Brine Fate and Effects Information

The following publications, presentations, and reports were contributed from multiple individuals and organizations as background on the fate and effects of desalination and other brines. These documents describe recent studies or specific projects in California and elsewhere, and are being provided as an aid to interested parties in learning more about the technical issues concerning the fate and effects of brine discharged into coastal waters.

CALIFORNIA STUDIES

Plume Modeling

Hydrodynamic modeling of dispersion and dilution of concentrated seawater produced by the ocean desalination project at the Encina power plant, Carlsbad, CA.

Contributed by Poseidon

- Report on modeling of mixing and dilution patterns from the desalination project at the Encina power plant

Hydrodynamic modeling of dispersion and dilution of concentrated seawater produced by the ocean desalination project at the Encina power plant, Carlsbad, CA, Part II: Saline anomalies due to theoretical extreme case hydraulic scenarios.

Contributed by Poseidon

- Report on potential saline anomalies from desalination project at the Encina power plant

Effects Modeling

MRWPCA brine discharge diffuser analysis, September 9, 2008.

Contributed by CalDesal

- Technical memorandum on the effects of discharging brine through Monterey Regional Water Pollution Control Agency (MRWPCA), analysis of different desalination scenarios

MRWPCA brine discharge diffuser analysis, August 13, 2010.

Contributed by CalDesal

- Technical memorandum on the effects of discharging brine through Monterey Regional Water Pollution Control Agency (MRWPCA) ocean outfall under different discharge scenarios

Marine biological considerations related to the reverse osmosis desalination project at the Encina power plant, Carlsbad, CA (text).

Contributed by Poseidon

- Figures from a report on the potential effects of the Encina desalination project

Marine biological considerations related to the reverse osmosis desalination project at the Encina power plant, Carlsbad, CA (figures).

Contributed by Poseidon

- Text from a report on the potential effects of the Encina desalination project

Salinity/Brine Toxicity

96-hour acute effluent toxicity bioassay.

Contributed by Poseidon

- Results of salinity toxicity tests using topsmelt

Toxicity test results – Test substance RO concentrate comp.

Contributed by Poseidon

- Results of reverse osmosis concentrate toxicity tests using topsmelt

Salinity tolerance investigations: A supplemental report for the Carlsbad, CA desalination project.

Contributed by Poseidon

- Report on salinity tolerance testing with purple sea urchins, sand dollars, and red abalone

Salinity related toxicity threshold for short-term exposure.

Contributed by Poseidon

- Report on salinity tolerance short-term exposure threshold testing with topsmelt

Waste Characterization

Carlsbad desalination project waste stream characterization.

Contributed by Poseidon

- Report describing and giving the chemical characterization of the waste streams from the Encina desalination plant

OTHER REGIONS

Effects Modeling

Mitigation approaches to address impacts of salinity discharges in marine environments.

Contributed by CalDesal

- Presentation on monitoring and managing brine discharge in Australia

An environmental literature review and position paper for reverse osmosis desalination plant discharges.

Contributed by CalDesal

- International review of the policies and practices associated with sea water reverse osmosis (SWRO) plants

Discharge Monitoring

Perth, Australia: Two-year feedback on operation and environmental impact.

Contributed by CalDesal

- Outline of how the operational environmental concerns have been addressed, after two years of operation of a SWRO plant in Perth, Australia