Groundwater

Adaptation

Periodic Re-Testing

If computer models are used to manage groundwater quantity and quality in areas where the data distribution is less than ideal, it is reasonable to permit challenges by affected landowners, revisit and update the computer models regularly with new data, or with new concepts and conceptual models. I acknowledge these uncertainties and challenges frustrate policy makers and decision makers, but the "multiple working hypotheses" approach has served as the foundation of the field of hydrogeology developed by American geologist Thomas Chamberlain since the late 1890s.

The other challenge facing new approaches to groundwater and aquifer governance is the notion of "dueling experts." Multiple working hypotheses, coupled with the uncertainty associated with the quantitative characteristics of groundwater systems and the unfortunate, but frequent use of professional witnesses, fuels this problem. To combat this problem, there is increased reliance on a "prove-it" approach to assertions of adequate groundwater supplies and water quality issues. But the periodic re-testing of wells for re-determination of water availability and water quality is not only good policy, but good science, too. The hydraulic performance of wells and aquifers changes with time. Where will these differences in opinion ultimately be resolved? My students in conflict resolution at the University of Oregon and OSU are developing methods to resolve disputes over these wicked "science" questions through "Scientific Mediation," a process that sounds rather utopian, but is garnering much interest by conflict resolution "pracademics."

For Additional Information:
Todd Jarvis, Oregon State University, 541/ 737-8052 or Todd.Jarvis@oregonstate.edu

California Desalination

REGULATING SEAWATER DESALINATION IN CALIFORNIA

by J. Tom Boer & Kathryn Oehlschlager, Barg Coffin Lewis & Trapp (San Francisco, CA)

INTRODUCTION

Continuing Drought

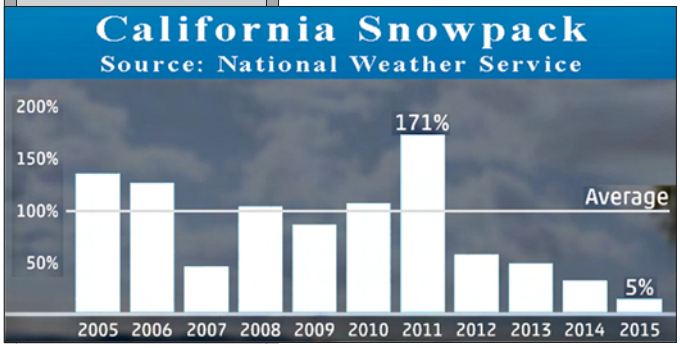
Drought continues to grip California. While Californians are working hard to conserve the limited available water resources, dire long-term projections about the impact of climate change and the possibility of a "mega-drought" have shifted the public's attention to seeking out new sources of water. In other words, policymakers are now focused on how we can "increase the pie" when it comes to water supply. Seawater desalination presents a viable option to provide California with additional water resources. Permitting of desalination facilities in California, however, requires that various local, state, and federal agencies address a multitude of environmental concerns under a broad array of statutes and regulations. An overview of the various regulatory steps associated with the permitting of coastal desalination facilities are discussed below.

BACKGROUND

CALIFORNIA REACTS TO DWINDLING WATER RESOURCES

Resource Demands

For decades, California has faced increasing pressure on its limited water resources due to growing population, agricultural demands, and natural resource protection. Widespread drought in the western United States has recently added substantially to this pressure. After several years of drought conditions, California State Governor Jerry Brown declared a state of emergency in January 2014. Drought conditions have persisted since the emergency declaration, and California's 2014 water year, ending on September 30, 2014, was the third driest in 119 years of record-keeping. It was also the warmest year on record according to the US Geological Service. Measurements taken by the California Department of Water Resources (DWR) in April 2015 found that the Sierra snowpack measured only five percent of historic averages. This is particularly concerning because the runoff from snowpack has historically provided about one-third of the water used by California's cities and farms.



California Desalination

Groundwater Option

Groundwater has served as a dependable renewable resource that can provide backup water supplies in periods of drought. Unfortunately, groundwater has been rapidly depleted in California as pumping has dramatically increased during the drought. Until recently, State policy allowed essentially unlimited groundwater extraction by property owners. As a result of increased groundwater extraction, water tables have reportedly dropped by more than a hundred feet in some locations, ground surface is sinking (subsidence) by as much as a foot per year in other areas, and shallow wells are running dry. Groundwater resources will likely take years to recharge, even with a return to average precipitation levels. Looking further down the road, climate change may further exacerbate the situation, even if drought conditions recede. Projections indicate that climate change will result in less snowfall and adversely change the timing of runoff from the Sierras to earlier in the year.

