APPENDIX A:

COURT ORDERS

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This appendix contains the court orders issued on May 2, 2003, and July 8, 2003, by the United States District Court, Southern District of California (Case No. 02-CV-513-IEG (POR)), in the case of the Border Power Plant Working Group versus the U.S. Department of Energy and the Bureau of Land Management.

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CLERK, U.S. DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA
BY: DEPUTY

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

BORDER POWER PLANT WORKING GROUP,

Plaintiff,

vs.

DEPARTMENT OF ENERGY; SPENCER ABRAHAM, in his official capacity; CARL MICHAEL SMITH, in his official capacity; ANTHONY J. COMO, in his official capacity; BUREAU OF LAND MANAGEMENT,

Defendants.

CASE NO. 02-CV-513-IEG (POR)

ORDER (1) GRANTING IN PART AND DENYING IN PART PLAINTIFF'S MOTION FOR SUMMARY JUDGMENT; (2) GRANTING IN PART AND DENYING IN PART DEFENDANT'S MOTION FOR SUMMARY JUDGMENT; (3) DENYING DEFENDANTS' MOTION TO STRIKE PLAINTIFF'S DECLARATIONS; (4) DENYING DEFENDANTS' ORAL MOTION TO SUPPLEMENT THE ADMINISTRATIVE RECORD; (5) GRANTING PLAINTIFF'S MOTION TO STRIKE SUPPLEMENTAL DECLARATION AND REQUEST FOR JUDICIAL NOTICE; and (6) SETTING BRIEFING SCHEDULE FOR THE REMEDY PHASE OF THE MOTIONS FOR SUMMARY JUDGMENT

[Doc Nos. 44, 56, 59, 85]

Presently before the Court are cross-motions for summary judgement, federal defendants' motion to strike plaintiff's declarations, defendants' oral motion to supplement the record, and

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plaintiff Border Power Plant Working Group's motion to strike amicus Termoelectrica U.S.'s request for judicial notice and supplemental declaration. For the reasons discussed below, the Court denies in part and grants in part both motions for summary judgment, denies federal defendants' motions to strike and to supplement the record, and grants plaintiff's motion to strike.

BACKGROUND

I. Factual Background[1]

This case involves two applications for Presidential Permits and federal rights-of-way to build electricity transmission lines within the United States and across the United States-Mexico border to connect new power plants in Mexico with the power grid in Southern California.

1. The BCP Permit and Right-of-Way

In February 2001, Baja California Power ("BCP"), a wholly-owned subsidiary of Intergen Aztec Energy ("Intergen"), applied to defendant U.S. Department of Energy ("DOE") for a Presidential Permit to construct and operate an electric power transmission line across the international border between the United States and Mexico near El Centro, California. (See Pla's Statement of Undisputed Facts ("PSUF") at ¶ 1; Defs' Statement of Undipsuted Facts ("DSUF") at ¶ 2).[2] In particular, the BCP transmission line will connect the Imperial Valley electric substation in Imperial County, California to a new power plant called the La Rosita Power Complex ("LRPC") under construction just west of Mexicali, Mexico. See DOE-33, 202165-202167, DOE-101, 204344.[3] The connection will be made via another transmission line being constructed in Mexico by Energía de Baja California ("EBC"), a wholly-owned subsidiary of Intergen. See DOE-101 at 204320; DOE-33 at 202167; PSUF at ¶ 2. The LRPC is being built by EBC and another

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[1]The administrative record ("AR" or "record") is a compilation of documents relied upon by the agencies in making their challenged decisions and sets forth the material facts in this case.

[2]BCP also applied to the Bureau of Land Management ("BLM") for a right-of-way across federal land to build the transmission line. Although the Presidential Permits at issue were issued by the DOE and the rights-of-way were issued by the BLM, both agencies relied upon the same environmental analysis documents. Additionally, the parties focused their briefing almost entirely on the DOE's issuance of the Presidential Permits. For convenience, the Court will follow suit and refer primarily to the DOE permits, although the Court's analysis applies to both agencies' decisions.

[3]The Court will cite to the Administrative Record by referring to either the DOE or Bureau of Land Management ("BLM") document number and then to a bates number.

wholly-owned subsidiary of Intergen, Energia Azteca X ("EAX"). DOE-33 at 202167; PSUF at ¶ 2. The LRPC will house four gas-fired combustion turbines. DOE-101 at 204320. EBC will own one of these turbines and EAX will own the remaining three. Id. Two of the EAX turbines, with a combined output of approximately 500 megawatts ("MW"), will provide power to Mexico, while the third EAX turbine and the single EBC turbine will export a combined, nominal[4] 560 MW of power to the United States. DOE-101 at 204320, 204402, 204404. However, the BCP transmission line will be able to transport power generated by any of the turbines at the LRPC. DOE-101 at 204320 n.2 (noting that while exported power may in limited circumstances from one of the two turbines designated for Mexican energy production, the total amount of power exported would not rise above a nominal 560 MW). Each of the double circuit lines proposed by BCP would have a capacity of 600 MW. DOE-033 at 202168. The lines are to be constructed in two phases, with the second circuit only strung when business or economic circumstances make possible the expansion of the EBC facility, or to meet the additional transmission needs of the EAX turbines. Id. at 202167-212168.

The EBC turbine and the EAX export turbine utilize dry low-NOx (oxides of nitrogen) combustor technology and selective catalytic reduction ("SCR") technology that reduce NOx emissions to 4 parts per million ("ppm"). DOE-101 at 204402, 204404. Carbon Monoxide (CO) emissions from the EBC turbine and the EAX export turbine would be not be controlled and would emit at 30 ppm. DOE-101, 204404, 204321, 204344. Annual emissions from the EBC turbine and the EAX export turbine would be 282 tons of NO_2 (nitrogen dioxide), 924 tons of CO, and 410 tons of PM-10 (particulate matter less than 10 microns in size). DOE-101 at 204401.

The administrative record does not suggest that the remaining two EAX turbines at the LRPC will be built with emissions control technology for NOx or CO. DOE-101 at 204321,

[4]The parties explained at oral argument that "nominal" power output refers to the output of a plant when just the primary cycle of the plant is operating. Because these turbines are combined-cycle, they apparently achieve a "maximum" power output by using their secondary cycle.

204344.[5] Accordingly, these turbines will emit at 25 ppm for Nox and 30 ppm for CO. DOE-101, 204321. Annual emissions from these two EAX turbines would be 1,502 tons of NO_2, 957 tons of CO, and 314 tons of PM-10. DOE-101 at 204401.

2. The Termoelectrica-US ("T-US") Permit and Right-of-Way

On March 1, 2001, Sempra Energy Resources (SER) filed an application for a Presidential permit to construct and operate a separate transmission line that would facilitate the transmission of electricity across the U.S.-Mexico border. See DOE-35 at 202186-202187. In particular, the SER application sought permission to build a line that would connect the Imperial Valley electric substation to the Termoelectrica de Mexicali ("TDM") power plant under construction near Mexicali, Mexico. DOE-35 at 202186-202187. The connection will be made via another transmission line being constructed in Mexico by TDM. DOE-35 at 202187. TDM is a wholly-owned subsidiary of Sempra Energy. DOE-35 at 202188. The TDM plant would export 100 percent of its net generating capacity to the United States. DOE-101 at 204344. The TDM facility consists of two gas-fired combustion turbines. DOE-101 at 204320. Although the TDM facility is only permitted by Mexican authorities to generate a nominal 500 MW, DOE-35 at 202188,[6] SER indicated that it intended the possible second circuit of the transmission line to have the potential to export up to another nominal 500 MW. DOE-36 at 202196; DOE-35 at 202188.

The TDM facility would be equipped with emission control technology, including dry low-NOx combustor technology, SCR, and oxidizing catalyst systems, to reduce Nox and CO emissions. DOE-101 at 204402. The TDM facility would thus emit 2.5 ppm for NOx and 4.0 ppm for CO. DOE-101 at 204402, 204321. Based on 600 MW of energy output, the TDM facility would annually emit 170 tons of NOx, 165 tons of CO, and 216 tons of PM-10. DOE-101 at 204401.

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[5]Defendants argue that Intergen has announced since the issuance of the Presidential Permits that all of the Intergen turbines will use emissions control technology for NOx. (See DSUF at ¶ 23). However, based on defendants own arguments in their motion to strike, the Court will focus on the information available in the record as it stood at the time that defendants made the finding of no significant impact.

[6]The AR also indicates, however, that TDM is intended to export 600 MW to the U.S. DOE-101, 204321.

Concentrations of pollutants at the U.S. Mexico border due to emissions from the TDM facility are predicted to increase as follows: NOx (annual) 0.09 $\mu g/m^3$; CO (8-hour) 2.16 $\mu g/m^3$; PM-10 (hourly) 1.12 $\mu g/m^3$; PM-10 (annual) 0.11 $\mu g/m^3$. DOE-101 at 204403. When combined with total emissions predicted from the entire LRPC, the concentrations of pollutants at the U.S./Mexico border are expected to rise as follows: NO2 (annual) 0.8 $\mu g/m^3$; CO (1-hour) 70.0 $\mu g/m^3$; CO (8-hour) 30.8 $\mu g/m^3$; PM-10 (24-hour) 4.5 $\mu g/m^3$; PM-10 (annual) 0.3 $\mu g/m^3$. DOE-101 at 204439.

II. Procedural Background

After undertaking an environmental assessment of the applications for the Presidential Permits and the BLM rights-of-way, DOE and BLM each issued a Finding of No Significant Impact ("FONSI") in December 2001. DOE-103; BLM-182 (FONSI for BCP right-of-way); BLM-183 (FONSI for SER right-of-way). DOE issued Presidential Permits to BCP and SER on December 5, 2001. DOE-104 at 204612; DOE-105 at 204618. BLM granted a right-of-way to BCP that became effective on December 28, 2001, and another right-of-way to SER that became effective on December 31, 2001. BLM-189 at 102333; BLM-186 at 102290. The Presidential Permit and the right-of-way issued to SER were subsequently transferred to T-US, a subsidiary of Sempra Energy. DOE-125S at S24897; BLM-207S at S102612.

Plaintiff filed a motion for summary judgment, alleging various violations of the National Environmental ~~Protection~~ Policy Act ("NEPA") and the Administrative Procedure Act ("APA") on January 31, 2003. The federal defendants filed a cross-motion for summary judgment and an opposition to plaintiff's motion on March 13, 2003. Amicus curiae briefs were filed by BCP, T-US, and Imperial County and City of El Centro. Plaintiff responded to the BCP and T-US briefs on April 4, 2003, and both plaintiff and the federal defendants replied to the other's opposition brief. The federal defendants have also moved separately to strike extra-record materials. Finally, plaintiff's moved to strike T-US's request for judicial notice and supplemental declaration.

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DISCUSSION

III. Preliminary Issues

Before reaching the merits of the case, the Court must first determine whether it has jurisdiction and what evidence it can consider. First, the Court will briefly consider whether it has proper jurisdiction.

A. Standing

Although defendants do not challenge plaintiff's standing, the Court has an independent duty to assure itself that it has jurisdiction over the case. Plaintiff has submitted several declarations to demonstrate its standing.

1. Legal Standards

a. Traditional Standing

Because standing is "an essential and unchanging part of the case-or-controversy requirement of Article III," the Court does not have jurisdiction in its absence. Lujan v. Defenders of Wildlife, 504 U.S. 555, 560 (1992). The "irreducible constitutional minimum" of standing contains three elements. Id. First, the plaintiff must have suffered an "injury in fact." Id. The Supreme Court's opinions have defined such an injury as "an invasion of a legally protected interest which is (a) concrete and particularized. . .and (b) actual or imminent, not conjectural or hypothetical." Id. (internal quotations omitted). Second, the injury must be fairly traceable to the challenged action of the defendants. See id. Third, it must be "likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision." Id. at 561 (internal quotations omitted). Each of these elements must be supported by the plaintiff with the same manner and degree of evidence required to show any other matter at the present stage of the litigation. Id.

With regard to the "imminence" of the injury in fact, the plaintiff must show that the injury is "*certainly* impending." Id. at 564, n.2 (emphasis in original). The goal is to avoid conferring standing on a party on which no injury would have occurred at all in the absence of judicial action. Id. In the end analysis, the Court warns that standing "is not 'an ingenious academic exercise in the conceivable.'" Id. at 566 (citing United States v. Students Challenging Regulatory Agency

Procedures, 412 U.S. 669, 688 (1973)).

The requirement that the injury is particularized means that "[t]he plaintiff must have a personal stake in the outcome." Id. at 583. To be concrete, the injury must be more than "abstract." Id. Rather, plaintiff must demonstrate that it has "sustained or is immediately in danger of sustaining some direct injury as the result of the challenged statute or official conduct." Id. (internal quotation omitted).

b. Procedural Standing

In Lujan v. Defenders of Wildlife, the Court recognized that its analysis would differ if it was faced with a case in which "plaintiffs are seeking to enforce a procedural requirement the disregard of which could impair a separate concrete interest of theirs (*e.g.*,. . .the procedural requirement for an environmental impact statement before a federal facility is constructed next door to them)." Id. at 572. Although the Court rejected the argument that the injury-in-fact requirement is satisfied by "congressional conferral upon *all* persons of an abstract, self-contained, noninstrumental 'right' to have the Executive observe the procedures required by law," id. (emphasis in original), it also recognized that "procedural rights" are special and should be accorded different treatment under the standing analysis:

> The person who has been accorded a procedural right to protect his concrete interests can assert that right without meeting all the normal standards for redressability and immediacy. Thus, under our case law, one living adjacent to the site for proposed construction of a federally licensed dam has standing to challenge the licensing agency's failure to prepare an environmental impact statement, even though he cannot establish with any certainty that the statement will cause the license to be withheld or altered, and even though the dam will not be completed for many years.

Id. at 572, n.7. The Lujan Court explained that the case before it differed from its hypothetical case because the Lujan plaintiffs sought procedural standing for persons who had no concrete interests affected. Id. In terms of the Court's hypothetical, these would be people who live on the other side of the country from where the proposed dam would be built. Id.. In sum, the Court held that an individual can enforce procedural rights "so long as the procedures in question are designed to protect some threatened concrete interest of his that is the ultimate basis of his standing." Id. at 573.

The Ninth Circuit has determined that the Lujan case requires a plaintiff to show two

essential elements for procedural standing: "(1) that he or she is a person who has been accorded a procedural right to protect [his or her] concrete interests. . . and (2) that the plaintiff has some threatened concrete interest ... that is the ultimate basis of [his or her] standing." Douglas County v. Babbitt, 48 F.3d 1495, 1500 (9th Cir. 1995) (internal citations omitted). Additionally, "plaintiffs must show that their interest falls within the 'zone of interests' that the challenged statute is designed to protect." Id. at 1500-01.

The Ninth Circuit has found in several cases that a procedural injury can form the basis for standing. See, e.g. Pacific Northwest Generating Coop. v. Brown, 25 F.3d 1443, 1450 (9th Cir.1994) (plaintiffs with an economic interest in preserving salmon have procedural interest in ensuring that the ESA is followed); Friends of the Earth v. United States Navy, 841 F.2d 927, 931-32 (9th Cir.1988) (residents who live near site of proposed port have procedural standing to sue for Navy's alleged failure to follow permitting regulations); State of California v. Block, 690 F.2d 753, 776 (9th Cir.1982) (state of California has procedural standing to challenge the adequacy of an EIS for forest service's land allocation); City of Davis v. Coleman, 521 F.2d 661, 671 (9th Cir.1975) (city located near proposed freeway interchange has procedural standing to challenge agency's failure to prepare an EIS).

c. Organizational Standing

An association has standing to bring suit on behalf of its members when "(a) its members would otherwise have standing to sue in their own right; (b) the interests it seeks to protect are germane to the organization's purpose; and (c) neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit." Hunt v. Washington State Apple Adver. Comm'n, 432 U.S. 333, 343 (1977).

2. Application to This Case

Plaintiff claims that five of the eight declarations it submitted in conjunction with its motion for summary judgment support plaintiff's standing. (See Declarations of Marie Barrett, Carlos Yruretagoyena Ugalde, Fernando Armando Medina-Robles, Kimberly Collins, and William Powers). All five are members of the plaintiff organization. Four of the five live either in Imperial County, U.S.A., or Mexicali, Mexico, near the transmission lines and power plants at issue. Based

on their proximity to the project and the procedural requirement under NEPA to evaluate whether the project will have a significant impact on the environment, it seems clear that at least four of the members submitting declarations have procedural standing to sue in their own right. Furthermore the interest that the plaintiff seeks to protect - the public health and quality of the environment in that region - are germane to the plaintiff's purpose. (See Powers Decl. at 2 ("[Plaintiff organization's] membership is composed of United States and Mexican citizens who share a concern for the environmental health of the border region."). Finally, because the standing to sue is common to at least four of the members who submitted declaration, it is clear that no one member's participation is required in the lawsuit other than to supply the declaration that confers standing. Accordingly, it appears that plaintiff has satisfactorily demonstrated by a preponderance of the evidence that it has organizational standing to proceed in this suit.

B. Extra-Record Materials

As a second preliminary matter, the Court must determine what facts may properly form the basis of its decision. Plaintiff's cause of action arises under the Administrative Procedure Act ("APA"), 5 U.S.C. § 701 et seq. In general, actions under the APA are based on judicial review of the administrative record on which the agency relied in reaching the decision at issue. See 5 U.S.C. § 706. Defendants complain that plaintiff has filed eight extra-record declarations, each of which post-dates the final decision made by defendants in this case. (See generally Defs' Mem. in support of Motion to Strike). Accordingly, defendants move to strike these declarations. At the same time, Defendant-Intervenors T-US and BCP have submitted extra-record declarations in support of their respective amicus briefs. Finally, amici County of Imperial and City of El Centro have lodged several documents that they believe require judicial notice.[7]

The APA directs that "the court shall review the whole record or those parts of it cited by a party." 5 U.S.C. § 706. The Ninth Circuit has interpreted this command in the following way:

> Generally, judicial review of agency action is limited to review of the administrative record. *Friends of the Earth v. Hintz*, 800 F.2d 822, 828 (9th Cir.1986). In *Florida Power & Light Co. v. Lorion*, 470 U.S. 729, 105 S.Ct. 1598, 84 L.Ed.2d 643 (1985), the Supreme Court

[7]The Court discusses T-US's supplemental declaration and request for judicial notice separately to provide a fuller context for that discussion. See Section VI(A), infra.

> emphasized that when reviewing administrative decisions:
> "[T]he focal point for judicial review should be the administrative record already in existence, not some new record made initially in the reviewing court." The task of the reviewing court is to apply the appropriate APA standard of review, 5 U.S.C. § 706, to the agency decision based on the record the agency presents to the reviewing court. *Id.* at 743-44, 105 S.Ct. at 1607 (quoting *Camp v. Pitts,* 411 U.S. 138, 142, 93 S.Ct. 1241, 1244, 36 L.Ed.2d 106 (1973)). This standard is applicable to review of agency action under NEPA. *Hintz,* 800 F.2d at 829.
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> However, certain circumstances may justify expanding review beyond the record or permitting discovery. *See, e.g., Public Power Council v. Johnson,* 674 F.2d 791, 793 (9th Cir.1982). The district court may inquire outside the administrative record when necessary to explain the agency's action. *Id.* at 793-94. When such a failure to explain agency action effectively frustrates judicial review, the court may "obtain from the agency, either through affidavits or testimony, such additional explanation of the reasons for the agency decision as may prove necessary." *Camp v. Pitts,* 411 U.S. 138, 143, 93 S.Ct. 1241, 1244, 36 L.Ed.2d 106 (1973). The court's inquiry outside the record is limited to determining whether the agency has considered all relevant factors or has explained its course of conduct or grounds of decision. *Hintz,* 800 F.2d at 829.
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> The district court may also inquire outside of the administrative record "when it appears the agency has relied on documents or materials not included in the record." *Public Power Council [v. Johnson],* 674 F.2d [791] at 794 [9th Cir. 1982]. In addition, discovery may be permitted if supplementation of the record is necessary to explain technical terms or complex subject matter involved in the agency action. *Id.*

Animal Defense Council v. Hodel, 840 F.2d 1432, 1436 (9th Cir. 1988) as amended by Animal Defense Council v. Hodel, 867 F.2d 1244 (9th Cir. 1989); see also Hells Canyon Preservation Council v. Jacoby, 9 F. Supp. 2d 1216, 1223 (D. Ore. 1998).

Plaintiff argues that its three scientific declarations fall within these exceptions. (See Pla's Opp'n to Defs' Mot. to Strike at 3).[8] First, plaintiff argues that the declarations demonstrate relevant factors (including impacts on air, water, and human health) that DOE did not adequately consider. (Id.). Second, they argue that the declarations help to explain technical terms essential to the case. (Id. at 4). Because it is not the Court's job to "resolve disagreements among various scientists as to methodology," the Court will not consider the declarations to the extent they seek to simply advocate a better or different methodology for assessing environmental impacts already analyzed in a reasonable manner by defendants. See Friends of Endangered Species, Inc. v. Jantzen, 760 F.2d 976, 986 (9th Cir. 1985). Neither may post-decisional documents be used to

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[8]Plaintiff argues that the remaining five declarations are submitted only to preemptively demonstrate standing. The Court finds that this is a permissible use of these five declarations and will consider them only to the extent that they bear on plaintiff's standing.

object to or support the federal actions for the first time. See Havasupai Tribe v. Robertson, 943 F.2d 32, 34 (9th Cir. 1991); Association of Pacific Fisheries v. EPA, 615 F.2d 794, 811-812 (9th Cir. 1980). However, to the limited extent that these declarations provide information falling within one of the established exceptions to the general rule that the review will be confined to the record, the Court will consider them. See Sierra Club v. Babbitt, 69 F. Supp. 2d 1202, 1209 (E.D. Cal. 1999) (finding extra-record declarations permissible and helpful in understanding the factual complexities of the case). If the Court relies on any of these extra-record documents, it will provide a citation to that document and explain the exception under which it considers the document. The Court will treat the extra-record materials submitted by the amici in the same manner. Accordingly, the Court declines to adopt the bright line rule urged by defendants, and denies their motion to strike plaintiff's extra-record declarations.

IV. Threshold Question: Are the Power Plants Within the Scope of the NEPA Review?

As a threshold matter, the Court must first determine the scope of the environmental review required by NEPA to determine whether the construction of the power plants is within that scope. Plaintiff assumes in its arguments that the actions whose impacts must be analyzed include not only the construction and operation of the actual transmission lines, but also the operation of the power plants in Mexico to which the lines will be connected. In fact, all, or at least the vast majority, of the complaints of impacts to air quality, water quality, and human health set forth by plaintiff are actually caused by the power plants. (See generally Pla's Mem. at 1:21-28). Because of this, amicus BCP argues that if the "action" at issue here is narrowly limited to the construction and operation of the transmission lines, without regard to the generation of the power, and the emissions of the power plants are not "effects" of that action, then plaintiff's complaints are immaterial to the permits at issue.

NEPA requires a federal agency to prepare an environmental impact statement (EIS) for all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). The Council for Environmental Quality (CEQ), which is charged with implementing NEPA, has defined a "major federal action" as including "actions with effects that may be major

and which are potentially subject to Federal control and responsibility." 40 C.F.R. § 1508.18. Similarly, defendant Department of Energy has defined "action" for NEPA purposes as "a project, plan, or policy . . . that is subject to DOE's control and responsibility." 10 C.F.R. § 1021.104(b). BCP argues that the latter definition necessarily excludes the Mexican power plants from the scope of the action because these plants are outside the regulatory jurisdiction of the United States. (See BCP Brf. at 6).

The first key question under the regulatory definitions is whether the plants will be "projects" that are "subject to [Federal] control and responsibility." 10 C.F.R. § 1021.104(b). Clearly, they are not because they are outside the jurisdiction of the United States. Accordingly, defendants correctly did not include the power plants themselves when defining the scope of the proposed action. DOE-101 at 204328.

Nonetheless, the environmental analysis of the actions might still require consideration of the operation of the power plants if such operation constitutes an "adverse environmental effect" of the granting of the permit to construct and operate the transmission lines. 42 U.S.C. § 4332(C)(ii). NEPA's implementing regulations define "effects" and categorize them as "direct" or "indirect." 40 C.F.R. § 1508.8(a). "Direct effects" are those "which are caused by the action and occur at the same time and place." Id. "Indirect effects" are those "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." Id. Thus, as BCP notes, the question is one of causation. (BCP Brf. at 6).

