temporary plant size limit of up to 1 MGD provided a subfloor intake system is applied for within 6 months of commencement of operations and installed with 18 months of commencement of desalination operations. At which time the subfloor intake system is operational that such plants no longer be considered "Temporary" but instead permanent.
5. **Sustainably Sourced Chloralkali Chemical Incentives and Requirements.** Finally, we request that the Amendment set out some incentive(s) for water and wastewater plants as well as industry be given (a) some meaningful incentive(s) and (b) that large water users whose use is greater than 0.5 MGD that also use chloralkali chemicals be required to replace their current chloralkali chemical use with the use of chloralkali chemicals produced from sea salt harvested in the production of freshwater in the State of California. By enacting such incentives and requirements, California's chemical usage will incentivize the sustainable practice of using chloralkali chemicals derived from the salt harvested from desalination rather than solution mining or mined salt and thereby increase water availability with minimal environmental impact. Chloralkali chemicals derived from salt are: Chlorine (Cl2), Chlorine Dioxide (ClO2), Caustic or Sodium Hydroxide (NaOH, Hydrochloric Acid (HCl), and Bleach or Sodium Hypochlorite (NaOCl) Hydrogen gas (H2) and Oxygen (O2). Water and wastewater plants are major users of such chlorine products including bleach as biocides and disinfectants. Swimming pools are major users of chlorine products and HCl. VCM manufacture used for producing PVC plastic production are also large consumers of chlorine products. Steel refining and fracking are large consumers of HCl. Caustic and Hydrogen are used in oil refining to remove sulfur (eliminating sulfur dioxide from the emissions of gasoline and other fuels) as well as aluminum refining to extract aluminum from bauxite ore. Both NaOH and HCl are used in numerous other industries including pharmaceuticals and food processing. Hydrogen is also used in producing ammonia.

Our rationale for all these requested revisions is simply that a combination of the desalination attributes of (1) no brine discharge and (2) a subfloor intake for desalination overwhelmingly

achieves the spirit of sustainable, ecofriendly desalination without marine mortality and negligible environmental impact and thus should not be delayed by the same permitting delays and requirements of those desalination practices of the methods that elect not to be sustainable or ecofriendly.

Ocean studies have shown that 90 percent of the marine life in the ocean lives in a narrow band within a few miles of the world's coastlines. Furthermore a significant part of California's tourism and fishing industry depends on the preservation of the environmental health of their coastal waters. It has been clearly shown that exceeding the normal salinity levels causes a decline and/or mortality in marine life and related dependent wildlife and causes fish mortality. This was demonstrated in a recent federal case (The Aransas Project (TAP) vs. the Texas Commission on Environmental Quality, Corpus Christi) involving the death of 23 Whooping Cranes, a federally designated endangered species which is now before the 5th Court of Appeals in New Orleans, Louisiana.

By distinguishing and incentivizing use of chloralkali chemicals derived from desalination brine concentrate, California will increase demand in the marketplace for sustainable chemical production practices and increase water availability through environmentally sound desalination technologies. In addition, because the cost of desalination is spread out over the cost of chloralkali chemical production (with much higher profit margins), not only can the chemicals be produced very competitively but freshwater can be produced for less than 50% of the cost of conventional desalination.

With water scarcity being a worldwide phenomenon and California being the undisputed leader in environmental thought, this desalination legislation offers California an opportunity to influence the worldwide direction into more sustainable desalination that minimizes environmental impacts and increases usage of sustainably derived chloralkali chemicals.

Thank you for your consideration of these revisions,

Joe Veytia

Joe Veytia
Senior Vice President
SALT OF THE EARTH ENERGY LLC
23705 I-10 West Suite 207
San Antonio, Texas 78257
(713) 614-0640

Salt of the Earth Energy LLC

www.saltoftheearthenergy.com

23705 I-10 West Suite 207

San Antonio, Texas 78257

(713) 614-0640

August 19, 2014

State of California
Water Resources Control Board
Sacramento, California

REF: Supplement Comments to Draft Amendment to the Water Quality Control Plan for Ocean Waters of California

Ladies and Gentlemen:

This letter supplements a letter previously submitted by our company for suggested revision to the Draft Amendment to the Water Quality Control Plan.

On the 2nd page of our company's letter dated August 15th, 2014 our company ADDS the following comments and suggested revisions to the proposed Amendment:

6. **Additional CARB Offset Credit Project 1**. Pursuant to the California Global Warming Solutions Act (AB32) currently there are only 4 specific types of projects permitted to earn offset credits (a) Ozone Depleting Substances Projects (b) Livestock Projects (c) Urban Forest Projects and (d) US Forest Projects. It is suggested that low energy desalination projects become eligible to earn offset credits. The computation for such offset credits should be computed based on the difference in CO2 emissions produced by the power requirements for CONVENTIONAL desalination and any byproducts such as salt, chloralkali chemicals and/or minerals rendered to saleable products COMPARED to the savings in power requirements and resulting CO2 emissions to produce such desalinated water, chemicals and minerals using novel methods.

7. **Additional CARB Offset Credit Project 2**. Again pursuant to the California Global Warming Solutions Act (AB32) currently there are only 4 specific types of projects permitted to earn offset credits (a) Ozone Depleting Substances Projects (b) Livestock Projects (c) Urban Forest Projects and (d) US Forest Projects. It is suggested that chemical projects produced from desalination that are used to sequester CO2 or destroy become eligible to earn double offset credits. As described earlier, caustic (NaOH –

sodium hydroxide) is a chemical that can be produced from brine concentrate. A derivative chemical that is produced with caustic is sodium carbonate. Sodium carbonate can be produced by combining caustic with CO2. If such CO2 were harvested from emission stacks then a major chemical would be produced from brine concentrate that would also be used to sequester CO2. There are other combinations of brine concentrate sourced chemicals could be used to produce useful, saleable products that sequester CO2 e.g. CaCO3, MgCO3, etc. CaCO3 is often used in fresh water plants.

Supplementing the current CARB CAP & TRADE legislation to add the above 2 projects into the allowable offset credit projects would provide some of the necessary financial investment incentives to redesign, retool and equip chemical processes to achieve more sustainable methods for desalination. Specifically the above incentives would offer the CAP & TRADE economic incentives to help solve the water shortage problem in California through brine concentrate recycling and thereby reduce the cost of sustainable desalinated water.

Thank you for your consideration of these revisions,

Joe Veytia
Senior Vice President
SALT OF THE EARTH ENERGY LLC
23705 I-10 West Suite 207
San Antonio, Texas 78257
(713) 614-0640