Confronted with the continuing drought conditions and the decreasing availability of water resources, California has taken statewide action to conserve and recycle water, protect natural resources, and regulate the extraction of groundwater.

Drought Actions

California drought-related actions include:

- Passage of legislation: 2014's Sustainable Groundwater Management Act created a state-wide regulatory scheme for management of groundwater, which will require local and State agencies to regulate groundwater resources in an effort to ensure that California's groundwater supply is sustainable over the long term (*see* Aladjem, *TWR* #135)
- Curtailment of thousands of junior appropriative surface water rights-holders during the 2014 and 2015 dry seasons by the State Water Resources Control Board (State Water Board)
- Adoption of a voluntary cutback program for Delta riparian water rights holders by the State Water Board in early 2015 and the subsequent curtailment of some senior water rights in June 2015
- Issuance of Executive Order B-29-15 by Governor Brown requiring implementation of statewide water saving measures, including a 25% reduction of urban potable water usage through February 2016
- State Water Board implementation of emergency measures to protect natural resources, including enhanced conservation measures and water use reporting in the Russian River watershed to protect salmon species
- Adoption of new building codes to conserve water, including a revised model landscape ordinance by DWR that encourages lower water usage in landscapes and approval of new water efficiency requirements for nonresidential and public school construction by the California Building Standards Commission

"Pie" Expansion

Of course, all of these efforts merely reallocate or conserve the usage of existing water resources. One of the only options available to "expand the pie" — by actually providing additional water for use in California — is the use of desalination technology.

DESALINATION IN CALIFORNIA
PAST & FUTURE

Desalination is currently one of the lowest-volume drinking water sources in the State, and the technology has been relied upon historically only for short periods during times of extreme scarcity. In 1992, following several years of drought, the Santa Barbara Desalination Plant was completed. Once the drought ended, however, the desalination process was no longer cost effective and the facility was decommissioned. As evident in the case of the Santa Barbara facility, the biggest impediment to widespread adoption of desalination is that the technology has been prohibitively expensive compared to available alternatives. According to DWR, however, new technology and potential government cost subsidies appear to be making seawater desalination more cost competitive.

As of 2013, DWR reported three operating ocean water desalinating facilities in California, serving small communities like Santa Catalina, with a total annual capacity of only 562 acre-feet. A much larger facility — the Carlsbad Seawater Desalination Facility — is currently under construction and scheduled to begin operating in November 2015. At least 15 other facilities have also been proposed, and if all of the proposed facilities are constructed, California will see an increase in seawater desalination capacity of more than two orders of magnitude.

California Desalination

Technology

Reverse Osmosis

Though successful completion of all of the proposed desalination facilities would serve only about 5% of California's urban water demand, it would demonstrate the viability of the technology to provide potable water, particularly for California's urban coastal populations.

There are a number of desalination technologies that can transform ocean water into potable water. The oldest is thermal distillation, which can deliver large volumes of high purity water, but thermal distillation facilities have high capital construction costs and require large energy inputs. Although there are large-scale facilities still using thermal distillation in the Middle East, the technology has never been used to produce municipal drinking water in California. Most modern facilities use membrane separation and, more specifically, **r**everse **o**smosis (RO), to desalinate ocean water, a technology that has been rapidly advancing since the 1990s. In an RO facility, seawater is pushed under pressure through a semi-permeable membrane, allowing relatively fresh water to pass through for future use, and leaving high salinity brine behind for disposal.

This article focuses on the regulatory requirements for RO desalination facilities with ocean water intakes on the California coast. Although other technologies are available, and locations away from the coast are feasible (e.g., pumping brackish groundwater), the desalination of ocean water using RO technology has emerged as the preferred approach likely to be used in California to supplement urban water supplies.

Desalination Support

California has recognized the potential for desalination to supplement water supplies and has encouraged development of desalination technology.