The question of whether the power plants are effects of the proposed action is central to assessing both the legality of the FONSI and to assessing the adequacy of the environmental assessment (EA). First, in deciding whether to prepare an EIS, an agency must consider "significant indirect effects." Sylvester v. U.S. Army Corps of Engineers, 884 F.2d 394, 400 (9th Cir. 1989). Second, the question of the adequacy of the EA's analysis of the air impacts, water impacts, and alternatives of the proposed actions, depend on whether the plants' adverse environmental impacts are effects of the proposed transmission lines.

The Sylvester court created the following analogy to address the scope of "effects" of a

proposed action that must be discussed in environmental analyses:

> Environmental impacts are in some respects like ripples following the casting of a stone in a pool. The simile is beguiling but useless as a standard. So employed it suggests that the entire pool must be considered each time a substance heavier than a hair lands upon its surface. This is not a practical guide. A better image is that of scattered bits of a broken chain, some segments of which contain numerous links, while others have only one or two. Each segment stands alone, but each link within each segment does not.

Id. at 400. Employing this analogy, the Sylvester court held that in order for an agency to be required to consider secondary (indirect) and cumulative impacts (or effects) of an action other than the proposed action under NEPA, the proposed action and the second action must be "two links of a single chain." Id. In so holding, the Sylvester court collected and analyzed the prior cases discussing the question in the Ninth Circuit. Id. (citing Port of Astoria, Oregon v. Hodel, 595 F.2d 467, 480 (9th Cir.1979) (agency's EIS had to consider the supply of federal power and the construction of a private magnesium plant that used the power); Thomas v. Peterson, 753 F.2d 754, 761 (9th Cir.1985) (agency's EIS had to consider both a federal road and the federal timber sales that the road would facilitate); and Colorado River Indian Tribes v. Marsh, 605 F.Supp. 1425, 1433 (C.D.Cal.1985) (agency had to prepare an EIS that considered both the federal action of stabilizing a river bank and the private housing built as a result)); see also id. at 401 (citing Friends of the Earth v. Hintz, 800 F.2d 822, 832 (9th Cir.1986) (agency considered only filled wetlands and not other aspects of a harbor facility in deciding not to prepare an EIS); Enos v. Marsh, 769 F.2d 1363, 1371-72 (9th Cir.1985) (agency's EIS did not have to consider non-federal shore facilities for a new deep draft harbor); Friends of Earth, Inc. v. Coleman, 518 F.2d 323, 328 (9th Cir.1975) (agency did not have to prepare an EIS for state funded projects in a partially federally funded airport development)). The court concluded that these cases did not mandate a different result because "[t]he federal and private portions of the projects considered in these cases were joined to each other (links in the same bit of chain) in a way that the golf course [the proposed action under consideration in Sylvester] and the remainder of the resort complex (a separate segment of chain) are not." Id.

Importantly, the basis for the Sylvester court's determination of whether two related actions

constituted links of a single chain involved determining whether "each [action] could exist without the other." Id. It was not enough that the actions might be related or that each "might benefit from the other's presence." Id. Accordingly, the question in the present case narrows to whether the transmission lines and the power plants at issue would exist in the absence of the other.

Somewhat confusingly, the Sylvester court cites two other Ninth Circuit cases in a footnote, dismissing them because they involved "the impact of federal action rather than the scope of federal action." Id. at 401 n.3 (citing Methow Valley Citizens Council v. Regional Forester, 833 F.2d 810, 816 (9th Cir.1987) and City of Davis v. Coleman, 521 F.2d 661, 671 (9th Cir.1975)). While it is clear, as the Sylvester court implies, that the scope of the proposed action and the impacts of that action are separate questions under NEPA, this appears confusing only because "scope" may also refer to the variety of impacts that a sufficient EA or EIS must address. It is helpful to differentiate then between the scope of the proposed action and scope of the NEPA review. Thus, in the present case, the proposed action does not include the operation of the Mexican power plants. The question remains, however, whether the operation and emissions of those plants must be included within the scope of the NEPA review because they are effects of the proposed federal action. It seems to the Court that many of the cases cited by Sylvester court involved both the impact (or effects) of a proposed federal action and the scope of the action. While those cases treated the two concepts as coextensive, this Court finds the cases relevant to the present inquiry only to the extent that they discuss the effects of the proposed action. Thus, the two additional cases cited by Sylvester dealing exclusively with the effects of federal action are central to the present analysis.

First, in Methow Valley Citizens Council v. Regional Forester, 833 F.2d 810, 816 -817 (9th Cir. 1987), rev'd on other grounds, Robertson v. Methow Valley Citizens Council, 490 U.S. 332 (1989), the court first emphasized that NEPA does not recognize any distinction between primary and secondary effects when requiring environmental review of the effects. Id. at 816. In discussing how proximate any effects must be to the proposed action to require their inclusion in the NEPA analysis, the Court held:

> This court would not require the government to speculate on impacts in order to "foresee the unforeseeable". *See City of Davis v. Coleman,* 521 F.2d 661, 676 (9th Cir.1975). However, [i]t must be remembered that the basic thrust of an agency's responsibilities under NEPA is to predict the environmental effects of proposed action before the action is taken and those effects fully known. Reasonable forecasting and speculation is thus implicit in NEPA, and we must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as "crystal ball inquiry". *Id.* at 676 (quoting *Scientists' Institute for Public Information v. A.E.C.,* 481 F.2d 1079, 1092 (D.C.Cir.1973)). Thus we find it imperative that the [agency] evaluate the reasonably foreseeable significant effects which would be proximately caused by implementation of the proposed action.

Id. at 816-817. Similarly, though perhaps more narrowly, the court in City of Davis v. Coleman, found that effects must be included in the environmental review when the action is an "indispensible prerequisite" or an "essential catalyst" to the effects. 521 F.2d 661, 674 (9th Cir. 1975).

More recently, the Ninth Circuit reaffirmed that an agency may "limit the scope of its NEPA review to the activities specifically authorized by the federal action where the private and federal portions of the project could exist independently of each other." Wetlands Action Network v. U.S. Army Corps of Engineers (WAN), 222 F.3d 1105, 1116 (9th Cir. 2000). In general that Court instructed that "deciding whether federal and non-federal activity are sufficiently interrelated to constitute a single federal action for NEPA purposes will generally require a careful analysis of all facts and circumstances surrounding the relationship." Id. (internal quotations omitted).[9]

The WAN court faced a situation, like here, where the federal agency did not have independent jurisdiction over the non-federal action that was a potential effect of the proposed action. See id. at 1117.[10] Furthermore, the court found that the non-federal action "certainly *could*

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[9]Although the WAN court describes the federal and non-federal activity as a "single federal action for NEPA purposes," this Court's understanding of the holding is not that the private activity may fall within the scope of the proposed action, but rather that the private activity might constitute an effect of the proposed action and therefore fall within the scope of NEPA review.

[10]For this reason, cases involving whether the impact of "connected actions" have to be considered together under NEPA are inapposite to the case at bar. Cf. Save the Yaak Committee v. Block, 840 F.2d 714, 719 (9th Cir. 1988) (analyzing whether separate federal actions involving logging

proceed without the [federal action] and. . .is currently proceeding without the [federal action]." Id. The non-federal action at issue in WAN, as here, was not financed by federal funding, and federal regulations did not control the design of the non-federal action. Id. Finally, the WAN court derived comfort from the fact that the non-federal action had already been subjected to extensive state environmental review. Id.

In sum, Ninth Circuit precedent makes clear that effects must be causally linked to the proposed federal action in order for NEPA to require consideration of those effects in an EA or EIS. In the present case, only BCP puts much weight on the argument that the power plant emissions are not effects of the transmission line project. BCP's principle argument is that the power transmission lines are not a but-for cause of the LRPC emissions because the LRPC would generate some of its power for the Mexican market without regard to whether the transmission lines are completed, and it could send its export power through the Mexican power grid to the United States via an alternative transmission line. (See BCP Brf. at 9-10). Amicus T-US does not make the same argument, presumably because the TDM plant will only be producing power for export to the United States, and the only planned transmission line connecting that plant is the one requiring the permit under consideration. The federal defendants appear to concede, both in the EA itself and their briefs, that they were required to analyze to some extent the impacts of the power plants,[11] although they argue, correctly, that the power plants are not within the scope of the proposed action.

Plaintiff argues that the BCP and T-US permits should not be separately analyzed because

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operations must be considered cumulatively under NEPA regulations governing "connected actions"); Thomas v. Peterson, 753 F.2d 754, 758 (9th Cir.1985) (same). The EA concluded that a Federal Energy Regulatory Commission action involving a gas pipeline to fuel the plants under discussion was not a "connected action" pursuant to NEPA regulations. See DOE-101 at 204444-45. Plaintiff does not challenge that conclusion in the present action.

[11]See Defs' Reply at 1:15-17 ("DOE reasonably assessed the potential impacts of the actual proposed action and alternatives, and *also* reviewed impacts from the associated power plants."). This language suggests that federal defendants view the power plant impacts as secondary effects under NEPA. However, federal defendants also argue that NEPA does not require them to consider alternatives to the power plants, or to consider the cumulative impacts of the plants beyond that analysis contained in the EA. (Defs' Reply at 1:17-19).

the federal defendants opted to analyze the actions together. (See Pla's Reply at 10, n.10). Especially given the WAN court's instruction that the determination of effects is a fact-specific inquiry, the Court finds no reason why it should not consider the permits separately. This is even more important in this case because the record demonstrates that at least part of the LRPC plant is dedicated to providing power exclusively to the Mexican market, while all of the power of the TDM plant will be exported to the United States. Given these different factual circumstances, the Court finds it appropriate to consider the permits separately at the threshold level of analysis.

The LRPC plant is divided into three EAX turbines and one EBC turbine. Two of the EAX turbines are designed to produce power exclusively for sale to a Mexican utility, and it is reasonably foreseeable that very little of this power will flow through the BCP transmission line into the United States. DOE-101 at 204320. The EA does acknowledge the possibility that under limited circumstances, the domestic generation turbines may provide power to the BCP line. Id. at 204320, n.2. The record shows that the third EAX turbine is anticipated to produce power exclusively for export to the United States. Id. at 204320, n.1. However, the power produced by the EAX export turbine could be transmitted to the United States through an alternative interconnection site. Id. at 204328-29, 204395.[12] Finally, the EBC turbine is configured and licensed only to sell electricity over the BCP line. Id. at 204328-29, 204395, 204321; BCP Brf. at 9.

Although BCP cites to an extra-record declaration to support its claim that the two export turbines at the LRPC plant could be reconfigured to provide power for the Mexican market in the absence of the BCP transmission line, the Court finds that these extra-record materials were not before the agencies at the time that they made the challenged decisions and do not fall within any exceptions to the rule that the Court will limit its review to the record. Considering only the information that the federal defendants had before them at the time they made their final decisions, the Court finds that it was reasonably foreseeable that the two export turbines in the LRPC would

[12]Presumably, the Presidential Permit governing the alternative interconnection site would need to be modified and an appropriate environmental review performed in the event that the EAX export turbine was forced to export its power through the alternative line.

use the BCP transmission line to export the entirety of their power. Furthermore, given that the BCP line is the only current means evidenced by the record through which the EBC turbine could transmit its power, the Court finds that the BCP line was a but-for cause of the generation of power at the EBC turbine. Because the EBC turbine and the BCP transmission line are two links in the same chain, the emissions resulting from the operation of the EBC turbine are "effects" of the BCP transmission line that must be analyzed under NEPA. For the same reasons, the Court finds that the operation of the TDM plant is an effect of the T-US transmission line. See DOE-101 at 204321 (indicating that the only current means of transmission from the TDM plants are through the T-US line).

Conversely, the Court finds that the two turbines in the LRPC dedicated almost exclusively to the generation of power for the Mexican market are not causally linked to the BCP line in a way that makes the BCP line a necessary prerequisite or essential catalyst to their operation. Because the line of causation is too attenuated between these turbines and the federal action permitting the BCP line, Ninth Circuit authority makes clear that the emissions of the non-export turbines were not effects of the BCP line and that the federal defendants were therefore under no NEPA obligation to analyze their emissions as effects of the action.[13] Additionally, because the record makes clear that the EAX export turbine has an alternative to the BCP line to export its power, the BCP line cannot be considered the but-for cause of the EAX export turbine's operation. Indeed, the EA concludes that the EAX export turbine would be built regardless of whether the BCP line is permitted. DOE-101 at 204328-29, 204395. For this reason, the EAX turbine is also not an effect of the action.

Although NEPA does not explicitly limit the federal defendants' review of impacts to only those required by NEPA (and, indeed, agencies might be commended for erring on the side of precaution and inclusiveness when considering major actions affecting the environment), the Court does not believe that even an inadequate analysis of isolated impacts that are not effects of the

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[13]As discussed in more detail below, however, the EA must still analyze the cumulative impact of the proposed action when considered in conjunction with the impacts of other independent actions in the area.

proposed action can require the invalidation of an EA. Accordingly, the Court will not consider plaintiff's complaints regarding the EAX turbines at the LRPC except to the extent they relate to the cumulative impact analysis.

V. Did the Agencies Act Arbitrarily When They Issued a "Finding of No Significant Impact" (FONSI)?[14]

A. Standard of Review

Summary judgment is properly granted when "there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(c). In an administrative review case, like this one, the administrative record provides the relevant facts, and the legality of the agency's decision based on those facts is a question of law. Accordingly, summary judgment is an appropriate vehicle for resolving a case like the one at bar. See Northwest Motorcycle Assn. v. U.S. Dept. of Ag., 18 F.3d 1468, 1471-72 (9th Cir. 1994).

Under NEPA, an agency must prepare an EIS for any "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). NEPA's regulations provide that an agency may prepare an EA to determine whether the proposed action is one that requires a full EIS. 40 C.F.R. § 1501.4(b). The EA must briefly describe the proposal, examine alternatives, consider environmental impacts, and provide a listing of individuals and agencies consulted. 40 C.F.R. § 1508.9. After preparation of the EA, an agency may decide to issue a "finding of no significant impact" (FONSI), which relieves the agency of its obligation to prepare a full EIS. If, however, the EA establishes that the agency's action may have significant environmental impacts, the agency must prepare an EIS. National Parks & Conservation Ass'n v. Babbitt, 241 F.3d 722, 730 (9th Cir. 2001) (internal quotations omitted).

An agency's decision not to prepare an EIS under NEPA is a final administrative decision reviewable under the Administrative Procedure Act (APA). See 5 U.S.C. § 701 et seq. Under the APA, the Court must decide whether the decision was arbitrary, capricious, an abuse of discretion,

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[14]Because the Court has requested the parties to brief only the issue of whether the EA and FONSI amount to violations of NEPA, the Court does not now address whether an EIS is required. The Court will address the appropriate remedies for any violations at a later hearing.

or otherwise not in accordance with law. See Native Ecosystems Council v. Dombeck, 304 F.3d 886, 891 (9th Cir. 2002). Under this standard, courts must "carefully review the record to ensure that agency decisions are founded on a reasoned evaluation of the relevant factors." Public Citizen v. Department of Transp., 316 F.3d 1002, 1020 (9th Cir. 2003) (internal quotations omitted). The Court must be satisfied that the agency took a "hard look" at the potential environmental impacts of the proposed action. Greenpeace Action v. Franklin, 14 F.3d 1324, 1332 (9th Cir. 1992). Part of this hard look is providing a convincing statement of reasons why potential effects are insignificant, and therefore do not necessitate the preparation of an EIS. See Save the Yaak Committee v. Block, 840 F.2d 714, 717 (9th Cir. 1988). If the decision of the agency is "well informed and well considered," the Court must defer to the agency's decision. LaFlamme v. FERC, 852 F.2d 389, 398 (9th Cir. 1988); see also WAN, 222 F.3d at 1114-1115 (an environmental review under NEPA will only be overturned if the agency committed a clear error in judgment).

B. Analysis

The parties do not dispute in their briefs that the issuance of the Presidential Permits and the rights-of-way in the present case represent "major federal actions" as defined by the NEPA regulations. Rather, the dispute centers on whether these actions will have "significant" impacts on the environment. NEPA regulations provide guidance on evaluating the significance of an action's impact. See 40 C.F.R. § 1508.27. Those regulations provide as follows:

> "Significantly" as used in NEPA requires considerations of both context and intensity:
> (a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.
> (b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:
> (1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
> (2) The degree to which the proposed action affects public health or safety.
> (3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
> (4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

> (5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
> (6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
> (7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
> (8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
> (9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
> (10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

40 C.F.R. § 1508.27. If the agencies' actions are environmentally "'significant' according to *any* of these criteria," then they erred in failing to prepare an EIS. Public Citizen v. Department of Transp., 316 F.3d 1002, 1023 (9th Cir. 2003) (citing Nat'l Parks, 241 F.3d at 731) (emphasis in original).

1. Public Health

Plaintiff argues that despite public comments alerting the agencies to potential impacts on public health as a result of increased air pollution, the EA failed to evaluate these impacts. (See Pla's Mem. at 11-12). The Ninth Circuit has stated that even a "marginal degradation" of air quality "could easily be said" to be a significant impact on the environment for NEPA purposes. Public Citizen v. Department of Transp., 316 F.3d 1002, 1024 (9th Cir. 2003). In Public Citizen, the Court found that an agency's failure to even consider whether NOx and PM-10 emissions from diesel trucks would impact public health was a violation of NEPA. Id.

Defendants respond that they did in fact consider the health impacts of increased emissions. The reasoning upon which they rely is based on the following steps of logic: (1) Because they determined that emissions of NOx, CO, and PM-10 would fall below "significance levels" (SLs) established by the EPA, and (2) because these SLs are "based on protecting human health and welfare," then (3) the federal defendants at least implicitly analyzed whether the air emissions would harm public health. (See Def's Mem. & Opp'n at 11-12, 34). The EPA sets SLs for criteria pollutants in the context of carrying out its duties under the Clean Air Act. See DOE-101 at

204401-204402. These are the levels below which any particular major source is not deemed to be contributing to violations of the National Ambient Air Quality Standards ("NAAQS"). Id. The Appendix to the EA states that "[i]f measured or predicted concentrations of the criteria pollutants are below the ambient standard, no health effects are expected." DOE-102 at 204472. This statement contradicts plaintiff's claim that the EA contained no discussion of the health impacts of the actions whatsoever.[15] (See Pla's Reply & Opp'n at 7). Moreover, defendants argue that this link between NAAQS and public health impacts distinguishes the present case from Public Citizen. (See Defs' Mem. & Opp'n at 35, n. 18). Defendants argue that there exists no "marginal degradation" of air quality, as the term is used in Public Citizen, because the EA establishes that emissions would not exceed the SLs. (Id.). Finally, defendants argue that further discussion of the potential health impacts of the actions are discussed in the EA appendix, which they argue should be considered to be part of the EA. (Id. at 35). The EA Appendix specifies that T-US's application evaluated potential acute, chronic, and cancer health effects resulting from the TDM facility and found them to be "substantially below their relative thresholds of 10 in 1 million, 0.5 and 0.5, respectively." DOE-102 at 204486. Defendants also argue that modeling data for the LRPC export turbines were analyzed to ensure that they would result in no negative health impacts. Id. at 204469. Defendants argue that these analyses constitute the hard look they were required to take.

Although plaintiff argues that an analysis of whether air impacts will exceed EPA SLs cannot be equated with the public health analysis required by NEPA, the Court finds that plaintiff's argument is merely one involving methodology. The Court will not require that the agencies analyze the air impact on public health in a particular way, but rather will only ensure that the agencies' analysis is well-reasoned. The Court finds that the agencies have met their burden in this case. The logic of their argument is indeed well-reasoned: If ambient air quality standards are

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[15]Even if the Court excludes the Appendix to the EA from its review, the Court declines to adopt plaintiff's argument that an analysis of air quality impacts is not simultaneously an analysis of the public health impacts of impaired air quality. Air quality is regulated primarily because poor air quality has been linked to health impacts. Thus, an evaluation of whether the actions affect air quality necessarily involves an evaluation of the health impacts of the actions resulting from air pollution.

designed, as they are, to protect human health, then a finding that the projects do not violate those standards logically indicates that they will not significantly impact public health.[16]

2. Uncertainty

Plaintiff argues next that an EIS must be prepared because the effect of the Mexican power plants on the formation of ozone in Imperial County's airshed are uncertain. "Preparation of an EIS is mandated where uncertainty may be resolved by further collection of data, or where the collection of such data may prevent speculation on potential ... effects. The purpose of an EIS is to obviate the need for speculation by insuring that available data are gathered and analyzed prior to the implementation of the proposed action." Public Citizen, 316 F.3d at 1024 (internal quotations omitted) (omission in original).

In Public Citizen, the court held that an EIS was required to resolve uncertainties where an EA had made an arbitrary assumption about data supporting the agency's conclusion. See id. at 1026 (FONSI unsupportable because, among other reasons, it made an "an arbitrary assumption about the percentage of newer, 'cleaner' Mexican trucks on the roads"). Plaintiff in the present case argues that defendant's assumption that NOx emissions and ozone production would be linearly related is arbitrary and that therefore ozone modeling should have been conducted. (Pla's Reply & Opp'n at 14-15). In support of its argument, plaintiff points out that the EA itself states that the process of ozone formation is "complex and is also non-linear (i.e., output is not necessarily proportional to input."). DOE-101 at 204407. On the same page of the EA, the agencies state that ozone in Imperial County, like other rural areas, "does generally tend to be NOx-limited (i.e., adding more NOx increases [ozone])." Id.

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[16]For the same reason, the Court declines to find that the agencies acted arbitrarily by not considering whether the emissions from the plants would violate the Clean Air Act's "prevention of significant deterioration" requirements (PSD) for attainment areas. First, this is yet another disagreement concerning the methodology of the agency's analysis, rather than an argument concerning the existence or adequacy of such analysis. Second, to the extent this argument attacks the reasonableness of the agencies' analysis, the Court finds that the agencies' decision was not arbitrary because the record shows that Imperial County is a nonattainment area for the emissions in question, and the PSD regulations are meant for areas in attainment or categorized as "unclassifiable." See 42 U.S.C. § 7471; DOE-101 at 204364 (Salton Sea Air Basin in nonattainment for PM-10, ozone, and in localized nonattainment for CO).

Defendants argue that they have acted conservatively in assuming that ozone production would be proportional to NOx emissions. (See Defs' Reply at 9). First, they argue that under some circumstances, increased NOx emissions can lead to a decrease in ozone. (Id.). Second, they argue that even if they took the counter-assumption that ozone was VOC-limited,[17] then additional NOx emissions would have little to no effect on ozone production. (Id.). Furthermore, defendant argues that to the extent plaintiff demands the use of ozone modeling to assess impacts, plaintiff merely disagrees with the method chosen by DOE. (See Defs' Mem. & Opp'n at 29).

The Court need not resolve disagreements among scientists as to methodology or to decide whether the method employed by an agency in its analysis is the best available. See Friends of Endangered Species, Inc. v. Jantzen, 760 F.2d 976, 986 (9th Cir. 1985). Instead, the Court's task "is simply to ensure that the procedure followed by the [agencies] resulted in a reasoned analysis of the evidence before it, and that the Service made the evidence available to all concerned." Id. Here, defendants present a reasoned analysis of the impacts on ozone. They provide a logical argument that the presence of NOx and ozone will be closely and positively correlated. DOE-101 at 204407. They then analyzed the contributions of all turbines at issue to the concentration of NOx at the U.S. border and reasonably extrapolated from this the impact on ozone. Id. at 204407-08. The criticism leveled by plaintiff is not at the amount of data collected to determine NOx levels at the border, but rather at the methodology employed to estimate ozone impacts. NEPA does not provide the Court with authority, however, to disagree with the agencies' specialized knowledge and determination that the particular methodology urged by plaintiffs would be infeasible and inaccurate. See DOE-101 at 204408 (describing the limited utility of ozone modeling when applied to the projects at issue). Accordingly, the Court does not find that the agencies acted arbitrarily in issuing the FONSIs because of uncertainty.