California's desalination encouragement has included:

- Passage of AB2717 in 2002 established the California Desalination Task Force, which has issued a series of reports on desalination and a finding "that economically and environmentally acceptable desalination should be considered as part of a balanced water portfolio to help meet California's existing and future water supply and environmental needs."
- Passage of AB314 in 2003, which declared that it is the policy of the State to give the same assistance and funding to desalination projects developed by, or for public water entities as given to other water supply and reliability projects.
- The California Coastal Commission, in its March 2004 Seawater Desalination and the California Coastal Act report, concluded that "desalination will obviously be an important part of California's water future. The question is not whether, but rather how, where, when, by whom, and under what conditions will desalination projects be designed, built, and operated."
- The California Water Plan, most recently updated in 2013 by the Department of Water Resources, identifies desalination as a "one of the few options available to augment California's water supply."
- Governor Brown's 2015 Executive Order B-29-15 directed State agencies to encourage the development of cutting-edge technologies, including "renewable energy-powered desalination."
- Amendment of the Ocean Plan by the State Water Board in May 2015, discussed further below, to provide uniform, statewide guidance for the permitting of operations at desalination plants.

DESALINATION ENVIRONMENTAL ISSUES

Environmental Issues

The construction and operation of desalination facilities raises a host of potential environmental issues unlike those associated with more traditional water sources.

The more significant environmental issues include:

Potentially Sensitive Habitat and Land Use Impacts

Coastal Protections

Seawater desalination facilities must be constructed in close proximity to the ocean. Due to sensitive habitat and limited oceanfront land, the coast is subject to significant protection in California. Construction may harm or displace habitat or sensitive species and placement of facilities may raise various land use concerns, including those related to public access, compatibility, and wetland preservation.

Seawater Intake

Intake Methods

Desalination facilities need to intake seawater. The method of intake can play a critical role in determining potential adverse impacts on habitat and species. There are two general types of desalination intakes: (i) surface intakes, located above the floor of the ocean; and (ii) subsurface intakes, located below the ocean. Surface intakes use screens to minimize impingement (trapping of organisms against the screen by the force of incoming water) and entrainment (when organisms are pulled into the intake). Subsurface intakes draw seawater through wells or seabed infiltration galleries, which consist of intake pipes placed under the ocean floor.

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Energy Issue

Brine Disposal

Greenhouse Gas Emissions

RO technology requires significant power to produce potable water. Therefore, if a desalination facility runs on non-renewable energy sources, it will likely generate more greenhouse gas emissions per acre-foot of water produced than alternative water supplies. Regulators may seek to mitigate the impact of increased greenhouse gas emissions associated with a desalination facility via the permitting process.

Brine/Salt Disposal

The desalination process generates high-salinity brine. There are a number of methods to dispose of brine, including: (i) discharge back to the ocean (or another surface water); (ii) subsurface discharge by injection into a deep well to the aquifer; (iii) land application by irrigation; or (iv) solar or thermal evaporation to produce solids for landfill disposal. As discussed below, the preferred disposal method for brine in California is discharge back to the ocean, ideally after being mixed with another source of lower-salinity water. The primary regulatory concern is impact on salinity levels near discharge points because increased salinity can have negative impacts on habitat and species.

As discussed below, the regulatory process in California is intended to address, regulate, and mitigate all of these issues.

REGULATION OF DESALINATION FACILITIES IN CALIFORNIA

Construction and operation of desalination facilities in California triggers multiple regulatory reviews and permitting requirements with local, State, and federal agencies.

State & Local Land-Use Approvals

Zoning

Local Land-Use Permits

There are a variety of local approvals that could be required for a desalination project, including zoning variances and conditional use permits. Though it will vary by jurisdiction, every project will require at least one approval from a local agency, and project proponents will be required to meet local requirements for public notice, hearings, and appeals. Construction may also require building and grading permits. Project proponents would be well-advised to coordinate with local planning staff early in the process to ensure a full understanding of the regulatory requirements.

Coastal Development

Coastal Development Permits

Construction of a coastal desalination plant will require a Coastal Development permit from the Coastal Commission or the local jurisdiction, if it has a certified local Coastal Program. In many areas, the local jurisdiction's approval can also be appealed to the Coastal Commission.

Tidelands Use

State Lands Commission

The State Lands Commission (SLC) has regulatory authority over public trust lands, including tidal and submerged lands. A private company or public entity must apply to the SLC to use sovereign lands for any public trust use. Because intake and outfall structures will likely be on state tidelands, they will likely require a lease from the SLC.

Species-Related Approvals

Federal and State Endangered Species Acts

In many areas off the California coast, potential impacts on protected species will be difficult, if not impossible, to eliminate. Opponents to new desalination facilities often cite species impacts as major concerns, specifically with regard to intake structures and, to a lesser extent, discharge.

ESA Section 7 Consultation

If a project has the potential to impact protected species, it will fall under the state and/or federal Endangered Species Act (ESA), and, potentially, the federal Marine Mammal Protection Act. If a federal approval is required for a particular project and that project may affect a species protected under the federal ESA, that agency will be required to consult with the United States Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service under Section 7 of the federal ESA. If there is no federal approval required but the project has the potential to "take" a federally protected species, the project applicant will be required to obtain an Incidental Take Statement under ESA Section 10. If a project also may affect species that are protected under California law but not the federal ESA, consultation with the California Department of Fish and Wildlife will also be required.

ESA Process Timelines

The ESA process can be onerous, particularly if there is a Section 7 consultation requiring a Biological Opinion, so project proponents would be wise to build a significant amount of time — usually, at least a year — into their timelines for obtaining species-related approvals.

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CEQA and NEPA

The California Environmental Quality Act (CEQA) applies to any discretionary approval by a state or local agency that has the potential to have a physical impact on the environment. Because desalination plants require a variety of state and local approvals, CEQA review will be required. If a project also involves a permit from a federal agency, it will also require review under the National Environmental Policy Act (NEPA).

CEQA Lawsuits

CEQA could prove a formidable hurdle to desalination projects in California. CEQA lawsuits have become essentially unavoidable for controversial development projects, and desalination is no exception. Attorneys fees may be awarded under the California Code of Civil Procedure § 1021.5 if the project opponents' case is successful. It is critical that the proponent of a desalination project convene the right team of consultants and lawyers to prepare a detailed and defensible Environmental Impact Report (EIR).

Impacts & Mitigation

CEQA requires a lead agency to identify the environmental impacts of a project and determine whether any impacts will be "significant." If an impact is significant, the lead agency must either impose mitigation that will reduce the impact to a less-than-significant level or issue a Statement of Overriding Considerations (SOC), finding that such impacts are "significant and unavoidable" and that the project will go forward nonetheless. The impacts of a particular desalination proposal will depend on project-specific factors, such as size, location, and technology. That said, there are several impact areas that will likely become pressure points in EIRs for coastal desalination projects.

Energy Impacts

Energy Analysis

One major criticism of desalination is the significant amount of energy required to perform reverse osmosis. In *California Clean Energy Committee v. City of Woodland*, 225 Cal.App.4th 173 (2014), the California Court of Appeal for the Third District arguably increased the burden on project proponents with regard to energy impacts, holding that in-depth analysis of alternative energy sources and transportation energy impacts is required. Project proponents should focus on preparing a robust analysis of energy impacts that closely tracks Appendix F to the CEQA guidelines and follows the guidance in *California Clean Energy Committee*. Appendix F available at: www.urbanxroads.com/wp-content/uploads/2014/12/Appendix-F.pdf.

Consistency with Land Use Plans

Land Use

Land use consistency is likely to be an issue in EIRs for desalination plants, in part because it is difficult to find coastal property that is zoned for industrial use. In addition, the recent Ocean Plan amendments, discussed further below, require consideration consistency with local water management plans, such as urban water management plans, general plans, and integrated regional plans. EIRs will need to clearly explain how a proposed desalination project harmonizes with existing planning documents.

Growth Inducement

Growth Inducement

Growth inducement will also be a key issue in CEQA analysis. In 2004, the California Coastal Commission stated publicly that "[a] desalination facility's most significant effect could be its potential for inducing growth." This is particularly true on California's Central Coast, where development of highly desirable real estate has been precluded for decades as a result of limited water supply. Desalination EIRs will have to address these impacts, which can be difficult to mitigate.

Species Impacts

Species Impacts & Project Design

For the reasons discussed above, species impacts are likely to be the subject of significant controversy in connection with desalination projects. Large-scale desalination involves pumping millions of gallons of seawater per day, and opponents of desalination often cite impacts to species, in the form of entrainment and impingement, as their principal reason for dissenting.