3. Impact on the Salton Sea, an Ecologically Critical Area

Although the draft EA contained no analysis of the impacts of the action on the Salton Sea,

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[17]VOCs are volatile organic compounds and are, along with sunlight and NOx, one of the main sources of "fuel" for the production of ozone. DOE-101 at 204407. The production of ozone tends to be limited either by the availability of VOCs or by NOx. Id.

in response to public comments the agencies analyzed the impacts in the final EA and the FONSI. See DOE-101 at 204446, 204431-204432; DOE-103 at 204605. The final EA determined that the combined impact of the LRPC and TDM facilities will reduce water flow into the Salton Sea by 0.79 percent and increase the salinity of the Salton Sea by 0.142 percent. DOE-101 at 204431-32. At the same time, the final EA implies that the operation of the plants will reduce the level of biological contaminants in the New River (which ultimately flows into the Salton Sea). Id. at 204432. The FONSI concludes that the negative impacts are "minimal and below the threshold of detection of most measuring instruments." DOE-103 at 204605.

Plaintiff argues that the agencies' conclusion is conclusory, not supported by data or analysis, and is due no deference. (See Pla's Mem. at 13). In support of its argument, plaintiff points to a document in the record stating that the Salton Sea is already a damaged resource because of too much salinity and that recovery efforts are underway to reduce the level of salinity. DOE-25 at 200943-949. The record also links efforts to control salinity in the Salton Sea to the survival of the region's biodiversity. See id. at 200959. Given this evidence of potential impact, plaintiff challenges the agencies' conclusion that an increase in the salinity of the Salton Sea would be insignificant merely because it might be too small to measure.

Defendants respond that they have provided adequate support for their conclusion that the impact will be insignificant because the estimated decrease to inflow and increase in salinity are within the natural range of variability of the Salton Sea and because the operation of the power plants will reduce biological and chemical contaminants in the water. See DOE-101 at 204432; (Defs' Mem. & Opp'n at 17 (citing DOE-25 at 201228)).[18] Furthermore, defendants point to the fact that the construction of evaporation ponds in the effort to restore the Salton Sea to a less degraded state will evaporate more water than the TDM and LRPC facilities will use on an annual basis. (See Defs' Mem. & Opp'n at 17 (citing DOE-25 at 200947, 200949)). Therefore, defendants argue that the proposed actions are consistent with the restoration effort. (Id.).

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[18]Water used in the power facilities and then returned to the New River will be treated to remove biological and chemical contaminants prior to the use of the water in the plants' cooling processes. See DOE-101 at 204431.

The Court agrees with plaintiff that the agencies' determination that the actions will not significantly impact the Salton Sea are arbitrary and capricious. First, while decreases in water flow and increases in salinity in the Sea may be "immeasurable," as the EA itself demonstrates, they are not incalculable. In fact, the record makes clear that the actions will increase the salinity of the Sea, that the Sea is under threat from increasing salinity already, and that extensive restoration efforts are underway to reduce the current salinity of the Sea.[19] Given this backdrop, the Court finds it unconvincing to say that merely because measuring instruments may not be able to detect an increase in salinity that is bound to occur makes that increase insignificant. The significance of an impact under NEPA has less to do with its measurability and everything to do with the context of the impact. Here, the impacts would affect an "ecologically critical area." See 40 C.F.R. § 1508.27(b)(3). It is clear from the record that this resource is currently threatened in a way that will only be exacerbated if the proposed actions are undertaken. To state simply, as the agencies have done, that these known impacts will be hard to measure, that they are within a range of natural variability,[20] or that an unrelated restoration effort will evaporate even more water in its effort to decrease salinity in the Sea,[21] is not enough to demonstrate that the impacts will be insignificant. Because the agencies' analysis is not well-reasoned or convincing, the Court finds

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[19]This analysis assumes that removing the impacts of the unconnected EAX turbines in the LRPC simply makes the increases in salinity and decreases in water flow proportionally smaller. In any case, the impacts from all the turbines, including those owned by EAX, on the Sea would have to be taken into account in the cumulative impact analysis.

[20]This reason in particular makes no sense. The natural variability of water flow and salinity in the Sea has no connection to the projects at issue here. If the projects increase salinity in the Sea, it appears as though this increase will be in addition to, and completely independent of, any natural increase in salinity. Thus, the impact of these projects might be thought of as simply moving the range of natural variability in the direction of increased threat. (See Pla's Reply & Opp'n at 12). Such a move does not argue against the significance of the impact, but rather argues strongly in favor of its significance.

[21]Defendants pointed out at oral argument that restoration efforts underway in the Salton Sea actually work in a cumulative sense to ameliorate the impact of increased salinity from the power plants. However, this argument overlooks another major factor in the cumulative impact analysis: the current base-line level of salinity, which is already threatening the area's biodiversity. When the base-line level of salinity is so high that it requires an extensive restoration effort, it is difficult to see how a new source of increased salinity, even a small one, can be insignificant cumulatively. Although the ultimate determination concerning significance is for the agencies and not the Court to make, as discussed in the cumulative impact discussion below, the EA is inadequate as a matter of law because it provides no analysis of the purportedly insignificant increases in salinity from the plants in the context of the high base-line level of salinity.

that they have failed to take the hard look at the impacts of the actions on the Salton Sea required of them under NEPA.[22]

4. Controversial Nature of the Impacts

Plaintiff next argues that the controversy surrounding the potential impacts mandated the preparation of an EIS. (See Pla's Mem. at 14-15). "'Controversy' sufficient to require preparation of an EIS occurs 'when substantial questions are raised as to whether a project ... may cause significant degradation of some human environmental factor, or there is a substantial dispute [about] the size, nature, or effect of the major Federal action.'" Public Citizen, 316 F.3d 1002, 1027 (citing Nat'l Parks, 241 F.3d at 736). The evidence establishing such a controversy must be brought to the agency's attention before it completes its deliberations on the proposed action. Id. The Public Citizen court set out a two-step test for determining the existence of a controversy. First, "[plaintiffs] must show that there was a 'substantial dispute' about [an agency's] actions and that this dispute raised 'substantial questions' about their validity." Id. If plaintiff makes this showing, "the burden then shifts to [the agency] to provide a 'convincing' explanation why no controversy exists." Id. (citing Nat'l Parks, 241 F.3d at 736).

Public Citizen held that an "outpouring of public protest" constituted a substantial dispute where 85 percent and 90 percent of public comments opposed the proposed action. See 316 F.3d at 1027. Where those comments had merit and the agency "failed to adequately account for its failure to act on them," the court held that the action was "controversial" and required preparation of an EIS. Id.

In the present case, DOE received twelve comment letters before the close of the public comment period, and an additional 400 comments by e-mail after the close of the period. DOE-103 at 204601-204602. Plaintiff cites to concerns raised in all but four of these comment letters

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[22]Although it appears that the treatment of water to be used in the plants will remove contaminants in the water and improve the biological and chemical quality of the New River, these welcome benefits do not in some way negate the agencies' duty to separately analyze the negative impacts on water flow and salinity. See 40 C.F.R. 1508.27(b)(1) ("Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.").

concerning the water and air impacts of the power plants. See DOE-103 at 204602 (e-mail comment letters raised air and water impacts); DOE-101 at 204442-204443; DOE-72 at 203697, 203699 (air impacts); DOE-79 at 203713-714 (air impacts); DOE-80 at 203717-203719 (air and water impacts); DOE-85 at 203768-769 (water impacts); DOE-82 at 203724-765 (air and water impacts); DOE-86 at 203771 (air and water impacts); DOE-87 at 203773 (air impacts); DOE-71 at 203686 (air impacts). Thus, approximately 67 percent of pre-closure comments and approximately 99 percent of both pre- and post-closure comments raised air and water impact concerns. Plaintiff argues that these comments evidence a "substantial scientific controversy" over the significance of the actions. (Pla's Mem. at 15). Plaintiff additionally argues that the agencies failed to address in the EA or the FONSI whether the comments raise a controversy such that an EIS would be required. (Id.).

Defendants point out that public controversy sufficient to require the preparation of an EIS must raise "substantial" questions concerning the significance of any impacts of the proposed action or "substantial" dispute over the size, nature, or effect of the action. See National Parks, 241 F.3d at 736. If plaintiff raises such a substantial question or dispute before the preparation of a FONSI, then the burden shifts to the government to provide a "well-reasoned explanation" why the dispute over the EA does not create "a public controversy based on potential environmental consequences." Id. (internal quotations omitted).

In the present case, the agency received 412 comments on the proposed actions before the preparation of the FONSIs, although 400 of these comments were received after the close of the comment period. The agencies responded to all 412 comments in the final EA. Although post hoc arguments do not suffice to create public controversies and at least one court has found that comments creating a controversy must be made contemporaneously with the comment period, Nat'l Parks, 241 F.3d at 737 n.16, the agencies' consideration of the e-mail comments in the final decision document suggests that the Court should give them some weight. Nearly all of the comments disputed the effects of the action and the significance of those effects. In particular, the comments, considered as a whole, disputed the air and water impacts of the actions and asserted that the generation of the power to be transmitted over the lines were effects of the actions. In light

of these comments, the Court finds that plaintiff has demonstrated the existence of a substantial dispute as to the effects and significance of those effects prior to the preparation of the FONSI.

Defendants argue that even if the comments raised a substantial dispute, the dispute was adequately addressed by responses to the comment letters. (See Defs' Mem. & Opp'n at 26). The applicable standard is whether defendants' responses provide a convincing explanation of why the comments do not suffice to constitute a public controversy. Nat'l Parks, 241 F.3d at 736; see also Northwest Environmental Defense Center v. Bonneville Power Admin., 117 F.3d 1520, 1536 (9th Cir. 1997) (holding that where agency cooperated with objecting parties, and alleviated most of those parties concerns, agency need not prepare EIS). Defendants addressed the comments in a separate section of the EA that compiles them by category. See DOE-101 at 204442-48. The Court has reviewed these responses and finds that they generally restate the substance of the comments and then reject those comments to the extent they assert significant air impacts, request mitigating conditions, or challenge the scope of the review. See id. The agency did address the comments asserting water impacts by adding a new section into the EA. Id. at 204446-47. Nowhere in the discussion of the comments, however, does the agency directly explain, much less "convincingly" explain, why the comments do not suffice to constitute a public controversy. See LaFlamme v. F.E.R.C., 852 F.2d at 401 ("While FERC disputes LaFlamme's contentions, nowhere does FERC explain why LaFlamme's points do not suffice to create a public controversy based on potential environmental consequences. NEPA requires such a well-reasoned explanation .") (brackets and internal quotation omitted). Because a controversy necessarily involves disagreement, it is not enough for defendants to simply point to their disagreement with the comments. Instead, the Court reads the applicable law to place on the agencies the burden of demonstrating the absence of a substantial public disagreement when they choose not to prepare an EIS.[23] Because defendants have failed to make such a showing in the EA or the FONSI, the Court finds that the EA inadequately considered whether the substantial questions raised by the 412 comment letters made

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[23]As noted above, defendants did address the water-related comments by expanding the scope of the analysis. See DOE-101 at 204446. To the extent this may have eliminated the controversy over these impacts, however, substantial dispute over the scope of the analysis, the need for conditioning the permits on mitigating measures, and the significance of air impacts still existed.

the proposed actions controversial for purposes of determining the potential significance of the actions.

5. Local Air Laws

Finally, plaintiff argues that an EIS must be prepared because the proposed actions threaten to violate local air quality laws. (See Pla's Mem. at 17-18). "In its determination of whether its proposed action is significant, an agency must consider '[w]hether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.'" Public Citizen, 316 F.3d at 1026 (citing 40 C.F.R. § 1508.27(b)(10)). An agency has an obligation under NEPA to consider whether an action might violate state or local rules. Id.

Plaintiff's particular argument in the present case is that the proposed action threatens to violate Rule 207 of the Imperial County Air Pollution Control District (ICAPCD), which prohibits net increases from a new stationary source that has the potential to emit 137 pounds per day or more of any non-attainment pollutant. (Pla's Mem. at 17-18). The TDM plant alone is expected to emit 216 tons per year, or 1,184 pounds per day, of PM-10, a nonattainment pollutant in Imperial County. See DOE-101 at 204401.

Defendants respond that the plants cannot threaten to violate Imperial County's air laws because the plants are not part of the proposed action and because they are not subject to those laws. (See Defs' Mem. & Opp'n at 31-33). With regard to the first part of defendants' argument, the Court has already determined that the TDM and EBC turbines are effects of the proposed action and therefore fall within the scope of the analysis. However, the question of whether the plants are required to be included within an environmental analysis under NEPA differs substantially from the question of whether the plants must meet local air pollution laws. The ICAPCD rule cited by plaintiff applies to "new Stationary Sources . . . which are subject to Air Pollution Control District permit requirements." (Ex. 1 to Cty of Imperial's Request for Judicial Notice at Pg. 1).[24] Nothing in the record suggests that the TDM and EBC turbines are subject to the ICAPCD permitting requirements. In fact, defendants contend that these plants are not subject

[24]The Court considers this extra-record document only for the permissible reason of ascertaining whether the agencies considered all relevant factors in their EA.

to ICAPCD jurisdiction. See DOE-101 at 204328. Plaintiff does not specifically raise any other state or local law that they claim the plants threaten to violate. Accordingly, the Court declines to find that the potential impacts from the actions are significant because they threaten violations of any state or local air pollution laws.

VI. Is the EA adequate as a matter of law?

A. Analysis of Impacts

Plaintiff argues that the EA is deficient because it failed to consider, analyze, and disclose all of the potentially significant impacts of the proposed action. (See Pla's Mem. at 22-24). Plaintiff argues that this contravenes one of the fundamental purposes of NEPA, namely, to guarantee "that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision." See Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989). In particular, plaintiff argues that the EA underestimates potential emissions from the TDM plant, fails to evaluate carbon dioxide and ammonia, and fails to evaluate health impacts of the emissions it does disclose. (See Pla's Mem. at 23-24).

First, plaintiff argues that the EA is inadequate because it assumes the TDM plant will produce only 600 megawatts (MW) of energy, even though T-US states in its permit application that it intends its transmission line to be able to carry a maximum potential load of 1400 MW. See DOE-36 at 202196; DOE-35 at 202188; DOE-101 at 204401. Furthermore, plaintiff argues that since the Presidential Permit carries no contrary condition on emissions, any expansion in the production capacity of the TDM plant could more than double the analyzed emissions from the plant without requiring any new permit for the transmission. (See Pla's Mem. at 23).

Defendants respond that they have simply used in their analysis the estimated amount of power to be generated submitted by TDM to the Mexican government in order to secure a license to operate the plant. (See Defs' Mem. & Opp'n at 13 (citing DOE-36 at 202201). Defendants argue that it is not "reasonably foreseeable" that the T-US line will carry more than the assumed 600 MW of power even though T-US stated in its permit application that the line would carry "a nominal 500 MW of power (approximately 700 MW maximum peak) into the U.S., with the

potential for an ultimate nominal 1000 MW (with an approximate 1400 MW peak) of power using a possible future, second circuit." (Id.)[25] In general, defendants argue that TDM has not "indicated it has any plans to expand the TDM facility." (Id.); but see DOE-36 at 202201 (stating that a second circuit on the transmission line could "accommodate possible future expansion capability, generated by TDM" to the U.S.). The agencies determined that the "operating characteristics of the facilities" produced the estimate of generation capacity and that the higher assumptions urged by commenters were "undocumented." DOE-101 at 204446. To the extent that the higher emissions urged by plaintiff might be attributable to facilities other than TDM or LRPC, defendants argue that those other facilities are not within the scope of the analysis. (Id.). Therefore, defendants contend they are not required under NEPA to speculate about a future expansion of the TDM plant or the use of the lines to transmit power from other facilities. (Id. at 14).

The Court finds that the agencies provided adequate support for their conclusion that any future expansion of the TDM plant was not reasonably foreseeable. Plaintiff has pointed to nothing in the record suggesting that such an expansion is anything more than a speculative possibility, dependant on the market for electricity and other factors beyond the scope of this case. Additionally, defendants' counsel represented at oral argument that any future expansion of the facility to provide export power would require a supplement to the EA because the Presidential Permit currently approves of only the transmission of 600 MW of power. To the extent the potential carrying capacity of the T-US transmission line will be used to carry power from plants

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[25]Amicus T-US filed a supplemental declaration of Octavio M.C. Simoes in support of a request for judicial notice of the Mexican environmental permits issued to TDM authorizing both the generation and export of power from the TDM plant. These are evidently the same permits that the agencies indirectly relied upon in making their assumption that the TDM plant would generate 600 MW of power. Plaintiff moved to strike the supplemental declaration and request for judicial notice. At oral argument, plaintiff notified that Court that plaintiff and defendants had stipulated to the authenticity of the Mexican permits submitted by T-U.S. Defendants then moved at oral argument to supplement the administrative record by adding the permits. Plaintiff objected on the basis that plaintiff would be prejudiced since it had not had a prior opportunity to examine the documents. The Court finds that although the permits would have been properly made a part of the administrative record in this case, the prejudice to plaintiff of making them a part of the record at this late date outweighs the interest in supplementing the record. Accordingly, the Court denies defendants' motion to supplement the record. For the same reasons, the Court grants plaintiff's motion to strike the supplemental declaration and request for judicial notice.

other than the TDM plant, the agencies have also demonstrated that the record provides nothing to show that the specific operating details of these plants are reasonably foreseeable, or that these plants would be "effects" for NEPA purposes of the T-US transmission line.[26] In short, the potential for future power generation is simply too remote and speculative to provide a basis for meaningful environmental analysis at the present time.

Second, plaintiff argues that the EA fails to consider emissions of carbon dioxide and ammonia. Because carbon dioxide contributes to global warming, and because ammonia is known to have health impacts, plaintiff contends that the failure to assess and disclose the impacts makes the EA inadequate. (See Pla's Mem. at 23-24). Defendants respond that nothing in the record provides a basis for the assertion that the agencies should have considered ammonia and carbon dioxide emissions. (See Defs' Mem. & Opp'n at 15). Additionally, defendants assert that neither ammonia nor carbon dioxide is a hazardous or toxic pollutant under federal or California law. (Id.). Accordingly, defendants argue that they were not arbitrary and capricious in not analyzing these effects. (Id.).

Although the federal defendants cite authority for the proposition that they need not evaluate "questionable effects" or "imaginary horribles," these cases are inapposite to the question posed by the emissions described here. (Id.). Defendants do not dispute that the TDM and EBC turbines will emit ammonia and carbon dioxide; these effects are neither questionable nor imaginary. Additionally, the record reflects that ammonia may cause acute and chronic health impacts. See DOE-23 at 200819. Although the agencies state that plaintiff has provided no authority for the proposition that it must consider the impacts of carbon dioxide and ammonia, neither do the agencies provide reasoning or legal authority for their proposition that they need not disclose and analyze these emissions merely because the EPA has not designated them as "criteria pollutants." (See Defs' Mem. & Opp'n at 14-15). In fact, one of defendants' consultants advised the agencies that "all criteria and non-criterion air pollutants relevant to the proposed action should

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[26]For example, to conduct any legitimate analysis of the environmental impact of the additional generation of power to be carried by the T-US line, the agencies would have to be able to reasonably foresee the location of the additional power plants and their method of generation. The record does not suggest any of this information, nor does plaintiff in its brief.

be assessed." DOE-55 at 202850.

The record shows that carbon dioxide is one of the pollutants emitted by a natural gas turbine and that it is a greenhouse gas.[27] See DOE-17 at 200640; DOE-15 at 200386. Additionally, plaintiff argues that carbon dioxide emissions are the greatest by weight of all pollutants emitted by natural gas turbines, and charts from the record appear to support that argument. See DOE-17 at 200646-47. Similarly, the record discloses that ammonia is a by-product of the control technology used in the EBC and TDM turbines and that it causes acute and chronic health effects. See DOE-23 at 200818-19. Because these emissions have potential environmental impacts and were indicated by the record, the Court finds that the EA's failure to disclose and analyze their significance is counter to NEPA.

Finally, plaintiff argues that the EA is inadequate because it fails to evaluate health impacts related to the CO, NOx, and PM-10 emissions of the plants. The Court finds that the agencies' evaluation of health impacts was adequate based on the discussion in Section V.B.1, above.

B. Alternatives

Plaintiff argues next that the EA was inadequate because it failed to present reasonble and feasible alternatives. NEPA requires federal agencies to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(2)(E). Agencies must consider alternatives in an EA. See Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1228-29 (9th Cir. 1988); 40 C.F.R. § 1508.9(b). The alternatives analysis is central to an environmental analysis. 40 C.F.R. § 1502.14. It should "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." Id. "The rule of reason guides both the choice of alternatives as well as the extent to which the [NEPA analysis] must discuss

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[27] A "greenhouse" gas is one that is "of, relating to, contributing to, or caused by the greenhouse effect." See Merriam-Webster Dictionary, on-line edition (available at www.m-w.com) (last visited April 24, 2003). A "greenhouse effect" is the "warming of the surface and lower atmosphere of a planet . . . that is caused by conversion of solar radiation into heat in a process involving selective transmission of short wave solar radiation by the atmosphere, its absorption by the planet's surface, and reradiation as infrared which is absorbed and partly reradiated back to the surface by atmospheric gases." Id.

each alternative. Public Citizen, 316 F.3d at 1028 (internal citations and quotations omitted).

In the present case, plaintiff argues that the agencies were required under NEPA to do more than consider only a "no action" alternative and two alternative locations for the transmission lines. See DOE-101 at 204328, 204352-204354.[28] In particular, plaintiff argues that the agencies should have considered the proposal put forward by plaintiff in its comments; namely, that the granting of the rights-of-way and the Presidential Permits be conditioned on the commitment of the project proponents to implementation of state-of-the-art emissions control systems, mitigation through offsets in existing sources, and the use of dry cooling or parallel dry-wet cooling. DOE-82 at 203725-203727. Two other commentators suggested conditioning the issuance of the permits on certain controls for air and water emissions. See DOE-79 at 203714-203715 (comments of the American Lung Association) and DOE-80 at 203718-203719 (comments of Congressman Filner requesting a delay until mitigation measures could be adopted). Plaintiff argues that conditioning the permits in such a way was both within DOE's authority and feasible. (Pla's Mem. at 20-21). In sum, plaintiff argues that the agencies did not find that the alternatives proposed were unreasonable, but rather that the agencies simply never evaluated them. (Id. at 22).

In response, defendants argue that conditioning the Presidential Permits at issue would have been beyond the scope of the "purpose and need" of the proposed actions, since those actions dealt only with the construction and operation of the transmission lines and not with the operation of the power plants. (See Defs' Mem. & Opp'n at 18). In particular, defendants explained at argument their view that the alternatives analysis is co-extensive with the scope of the proposed action, and that it does not extend to the full scope of the review required under NEPA. Thus, defendants apparently contend that they only need consider alternatives to the direct effects of the construction of the power lines (e.g., the localized effects from construction of the towers).

The agencies need only consider alternatives that are feasible, and the analysis "cannot be found wanting simply because the agency failed to include every alternative device and thought conceivable by the mind of man . . . regardless of how uncommon or unknown that alternative may

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[28]In fact, defendants also considered the alternative of granting only one permit and not the other. See DOE-101 at 204328-30.

have been at the time the project was approved," Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc., 435 U.S. 519, 551 (1978). Yet, plaintiff and others put forward the alternative of conditioning the permits in their comments responding to the draft EA. Plaintiff also argues that conditioning the permit was feasible since other conditions were placed on the permits. (See Pla's Mem. at 20). Additionally, plaintiff cites an Executive Order that grants DOE the authority to place conditions on Presidential Permits necessary to protect the public interest. See Executive Order 10485, § 1(a)(3), 18 Fed. Reg. 5397 (Sept. 3, 1953) as amended by Executive Order 12038 § 2(A), 43 Fed. Reg. 4957 (Feb. 3, 1978). Defendants argue that the "purpose and need" of the federal actions at issue did not include the generation of power at the Mexican plants. However, to the extent that this is simply a restatement of the threshold argument discussed above, the Court has already resolved that question by finding that the TDM facility and the EBC turbine are effects of the action. Said in another way, the purpose and need of the transmission lines is to deliver power from the TDM and EBC turbines.