Some species impacts can be mitigated by project design, specifically by replacing traditional surface intakes with subsurface intakes. Surface intakes can be screened to reduce entrainment, but even screens with very small slot size are ineffective at reducing impacts on microscopic organisms. The Ocean Plan states that the Water Board shall require subsurface intakes unless it determines they are not feasible for a particular project, based on a variety of factors. Discharges of reject water, or brine, with high concentrations of salt can also harm species. Brine can accumulate on the sea floor and cause harm to bottom-dwelling environments, and simply increases the salinity of the environment near the discharge point.

It is critical that project proponents adequately analyze and mitigate species impacts resulting from desalination projects.

Impacts Review: *North Coast Rivers Alliance, et al. v. Marin Municipal Water District*

Impacts Review

The importance of a thorough impacts review was evident in the Marin Municipal Water District's (MMWD's) 2013 win in a CEQA dispute for a proposed desalination project. The North Coast Rivers Alliance (NCRA) filed suit against the MMWD, challenging its 2009 EIR for a five million gallon-per-day

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reverse osmosis desalination plant that would extract water from San Rafael Bay. NCRA's writ petition in the lawsuit took an "everything but the kitchen sink" approach, challenging the EIR document's analysis of: aesthetics; land use; seismology; hydrology and water quality; biological resources; alternatives; and greenhouse gasses. NCRA also argued that MMWD should have recirculated the draft EIR after adding an additional alternative in response to comments. The trial court agreed with NCRA, finding for the petitioners on all of the issues above.

Litigation Preview

However, the Court of Appeal reversed the trial court on all issues, finding the MMWD had complied with CEQA both procedurally and with respect to the content of the document. It was a significant victory for MMWD, but also a preview of what's to come with respect to litigation over desalination projects. *North Coast Rivers Alliance, et al. v. Marin Municipal Water District Board of Directors* (1st Dist., Div. 4, 2013), 216 Cal.App.4th 614; available at: http://resources.ca.gov/ceqa/cases/2010/Sonoma_County_Water_Coalition_v._Sonoma_County_Water_Agency.pdf.

Federal Clean Water Act & State Waste Discharge Requirement Permitting

California's Ocean Plan

Permitting for the operation of desalination facilities, particularly the intake and brine discharge technology, is regulated by both the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act.

NPDES Program

Section 402 of the Clean Water Act requires the US Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System (NPDES) program. The program controls water pollution by regulating point sources that discharge pollutants. Any point source discharge of brine, or other wastewater, from desalination facilities to waters of the United States — which include "Territorial Seas" — must operate with an NPDES permit. Although the NPDES permit program is tailored to the regulation of discharges, EPA also evaluates and imposes limitations on intake systems via the same permitting process. EPA has delegated implementation of the federal NPDES program to California, where it is administered via the State and Regional Water Boards.

Ocean Plan (Water Quality)

Two aspects of the Porter-Cologne Act are particularly relevant to the permitting of seawater desalination facilities. First, pursuant to § 13170.2(b) of the California Water Code, and in accord with § 303(c)(1) of the federal Clean Water Act, the State Water Board is responsible for maintaining a Water Quality Control Plan for Ocean Waters of California (the Ocean Plan) that sets water quality standards (see www.swrcb.ca.gov/water_issues/programs/ocean/ for more information). Standards specified in the Ocean Plan provide the general parameters that will guide permitting of desalination facilities by the applicable Regional Water Board. Second, pursuant to § 13260 et seq. of the Water Code, the Regional Water Boards are authorized to prescribe requirements — known as Waste Discharge Requirements (WDRs) — for any proposed discharges to receiving waters in the State.

Discharges

Single Permit

Because implementation of the federal NPDES program is delegated to the State, the Regional Water Boards will issue a single permit to applicants that meets both the NPDES and WDR requirements. The terms of that permit will be guided by the applicable Water Quality Control Plan (known as "Basin Plans") set by each Regional Water Board and the water quality requirements delineated in the Ocean Plan as adopted by the State Water Board.