Additionally, to the extent defendants argue that they need only consider alternatives narrowly related to the scope of the proposed action rather than considering indirect effects of the action, the Court holds otherwise. "[A]n agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action." Idaho Conservation League v. Mumma, 956 F.2d 1508, 1520 (9th Cir. 1992) (internal quotation omitted). Here, the scope of the action relates only to the transmission lines, but the nature of the action includes the full scope of the analysis, including the effects of the action. The nature of the action therefore includes the importation of power generated in Mexico. Indeed, to leave out the secondary impacts would be at odds with the purpose of the alternatives analysis, which is to provide a way for an agency to calculate and compare the various predicted effects of alternative courses of action. The analysis would be arbitrary in itself if it did not take into account all effects of a proposed action. Accordingly, defendants' argument that they need not consider alternatives related to the TDM and EBC facilities fails.

Given this nature, the agencies were obligated to set forth in the EA "the range of alternatives . . . sufficient to permit a reasoned choice." Methow Valley Citizens Council, 833

F.2d at 815. Although defendants argue that "international sensitivities" preclude conditioning the permits from being a reasonable and feasible alternative, such a discussion belongs in the EA's alternative analysis rather than a litigation brief. Furthermore, the Court is unconvinced that the federal government's conditioning of a permit to construct transmission lines within the government's jurisdiction to ameliorate negative environmental effects within the United States necessarily offends international principles of law.[29] The condition would not be a direct regulation of the Mexican power plants; those plants could still choose to sell their power to the Mexican market or transmit their power via an alternate route rather than meet the condition.

Plaintiff bears the burden of showing that the agency was alerted to the specific alternative at issue before it prepared the EA in question. See City of Angoon v. Hodel, 803 F.2d 1016, 1021-1022 (9th Cir. 1986). This requirement helps ensure that the alternative was not so remote and speculative as to have precluded the agencies from ascertaining the possibility. See Life of the Land v. Brinegar, 485 F.2d 460, 472 (9th Cir. 1990). In the present case, commenters, including plaintiff, clearly proposed withholding the permits until the federal defendants could be certain that the power generation met certain environmental standards. DOE-82 at 203725-203727; DOE-79 at 203714-203715; DOE-80 at 203718-203719. Accordingly, the Court is hard-pressed to find that the proposed alternative could not be reasonably ascertained by the agencies during their deliberations. Because the Court finds that the conditioning of the permits is a reasonable and feasible alternative within the nature of the proposed actions, the Court finds that the analysis of alternatives in the EA was inadequate in this regard.

C. Cumulative Impact Analysis

Finally, plaintiff argues that the EA is inadequate because it fails to adequately assess the

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[29]Defendants argue in the same breath that conditions are not necessary on the permits because of the voluntary measures undertaken by the power plants. Defendants seem to argue that if these voluntary measures were dropped in the future, defendants could then conduct a supplementary environmental analysis that would presumptively lead to a condition on the permit. (See Defs' Mem. & Opp'n at 22-23, n.14). The Court is at a loss to understand why such conditions might not raise international sensitivities in the future after voluntary agreements failed, when the same conditions are not even feasible enough to be considered in an EA today. In the same vein, the Court fails to see how denying one or both of the permits because of U.S. environmental impacts - alternatives considered by the EA (See Defs' Mem. & Opp'n at 24) - would have any less of an effect on international sensitivities than the conditioning of the permits.

cumulative impacts of the proposed actions. (See Pla's Mem. at 24-25). NEPA regulations explain that the cumulative impact of a project consists of the "incremental impact of the action when added to other past, present, and reasonably foreseeable future action regardless of what agency (Federal or non-Federal) or person undertakes such other actions." See Sylvester, 884 F.2d at 400 (citing 40 C.F.R. § 1508.7).

Although NEPA does not require the government to do the impractical, Inland Empire Public Lands Council v. United States Forest Service, 88 F.3d 754, 764 (9th Cir. 1996), the Ninth Circuit has held that "reasonably foreseeable" actions with potentially cumulative impacts must be analyzed under NEPA. Blue Mountains, 161 F.3d at 1215. Native Ecosystems Council v. Dombeck made clear the importance of the cumulative impact analysis:

> The importance of ensuring that EAs consider the additive effect of many incremental environmental encroachments is clear. "[I]n a typical year, 45,000 EAs are prepared compared to 450 EISs.... Given that so many more EAs are prepared than EISs, *adequate consideration of cumulative effects requires that EAs address them fully.*" *Kern [v. U.S. Bureau of Land Management]*, 284 F.3d [1062] at 1076 [9th Cir. 2002] (emphasis in original) (quoting Council on Environmental Quality, *Considering Cumulative Effects Under the National Environmental Policy Act* at 4, January 1997). As we have previously emphasized when considering the sufficiency of a timber sale EA, without a consideration of individually minor but cumulatively significant effects "it would be easy to underestimate the cumulative impacts of the timber sales ..., and of other reasonably foreseeable future actions, on the [environment]." *Id.* at 1078.

304 F.3d 886, 896 (9th Cir. 2002) (bracketed citation information added).

Plaintiff argues that the EA contains no cumulative impact analysis for effects on health, water quality or quantity, the Salton Sea, or ozone. (Pla's Mem. at 16). Additionally, plaintiff argues that the cumulative air impact analysis in the EA is inadequate to support the conclusion that the impact is insignificant. (Id.). In particular, plaintiff points to statements by DOE's consultant advising DOE that the air impacts of the power plants when considered in conjunction with the current non-attainment status of Imperial County's airshed might be cumulatively significant. See DOE-55 at 202850-202851. Additionally, plaintiff points to agency comments that the cumulative impacts section of the EA lacked discussion of potentially significant impacts. See P-52 at 102697 ("It would seem that the incremental addition of NOx to an ozone non-attainment area is exactly the kind of impact that discussions of cumulative impacts are intended to

address.").

The cumulative impacts section of the EA analyzed the NOx, CO, and PM-10 impacts not only from the TDM and EBC turbines that are effects of the action, but also the remaining LRPC turbines. (See Def's Mem. & Opp'n at 34 (citing DOE-101 at 204438)). That analysis determined that the projected increases in ambient concentrations of those pollutants will be below the significance levels established by the EPA. (Id.). However, the cumulative impacts section of the EA fails to expressly disclose the past or present levels of air emissions in the Salton Sea Air Basin, nor does it consider the combined effects of the present actions when added to any unrelated, reasonably foreseeable future electricity generation projects in the air basin. See DOE-101 at 204436-40 (lacking discussion of these cumulative impacts). Although the federal defendants argue that no other emissions are foreseeable, plaintiffs point to information in the record suggesting plans for the construction of three additional power plants in the region. (See Pla's Reply & Opp'n at 18 (citing DOE-71 at 203687, DOE-79 at 203714)). Additionally, plaintiff argues that at least the potential expansion of the TDM plant to a maximum capacity of 1400 MW should have been considered. (Id.).

Defendants argue that additional power plant projects in the project area are "rumors" that the agencies do not consider to be concrete enough to be reasonably foreseeable. DOE-101 at 204438. Without more, the Court is unable to uphold its responsibility of determining whether the agencies took a hard look at potential cumulative impacts arising from other power plants in the area. The EA fails to list the plants expressly noted by the Imperial County Air Pollution Control District and the American Lung Association in their comment letters, and furthermore fails to support in any way the conclusion that the emissions from these plants are not reasonably foreseeable. See DOE-71 at 203687; DOE-79 at 203714. In contrast, and as discussed more in section VI(A) above, the agencies considered and provided support to reject the assertion that the future expansion of the TDM to produce a maximum 1400 MW was reasonably foreseeable.

Furthermore, defendants argue that since all impacts of the LRPC and the TDM plant were measured together and found not to rise above the SLs at the U.S. border, the combined impact of

these turbines will not significantly impact the present background levels of the measured pollutants in Imperial County. Id. The Court agrees with the federal defendants that the cumulative impact analysis necessarily considers the impact of the cumulative LRPC and TDM emissions when combined with the current air quality of the Salton Sea Air Basin. Indeed, the agencies' finding that the emissions would not exceed the SLs means that the concentration of these air pollutants in Imperial County would not be significantly impacted by the operation of the plants. Accordingly, the Court finds that the EA adequately considered the cumulative impact of the TDM and LRPC emissions against the background of Imperial County's present air quality.

Finally, a review of the cumulative impact section of the EA and the entire FONSI fails to disclose any discussion of the actions' cumulative impact on water quality and quantity in the New River or the Salton Sea. The complete lack of an analysis of cumulative water impacts is inherently inadequate. In sum, the Court finds that the cumulative impact analysis in the EA is inadequate because the analysis fails to consider the combined impacts of future, specific power plants in the region and the cumulative impact on water resources.

VII. CONCLUSION

Based on the discussion above, the Court **GRANTS IN PART** plaintiff's motion for summary judgment to the extent it asserts violations of NEPA and the APA arising from the EA and FONSI's inadequate analysis of the following issues: **(1) the potential for controversy; (2) water impacts; (3) impacts from ammonia and carbon dioxide; (4) alternatives; and (5) cumulative impacts.** The Court **DENIES IN PART** defendants' motion for summary judgment as to the same issues. However, the Court **GRANTS IN PART** defendants' motion for summary judgment as to the remaining issues raised by plaintiffs, and **DENIES IN PART** plaintiff's motion as to those issues.

Additionally, the Court **DENIES** defendants' motion to strike plaintiff's extra-record declarations, **DENIES** defendants' motion to supplement the record, and **GRANTS** plaintiff's motion to strike T-US's supplemental declaration and request for judicial notice. Accordingly, the Court **STRIKES** T-US's supplemental declaration and request for judicial notice from the record.

Finally, the Court **INVITES** the parties, including defendant-intervenors T-US and BCP, to provide briefing on the question of an appropriate remedy or remedies for the violations found above. The parties shall provide briefing, if any, according to the following schedule and limitations:

BRIEF	**TO BE FILED AND SERVED ON OTHER PARTIES ON OR BEFORE:**	**PAGE LIMITATION**
Plaintiff's Memorandum on Remedies	May 19, 2003	10
Federal Defendants' Opposition	June 2, 2003	10
Defendant-Intervenor T-US's Opposition	June 2, 2003	10
Defendant-Intervenor BCP's Opposition	June 2, 2003	10
Plaintiff's Reply	June 9, 2003	10

The Court will hear argument concerning the appropriate remedy on June 16, 2003, at 10:30 a.m. in Courtroom 13, unless the Court notifies the parties otherwise.

IT IS SO ORDERED.

Dated: May 2, 2003

IRMA E. GONZALEZ
United States District Judge

cc: The Honorable Magistrate Judge Louisa S. Porter
all parties

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

BORDER POWER PLANT WORKING GROUP,

Plaintiff,

vs.

DEPARTMENT OF ENERGY; SPENCER ABRAHAM, in his official capacity; CARL MICHAEL SMITH, in his official capacity; ANTHONY J. COMO, in his official capacity; BUREAU OF LAND MANAGEMENT,

Defendants.

CASE NO. 02-CV-513-IEG (POR)

ORDER (1) DENYING PLAINTIFF'S SPECIFIC REQUESTS FOR RELIEF; (2) GRANTING RELIEF IN MODIFIED FORM; (3) DEFERRING THE SETTING ASIDE OF THE PERMITS AND FONSI UNTIL JULY 1, 2004; (4) REMANDING THE MATTER TO THE FEDERAL DEFENDANTS FOR ADDITIONAL NEPA REVIEW AND A NEW DETERMINATION; (5) DENYING PLAINTIFF'S REQUEST FOR AN INJUNCTION PROHIBITING OPERATION OF THE TRANSMISSION LINES IN THE INTERIM; (6) DENYING WITHOUT PREJUDICE PLAINTIFF'S REQUEST FOR AN INJUNCTION TO REMOVE THE TRANSMISSION LINES AFTER 18 MONTHS; (7) RETAINING JURISDICTION PENDING NEPA COMPLIANCE; and (8) PROVIDING OTHER DIRECTION AND RELIEF AS STATED IN THE ORDER'S CONCLUSION

[Doc. Nos. 91, 93, 146]

Presently before the Court are plaintiff Border Power Plant Working Group's request for relief and motion for reconsideration of this Court's denial of plaintiff's oral motion to file supplemental declarations. Having heard argument on the request and having considered the parties' legal briefs and scientific declarations, the Court denies plaintiff's specific request for relief but grants relief in a modified form, as more fully described below. Additionally, the Court grants plaintiff's motion for reconsideration and, upon reconsideration, grants plaintiff's motion to file supplemental declarations.

I. Background

The Court refers the parties to the factual background provided in the Court's May 2, 2003 Order on the merits of this case. In sum, this case involves two applications for Presidential Permits and federal rights-of-way to build electricity transmission lines within the United States and across the United States-Mexico border to connect new power plants in Mexico with the power grid in Southern California. The U.S. Department of Energy (DOE) issued on Presidential Permit and the U.S. Bureau of Land Management (BLM) issued on right-of-way to defendant-intervenor Baja California Power (BCP). Those agencies issued another Presidential Permit and another right-of-way to defendant-intervenor Termoelectrica-U.S. (T-US). For ease of use, the Court will refer below to the Presidential Permits and the rights-of-way collectively as the "permits." The agencies collaborated to produce an environmental assessment (EA) pursuant to the National Environmental Policy Act (NEPA), upon which they subsequently relied to make a finding of no significant environmental impact (FONSI) from the issuance of the permits. Under NEPA's implementing regulations, this FONSI relieved them of the duty of undertaking a more comprehensive environmental impact statement (EIS).

Plaintiff filed a motion for summary judgement, alleging various violations of NEPA and the Administrative Procedure Act ("APA") on January 31, 2003. The federal defendants filed a cross-motion for summary judgment and an opposition to plaintiff's motion on March 13, 2003. Amicus curiae briefs were filed by BCP, T-US, and Imperial County and City of El Centro. Plaintiff responded to the BCP and T-US briefs on April 4, 2003, and both plaintiff and the federal defendants replied to the other's opposition brief.

On May 2, the Court granted in part plaintiff's motion for summary judgement, holding that the federal defendants had violated NEPA and the APA by finding arbitrarily and capriciously that their actions would not lead to any significant environmental impacts. In particular, the Court held that the EA did not adequately address the water impacts on the Salton Sea, the potential for public controversy over the actions, the cumulative impacts of the actions, the impacts of carbon dioxide and ammonia emissions from the plants, and the alternative of conditioning the permits on certain emissions standards. Based on these deficiencies, the Court held that the FONSI was inadequately supported and therefore arbitrary. The Court set a remedy-phase hearing in the case for June 16, 2003.

Following the issuance of the Court's order on the merits, plaintiff moved for a temporary restraining order and a preliminary injunction pending the final decision on relief. The Court issued an order setting a hearing on June 3, 2003 to resolve the motion for a TRO. Following that hearing, the Court denied both the TRO and the PI motions, finding that plaintiff had failed to making a showing of irreparable injury in the interim and that the equities were against the issuance of temporary injunctive relief. The Court noted that its adjudication of the temporary relief motions was separate from its consideration of plaintiff's present request for permanent injunctive relief.

Plaintiff's motion for permanent relief in the case includes four requests: (1) that the Court set aside the permits and the FONSI; (2) that the Court order the DOE and the BLM to conduct an environmental impact statement (EIS) before issuing a new decision on whether to re-issue the permits; (3) that the Court enjoin operation of the transmission lines until the DOE and BLM issue permits pursuant to a legally adequate EIS and Record of Decision (ROD); and (4) that the Court enjoin the intervenors and DOE to remove the constructed transmission lines if DOE does not issue permits pursuant to a legally adequate NEPA review within 18 months of the Court's present Order. The Order will discuss each of these requests in turn.

III. DISCUSSION

A. WHETHER THE PERMITS AND THE FONSI SHOULD OR MUST BE SET ASIDE

1. Legal Standard

The Court has already determined in its Order of May 2, 2003 that the Administrative Procedure Act ("APA"), 5 U.S.C. § 701, et seq., establishes the standard of review for challenges to agency actions under NEPA. The APA also provides a specific remedy when a court, as here, has found agency action to be arbitrary and capricious: "The reviewing court shall . . . hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A).

2. Discussion

Plaintiff argues that the "shall" in the APA language cited above means that the Court must set aside the permits issued pursuant to an arbitrary and capricious FONSI. At least one district court in the Ninth Circuit has agreed with this analysis. See National Wildlife Federation v. Babbitt, 2001 WL 128425, *1 (E.D. Cal., Jan. 26, 2001) (holding that the court "must 'hold unlawful and set aside'" the agency's decision once it determined that the permit was issued in violation of the APA's standards). But see Westlands Water Dist. v. U.S. Dept. of Interior, 2002 WL 32101999, *56 (E.D. Cal., 2002) ("Despite the mandatory language, 'shall,' courts retain equitable discretion to fashion appropriate remedies when there has been a violation of NEPA.")). In interpreting the language of APA's § 706 to a violation of the Endangered Species Act, the Tenth Circuit held that the "shall" in § 706 restricts the courts' equitable discretion as to the remedy and mandates that the court issue the relief specified. See Forest Guardians v. Babbitt, 174 F.3d 1178, 1187-1189 (10th Cir. 1999) (citing Environmental Defense Ctr. v. Babbitt, 73 F.3d 867 (9th Cir.1995) for the proposition that the Ninth Circuit has implicitly recognized that "shall" in the APA § 706 means "shall").

The federal defendants argue, however, that the Court may exercise its traditional equitable discretion in deciding not to issue an injunction setting aside the permits in this case. Both sides agree that such equitable discretion "is displaced only by a 'clear and valid legislative command.'" United States v. Oakland Cannabis Buyers' Cooperative, 532 U.S. 483, 496 (2001) (quoting Porter v. Warner Holding Co., 328 U.S. 395, 398 (1946)). The federal defendants argue essentially that the "shall" in § 706 of the APA is qualified by § 702, which provides that "[n]othing herein . . . affects . . . the power or duty of the court to dismiss any action or deny relief on any other

appropriate legal or equitable ground." 5 U.S.C. § 702.[1] The federal defendants argue that the legislative history of the 1976 amendment of the APA that resulted in this provision makes clear that the grounds for denying relief pursuant to § 702 include hardship to the defendant or to the public following a balancing of the equities. (See Fed. Defs' Opp'n at 2). Additionally, the federal defendants argue that § 706 itself qualifies its seemingly mandatory order for relief by adding the caveat that the court, in making determinations under § 706, must take "due account . . . of the rule of prejudicial error." 5 U.S.C. § 706. This provision, according to the federal defendants, means that the "shall" does not mean "shall" in cases where no prejudice has been shown. (See Fed. Defs' Opp'n at 3).

Plaintiff argues in reply that the term "shall" is unambiguous, and that the court must give meaning to the clearly expressed intent of Congress. (See Pla's Reply at 3). Indeed, the Supreme Court has stated that Congress could not choose a stronger word to express its intent than the use of the word "shall" as a legislative command to the courts. See U.S. v. Monsanto, 491 U.S. 600, 607 (1989). More recently, the Supreme Court warned that "[c]ourts of equity cannot, in their discretion, reject the balance that Congress has struck in a statute." Oakland Cannabis Buyers' Co-op., 532 U.S. 483, 497 (U.S. 2001).

Plaintiff replies to the federal defendants' argument that § 702 qualifies the "shall" in § 706 by arguing that the purpose of the 1976 amendment to the APA was only to remove the defense of

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[1] 5 U.S.C. § 702 provides, in its entirety:

> Right of review. A person suffering legal wrong because of agency action, or adversely affected or aggrieved by agency action within the meaning of a relevant statute, is entitled to judicial review thereof. An action in a court of the United States seeking relief other than money damages and stating a claim that an agency or an officer or employee thereof acted or failed to act in an official capacity or under color of legal authority shall not be dismissed nor relief therein be denied on the ground that it is against the United States or that the United States is an indispensable party. The United States may be named as a defendant in any such action, and a judgment or decree may be entered against the United States: *Provided*, That any mandatory or injunctive decree shall specify the Federal officer or officers (by name or by title), and their successors in office, personally responsible for compliance. Nothing herein (1) affects other limitations on judicial review or the power or duty of the court to dismiss any action or deny relief on any other appropriate legal or equitable ground; or (2) confers authority to grant relief if any other statute that grants consent to suit expressly or impliedly forbids the relief which is sought.

5 U.S.C. § 702.

sovereign immunity as a bar to judicial review of federal administrative action. (See Pla's Reply at 5). Plaintiff argues that the provision merely serves to make clear that extraordinary injunctive relief could still be denied on other appropriate equitable grounds. (Id.). In plaintiff's view, this general provision does nothing to affect the specific and mandatory remedy set forth in § 706, but rather that it applies to other types of injunctive relief that a party may seek beside the statutorily-prescribed remedy of setting aside the action. In support of its argument, plaintiff points persuasively to a report of the House of Representatives on the § 702 amendment, which concludes that the changes made by the amendment would not upset "congressional judgments that a particular remedy in a given situation should be the exclusive remedy." H.R. Rep. 94-1656, 1976 U.S.C.C.A.N. 6121, 6140.

Plaintiff's argument, however, appears to directly contradict the holding of the Ninth Circuit in National Wildlife Federation v. Espy, in which the court held:

> Although the district court has power to do so, it is not required to set aside every unlawful agency action. The court's decision to grant or deny injunctive or declaratory relief under APA is controlled by principles of equity. *Westlands Water Dist. v. Firebaugh Canal,* 10 F.3d 667, 673 (9th Cir.1993); *Sierra Pacific Industries v. Lyng,* 866 F.2d 1099, 1111 (9th Cir.1989). The district court must weigh "the competing claims of injury ... and the effect on each party of the granting or withholding of the requested relief." *Amoco Production Co. v. Village of Gambell,* 480 U.S. 531, 542, 107 S.Ct. 1396, 1402, 94 L.Ed.2d 542 (1987).

45 F.3d 1337, 1343 (9th Cir. 1995) (emphasis added). See also Natural Resources Defense Council v. Houston, 146 F.3d 1118, 1125 (9th Cir. 1998) ("A court may set aside an agency action if it was 'arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law'") (emphasis added) (citing 5 U.S.C. § 706(2)(A)); id. at 1129 (While the APA § 706 states that the agency shall set aside illegal agency action, the district court had the discretion to preserve contracts issued in violation of the APA) (citing Weinberger v. Romero-Barcelo, 456 U.S. 305, 320 (1982)). Unfortunately, the court in National Wildlife Federation did not provide an in-depth explanation for its conclusions regarding the statutory construction of the APA. It is clear, however, that the Ninth Circuit in that case specifically addressed the "shall" provisions of § 706 when it held that the courts retain equitable discretion not to set aside illegal agency action. 45 F.3d at 1340 (explaining that plaintiffs brought their claims under APA §§ 701-706); id. at 1342 ("Plaintiffs seek declaratory and injunctive relief under a federal statute which empowers a federal court to

'compel agency action unlawfully withheld,' and to 'hold unlawful and set aside agency action ... in excess of statutory jurisdiction, authority, or limitations, or short of statutory right....' 5 U.S.C. § 706(1), (2)(C)."). Accordingly, this Court is bound by the Ninth Circuit's interpretation of § 706 and accordingly must exercise its equitable discretion in deciding whether to set aside the permits at issue. Id. at 1343.[2]

In light of the Court's conclusion below to deny the request for an injunction against operation of the transmission lines pending further NEPA review, reached after a searching inquiry into the balance of harms to the parties and the public, the Court exercises its equitable discretion to defer the invalidation of the permits. See Sierra Club v. Penfold, 857 F.2d 1307, 1311 (9th Cir. 1988) (upholding district court's holding that BLM action was invalid for failure to include a sufficient EA but that injunction setting aside the action should be equitably deferred); id. at 1317 ("The district court molded its decree to meet the exigencies of the situation before it. The deferral of invalidity . . . was the best course available to remedy the interests and injuries involved."). Such a resolution avoids an outcome in which the Court has allowed the interim operation of the power lines, but those lines are without the proper legal permits. Accordingly, the Court defers the setting aside of the permits until July 1, 2004. The federal defendants may seek leave of the Court to continue that date, if necessary, as provided in the conclusion to this Order.