Desalination Amendment

On May 6, 2015, the State Water Board, recognizing the increasing interest in desalination facilities in response to the drought and limited alternatives to supplement California water resources, approved an amendment to the Ocean Plan that directly addresses permitting of seawater desalination facilities (*see* Desalination Amendment at: www.swrcb.ca.gov/water_issues/programs/ocean/desalination/). The amendments were developed via a multi-year process that included commissioning experts to study potential environmental impacts, conducting an external scientific peer review, and conducting public outreach, including a public hearing. According to a press release from the State Water Board, the amendment will provide: (i) "a consistent framework for communities and industry"; (ii) "direction for regional water boards when permitting desalination facilities"; and (iii) "specific implementation, monitoring, and reporting requirements" for coastal desalination facilities.

Preferred Approaches & Alternatives

The Ocean Plan now provides regulatory requirements applicable to new or expanding desalination facilities. In many instances, including for intake and disposal technology and receiving water salinity limits, project proponents may seek an alternative to the preferred approach identified by the Ocean Plan. The more closely that a project adheres to the preferred alternatives, however, the more likely the permitting process will proceed expeditiously before the Regional Water Board. To the extent that a project departs from a preferred alternative specified in the Ocean Plan, it is advisable to engage early with staff at the Regional Water Board and to prepare a project-specific technical analysis supporting the need for an alternative approach that thoroughly addresses the relevant criteria specified in the Ocean Plan.

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Key requirements in the Ocean Plan applicable to seawater desalination facilities include:

Facility Analysis

Alternatives Analysis

The Ocean Plan requires an analysis of any proposed facility: "The regional water board shall first analyze separately as independent considerations a range of feasible alternatives for the best available site, the best available design, the best available technology, and the best available mitigation measures to minimize intake and mortality of all forms of marine life. Then, the regional water board shall consider all four factors collectively and determine the best combination of feasible alternatives to minimize intake and mortality of all forms of marine life." This analysis will be done in consultation with other agencies, including the California Coastal Commission, the California State Lands Commission, and the California Department of Fish and Wildlife.

Subsurface Intakes (Feasibility)

Intakes

Subsurface intakes are required, unless a determination is made that such intakes are not feasible. The Ocean Plan specifies criteria to evaluate the feasibility of subsurface intakes, including geotechnical data, benthic topography, presence of sensitive habitats and species, design constraints, and project life cycle cost. The Ocean Plan states that subsurface intakes cannot be "determined to be economically infeasible solely because [they] may be more expensive than surface intakes." However, a finding that subsurface intakes render the proposed facility "not economically viable" would potentially open the door for the approval of a surface water intake alternative. The Ocean Plan lists the conditions that would be required for any facility using a surface water alternative.

Wastewater Dilution

Brine Disposal

The "preferred technology for minimizing intake and mortality of all forms of marine life resulting from brine discharge" is to commingle brine with wastewater (e.g., agricultural, municipal, industrial, power plant cooling water, etc.) that would otherwise be discharged to the ocean. As a practical matter, this indicates a regulatory preference for co-locating desalination facilities near coastal power plants. Alternatively, if there is no option to dilute brine with a nearby wastewater source, multiport diffusers (submerged linear structures with spaced ports or nozzles) are identified as the "next best method for disposing of brine." A project proponent can propose an alternative brine discharge technology, provided that it can be demonstrated that the alternative "provides a comparable level of intake and mortality of all forms of marine life as wastewater dilution if wastewater is available, or multiport diffusers if wastewater is unavailable." *See* www.swrcb.ca.gov/water_issues/programs/ocean/desalination/docs/desalamend_050515.pdf at page 8.

Brine Standard

Receiving Water Salinity

Discharge of brine may not exceed a daily maximum of 2.0 parts per thousand above natural background salinity measured no further than 100 meters horizontally from each discharge point. A project proponent may propose an alternative receiving water limitation for salinity, but any proposal must be supported by toxicity studies and biologic surveys. *See* www.swrcb.ca.gov/water_issues/programs/ocean/desalination/docs/desalamend_050515.pdf at page 16.

Monitoring

Monitoring and Reporting

Desalination facilities must implement a Monitoring and Reporting Plan, subject to approval by the Regional Water Board, that includes "monitoring of effluent and receiving water characteristics and impacts to all forms of marine life."