B. WHETHER THE COURT SHOULD ORDER THE PREPARATION OF AN EIS

1. Legal Standard

An agency is required to prepare an EIS if the EA establishes that the agency's action may have significant environmental impacts. National Parks & Conservation Ass'n v. Babbitt, 241 F.3d 722, 730 (9th Cir. 2001) (internal quotations omitted). An agency errs in failing to prepare an EIS if the agency's action is environmentally "significant" according to any of the criteria provided

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[2]The Court notes, however, that the cases cited by the Ninth Circuit in National Wildlife Federation do not appear to provide direct support for its conclusion. The citation to Westlands Water District appears inapposite, since the latter court merely held that "[t]he APA authorizes a court to either compel or set aside agency action (i.e. to award equitable relief) but does not authorize money damages." 10 F.3d at 673. Similarly, Sierra Pacific Industries does not appear to provide direct support for the proposition that the mandatory language of § 706 is subject to general principles of equity. In fact, that case does not discuss the APA, but rather describes the court's authority to issue an injunction under a different statute. See generally 866 F.2d 1099, 1111-1112.

by the Council on Environmental Quality for assessing the significance of environmental impacts. Public Citizen v. Department of Transp., 316 F.3d 1002, 1023 (9th Cir. 2003); 40 C.F.R. § 1508.27. "[T]o prevail on the claim that the federal agencies were required to prepare an EIS, the plaintiffs need not demonstrate that significant effects *will* occur. A showing that there are *substantial questions* whether a project may have a significant effect on the environment is sufficient." Anderson v. Evans, 314 F.3d 1006, 1017 (9th Cir. 2002) (internal quotations omitted). Thus, the Ninth Circuit has required preparation of an EIS where a "substantial controversy," one of the significance factors, existed regarding the effect of the action on the environment. National Parks & Conservation Ass'n v. Babbitt, 241 F.3d 722, 731 (9th Cir. 2001) ("[W]e conclude that the Parks Service clearly erred and that the high degree of uncertainty and the substantial controversy regarding the effects on the quality of the environment each necessitates preparation of an EIS." (emphasis added)).

On the other hand, the Ninth Circuit has also remanded a case in which it found a violation of NEPA to the federal agency without ordering an EIS. See Smith v. U.S. Forest Service, 33 F.3d 1072, 1079 (9th Cir. 1994). In Smith the Ninth Circuit concluded, unlike this Court in the present case, that the agency's decision was "environmentally significant." Id. Nonetheless, the Smith court found it more appropriate under the circumstances to "leave to the agency the decision of how best to comply with NEPA and its implementing regulations, and hold only that the NEPA documents before us are insufficient." Id.

Plaintiff suggests in a letter-brief submitted to the Court after oral argument that Smith can be distinguished because, in that case, the FONSI issued pursuant to the invalid EA had not itself been challenged. (Id. at 1078 ("the Forest Supervisor's finding [of] . . . no significant impact . . . has not, itself, been challenged by Smith")). However, the Court declines to adopt plaintiff's interpretation of Smith for three reasons. First, reading the passage cited by plaintiff in context, it appears that the court may have simply been characterizing the argument made by the defendant agency, rather than making its own finding of fact. Second, in the very next paragraph, the court states that "[n]evertheless, we must conclude that the agency's NEPA documents are inadequate." Id. The use of the plural "documents" suggests that the court found both the EA and the FONSI

inadequate, whether or not it accepted the defendant agency's assertion that plaintiff had not challenged the FONSI itself. Finally, the Court finds it difficult to imagine how an inadequate EA could support a legally-adequate FONSI. It would be a strange outcome indeed for the Smith court to have decided that the EA illegally failed to consider related and cumulative impacts of the agency decision, but to have nonetheless found that the agency's finding of no impact was reasonably supported by the same document. Based on these considerations, the Court agrees with the federal defendants that Smith offers support for the proposition that a court need not require an EIS on remand, even where a Court has found the action to be environmentally significant.

2. Discussion

The federal defendants argue, correctly, that the Court did not find in its Order on the merits of this case that there would, in fact, be significant impacts to the environment. Instead, the Court found simply that the record did not adequately support a finding of no significant impact. In particular, the Court found that the agencies' analysis of impacts to the Salton Sea were not well-reasoned or convincing, that public comments had raised a substantial dispute as to the effects of the permits and as to the significance of those effects, that the NEPA analysis failed to assess the impacts of ammonia and carbon dioxide emissions, that the analysis failed to consider a reasonable and feasible alternative, and that the EA failed to adequately consider cumulative impacts. In fact, after an extensive review of scientific testimony, described more fully below, the Court concludes that it is unable to make a positive finding that the operation of the transmission lines will likely cause irreparable and substantial harm to the environment.

The federal defendants argue that the proper remedy for the Court's findings is to remand the matter to the agency for further explanation of its decision. (See Fed. Defs' Opp'n at 5 (citing Florida Power & Light Co. V. Lorion, 470 U.S. 729, 744 (1985) ("If the record before the agency does not support the agency action, if the agency has not considered all relevant factors, or if the reviewing court simply cannot evaluate the challenged agency action on the basis of the record before it, the proper course, except in rare circumstances, is to remand to the agency for additional investigation or explanation"). It does not appear, however, that any party disagrees that the matter must be remanded to the agency for additional explanation. Instead, the question presently before

the Court is whether the agency should be ordered to conduct an EIS upon remand.

Plaintiff argues in response that while it is appropriate for the agency to have a first opportunity to explain why an EIS should not be prepared, when the agency fails to issue a legally-sufficient FONSI, the Court must remand for an EIS. The Anderson and National Parks & Conservation Association cases discussed above support this position by seemingly requiring an EIS if the Court finds that "substantial" questions or controversy surround the action. Plaintiff argues, convincingly, that if the federal defendant's interpretation of the Public Citizen court's two-step process for determining the existence of substantial controversy is taken to its extreme, the Court could never order an EIS to be prepared after having found that "substantial controversy" exists, since the agency would always have to be given a second (or third, etc.) chance to provide a convincing explanation for why the controversy does not, in fact, exist. See Public Citizen v. Department of Transp., 316 F.3d 1002, 1027 (9th Cir. 2003) (If a plaintiff shows substantial dispute about an agency action that raises substantial questions, then the burden shifts to the agency to provide a convincing explanation why no controversy exists).

The Court concluded in its May 2, 2003 Order on the merits of this case that "plaintiff has demonstrated the existence of a substantial dispute as to the effects and significance of those effects prior to the preparation of the FONSI." (Order at 29). The Court based its conclusion on the twelve timely comment letters received by the agencies and the additional 400 e-mail comment letters received by the agency after the closing of the comment period. In general, those letters, to the extent that they looked into the substance of the environmental impacts, provided little more than conclusions as to the significance of those impacts.

The record now before the Court includes a large number of scientific declarations, submitted by experts on both sides of the dispute, as to the significance of the impacts that the Court previously found inadequately assessed. These declarations provide a much broader and deeper scientific foundation upon which to judge the substance of plaintiff's allegations, especially when compared with the inadequate or nonexistent analysis in the EA and the public comment letters. The Court is even more convinced at this stage of the proceeding that a dispute exists concerning the significance of the impacts. However, the Court finds it appropriate to revisit the

question of whether this dispute is "substantial," based on the record now before it. That inquiry, made in the following subsection below, leads the Court to the conclusion that plaintiff's allegations of environmental harm are, to a considerable degree, without substance. Because the Court finds that plaintiff has failed to make a likely showing of irreparable and substantial environmental harm, the Court also finds that it would be inconsistent to rely on its earlier finding of "substantial" dispute in ordering an EIS to be prepared. Rather, the Court finds for purposes of this remedial phase that plaintiff has failed to make a showing of substantial dispute or to raise substantial questions that would require such a remedial order.[3] Accordingly, the Court finds that this case can be distinguished from the Anderson and National Parks & Conservation Association cases, and that the Court is not bound by that precedent to require an EIS on remand.

Because plaintiff has not positively demonstrated to the Court the likelihood of a significant environmental impact from the proposed actions, the Court finds that it is not appropriate to constrain the agencies' decision-making by ordering an EIS on remand. The agencies are better suited to make that determination, after the completion of a fully adequate EA that rectifies and considers the deficiencies noted in the Court's May 2, 2003 Order on the merits. Accordingly, the Court remands the matter to the agencies to complete an environmental analysis of the proposed actions that complies with this Court's Order. In complying with this remand, the agencies may, according to their discretion, undertake either a supplemental EA, followed by an EIS if significant impacts are indicated, or an EIS in the first instance.[4]

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[3]In so holding, the Court does not mean to reconsider its holding on the merits that the agency failed to provide a convincing explanation for why the action had not raised a substantial dispute. The Court based its decision on the merits on the record, rather than on the extra-record materials presently before the Court. This was appropriate because the Court reviewed the reasonableness of the agency's decision based solely on that record.

The Court orders, below, that the agency may not rely on the Court's equitable analysis of environmental impacts on remand, given that the agency, and not the Court, has the superior expertise in these matters. Because the administrative record, absent the extra-record declarations prepared and submitted in this judicial proceeding and absent the Court's own analysis, fails to explain the absence of a substantial dispute, it is not inconsistent that the agency must still assess on remand whether a public controversy necessitates the creation of an EIS in this matter.

[4]Instructive in this regard is the Anderson court's analysis of the functional difference between an EIS and an EA:

[A]n EIS serves different purposes from an EA. An EA simply assesses whether there will be

C. WHETHER TO ENJOIN OPERATION OF THE TRANSMISSION LINES PENDING FURTHER ENVIRONMENTAL REVIEW AND DECISION-MAKING BY THE AGENCIES

1. Legal Standard

"The requirements for the issuance of a permanent injunction are 'the likelihood of substantial and immediate irreparable injury and the inadequacy of remedies at law.'" American-Arab Anti-Discrimination Committee v. Reno, 70 F.3d 1045, 1066 -1067 (9th Cir. 1995) (quoting LaDuke v. Nelson, 762 F.2d 1318, 1330 (9th Cir. 1985)).[5] "In each case, a court must balance the competing claims of injury and must consider the effect on each party of the granting or withholding of the requested relief." Amoco Production Co. v. Village of Gambell, 480 U.S. 531, 542 (1987). Additionally, "the public interest is a factor which courts must consider in any injunctive action in which the public interest is affected." American Motorcyclist Ass'n v. Watt, 714 F.2d 962, 967 (9th Cir. 1983) (citing Weinberger v. Romero-Barcelo, 456 U.S. 305, 312 (1982)). NEPA does not require the automatic issuance of injunctive relief upon establishing a violation, but instead the Court is obligated to conduct the traditional balancing of the equities when evaluating such a request. See Northern Cheyenne Tribe v. Hodel, 851 F.2d 1152, 1157-1158 (9th Cir. 1988).

2. Discussion

A. Irreparable Harm

The Court has already considered once, in conjunction with plaintiff's recent motions for a temporary restraining order and a preliminary injunction, whether plaintiff had met its burden of

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> a significant impact on the environment. An EIS weighs any significant negative impacts of the proposed action against the positive objectives of the project. Preparation of an EIS thus ensures that decision-makers know that there *is* a risk of significant environmental impact and take that impact into consideration. As such, an EIS is more likely to attract the time and attention of both policymakers and the public. In addition, there is generally a longer time period for the public to comment on an EIS as opposed to an EA, and public hearings are often held.

314 F.3d at 1023.

[5]No party suggests that plaintiff has an adequate legal remedy for any environmental harm it demonstrates. Accordingly, the analysis will focus on the whether plaintiff has succeeded in demonstrating a likelihood of substantial and immediate irreparable harm.

demonstrating irreparable harm. However, the Court made clear in its order denying plaintiff's motions that it was adjudicating the issue only based on the interim period of a few weeks and that such adjudication would not limit the Court in assessing the plaintiff's motion for a final remedy. The Court now has before it a much larger evidentiary record, based on the multiple declarations submitted by plaintiff and both intervenors.[6] The Court's first inquiry will be whether plaintiff has now met its burden of showing a likelihood of substantial and irreparable harm in the absence of the requested injunction. Plaintiff argues three distinct sources of such harm: (1) to the Salton Sea and the New River; (2) to the public from cumulative particulate emissions resulting from ammonia; and (3) from the lack of full public disclosure and the benefit of an informed agency decision prior to a change in the status quo.

1. The Salton Sea and the New River

Plaintiff submitted several declarations in support of its claim that irreparable injury will occur to the Salton Sea and the New River in the absence of an injunction. First, Jose Angel, a

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[6]Plaintiff filed a memorandum of points and authorities in support of its request for relief on May 19, 2003. That memorandum contained no supporting declarations. Plaintiff then filed a motion for a preliminary injunction and a temporary restraining order on June 2, 2003, *nunc pro tunc* May 28, 2003. Accompanying the TRO/PI motion was a declaration of William Powers assessing the impacts of the plants' operation on the environment. On June 2, 2003, in response to the Court's scheduling orders, the federal defendants and intervenors filed oppositions to both the plaintiff's May 19, 2003 request and May 28, 2003 motion for a TRO/PI. Defendant-intervenor TDM filed five declarations concerning the scientific impact of the plants' operation on the environment and human health. Defendant-intervenor BCP filed six declarations on the same subject. The Court denied plaintiff's motion for a TRO/PI on June 4, 2003.

Plaintiff then filed a reply to defendants' opposition to the request for relief on June 9, 2003. Attached to plaintiff's reply were five new scientific declarations and a second scientific declaration submitted by William Powers. At a telephonic status hearing on June 10, 2003, the Court granted defendant-intervenors' oral motion to file declarations in response to plaintiff's most recent declarations. On June 13, 2003, defendant-intervenors each submitted two additional rebuttal declarations. At oral argument on the request for relief, plaintiff appeared with five new rebuttal declarations that had not previously been served on defendants. Plaintiff made an oral motion to file the new declarations, which were made by the same declarants who had previously submitted declarations on behalf of plaintiff. After providing defendants with an opportunity to respond to the motion, the Court denied the motion. Plaintiff then filed on June 20, 2003 a motion for reconsideration of the Court's denial of the oral motion. Defendant-intervenors filed oppositions to the motion for reconsideration on June 25, 2003. Having considered the parties' arguments, and good cause appearing, the Court grants the motion for reconsideration and grants plaintiff's motion to file the additional declarations. To the extent that defendant-intervenors moved in their oppositions to file responses to the additional declarations, the Court denies those motions.

Division Chief with the California Regional Water Quality Control Board,[7] declares that the operation of the power plants and the affiliated sewage treatment plants will not decrease the total amount of total dissolved solids (TDS)[8] in the New River, as the intervenors claim, but rather will increase the salinity of the New River, decrease the flow, and leave unchanged the total amount of the TDS of the water flowing to the Salton Sea. (See Declaration of Jose Angel in support of Plaintiff's Request for Relief, at ¶ 18). Angel goes on to declare that because the "overwhelming body of evidence suggest [sic] that the current level [of salinity] is more than what is healthy for the Sea . . . any further salt degradation of the Salton Sea must be considered a significant impact." (Id. At ¶ 24). Angel explains in a supplemental declaration that he has referred to water quality standards established by the Regional Water Quality Control Board, and approved by the United States E.P.A., in evaluating the significance of the rise in salinity. (See Supp. Decl. of Jose Angel at ¶ 15). According to Angel, the current salinity of the Salton Sea fails to meet these standards, and therefore any further degradation must be significant. (Id.).

In another declaration, Thomas Kirk, the Executive Director of the Salton Sea Authority, states that "[*a*]*ny reduction* of inflow would cause the Sea to shrink and the salts in the Sea to become more concentrated." (Declaration of Thomas J. Kirk III in support of Plaintiff's Request for Relief, at ¶ 6). Kirk goes on to explain that the operation of the plants in Mexico "would result in reductions of inflow to the Sea that would exacerbate the rising salinity problem and further threaten the Salton Sea ecosystem." (Id.). Such rising salinity, according to Kirk, is already threatening the Salton Sea's fishery, which sustains "millions of birds that pass through the region annually as they migrate between the Pacific Ocean and the Gulf of California." (Id.). Based on this assessment, Kirk concludes that operation of the plants would have the "strong potential to cause irreparable harm to the Salton Sea." (Id.).

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[7]Counsel for plaintiff represented at oral argument that Angel had submitted his declaration with the full authority of, and on behalf of, the California Regional Water Quality Control Board. Angel states in his Supplemental Declaration at ¶ 25 that the Executive Director of the Board gave him the assignment to prepare the declaration.

[8]The scientific declarations submitted by the parties seem to use TDS and concentration of salts interchangeably. The Court will accordingly assume that they are at least close approximations of each other.

Finally, Marie Barrett, the Outreach Coordinator for the New River Wetlands Project, declares in support of plaintiff's motion that a 6 percent reduction in flow and a 6 percent increase in salinity of the New River could result in harm to the wetlands created by her organization along the New River. (Declaration of Marie Barrett in support of Plaintiff's Request for Relief, at ¶¶ 4,5). Barrett explains that these wetlands have been created as pilot projects to remove pollutants in the New River while providing increased habitat for birds in the area. (Id. at ¶ 3[a]). A three-year monitoring program is currently underway at the wetlands. (Id. at ¶ 3[b]).

Defendant-Intervenors submitted several declarations, however, that contest whether irreparable harm to the New River or to the Salton Sea is likely during the period in which the agencies are undertaking supplemental NEPA review.[9] T-US' expert, Dr. Theodore Hromadka, explains that the EA failed to take into account the effect of groundwater seepage on the flow of the New River, and that the analysis thus overstated the decrease in flow that might be expected. (See Declaration of Theodore Hromadka in support of T-US' Opp'n at ¶ 34). In essence, Dr. Hromadka explains that any decrease in the flow of the New River caused by operation of the plants will decrease the pressure on the banks of the river and allow a greater quantity of groundwater to seep into the river. (See id. at ¶¶ 18-20). Thus, Dr. Hromadka concludes that "all or almost all of the quantity of flow that is evaporated would be returned in quantity to the New River as a result of increased groundwater seepage." (Id. at ¶ 34). This equivalent or near equivalent flow would have less of a concentration of salts and TDS because the sewage treatment facilities connected to the plants would permanently remove much of the TDS.[10] (Id.). As a result of these processes, it is Dr. Hromadka's opinion that the operation of the plants and their treatment facilities "actually slows the degradation of the Salton Sea and would be a net benefit." (Id.). Plaintiff's expert, Angel, addresses this contention in his supplemental declaration. (See Supplemental Angel Decl. at ¶ 19). First, Angel states that groundwater seepage into the river is less than 13%. (Id.). The Court finds that this evidence fails to refute Dr. Hromdka's opinion

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[9]Intervenors argue, and plaintiff does not contradict, that such review would take no longer than 2 years, and would most likely take between 6 and 18 months. (See, e.g., T-US' Opp'n at 5, n.7).

[10]The Court notes that this assertion is directly disputed by plaintiff's expert, Jose Angel, as discussed above.

since it addresses current, not hypothetical seepage if flows from Mexico are decreased. Second, Angel argues that Dr. Hromdka has failed to point to any site-specific studies supporting his opinion and that the studies that Angel has conducted or directly supervised "fail to support the notion that groundwater is a significant source of inflow into the New River." (Id.). Finally, Angel notes that water accounting models used by the Salton Sea Authority and the U.S. Bureau of Reclamation are programmed to account for changes in groundwater flow, and that these models show a change in the elevation of the Salton Sea as a result of the power plants' operation. (See id. (citing id. at ¶ 11, but apparently meaning to cite to id. at ¶ 17)).

Finally, Dr. Hromadka also argues that even in the absence of increased groundwater seepage, the reduction in flow and corresponding increases in salinity would be well within the historic range of variability for the New River and the Salton Sea. (Id. at 35). However, the Court rejected this logic once already when it was put forth by the federal defendants in the EA, since it seems to ignore that an exogenous reduction in flow would merely move the historic range of variability to a lower flow range. Thus, historically low flow levels would apparently be even lower if the power plants remove water from the system.

T-US also submitted a supplemental declaration to respond to Jose Angel's first declaration. Among other factual challenges, Octávio Simoes refutes Angel's declaration that salts and TDS removed from sewage in the treatment process will simply be discharged again into the New River. (See Second Declaration of Octávio Simoes in Support of T-US' Opp'n at ¶ 3). Simoes explains that these wastes are processed at the plant into a solid waste that is then disposed of in a landfill. (Id. at ¶ 2). A supplemental declaration by BCP's expert Joel Kasper also declares that TDS removed during the treatment process at LRPC are not returned to the New River. (Second Declaration of Joel Kasper in support of BCP's Opp'n at ¶ 5). Angel responds to these contentions in his own supplemental declaration by suggesting that the water treatment process does not remove inorganic dissolved salts (e.g., sulfates) and that the intervenors' declarations have focused inappropriately on the removal of dissolved organics (e.g., organic phosphorous). (See Supp. Angel Decl. at ¶ 7). Additionally, Angel disputes Simoes' assertion that information regarding the removal of salts during the waste water treatment process can be found in the

Mexican environment impact evaluation. (Id. at ¶¶ 10-11).

BCP also offers Dr. Jean Nichols, an oceanographer and environmental consultant, who declares that even assuming that the operation of the plants increases salinity of the Salton Sea by as much as 0.14 percent after a year's time[11], such a change "would have no adverse effect on aquatic organisms in the Salton Sea." (Declaration of Jean A. Nichols in support of BCP's Opp'n at ¶ 4). Additionally, Joel Kasper, another of BCP's experts, explains that under a worst-case, continuous operation scenario, the salinity of the Salton Sea would rise about 63 mg/l, from about 44,000 mg/l to 44,063 mg/l, as a result of the operation of all the generation units in question for a year. (See First Declaration of Joel Kasper in support of BCP's Opp'n to Pla's Request for Relief at ¶ 12).[12] Kasper argues that the Bureau of Reclamation, in a report on the status of the Salton

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[11]This is a percentage increase in salinity that corresponds to BCP expert Kasper's estimate of the worse-case, continuous operation increase in salinity in the Salton Sea of 63 mg/l. (Nichols Decl. at ¶ 3).

[12]Plaintiff's expert Kirk directly disputes this calculation in his supplemental declaration. In that declaration, Kirk presents "simple mass balance calculations" to show that a flow reduction caused by the plants of 3,000 af/yr to 16,000 af/yr would lead to an increase in salinity in the Salton Sea of 408 mg/l to 1,963 mg/l. (See Supplemental Kirk Decl. at ¶ 3). Kirk goes on to argue that "[a] rapid increase of almost 2,000 mg/l could have a very serious effect on the fish with an increase in fish mortality or destroy the fishery completely." (Id. at ¶ 4 (emphasis added)). The 2,000 mg/l assumption translates into a percentage increase in salinity of about 4.5. Kasper, BCP's expert, calculates the maximum, worst-case reduction in flow to the Salton Sea resulting from the operation of the plants at 10,504 af/yr, closer to the higher range of Kirk's assumptions, but then concludes that such a reduction would only lead to a 63 mg/l increase in salinity after one year, assuming a new equilibrium is reached in one year. (See First Kasper Decl. at ¶ 12). Kasper's estimate is the basis for Nichols' assumption that the percentage increase in the salinity of the Sea will be about 0.14. While it is clear to the Court that either Kirk's or Kasper's calculation must be incorrect or that one of the two must have employed a faulty equation, the Court is ill-equipped to resolve such a dispute. However, the Court does note that Kirk's calculation appears to show, for example, that a 16,000 af/yr decrease in flow attributable to the plants leads to a total new equilibrium capacity in the Salton Sea of 7,299,184 af. (See Supp. Kirk Decl. at ¶ 3). This represents a total reduction of 325,659 af. (See id.) Perhaps this equilibrium would be reached over many, many years, but the Court is hard-pressed to understand how an inflow reduction of 38,000 af over a maximum two-year period, holding all other inflows constant, could result in such a large total reduction in the size of the Sea. This is especially true when viewed in light of Kasper's reasonable assertion that as the elevation of the Sea drops, evaporation will decrease, thereby mitigating at least some of the decrease in inflow. In any case, the Court assumes for purposes of this request for relief that Kirk's figures describe an equilibrium that would be reached far beyond the undisputed maximum two-year time-frame on remand contemplated by defendants. Finally, to the extent that Kirk's and Kasper's declarations are irreconcilable, the Court notes that Kirk's background and education are in the area of planning and public policy, while Kasper is an engineer with extensive experience working specifically in the area of water treatment for power plants. (Compare Supp. Kirk Decl. at ¶¶ 1-2 with Kasper Decl. in support of Opp'n to Request for Relief at ¶ 1-3). The Court finds that Kasper's relative professional expertise weighs in favor of giving greater credibility to his declaration. Similarly, the Court notes the potentially contradictory statements

Sea, has stated that 60,000 mg/l is the "critical salinity level for ecological reasons." (Id.). He submits that the worst-case potential increase in the salinity of the Sea is only 0.39 percent of the difference between the current and ecologically-critical levels. (Id.). Additionally, Kasper declares that any change in the salinity of the Salton Sea attributable to the operation of the plants would be entirely reversed if the flows into the New River are restored to their present levels. (Id. at ¶ 13).[13]

Finally, in a supplemental declaration, Kasper rebuts Barrett's assertions concerning the wetlands her organization has developed along the banks of the New River. First, he counters that the maximum possible reduction of flow at the wetlands would be no more than 2.5 percent, rather than the 6 percent alleged by Barrett. (Second Kasper Decl. at ¶ 15). Second, Kasper provides evidence that the wetlands are fed by pump, and not by gravity flow, so that the inflow to the wetlands could not be affected by a small reduction in the river's flow. (Id. at ¶ 16). Finally, Kasper states, based on evidence, that the dominant plant species in the wetlands would still be within its ideal salinity range even assuming Barrett's assertion that the salinity will increase by 6

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of Kirk, who declares that a 4.5 percent increase in salinity "could" have a very serious impact on the Sea's fishery, and Nichols, who declares that a 0.14 percent increase in salinity "would" have no adverse effect on aquatic organisms in the Sea. (Compare Supp. Kirk Decl. at ¶ 4 with Nichols Decl. at ¶ 4). The Court finds, based on the discussion above, that Nichols' estimate of the change in salinity is more credible. Additionally, the Court notes that Nichols is an oceanographer and environmental consultant who focused in her graduate work on bottom living organisms in regions of environmental stress. (Nichols Decl. at ¶ 1). The Court finds that her qualifications lend her conclusions relatively greater credibility when compared to the admittedly uncertain impacts asserted by Kirk.

[13]With regard to this argument, Angel responds in a supplemental declaration that he "cannot follow Mr. Kasper's line of reasoning because he does not explain how the lagoons are going to go back to their previous levels (presumably the levels before power plant operations) and how that reverses the projected environmental impacts – not just elevation." (Supp. Angel Decl. at ¶ 19). The Court does not find it so difficult to follow Kasper's line of reasoning. Presumably, if the power plants stopped operating, they would also stop diverting and using water from the New River system. Thus, holding all else constant, the quantity flowing into the lagoons and the sewage treatment plants, and therefore out of the lagoons and treatment plants, would be the same as before the plants had begun operation. Kasper argues that reinstating the previous levels of flow would enable the Salton Sea to reach a new equilibrium, one which would be the same as before operation of the plants if all else is held constant. Presumably, the total salinity in the Salton Sea at the new equilibrium would be about the same as before the operation of the plants, or possibly lower if the sewage treatment plants continued to operate after the power plants ceased operation and if the sewage treatment process does indeed remove salts as intervenors contend it would.

percent. (Id. at ¶ 17).[14]

Having considered the various scientific declarations submitted by the parties, the Court concludes that plaintiff has failed to show that substantial and irreparable harm to the Salton Sea would more likely than not result from a failure to issue the injunction. In particular, the Court is persuaded by intervenors' largely undisputed testimony that, even assuming a reduction in flow, the impacts from increased salinity resulting could be substantially reversed. The question of whether the fishery or other wildlife of the Salton Sea would be affected in the meantime, assuming an increase in salinity, is disputed among the experts. The Court does not find that plaintiff has prevailed in showing that such impacts would be likely or substantial. Finally, plaintiff's disputed claim that a wetlands creation program would be affected does not suggest that any effect on the wetlands would be irreparable, or that the loss of the wetlands would have other irreparable effects.

2. Ammonia Emissions

Next, plaintiff argues that it will suffer irreparable injury from the emission of ammonia that will create additional particulate pollution (PM_{10}). First, Dr. Paul English declares that "[b]ecause the EA did not disclose levels of ammonia emissions from the plants and thus, the corresponding increases of PM_{10}, which result as a byproduct from ammonia emissions, the EA's projected 24-hour average of 3 $\mu g/m^3$ underestimates the true cumulative impacts from this pollutant." (Declaration of Paul Brian English in support of Plaintiff's Motion on Remedies at ¶ 3). Another of plaintiff's experts, Dr. William Stockwell, concurs in this opinion, and declares that the worst-case, continuous operation ammonia emissions of 1,016 tons per year from the combined plants "poses a serious cumulative threat of irreparable environmental harm." (Declaration of William R. Stockwell in support of Plantiff's Motion on Remedies at ¶ 6). Dr. Stockwell also

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[14]Barrett acknowledges in a supplemental declaration that the USDA Plant Guide states that the ideal salinity range for the bulrush is 0 to 6,000 mg/l. (Supplemental Barrett Decl. at ¶ 3). However, she reasserts her argument that plants continuously exposed to the higher end of this range would face some degree of stress. (Id.). Additionally, Barrett argues that this marginal stress could be magnified by stresses from other sources, including other pollutants in the New River. (Id. at ¶ 5). The Court notes that Barrett does not address the undisputed fact that the sewage treatment plants would reduce other sources of pollution, which would presumably decrease the biological stress on the wetlands.

explains how ammonia emissions can form PM_{10} through a chemical reaction with nitric acid in the atmosphere. (Id. at 9). He goes on to argue that "[a]ny increases in ambient ammonia concentrations will increase the concentrations of secondary PM_{10}." (Id. at ¶ 11). In fact, Dr. Stockwell declares that due to the relative presence of NOx and ammonia in the atmosphere in the vicinity of the plants, a "substantial fraction" of the ammonia emitted could form PM_{10}. (Id. at 14). According to Dr. Stockwell, this additional PM_{10} was not discussed in the EA and has the potential to cause immediate and irreparable harm. (Id.).

T-US expert Dr. Steven Heisler explains that although ammonia is not regulated as a criteria pollutant or as a toxic air contaminant, exposure may have acute or chronic health effects. (First Declaration of Steven Heisler in support of T-US' Opp'n at ¶ 7). For that reason, the California Office of Environmental Health Hazard Assessment (OEHHA) has established acute and chronic reference exposure levels (RELs) for ammonia. (Id.). These RELs are commonly used significance levels for toxic air pollutants. (Id.). Dr. Heisler explains that RELs are established with margins of safety to ensure that no adverse health effects would be anticipated at levels below the respective REL. (Id.). The OEHHA RELs for ammonia are 3,200 $\mu g/m^3$ for the 1-hour (acute) period and 200 $\mu g/m^3$ for the annual (chronic period). (Id.). Dr. Heisler then calculated the anticipated ammonia slip emissions from all generation units at the LRPC and TDM facilities and, using a dispersion model, the resulting concentrations of ammonia at the border from these facilities. (Id. at ¶ 10). According to his calculations, the maximum 1-hour concentration would be 13.4 $\mu g/m^3$, and the annual average concentration would be 0.63 $\mu g/m^3$. Additionally, Dr. Heisler declares that since ammonia emissions from circulating water used in the facilities' cooling towers would be "much lower" than the ammonia slip emissions, no health impacts will result from the cumulative ammonia emissions of all the generating units. (Id. at 10, 12).

Dr. Heisler also opines on the ability of the ammonia emissions to cause particulate pollution. In his opinion, because Imperial County is relatively ammonia-rich, additional ammonia emissions from the plants would not lead to significant formation of particulate ammonium nitrate. (Id. at 13-16). He ultimately concludes based on this analysis that secondary particulate formed by ammonia emissions from the facilities would not be significant, or cause significant effects, over

the next two years. (Id. at 16). In a supplemental declaration, Dr. Heisler responds to plaintiff's experts by calculating the estimated additional PM_{10} that will result from the facilities' ammonia emissions and finding that all PM_{10} emissions, both direct and secondary, attributable to the TDM and LRPC plants will not cause PM_{10} levels to exceed the EPA's significance levels at the border. (Second Declaration of Steven Heisler in support of T-US' Opp'n at ¶ 7, 15-17). Additionally, Dr. Heisler takes note of the diminishing performance of SCR technology over its lifetime, the fact that two of the LRPC plants will not immediately have SCR equipment (and will therefore have no ammonia slip emissions), and the actual ammonia content of the water to be used by the facilities. (Id. at ¶¶ 10-12). Based on these corrections and the expected actual operation of plants only 75 percent of the time, Dr. Heisler concludes that actual ammonia emissions from the facilities will be only nine percent of Dr. Stockwell's estimate over the next two years. (Id. at 13).

BCP's expert Perry Fontana, also conducted an analysis of the potential for impacts from the power plants' ammonia emissions. Fontana calculated a worst-case emission rate of ammonia and used a dispersion model to determine the maximum concentration increase of ammonia at receptors in Mexico, along the border, and into the United States. (Declaration of Perry Fontana in support of BCP's Opp'n at 3-5). Fontana compared the predicted concentrations with reference exposure levels (RELs) – based on the most sensitive effect reported in the medical literature – adopted by the California Air Pollution Control Officers Association (CAPCOA). (Id. at 6-7). The CAPCOA RELs are the same as the OEHHA RELs employed by Dr. Heisler. According to Fontana's analysis, the highest concentration of ammonia at any of the ground-level receptors is predicted to be less than 2 percent of the acute REL and even less of the chronic REL. (See id. at ¶ 7). While Fontana's calculations of emissions are somewhat higher than those of Dr. Heisler, they are still far below the RELs. Fontana also opines that the existing levels of background ammonia in the Salton Sea Air Basin are far below the RELs, and that therefore the small addition of ammonia from the plants would not cause significant adverse health impacts. (Id. at ¶ 9). Finally, Fontana, using a calculation provided by BCP's expert Joel Kasper, agrees with Dr. Heisler that ammonia emissions from the cooling towers would only be a fraction of the ammonia slip emissions, and that the additional cooling tower emissions would not change his opinion of no

significant adverse health impacts. (Id. at ¶ 10; Kasper Decl. at ¶ 19).

In a supplemental declaration, plaintiff's expert Dr. English seeks to rebut the declarations of Heisler and Fontana by asserting again that it is "commonly accepted that there is a causal linear nonthreshold relationship between particulate matter with health outcomes such as hospital admissions, all-cause death, and death due to cardiorespiratory causes." (Supp. English Decl. at ¶ 3). Dr. English argues that looking just at the short-term increase in particulate matter at the border of 3 $\mu g/m^3$, which was the estimate presented in the EA and does not include any particulate that may be formed by ammonia emissions, the scientific literature suggests that the Court can assume there will be at least a 1% increase in deaths due to respiratory causes, a 0.8% increase in hospitalizations in COPD, and approximately 1% increase in upper respiratory symptoms and asthma. (Id. at ¶ 4).[15] It is beyond dispute that such impacts would be irreparable to those who suffered them. However, the Court must still determine whether such irreparable harm would be likely and substantial. Dr. English has not rebutted the EA's conclusion, as supplemented by intervenors' expert analysis to account for ammonia conversion, that such a increase in particulate is below the significance level set by the EPA for particulate emissions. While weighing the significance of health impacts is by no means a scientific or simple business, the Court finds it appropriate to defer to the expert agency's opinion on what increases in particulate are significant for purposes of protecting human health, and which are insignificant. Where the agency has determined that a particular increase is insignificant, the Court declines to find that the same increase is substantial for purposes of issuing injunctive relief.

Dr. English also argues in his supplemental declaration that the increases calculated by intevenors' experts would not, in fact, be below the EPA significance levels. (See id. at ¶ 5). While Dr. English apparently concedes that the 3 $\mu g/m^3$ estimated in the EA is below the 5 $\mu g/m^3$

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[15]In his first declaration, Dr. English cites to a 2002 study by Pope et al. and a 1999 paper by Pope and Dockery to support the assertion that a 10 $\mu g/m^3$ increase in chronic exposure to particulate is associated with specific health effects. (First English Decl. at ¶ 4). Fontana points out in a supplemental declaration that the 3 $\mu g/m^3$ increase reported in the EA is for short-term particulate increases, while the long-term average increase is only 0.2 $\mu g/m^3$. (Supp. Fontana Decl. at ¶ 6). In a rebuttal declaration, Dr. English again points to the 1999 Pope and Dockery article as support for his conclusion regarding acute health impacts of a 3 $\mu g/m^3$ increase, but he does not address the discrepancy pointed out by Fontana. (See Supp. English Decl. at ¶ 4).

significance level set by the E.P.A., he argues that such a conclusion is illogical in light of Fontana's own interpretation of the policy behind a significance level. (Id.). In particular, Dr. English quotes Fontana's statement that "significance levels represent the incremental increases in ambient concentrations attributable to an emissions source below which the source would not be considered to cause or contribute to a violation of the applicable National Ambient Air Quality Standards ("NAAQS") in areas where those standards already are not being met." (Supp. Fontana Decl. at ¶ 11) (citing 40 C.F.R. § 51.165(b)(2)). Dr. English argues that under this rationale, even a 3 $\mu g/m^3$ increase would be significant because it would have caused two particulate monitoring stations in Calexico to exceed the 150 $\mu g/m^3$ NAAQS eight times between 1994 and 2002. (See Supp. English Decl. at ¶ 5). While the Court notes the logic in Dr. English's argument, it does not agree with his conclusion. The significance levels regulations already assume that they are to be used in a "locality that does not or would not meet the applicable national standard." 40 C.F.R. § 51.165(b)(2). Thus, while it might be assumed that any incremental increase in the pollutant will contribute to or cause a violation of the NAAQS, the regulation creates a fiction in which incremental increases under certain thresholds will not be considered to have caused or contributed to the violation. Id. This does not amount to a purely mathematical conclusion, as Dr. English assumes, but rather to a conclusion based on policy and science that incremental increases below the significance levels will not unduly threaten human health and welfare, the basis for the NAAQS. See 40 C.F.R. § 50.2(b). As the Court stated above, where an expert agency has already determined that the emission of a certain level of a pollutant will not be significant, the Court will not lightly reject this conclusion. Rather, the Court finds that the agency's determination should weigh heavily in the Court's determination of whether the asserted particulate emissions would likely cause substantial irreparable harm for purposes of issuing injunctive relief.

Nonetheless, the Court finds persuasive Dr. English's assertion that even the particulate emissions disclosed in the EA - which likely understate the total particulate emissions because they fail to account for particulate caused by the ammonia emissions - would have caused the ambient concentration of particulate to exceed the NAAQS in Calexico multiple time during recent years. Notwithstanding the EPA's significance level fiction, these NAAQS were set at a level that

preserves human health and welfare with a margin of safety. As a matter of common sense, it is clear that discharges of pollutants that actually, if not legally, cause violations of the NAAQS, or make existing violations worse, have the potential for adversely affecting health. The argument carries additional force when the Court considers that the short-term PM_{10} emissions from ammonia conversion are estimated to be 1.8 $\mu g/m^3$. (See Supp. Heisler Decl. at ¶ 15).[16] Thus, the combined 3 $\mu g/m^3$ provided by modeling in the EA and the 1.8 $\mu g/m^3$ or more contributed by ammonia conversion means that the NAAQS for particulate in the Imperial Valley will be exceeded even more frequently, or that the violations will be larger, than even Dr. English suggests, and the minimum total of 4.8 $\mu g/m^3$, while still below the E.P.A. significance level, would verge on significance even under that regulation.

According to the data provided by Dr. English, a 4.8 $\mu g/m^3$ increase in ambient particulate concentrations would have caused readings to exceed the NAAQS at the Grant Street monitor in Calexico five times in the eight years between 1994 and 2002. (See Exh. 1 to Supp. English Decl.). Similarly, such an increase would have caused the reading at the Ethel Street monitor to exceed the NAAQS four times over the same period. (Id.). Assuming these exceedances are roughly distributed over time, then over the undisputed maximum two year period for remand in this case, it might be expected that the plants' emissions would cause a reading in excess of the NAAQS about once at each station. While the Court does not view even one such exceedance of the NAAQS lightly, it will not find that these circumstances demonstrate the substantial and irreparable harm necessary to justify injunctive relief. The Court finds this conclusion to be particularly appropriate considering that the NAAQS are designed to incorporate an "adequate margin of safety," 40 C.F.R. § 50.2, and English's data suggests that any reading in the next two years that exceeds the NAAQS would likely exceed the standard by only a small margin.

In sum, the Court finds that plaintiff has failed to demonstrate that a likelihood of substantial and irreparable harm will result from the plants' ammonia emissions in the absence of

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[16]Indeed, the contribution to particulate formation from ammonia may even be higher since it appears from Heisler's declaration that he has used estimates of actual ammonia emissions, rather than the more conservative "potential to emit" estimates normally required when reviewing new emissions sources. (See Supp. Stockwell Decl. at ¶ 3).

an injunction. The Court notes the dispute between the parties' experts concerning the formation of particulate, but declines to find that plaintiff's experts have shown that such particulate will be more likely than not to lead to substantial health effects. Additionally, the Court finds support for its conclusion from the declarations of two of intervenors' experts that ammonia emissions will not exceed the applicable reference exposure levels at the U.S. border.

3. Whether Irreparable Harm Results from the Lack of Full Disclosure and Informed Decision-Making Prior to a Change in the Status Quo

Plaintiff's third argument to show irreparable harm is that it will suffer a procedural injury from the lack of full disclosure and informed decision-making prior to the operation of the transmission lines. First, plaintiff argues that the agencies might be less likely to deny the permits after a new environmental review if the lines are allowed to operate in the interim. (Pla's Reply at 12). In support of this argument, plaintiff cites Metcalf v. Daley, 214 F.3d 1135, 1146 (9th Cir. 2000), in which the court suspended operation of an agreement between the federal government and the Makah Tribe pending the completion of a NEPA analysis. The Metcalf court was concerned that the government had already "committed in writing to support the Makah's whaling proposal," and that such a commitment might lead to a case of "first-the-verdict, then-the-trial." Id. This case is readily distinguishable, however, because plaintiff does not point to any similar written agreement, other than the clearly invalid permits, between the government and the intervenors. Furthermore, this Court can limit the influence of improper considerations by ordering the federal defendants not to consider the completion or interim operation of the transmission lines when making their NEPA determinations on remand.

A stronger argument is that NEPA provides a process through which major federal actions should be undertaken, that this process was inadequate in the instant case, and that it would be a subversion of the statute and the process to allow projects commenced under the authority of the invalid federal actions to proceed nonetheless. Support for this argument can be implied from the National Parks & Conservation Association court's holding that "[w]here an EIS is required, allowing a potentially environmentally damaging project to proceed prior to its preparation runs contrary to the very purpose of the statutory requirement." 241 F.3d at 737. However, it is important to note that the NPCA court had already found the project under consideration in that

case to be "potentially environmentally damaging." Id. In the present, unusual NEPA case, the Court has considered the record along with the declarations of the parties and has not found likely environmental harm.

In fact, a focus on the procedural protections of NEPA as the basis for injunctive relief would be counter to the Supreme Court's holding in Amoco Production Co. v. Village of Gambell. 480 U.S. 531. In that case, the Court held that the Ninth Circuit, in granting injunctive relief, "erroneously focused on the statutory procedure rather than on the underlying substantive policy the process was designed to effect--preservation of subsistence resources." Id. at 544. The Court went on to hold that while a sufficient likely showing of environmental harm is generally enough to warrant injunctive relief, where injury to the underlying substantive policy is not at all probable and significant considerations weigh against issuing the injunction, a court abuses its discretion in doing so. Id. at 545.

Plaintiff's argument that the Court can find irreparable harm solely in a violation of statutory procedure, rather than in the environment that the procedure was designed to protect, runs counter to the holding in Gambell. In fact, the procedural error will be remedied through a remand to the agency for a new environmental analysis and a new determination under NEPA. The Court is not persuaded that the agency will not have the same, full range of alternatives available to it following a new analysis that it did when it made the decision the first time. In the meantime, as discussed above, plaintiff has failed to convince the Court that likely substantial and irreparable environmental harm will occur.

Accordingly, the Court finds that plaintiff's request for an injunction against operation of the transmission lines fails because plaintiff has failed to make the threshold showing of substantial and immediate irreparable harm. However, assuming arguendo that plaintiff has met its burden and has shown such harm, the Court is still required to balance the equities in deciding whether to issue the injunction.

B. Balancing of the Equities

As in Gambell, the parties opposed to the injunction in the present case claim that they stand to suffer considerable economic injury if the injunction issues. T-US asserts, and plaintiff

does not dispute, that enjoining the use of the transmission lines for a period of two years would result in a direct financial impact to TDM, an affiliated company, of $121 million. (See T-US' Opp'n at 8; First Declaration of Octávio Simoes in support of T-US' Opp'n at ¶¶ 22-31). BCP argues, and plaintiff does not dispute, that enjoining the use of its transmission line would result in about $5.4 to $10.9 million in direct financial impacts to it and its affiliates in Mexico. (See Declaration of Vimal Chauhan in support of BCP's Opp'n at 4, 11, 12). Under the Gambell holding, the Court may consider these substantial economic harms in the absence of a sufficient showing of irreparable environmental harm. 480 U.S. at 545 (finding a loss of $70 million to weigh against enjoining the activity in the absence of demonstrated harm).

C. The Public Interest

The interests of the public must be taken into account when it is affected by the issuance or withholding of injunctive relief. Indeed, the failure to expressly consider the public interest on the record when the public interest is affected constitutes an abuse of discretion. Northern Cheyenne Tribe v. Hodel, 851 F.2d 1152, 1157 (9th Cir. 1988). In the present case, both sides lay claim to the public's interest. Plaintiff, appropriately, claims that the asserted environmental harms discussed above, if demonstrated, would harm the public. Additionally, plaintiff argues that the public has the right to an informed decision by the respective federal agency and full disclosure of environmental impacts of the action. The Court has already discussed both of these concerns above and has found them to be inadequate to require the issuance of an injunction.

On the other side of the equation, the federal defendants and intervenors argue the following public interest factors militate against issuing the injunction: (1) alleged benefits to the environment that accrue through operation of the sewage treatment plants associated with the power plants; (2) alleged benefits to the environment that accrue through the displacement of allegedly older, dirtier, and more costly power generation by the TDM and LRPC power plants; (3) the foreign policy implications from indirect impacts on Mexican plants, Mexican jobs, and Mexican taxes; and (4) the alleged threat of inadequate energy resources in California without the operation of the transmission lines.

First, BCP and T-US argue that because both the TDM and LRPC facilities have

constructed sewage treatment plants to remove pollutants from partially treated or untreated sewage from Mexicali prior to use in the plants for cooling[17], the operation of the plants provides a significant benefit for the environment. T-US states that if the injunction issues, and the TDM plant is forced to cease operations, its associated sewage treatment plant will also stop operating. (First Simoes Decl. at ¶ 13). The sewage treatment plant at the LRPC would continue operating at least partially since the injunction of the BCP would only partially and temporarily cause that facility to cease operations. (See generally Chuahan Decl. (describing plans of the LRPC to continue operations through alternative means and through reconfiguration, if necessary)).

Intervenors argue, and plaintiff does not dispute, that operation of the sewage treatment plants removes pollutants from water that would ultimately otherwise be partially treated and discharged into the New River. Intervenors also argue, and plaintiff also does not dispute, that removal of these pollutants assists Mexico in meeting its obligations under the International Boundary and Water Commission Minute 264, a treaty between the U.S. and Mexico that governs the quality of water flowing into the U.S. through the New River. (See First Simoes Decl. at ¶ 11). Although Jose Angel argues on behalf of plaintiff that the discharges from the power plants will also violate the same treaty because they are "substances . . . in concentrations which are toxic or harmful to human, animal, or aquatic life, or which may significantly impair the beneficial uses of such waters," (Angel Decl. at ¶ 27), the Court found in its preceding analysis that plaintiff failed to demonstrate that the discharges would be significantly toxic or harmful.