Marine Life Mortality

Mitigation

The project proponent must prepare a Marine Life Mortality Report, estimating the mortality to marine life resulting from the construction and operation of the facility. The report must include a "detailed entrainment study" and an analysis characterizing the area where "salinity exceeds 2.0 parts per thousand above natural background salinity" due to discharge of brine. Mitigation for the mortality of all marine life impacted by the facility must be mitigated by either: (i) completion of an acceptable mitigation project; or (ii) payment of a fee in lieu of mitigation, provided that the Regional Water Board determines that an acceptable fee-based mitigation program is available.

Permits Consistency

Several of the elements required in a proponent's permit application to the Regional Water Board, e.g., the alternative analysis and mitigation, will almost certainly be duplicative of issues that must also be addressed via other regulatory avenues, particularly the CEQA process. To expedite the permitting process and reduce exposure to litigation risk, project proponent should ensure consistency across all of their permitting documents and thoroughly cross-check regulatory requirements to ensure that all required criteria and requirements have been addressed.

For additional information about the Ocean Plan, *see*: www.swrcb.ca.gov/water_issues/programs/ocean/desalination/docs/desalamend_050515.pdf.

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Potential Regulatory Hurdles

Complex Regulation

Qualified Project Team

Other Potential Approvals

In addition to the permits and approvals listed above, some projects could require approvals from additional entities depending upon the project location and the specific design or technology selected for the facility.

Other potentially involved entities include:

- California Energy Commission, for desalination plants proposing to co-locate at power plants
- The California Public Utilities Commission, with regard to water rates and service areas
- The California Department of Public Health, under the Safe Drinking Water Act
- The Coast Guard, under the Rivers and Harbors Act
- The Army Corps of Engineers, if the site includes any jurisdictional waters (or wetlands) under Section 404 of the Clean Water Act
- Local Port Authorities, depending on location
- Regional regulatory bodies, like the Bay Conservation and Development Commission
- The National Oceanic and Atmospheric Administration or individual sanctuaries, for projects in national marine sanctuaries
- The Department of Parks and Recreation
- The Department of Transportation, for utilities crossing state highways
- Department of Water Resources, for use of state water conveyance facilities
- Local air pollution control districts, utilities, water districts, or other regulatory bodies

CONCLUSION

THE FUTURE OF SEAWATER DESALINATION IN CALIFORNIA

Given California's limited water resources, there is little doubt that seawater desalination will be an important component of meeting future urban water demand. California presents a complex regulatory environment for the construction of large industrial facilities and the nature of desalination plants — e.g., proximity to the coast, large power usage, and large volume intakes and discharges — has the potential to trigger heightened scrutiny under a variety of environmental statutes. Due to the high project cost associated with desalination plants, potentially exceeding $1 billion, any delay caused by third-party challenges can also be expensive or even risk the viability of a project. We therefore advise project proponents to assemble a highly qualified project team, consisting of environmental consultants and counsel, to address the myriad environmental requirements and to proactively coordinate with the various regulators at an early stage. Such an approach can help ensure expeditious review and processing of permit applications and reduce the risk associated with third-party litigation.

For Additional Information:
J. Tom Boer, Barg Coffin Lewis & Trapp, 415/ 228-5400 or jtb@bcltlaw.com
Kathryn Oehlschlager, Barg Coffin Lewis & Trapp, 415/ 228-5400 or klo@bcltlaw.com

J. Tom Boer is a partner at Barg Coffin Lewis & Trapp, LLP. His practice focuses on environmental litigation and compliance counseling under both federal and state environmental statutes, as well as commercial and other litigation matters. Before entering private practice, Tom spent seven years as a Trial Attorney with the US Department of Justice (DOJ) and two and a half years as an attorney with the US Environmental Protection Agency's Office of General Counsel. As an attorney with DOJ, Tom prosecuted cases pursuant to the Clean Air Act, Clean Water Act, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), Oil Pollution Act, and the Park System Resource Protection Act.

Kathryn Oehlschlager is a partner with Barg Coffin Lewis & Trapp, LLP. Her practice focuses on environmental and land use litigation and compliance counseling under federal and state statutes. Kathryn has extensive experience advising clients on compliance with all aspects of environmental and land use law, including CEQA, NEPA, federal and state endangered species laws, and laws regulating solid and hazardous waste.