Second, intervenors argue that if the Court enjoins operation of the transmission lines, older, more polluting, and costlier plants will have to make up the difference, all at a harm to the public. Intervenors first argue that the additional power to replace the power from these plants will have to come from other regional sources because of transmission considerations. (See, e.g. Declaration of Alberto Abreu in Support of T-US' Opp'n at ¶ 8). T-US' expert Alberto Abreu then systematically surveys the existing generation sources in each of the region's counties and Baja, Mexico to conclude that more NOx and carbon dioxide would be emitted if these other facilities

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[17]The water that is treated, less that which is evaporated in the cooling process, is discharged back into the New River after processing.

had to make up the difference from a ceasing of operations at the TDM plant. (Id. at ¶¶ 12-26). However, plaintiff's expert William Powers disputes that replacing the TDM and LRPC plants with other power plant capacity in the region will lead to anything more than "relatively little change" in NOx emissions. (Declaration of William Powers in Support of Pla's Motion on Relief at ¶ 13).[18] Additionally, Powers points out, and intervenors do not dispute, that emissions are not entirely fungible since Imperial Valley is in "nonattainment"[19] status for federal PM_{10} and ozone[20], while San Diego County is not. Thus, additional emissions in Imperial County, even if those emissions replace relatively more emissions in San Diego County, may ultimately be more harmful to the public as a whole. While acknowledging the merit of this argument, the Court also notes that it has considerable evidence before it in the intervenors' declarations and the EA that the estimated emissions of both particulate and NOx from the plants are below the significance levels established by the EPA for areas of nonattainment. The Court also notes that plaintiff has not disputed intervenors' contention that any power generated by other regional plants to replace power from TDM and the LRPC plants would be costlier and involve larger emissions of carbon dioxide.

Third, intervenors argue that the Court should be wary of issuing an injunction that would

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[18]The supplemental declaration of Simoes challenges Powers' declaration, stating that Powers' own data shows that NOx emissions would be higher if regional plants replaced the power generated by the TDM and LRPC facilities. (See Second Simoes Decl. at ¶ 14). Simoes also challenges factual evidence presented by Powers concerning the retrofitting of regional power facilities with technology to reduce NOx emissions. (See id. at ¶¶ 16-17). Powers then submitted his own supplemental declaration to rebut these assertions. Powers argues that at least the Ventura County boilers, as a group, could provide power at a lower level of NOx emissions than the TDM and LRPC turbines as a group. (See Supp. Powers Decl. at ¶ 6). He also argues that Simoes' claim that power from Ventura County is unlikely to supply the San Diego service area because of distance and congestion is unsupported by facts. (Id.). Additionally, Powers provides with his supplemental declaration evidence tending to support his claim that the average NOx reduction achieved by retrofitting gas-fired utility boilers with SCR is approximately 90 percent. (Id. at ¶ 8, Exh. 1 to Supp. Powers Decl.). Nonetheless, implicit in Powers' rebuttal to the Simoes declaration is that only the Ventura County boilers have lower emissions than the TDM and LRPC plants, even if the 90 percent figure for reductions is accepted. (See id. at ¶ 6). Accordingly, unless all power to replace the power otherwise provided by the TDM and LRPC plants comes from Ventura County, it appears that total emissions would indeed be higher if the Court enjoined operation of the transmission lines.

[19]"Nonattainment" is a designation under the Federal Clean Air Act for airsheds that are significantly degraded by specific criteria air pollutants.

[20]NOx contributes to the formation of ozone.

have an effect on international relations between the United States and Mexico. In particular, Simoes, on behalf of T-US, estimates that an injunction that causes the TDM to cease operation in the interim would result in a loss of $9-13 million in wages in Mexico, a loss of $22 million in Mexican tax revenues, and the loss of 68-102 local jobs. (First Simoes Decl. at ¶¶ 32-25). Plaintiff, while not disputing these losses, argues instead that the case law relied upon by T-US does not support a finding that the losses of tax revenues and jobs are "foreign policy implications" of an action. (See Pla's Reply at 17). Assuming, arguendo, that nothing in the cases cited by intervenors restricts the Court from entering an appropriate injunction upon finding violations of NEPA in this case, nothing in plaintiff's argument suggests that the Court may not, in exercising its duty to weigh the public interest in issuing an injunction, consider impacts on foreign jurisdictions or foreign nationals, particularly when those impacts may affect foreign relations. Accordingly, the Court finds that these impacts are entitled to some weight in the determination of the public interest.

Finally, the intervenors argue that the public will be harmed by the unavailability of power from the TDM plant, and perhaps from the LRPC export turbines, that would result from an injunction against the operation of the power lines. In particular, intervenors warn of the possibility of power shortages should the TDM and LRPC not be able to contribute their generation to the electricity grid in Southern California. Plaintiff responds, through the declaration of William Powers, that the California Independent System Operator (CAISO) has issued a 2003 Summer Assessment in which it indicates that California will have over 3,000 MW of power reserves during the summer of 2003 even if the worst-case scenarios for demand are met. (See Powers Decl. at ¶ 3). Powers asserts that this assessment does not rely on the power from the TDM or LRPC plants. (Id.). More specifically, Powers argues that neither the San Diego service area nor the Imperial County service area are in danger of power shortages. (Id. at ¶¶ 5-6). In addition, Powers states that the power produced by the TDM and the LRPC would "not add significantly to the total power available to the state at times of peak demand due to existing transmission congestion issues." (Id. at ¶ 7).

T-US, through a supplemental declaration by Simoes, disputes Powers' contentions. First,

Simoes argues that the 2003 Summer Assessment includes generation from the TDM and LRPC plants. (Second Simoes Decl. at ¶ 21). In support of his contention, Simoes attaches a copy of the Summer Assessment, which states that in the San Diego Gas & Electric Area, "about a 1000 MW of the summer peak load can only be met from the additional 1070 MW of new generation coming into ISO's Imperial Valley substation from Mexico,[21] 590 MW of new generation coming into CFE's LA Rosita substation from Mexico and over 3000 MW of new generation coming in Arizona at Hassayampa." CAISO 2003 Summer Assessment, Ex. 4 to Second Simoes Decl. at 38. The Court finds, however, that this language is ambiguous, since the sources listed total well above the 1000 MW required. It seems as though the assessment might mean to indicate that the required 1000 MW could be found in any combination of the three sources, including sources other than the TDM and LRPC plants. Second, Simoes argues that transmission congestion will not limit CAISO's ability to import power from the TDM and LRPC plants. (Second Simoes Decl. at ¶ 23). In support of this, Simoes declares that the plants have successfully sent their full generating capacity to the U.S. market without problems over the testing period. (Id. at ¶ 24). Plaintiff's expert, Powers, points out that the CAISO Summer Assessment also notes that "[a] new nomogram will limit the combined generation from Imperial Valley and imports from CFE to 800 MW." (Supp. Powers Decl. at ¶ 10 (citing CAISO 2003 Summer Assessment, Ex. 4 to Second Simoes Decl. at 38)). The implication is that, at most, 800 MW of the 1070 MW generated by the TDM and LRPC export turbines would be used to avoid power shortages in the San Diego service area. As a result, the Court agrees with plaintiff that the need for replacement power generated by potentially costlier and more polluting plants would likely be less than that estimated by intervenors. Nonetheless, this conclusion does not change the negative impact on the public interest from the issuance of an injunction, but rather changes only the relative magnitude of that impact.

Finally, and in further support of the intervenors' argument, Vimal Chauhan declares that the operation of the BCP transmission line would help alleviate transmission deficiencies and would enhance the reliability of the system by ensuring that the LRPC export generation could get

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[21]Simoes declares that this is a reference to the TDM and LRPC export plants. (Id. at ¶ 21).

to the California market if transmission along the alternative importation path is interrupted. (Chauhan Decl. at ¶ 13).

Having considered the declarations and argument of the parties, the Court finds sufficient evidence to believe that while the power that would flow over the transmission lines under consideration may not be required to avoid power shortages in the region or state in the interim period, the availability of the transmission lines and power would provide the system with a needed margin of forecasting error and safety, enhancing the reliability of the grid. Furthermore, given the high costs to the public that result from power shortages, even a relatively small probability carries with it a large risk. In sum, the Court finds that while plaintiff has not demonstrated a likelihood of substantial and irreparable environmental harm, intervenors have made a showing that they will suffer considerable economic harm and that the net interest of the public weighs against the issuance of the injunction. Accordingly, the Court declines to exercise its equitable power to enjoin operation of the transmission lines pending new NEPA determinations by the agencies.

D. WHETHER TO ENJOIN THE FEDERAL DEFENDANTS AND DOE TO REMOVE THE TRANSMISSION LINES IF LEGALLY ADEQUATE PERMITS ARE NOT ISSUED WITHIN 18 MONTHS

Finally, plaintiff moves the Court to compel intervenors to remove their transmission lines if they have not received permits issued pursuant to a valid NEPA review after 18 months. Because the Court will retain jurisdiction over the matter during that time, the Court finds no ground upon which to issue such an injunction, even if it was otherwise appropriate, at this time. Plaintiff may move the Court again for such relief after such time has elapsed if this matter has not been resolved.

IV. CONCLUSION

Based on the foregoing analysis, the Court **DENIES** Plaintiff's specific requests for relief but **GRANTS** relief in modified form. Specifically, the Court: (1) **GRANTS IN PART** plaintiff's request to set aside the Presidential Permits, the rights-of-way, and the FONSI issued in this case; (2) **DEFERS** the setting aside of the permits and the FONSI until July 1, 2004, or until such time as superceding NEPA documents and permits have issued, whichever is earlier; (3) **ORDERS** the

federal defendants to seek a hearing date and file a brief showing cause on or before May 15, 2004, if necessary, why the Court should not set aside the permits and the FONSI on July 1, 2004; (4) **REMANDS** the matter to the respective agencies for the preparation of NEPA documents consistent with this Order and the May 2, 2003 Order on the merits; (5) **DENIES** plaintiff's request for an injunction against the operation of the transmission lines in the interim period; (6) **GRANTS** plaintiff's motion for reconsideration of the Court's order at argument denying plaintiff's motion to file supplemental declarations; and (7) **DENIES WITHOUT PREJUDICE** plaintiff's request for an injunction compelling the removal of the transmission lines after 18 months in the absence of legally adequate permits. Plaintiff may renew its motion for injunctive relief as to the removal of the transmission lines after 18 months from the date this Order is file-stamped if the matter has not been resolved by that time.

Additionally, the Court **RETAINS** jurisdiction over this matter pending full NEPA compliance. To aid in the exercise of this jurisdiction, the Court **ORDERS** the federal defendants to notify the Court when they have made new determinations concerning the proposed federal actions.

Finally, the Court **PROHIBITS** the federal defendants from considering the interim operation of the transmission lines, the completion of the construction, or this Court's equitable analysis of the environmental impacts of the proposed actions as part of the NEPA analysis and determination process on remand. Cf. Northern Cheyenne Tribe v. Hodel, 851 F.2d 1152, 1157 (9th Cir. 1988).

IT IS SO ORDERED.

Dated: July 8, 2003

Irma E. Gonzalez

IRMA E. GONZALEZ
United States District Judge

cc: The Honorable Magistrate Judge Louisa S. Porter
all parties

APPENDIX B:

SCOPING SUMMARY REPORT

FOR

IMPERIAL-MEXICALI 230-kV TRANSMISSION LINES ENVIRONMENTAL IMPACT STATEMENT

SCOPING SUMMARY REPORT

FOR

IMPERIAL-MEXICALI 230-kV TRANSMISSION LINES ENVIRONMENTAL IMPACT STATEMENT

ENVIRONMENTAL IMPACT STATEMENT SCOPING PROCESS

Prepared by

Environmental Assessment Division
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for

U.S. Department of Energy
and
Bureau of Land Management

March 2004

CONTENTS

NOTATION

The following is a list of acronyms, initialisms, and abbreviations (including units of measure) used in this document.

BACT	best available control technology
BLM	Bureau of Land Management
CEA	Comprehensive Cumulative Analysis
CO	carbon monoxide
DOE	U.S. Department of Energy
EA	environmental assessment
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FONSI	Finding of No Significant Impact
kV	kilovolt(s)
NEPA	National Environmental Policy Act
NH_3	ammonia
NOI	Notice of Intent
NO_x	nitrogen oxides
$PM_{2.5}$	particulate matter with a mean aerodynamic diameter of 2.5 µm or less
PM_{10}	particulate matter with a mean aerodynamic diameter of 10 µm or less
ppm	part(s) per million
SCR	selective catalytic reduction system
Sempra	Sempra Energy Resources
TDS	total dissolved solids

SCOPING SUMMARY REPORT
FOR
IMPERIAL-MEXICALI 230-kV TRANSMISSION LINES
ENVIRONMENTAL IMPACT STATEMENT

1 INTRODUCTION

On October 30, 2003, the U.S. Department of Energy (DOE) issued a Notice of Intent (NOI) in the *Federal Register* (*Federal Register*, Volume 68, page 61796 [68 FR 61796]) to prepare an environmental impact statement (EIS) concerning the issuance of Presidential permits and two separate right-of-way (ROW) grants to Baja California Power, Inc. (Intergen) and Sempra Energy Resources (Sempra). The permits are required to allow the transmission of electric power from two new power plants built by the respective companies in Mexico to the United States. The ROWs granted as part of the action would be for the construction of two 230-kV transmission line routes needed to transmit the power to the United States. The power lines would be constructed on Federal land managed by the U.S. Department of the Interior's Bureau of Land Management (BLM). The lines would be in Imperial County, California, and would be located west of Calexico and El Centro, California. The lines would run to the San Diego Gas & Electric Company's Imperial Valley Substation. The EIS will examine the impacts associated with construction and operation of the transmission lines, as well as the impacts in the United States from operation of the three natural-gas fired combined-cycle units built in Mexico for power export to the United States.

The public scoping period began with the publication of the NOI on October 30, 2003, and ended December 1, 2003. Two public scoping meetings, hosted by DOE and BLM, were held on November 20, 2003, one in El Centro, California, and the other in Calexico, California. About 30 people attended each meeting. Eleven people provided oral comments at the El Centro meeting, nine at the Calexico meeting, and 17 individuals and organizations provided written comments.

2 SCOPING COMMENT SUMMARY AND EIS ANALYSIS

2.1 INTRODUCTION

A summary of issues and concerns raised by commentors during the scoping period is presented in this section. Each subsection presents comments related to that topic area, along with a discussion (under the heading *EIS Analysis*) of what is or is not covered in the EIS. Briefly, issues to be analyzed in depth pertain to the impacts in the United States of construction and operation of the two transmission lines and of the operation of the three export units in Mexico.

2.2 SUMMARY OF COMMENTS

Several commentors expressed their pleasure that the DOE was conducting a full EIS for the proposed action. Many of the comments focused on the adverse impacts on human health, air quality, and water quality associated with the operation of the power plants and technologies (e.g., selective catalytic reduction [SCR] systems and dry cooling) that could be used to reduce those impacts.

2.2.1 National Environmental Policy Act (NEPA) Process/Decision Making

Connected Actions: Several commentors suggested that the Federal agency actions analyzed in the EIS (i.e., DOE's issuance of Presidential permits for the Sempra and Intergen transmission line projects to cross the U.S.-Mexico border and BLM's issuance of two ROW grants for the transmission lines to cross BLM-administered land) are connected actions within the meaning of NEPA, and therefore are required to be analyzed in a single NEPA document. In addition, commentors suggested that the Federal Energy Regulatory Commission's (FERC's) actions to issue a Certificate of Convenience and Necessity and a Presidential permit to cross the border to North Baja Pipeline, LLC, for the North Baja Natural Gas Pipeline Project, and the two power plants in Mexico are connected actions.

EIS Analysis: While the projects are complementary, they are independent actions that serve distinct functions and that can proceed separately. Under the Council of Environmental Quality's regulations implementing NEPA (Title 40, Part 1508.25 of the *Code of Federal Regulations* [40 CFR 1508.25]), actions are connected if they (1) automatically trigger other actions which may require EISs; (2) cannot proceed unless other actions are taken; or (3) are interdependent parts of a larger action. The DOE and BLM actions related to this EIS will not automatically trigger FERC's actions related to the gas pipeline, or vice versa. The pipeline project will proceed regardless of whether DOE and BLM actions are taken, and, conversely, Sempra and Intergen will proceed with the transmission line projects regardless of whether the gas pipeline is built. Although DOE and BLM have no regulatory jurisdiction over the power plants, the EIS will analyze the impacts in the United States that these facilities have on air and water quality, and their contribution to cumulative impacts.

Assessment of Impacts in Mexico: Several commentors stated that the link between the transmission lines and the power plants warrants an examination of the potential construction and operation impacts in both the United States and in Mexico. Several commentors stated that an international board should study the environmental effects of the project. The group would examine all environmental effects on both sides of the border and identify the impacts.

EIS Analysis: The proposed action in this case is the granting of the Presidential permits and the granting of ROWs for the transmission lines. DOE and BLM have no jurisdiction over power plants located in Mexico. The plants' impacts are considered only to the degree that they contribute to cumulative impacts. That is, the impacts are assessed for the same project region locations as those of the transmission line impacts, which are confined to the United States in this analysis. Therefore, the assessment of the power plants' impacts on Mexico is outside the scope of the analysis. Related to these issues are the requests for a binational assessment of impacts from the proposed project. DOE and BLM believe that NEPA is the appropriate vehicle for assessing the impacts from this project.

Consultation: One group suggested that additional consultations are needed with representatives of Imperial County to assess how the proposed projects would conform to local regulations. It was also suggested that regional military bases be consulted directly.

EIS Analysis: DOE and BLM consulted with the Imperial County Air Pollution Control District Office. Information provided by this office is used in the EIS. There will be no formal consultation with the military.

Conditioned Presidential Permits: Commentors suggested that certain mitigation and technology upgrades be added as conditional requirements of the Presidential permits.

EIS Analysis: Alternative technologies that could mitigate impacts are analyzed under one of the alternatives in the EIS. If DOE chooses that alternative, one or both permits would be conditioned on the use of the specific alternative technologies.

Siting of the Transmission Lines and the Gas Pipeline: A commentor suggested that an appropriate, safe distance between the transmission line and gas pipeline be determined to prevent accidental ignition of the pipeline from an electrical discharge.

EIS Analysis: The EIS is concerned with any potential impacts from the construction of the transmission lines on BLM land. The nearest pipeline is more than 50 miles away from the transmission line, which is far enough away to remove concern. Therefore, the EIS does not specifically discuss safe distances between gas pipelines and transmission lines.

2.2.2 Human Health Issues

Health Effects from Operation of Power Plants: Numerous commentors expressed concern over the health and safety effects from the operation of the two power plants in Mexicali on human health in Imperial County. Many commentors stated that the unusually high asthma rates (especially for children) for the county are the result of poor air quality in Imperial Valley and that the construction and operation of additional power plants could only make matters worse. The commentors requested full disclosure of the process by which the health effects from the plants are analyzed.

EIS Analysis: The EIS examines the human health effects in the United States resulting from construction and operation of the transmission lines. The analysis also examines the effects on the U.S. population of operating the power plants. Asthma is discussed in the EIS, but there is not a detailed study of childhood and teenage asthma.

Comprehensive Health Risk Assessment: Several commentors recommended that a comprehensive health risk assessment be conducted for Imperial Valley. This study would examine the links between the air pollution and the health issues (including cancer, birth defects, asthma) occurring in the valley. Most of the commentors requesting this study wanted it to include both Mexico and the United States.

EIS Analysis: A comprehensive health risk assessment of health issues is included in Appendix H of the EIS.

2.2.3 Water Quality and the Salton Sea

General Water Issues: Several commentors expressed concern over the effects that the proposed action would have on water availability and quality in the region. Specific issues raised include concerns over a reduction in the flow of the New River resulting from the cooling processes at the power plants; an increase in salinity of the Salton Sea from the decreased flow in the New River; and an increase in the temperature of the New River from the heated water being discharged from the plants to the river. Commentors also expressed concern about the quantity of total dissolved solids (TDS) in the water being discharged into the New River from the power plants.

Effects on the Salton Sea: Many commentors expressed concern over the effects of the power plants on the Salton Sea. The main concern was that the use of water from the New River (one of two rivers that feed the Salton Sea) for the wet cooling system at Mexicali would reduce the flow of water into the Salton Sea from the New River, causing the Sea to shrink and the salts to become more concentrated. It was noted that the Sea and its nearby wetlands provide habitat for numerous species of fish and birds (including migratory birds species), and that even a small increase in salinity could have an adverse effect on the recreational fishing industry and the general ecology of the region. Also, the cumulative effects of this and other actions could cause more severe effects.

EIS Analysis: The EIS addresses potential water quality impacts of the proposed actions in the United States, with particular attention to impacts on the New River and the Salton Sea. The impacts on water quantity and quality associated with wet cooling (evaporation) systems are examined and compared to impacts expected from dry cooling or wet-dry cooling.

2.2.4 Air Quality

General Air Issues: Many commentors expressed concern that the power plants would further degrade the air quality in a region with existing air quality problems. Specifically, commentors expressed concern over the amounts of nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter with a mean aerodynamic diameter of 2.5 µm or less and a diameter of 10 µm or less ($PM_{2.5}$ and PM_{10}, respectively) that would be emitted by the power plants. There was also concern over increases in ozone (O_3) resulting from operation of the power plants.

EIS Analysis: Potential air quality impacts of the proposed action are addressed, as will the changes in emissions associated with installing SCR systems. The EIS examines pollutants considered to be key indicators of air quality, including CO, NO_x, O_3, sulfur dioxide (SO_2), lead, PM_{10} and $PM_{2.5}$. The analysis also specifically examines the contribution of plant emissions to NH_3 and secondary O_3 production in the region.

Air Analysis Parameters: Several people commented on aspects of the air analysis. One suggestion stated that if Prevention of Significant Deterioration was the standard for determining air quality impacts, the amount of ammonia (NH_3) slip allowed for this analysis should be 3.5 parts per million (ppm). A second commentor suggested that Sempra cannot claim any air credits for the introduction of natural gas fuel to Mexicali because the claimed reduction of other fuels as a consequence is not verifiable or quantifiable. A commentor noted that the analysis previously conducted on the power plant air emissions assumed that the region was an attainment area, when neither Mexicali nor El Centro are attainment areas.

Another commentor stated that the air samples taken at the border do not accurately reflect maximum exposure concentrations. The commentor stated that impacts must be analyzed away from the border because of stack heights and their proximity to the border.

Another commentor indicated that the air analysis should consider the extreme temperatures the region experiences and the effect that these temperatures have on air quality.

The analysis is limited to impacts in the United States on air quality in compliance with NEPA requirements.

2.2.5 Biological Resources

Some commentors requested that the EIS consider the impacts of the project on protected, threatened, endangered, or sensitive animals and plants and their habitats. One commentor was concerned that a decrease in surface water area of the Salton Sea would concentrate birds in a smaller area and the resulting increased concentration of waste would accelerate "biological processes" in that habitat. Another commentor was concerned that an increase in salinity, decrease in flow, and/or increase in water temperature could negatively impact wetland projects. A few commentors suggested that adverse impacts to the Salton Sea from the proposed action could have cumulative effects on the bird populations that utilize the lake. The commentors indicated that this could constitute a violation of the Migratory Bird Treaty Act.

EIS Analysis: The EIS assesses the potential environmental impacts of the construction and operation of the transmission lines and the operation of the power plants on ecological resources, including wetlands, plant and animal species, and threatened and endangered species and critical habitat that may occur in the area. The EIS specifically assesses the impacts from the construction of the transmission lines on the flat-tailed horned lizard, and the effects of water use by the proposed actions on the New River habitat and on the fish and bird populations at the Salton Sea. The EIS includes a brief discussion of the Migratory Bird Treaty Act. Impacts to biological resources in Mexico are within the scope of the EIS.

2.2.6 Cultural Resources

A commentor requested that the impacts of the project on cultural or historic resources on both sides of the border be considered as part of the analysis in the EIS.

EIS Analysis: The EIS assesses the potential impacts of the proposed action on the cultural, historic, and archaeological resources in the United States. Potential mitigation measures for any impacts are also discussed. The analysis does not include impacts that occur in Mexico.

2.2.7 Minority and Low-Income Populations

Several commentors pointed out that Imperial County is a poor and largely minority population, which must be protected. It was also suggested that issues related to environmental justice be addressed for the Mexican population as well.

EIS Analysis: The EIS evaluates the potential for disproportionately high or adverse human health or environmental impacts on minority and low-income populations in the region. Environmental justice impacts in Mexico are not analyzed as part of the EIS.

2.2.8 Socioeconomics

Tourism: A commentor suggested that the effects of the proposed project on tourism be examined as part of the analysis.

EIS Analysis: The socioeconomic analysis in the EIS includes employment and economic effects resulting from construction of the transmissions lines on Imperial County. Impacts on tourism are included as part of the analysis of the services sector of the county economy.

2.2.9 Homeland Security

One commentor asked that a homeland security risk assessment be developed.

EIS Analysis: A discussion of homeland security issues is beyond the scope of the EIS.

2.2.10 Geology, Soils, and Seismicity

Soil: One commentor asked that impacts on soil be included in the EIS.

Earthquake Response Measures: The commentor expressed concern over the ability of the power companies to respond to a seismic event that could affect the transmission of power to the United States. The commentor also noted that construction of the transmission lines must meet or exceed seismic zone 4 requirements and wondered what construction standards were in Mexico.

EIS Analysis: The EIS describes the geologic, soil, and seismic characteristics of the area traversed by the transmission lines and assesses earthquake-related impacts. Structural requirements for buildings in Mexico are beyond DOE's authority and are not addressed in the EIS.

2.2.11 Visual Resources

Some commentors suggested that the visual impact of the two new transmission lines be examined as part of the EIS.

EIS Analysis: The visual impacts of the project on the landscape are assessed for the United States.

2.2.12 Land Use and Recreation

One commentor noted that rising salinity could affect recreational fishing in the Salton Sea.

EIS Analysis: The EIS includes an analysis of the impacts and alterations to existing land use, including recreation, from construction of the transmission lines.

2.2.13 Technology Issues

General: Numerous commentors expressed concern over technologies currently being used at the power plants for cooling and emissions control. The primary concern was that technologies other than those currently in use could potentially reduce the adverse effects of power production on the environment. Many commentors suggested the use of alternative technologies, such as dry cooling. There was a request for the construction standards and techniques utilized in Mexico to be reviewed and assessed as part of the EIS.

Dry Cooling: Several commentors mentioned dry cooling and suggested that using dry (air) cooling methods at the power plants would reduce adverse effects to air and water that have been associated with wet (evaporative) cooling. They believed that the EIS should investigate alternative cooling methods, including dry cooling and a combination wet-dry system.

Selective Catalytic Reduction System: Several commentors mentioned the SCR systems (also called selective catalytic converters) that were going to be installed at the plants to help reduce NO_x emissions. Commentors pointed out that even with this technology, there will be a significant increase in measurable pollutants in the Imperial Valley; it was also noted that SCR systems do not reduce CO emissions. Another commentor wanted DOE to require that the turbines be equipped with SCR technology before granting the permit. Commentors also requested that emissions at the plant be measured and made public prior to and after the installation of this technology. The cost of installing SCR technology should be examined.

Best Available Control Technology: Some commentors wanted Best Available Control Technology for pollutants to be installed on all power generating units at the two power facilities. It was also stated that the offset of all emission increases associated with the operation of the two projects be secured according to the Clean Air Act.

Air Monitors: Commentors requested that monitoring stations be placed around the power plants to record air emissions (including particulates and smog forming pollutants) from the plants. It was also requested that the monitoring information be made public.

Alternative Energy: A commentor suggested that geothermal energy would be more appropriate for the Imperial Valley region for the generation of electricity than gas-fired electrical generating plants. The commentor noted that currently there are five geothermal areas within Imperial County being used to generate electricity, and that there are generally fewer emissions from a geothermal plant than from a gas power plant.

EIS Analysis: The EIS includes a discussion of best available technology. Dry cooling and SCR systems are included in the discussion. The EIS does not address air monitoring stations. An analysis of alternative energy sources is beyond the scope of this EIS.

2.2.14 Mitigation

Mitigation of All Impacts: Several commentors suggested that all impacts from the construction and operation of the power plants and the transmission lines be fully mitigated as a condition of approving the transmission lines. Offsets to mitigate any impacts, such as paving roads to limit the amount of dust in the air or retiring older, more polluting automobiles, were specifically mentioned. Another suggestion was to establish a mitigation fund for use in establishing offsets. A final comment on the offsets was a request that they be established in the United States or if they were established in Mexico, that Imperial County officials be allowed to inspect the offsets.

Emergency Response Measures and Reliability Study: One commentor was concerned about the lack of coordinated emergency response measures in the event of an aircraft crashing into one of the towers, lines, substation, or other part of the power grid. Another commentor suggested that a group of independent, binational observers be established to monitor compliance with all emergency response measures; and that this should be established and agreed to by the companies and agencies involved, as an integrated part of the EIS. Several commentors requested that information pertaining to emergency outage plans and security from terrorist acts be examined as part of the EIS.

EIS Analysis: Appropriate mitigation measures and/or offsets are discussed for each technical area. Issues related to emergency outage plans are covered in a separate reliability analysis being conducted by DOE that is not part of the NEPA analysis. This anlaysis would consider outages from a variety of circumstances, such as an aircraft collision with the power lines.

2.2.15 Cumulative Impacts

Cumulative Air and Water Issues: Several commentors requested that the EIS examine the cumulative effects of the transmission lines and the power plants in the larger context of activities occurring in Imperial Valley. The cumulative effects of the project on the Salton Sea, the New River, fishing, and on farming were all mentioned specifically. The commentors suggested that the analysis examine the impacts from both construction and operation of the power plants. One commentor requested that impacts in Mexico be included.

Effect of Additional Power Availability in Imperial Valley and Mexico: Some commentors requested that the EIS analysis examine the potential impacts associated with the new power supplies available in the region as a result of the projects. The commentors stated that the additional power would lead to increased development of the area through housing and industry.

Construction of Additional Power Plants: Some commentors wanted the construction of a second power plant by each of the companies to be considered in the cumulative impact analysis. They believed this was reasonable since each transmission line would contain two circuits.

Construction of a New County Cargo Airport: A commentor stated that the area selected for the construction of the transmission lines is in the vicinity of a proposed location for a new county cargo airport. It was suggested that the EIS examine the cumulative effect of such an airport sited near the transmission line.

50-Year Comprehensive Cumulative Analysis: A commentor suggested that a 50-Year Comprehensive Cumulative Analysis (CEA) be conducted for this project. The CEA should consider things like U.S. and Mexican growth projections, environmental factors, major equipment maintenance and operational activities, and overall energy requirements. Rather than being a Washington-based project, it should use local binational governmental and nongovernmental organizations involved in long-term planning for the Mexicali and Imperial Valley areas.

EIS Analysis: The EIS analyzes the potential cumulative impacts in the United States of the proposed transmission lines and the power plants when added to other past, present, and reasonably foreseeable future actions. This includes potential cumulative impacts to air quality in the region and impacts to the Salton Sea. All reasonably foreseeable future power plants are included in the cumulative impacts analysis. A 50-year comprehensive cumulative impact analysis is outside the scope of the EIS. Also, the EIS does not address actions taken by nongovernmental agencies.

APPENDIX C:

ISSUES TRACKING MATRIX

APPENDIX C:

ISSUES TRACKING MATRIX

TABLE C-1 EIS Issues Tracking Guide[a]

Issue Emerging from the EA Court Challenge/EIS Scoping	Summary of Resolution of the Issue	Where Issue Is Addressed in the EIS
Challenge		
1. *Potential for Public Controversy:* Substantial questions were raised in comments submitted on the EA that raised a controversy over the potential impacts of the proposed action.	This EIS was prepared in large part to address the questions that gave rise to the controversy.	Throughout. See citations below to specific questions.
2. *Water Impacts – Salton Sea:* The conclusion in the EA that flow and salinity impacts to the Salton Sea would be too low to measure was insufficient. Such impacts must be computed.	Impacts of flow reductions and salinity increases have been analyzed in terms of calculated increases in these parameters as well as on the elevation of the Salton Sea, its area, volume, and the advancement of the time to reach a critical salinity level of 60,000 mg/L.	Impacts of plant operations on the Salton Sea are presented in Section 4.2.4.2.
3. *Impacts from Ammonia and CO_2:* Questions remain concerning contributions of ammonia emissions to secondary PM_{10} formation and whether ammonia concentrations exceed reference levels in the U.S. Also, plant emissions of CO_2 need to be evaluated under NEPA.	Impacts from plant ammonia emissions were analyzed in terms of maximum increases in ambient air concentrations in Imperial County as compared to a safe reference concentration and in terms of contributions to secondary PM_{10} formation from chemical reactions of power plant ammonia and NO_x in the atmosphere.	Production of secondary PM_{10} from ammonia emissions is discussed in Section 4.3.4.4.2; an assessment of CO_2 emissions is presented in Section 4.3.4.4.3.
4. *Range of Alternatives:* The EA did not evaluate reasonable and feasible alternatives, namely (1) state-of-the-art emission controls on power plants, or dry cooling or wet-dry cooling; and (2) mitigation through offsets in existing sources.	The EIS analyzes alternatives encompassing the addition of further CO and NO_x controls on export turbines at the power plants and alternatives that consider dry or wet-dry cooling of the power plants.	The alternative technologies alternative is described in Section 2.3. Resource area impacts are generally discussed in the alternative technologies sections (e.g., 4.1.5, 4.2.5, etc.)

TABLE C-1 (Cont.)

Issue Emerging from the EA Court Challenge/EIS Scoping	Summary of Resolution of the Issue	Where Issue Is Addressed in the EIS
5. *Cumulative Impacts:* The EA did not adequately assess the cumulative impacts of power plant operations on the New River and Salton Sea, nor did it adequately consider the impacts of specific future power plants in the region mentioned by commentors.	Cumulative impacts on water resources and air quality in the border region are analyzed in the EIS. Impacts on the quantity and quality of water in the New River and Salton Sea from the projects were reviewed in the context of broader demands on the same resources, such as the water transfer project. Impacts to air quality from any verifiable future power plants or other industries with air impacts were analyzed after a careful review of planned or proposed projects in the region.	A cumulative impacts analysis is presented in Chapter 5. Cumulative impacts to water resources are discussed in Section 5.4.2. Cumulative impacts to air quality are discussed in Section 5.4.3. A summary of impacts is provided in Table 5.4-4.
EIS Scoping		
1. Adverse impacts to the New River and Salton Sea from increased TDS and reduced DO.	Impacts to the New River and Salton Sea are analyzed in terms of changes in calculated TDS loads and concentrations and measured DO concentrations.	Impacts to the New River are presented in Section 4.2.4.1 and to the Salton Sea in Section 4.2.4.2.
2. Adverse air quality impacts from plant emissions of NO_x, CO, PM_{10}, and NH_3.	Increases in ambient air concentrations in Imperial County are modeled using EPA's AERMOD model and compared to EPA significance levels for adverse air quality impacts for NO_x, CO, PM_{10}, and NH_3. Impacts on the concentrations of the secondary air pollutants ozone and PM_{10} are also analyzed.	Section 4.3.

TABLE C-1 (Cont.)

Issue Emerging from the EA Court Challenge/EIS Scoping	Summary of Resolution of the Issue	Where Issue Is Addressed in the EIS
3. Human health impacts, with particular concern for asthma sufferers.	Human health impacts are analyzed in terms of exposure to EMF from the transmission lines and from air pollutants emitted from the power plants. Exposure to EMF to nearby residents is computed from conservative application of standard field strengths for power lines. Exposure to plant-related air pollutants is analyzed in terms of EPA SLs and through a review of the types of health effects that are associated with the pollutants and the regional health status with respect to these health effects. In addition, a human health risk assessment was performed for exposure to hazardous air pollutants and ammonia.	Human health impacts from exposure to EMF and to plant-related air pollutants are discussed in Section 4.11 and Appendix H.
4. Consideration of mitigation measures to offset plant emissions.	A mitigation measures alternative is analyzed in the EIS. Mitigation measures analyzed are confined to those that affect air quality. Water resource offsets are not considered because all water in the region is accounted for, that is, taking water for one purpose would remove it from another established, purpose. Air quality offsets from road paving and engine and fuel conversions in vehicles are analyzed.	A mitigation measures alternative is analyzed under the various resource area analyses in Section 4. Specific discussions of air quality offsets are presented in Sections 2.4 and 4.3.6.
5. Consideration of alternative technologies, including dry cooling, wet-dry cooling, and CO and NO_X controls on power plants.	The EIS analyzes an alternative that encompasses power plants fitted with further air pollution controls and dry or wet-dry cooling. Air pollution modeling included cases with plants equipped with full NO_X and CO controls. In addition, impacts on water and air from the use of dry or wet-dry cooling are analyzed.	Impacts on water resources are discussed in Section 4.2.5. Impacts on air quality are discussed in Section 4.3.5, and impacts on biological resources are discussed in Section 4.4.5.

TABLE C-1 (Cont.)

Issue Emerging from the EA Court Challenge/EIS Scoping	Summary of Resolution of the Issue	Where Issue Is Addressed in the EIS
6. Ecological impacts from salinity increases in the New River and Salton Sea, including recreational fishing in the Sea.	Impacts to biological resources associated with the New River, Salton Sea, and experimental wetlands along the New River from water use at the power plants are analyzed in the EIS. Impacts on recreational fish populations in the Salton Sea are included in the analysis.	Ecological impacts from changes in water quality and volume are discussed in Section 4.4.
7. Visual impacts of the transmission lines.	Visual impacts from construction of the transmission lines along three possible alternative routes are analyzed in the EIS in terms of regional visual setting and from key viewing points using photo simulations.	Visual impacts of construction of transmission lines are discussed in Section 4.8.
8. Environmental justice and cultural resources impacts.	Environmental justice issues are evaluated in the EIS in terms of potential disproportionate impacts of the projects on low-income and minority populations. Impacts to cultural resources from construction of the transmission lines along three alternative routes are assessed in terms of known and expected resources along the respective routes.	Environmental justice issues are analyzed in Section 4.12. Cultural Resources impacts are analyzed in Section 4.5.

[a] Abbreviations: AERMOD = AMS/EPA Regulatory MODel; CO = carbon monoxide; CO_2 = carbon dioxide; DO = dissolved oxygen; EA = environmental assessment; EIS = environmental impact statement; EMF = electric and magnetic fields; EPA = U.S. Environmental Protection Agency; NEPA = National Environmental Policy Act; NH_3 = ammonia; NO_x = nitrogen oxides; PM_{10} = particulate matter with a mean aerodynamic diameter of 10 μm or less; SL = significance level; TDS = total dissolved solids.

TABLE C-2 Summary of Declaration Issues and Resolutions[a]

Declaration Author and Affiliation	Summary of Issue and Resolution	Where Issue Is Addressed in the EIS
	Declarations Related to Water Impacts	
M. Barrett, plaintiff	*M. Barrett declares that flow in the New River would be reduced by about 6% as the result of the proposed action.*	
	In general, the calculations performed for this EIS are in agreement with this value. The actual reduction at Brawley would be somewhat less, however, because the wetlands are located downstream of the Calexico gage and the New River gains water as it flows northward.	Section 4.2.4.2
	M. Barrett further states that the proposed action would immediately decrease the amount of water flowing through the Brawley wetlands.	
	However, water for the Brawley wetlands is obtained from the New River by pumping; direct flow from the river is not used. The reduction in New River flow at the wetlands produced by the proposed action would not prevent pumping the same amount of water (about 7 ac-ft/yr) from the river even under low-flow conditions.	Section 4.2.4.2
	M. Barrett additionally states that the proposed action would increase the TDS at the location of the wetlands by about 6%.	
	The calculations performed for this EIS are in agreement with her stated value.	Section 4.2.4.2
	M. Barrett states that the proposed action would reduce flow to the New River and the Salton Sea.	
	The calculations performed for this EIS support her statement. Flow in the New River would be reduced by about 6%, and inflow to the Salton Sea would be reduced by about 0.8%. These reductions would be well within the normal variability of the systems.	Sections 4.2.4.2 and 4.2.4.2

TABLE C-2 (Cont.)

Declaration Author and Affiliation	Summary of Issue and Resolution	Where Issue Is Addressed in the EIS
	Declarations Related to Water Impacts	
K. Collins, plaintiff	*In her declaration, K. Collins states that the proposed action would decrease water in the New River and increase its salinity.*	
	Calculations performed for this EIS are in agreement with her statement.	Section 4.2.4.1
	K. Collins further states that the proposed action would increase the concentration of industrial wastes if the power plants evaporate the treated water normally disposed of in the river. Water released from the Zaragoza Oxidation Lagoons undergo, at most, primary treatment (i.e., settling).	
	Calculations performed for this EIS indicate that, except for TDS and selenium, water quality parameters in the New River would be improved by the proposed action (e.g., decreased COD, BOD, TSS, phosphorus, etc.).	Section 4.2.4.1
DOI	*The DOI report summarizes the current status of alternatives for reducing salinity and of elevation control for the Salton Sea. Information from this report was used in characterizing the affected environment for the Salton Sea. Impacts to the Salton Sea from the proposed action were discussed as part of the EIS process.*	Sections 3.2.1.3 and 4.2.4.2
W. Powers, plaintiff	*W. Powers states that the proposed action would immediately reduce the flow of water in the New River and increase its salinity by as much as 10% at the U.S.-Mexico border.*	
	Calculations performed for this EIS indicate that similar changes would occur, but the magnitude would be less, approximately 6%.	Section 4.2.4.1
T.J. Kirk, plaintiff	*T.J. Kirk states in his declaration that the proposed action would reduce flow to the Salton Sea and increase its salinity.*	
	Calculations performed for this EIS are in agreement with this statement. With both plants operating, inflow to the Sea would be reduced by about 0.8%, and its TDS would increase by about 0.14%. The rate of TDS increase would also increase by about 0.19%. This increase in rate would result in a TDS value of 60,000 mg/L in about 36.06 years, rather than 36.07 years, a difference of about 4 days. This small change in time is beyond the accuracy of the model and the input parameter values used to predict the changes.	Section 4.2.4.2

TABLE C-2 (Cont.)

Declaration Author and Affiliation	Summary of Issue and Resolution	Where Issue Is Addressed in the EIS
	Declarations Related to Water Impacts	
J.A. Olson, plaintiff	*J.A. Olson declares that the proposed action would shrink the size of the Salton Sea and increase its salinity.*	
	Calculations performed for this EIS are in agreement with this statement. The volume of the Sea would decrease by about 0.14%, and its salinity would increase by the same amount. Its elevation would decrease by about 0.05 ft (0.02 m), and about 97 acres (39 ha) would be lost in surface area. Cumulatively, impacts of the proposed action would be a fraction of the impacts to the Sea resulting from decreased inflow to the system (approximately 32% in the short term, and 12% in 2022, when the San Diego water transfer projects ramp up to a value of up to 200,000 ac-ft/yr).	Sections 4.2.4.2 and 5.4.2
J. Angel, plaintiff	*J. Angel declares that the proposed action would increase TDS and reduce flow to the Salton Sea and New River.*	
	The calculations performed for this EIS are in agreement with this statement. The volume of the Sea would decrease by about 0.14% due to a reduction in flow from the New River, and the salinity of the Sea would increase by the same amount. Its elevation would decrease by about 0.05 ft (0.6 in.), and about 97 acres (39 ha) would be lost in surface area. Cumulatively, impacts of the proposed action are a fraction of the impacts to the Sea resulting from decreased inflow to the system (approximately 32% in the short term, and 12% in 2022, when the San Diego water transfer projects ramp up to a value of up to 200,000 ac-ft/yr).	Section 4.2.4.2 and 5.4.2
	The proposed action would also decrease the flow in the New River, as declared by J. Angel. At the Calexico gage, flow would be reduced by about 5.9%; at the Westmorland gage, flow would be reduced by about 2.3%. Both of these reductions are well within the annual variability of flows measured by the USGS.	Section 4.2.4.1
	Because of a reduction in flow and discharge of power plant water that was initially treated from the Zaragoza Oxidation Lagoons prior to use, the annual TDS load to the New River would be decreased; however, the annual TDS concentration in the river would increase by about 6% because of reduced flow in the river and TDS values in the power plant effluent. At the same time, TSS, BOD, COD, and phosphorus loads in the New River would decrease by 2.3, 5.8, 17.0, and 7.5%, respectively. All of these parameter changes are well within the annual variability observed by measurement.	Section 4.2.4.1

TABLE C-2 (Cont.)

Declaration Author and Affiliation	Summary of Issue and Resolution	Where Issue Is Addressed in the EIS
	Declarations Related to Water Impacts	
T.J. Kirk, plaintiff	*T.J. Kirk, in this declaration, states that reductions in New River flow would increase the TDS in the Salton Sea, reduce its area, and decrease its elevation.*	
	The calculations performed for this EIS are in agreement with this statement. However, the changes calculated for this EIS were less than those described in the declaration. The volume of the Sea would decrease by about 0.14% due to a reduction in flow from the New River, and the salinity concentration of the Sea would increase by the same amount. Its elevation would decrease by about 0.05 ft (0.6 in.), and about 97 acres (39 ha) would be lost in surface area. In either case, the values calculated are well within the uncertainty of the Sea's actual TDS concentration.	Section 4.2.4.2
T. Hromadka, Intervenors	*T. Hromadka declared that water lost to power plant operations in the New River would be replaced by an increase in groundwater inflow.*	
	Calculations performed for this EIS indicate that the change in water depth at the Calexico gage caused by plant operations would be on the order of 0.13 ft (about 0.04 m). In a gaining stream (i.e., one in which the quantity of water flowing in the stream increases in the downstream direction), such as the New River, as the water level drops, water would be released from bank storage (e.g., groundwater seepage). The amount of water released to the river would be a function of many variables, including soil type, antecedent moisture conditions, precipitation patterns, irrigation practices, etc. Because the change in depth of the New River produced by plant operations would be very small, accurately determining potential inflow from bank storage is not necessary, and groundwater replenishment of the river was not included as an ameliorating effect in the EIS (thus leading to a more conservative water analysis).	Section 4.2.4.1
	T. Hromadka further declares that the reduction in flow and increase in TDS for the New River would be within the historic range of variability for the New River and Salton Sea.	
	The calculations performed for this EIS support this declaration. As stated in the court decision, this reduction would lead to an overall decrease in the average flow for the New River. This decrease would be very small relative to prepower plant flows and small compared to the overall variability.	Sections 4.2.4.1 and 4.2.4.2

TABLE C-2 (Cont.)

Declaration Author and Affiliation	Summary of Issue and Resolution	Where Issue Is Addressed in the EIS
	Declarations Related to Water Impacts	
O. Simoes, Intervenors	*O. Simoes declared that wastes from the power plant operations are processed at the plant into a solid waste that is then disposed of in a landfill.*	
	Calculations performed for this EIS indicate that operation of the power plants would reduce the annual loads of water quality parameters to the New River. For example, operation of both plants would reduce the annual TDS load to the New River by about 9 million lb (4 million kg). This reduction primarily occurs because less water would be delivered to the New River by the combined plants and Zaragoza Oxidation Lagoons outfalls. Because of a decrease in flow in the river, its TDS would increase by up to 6%.	Section 4.2.4.1
J. Kasper, Intervenors	*J. Kasper declared that TDS removed during the treatment process at the LRPC is not returned to the New River.*	
	Calculations performed for this EIS indicate that operation of the power plants would reduce the annual TDS loads to the New River. For example, operation of both plants would reduce the annual TDS load to the New River by about 9 million lb (4 million kg). This reduction primarily occurs because less water would be delivered to the New River by the combined plants and Zaragoza Oxidation Lagoons outfalls. Although the net load of TDS to the New River would be reduced, its TDS concentration would increase by up to 6%. Important TDS constituents for the New River are chloride, sodium, magnesium, calcium, carbonate, bicarbonate, nitrate, and sulfate. Although phosphorus is not listed as one of the salts of concern, it is a very important water quality parameter in terms of system eutrophication. Phosphorus reduction to the New River due to plant operations would be about 150,000 lb (68,000 kg) annually. *J. Kasper further declares that any changes in salinity of the Salton Sea attributable to plant operations would be entirely reversed if the flows from the New River are restored to their present levels.* All else being equal, this statement is correct, but not discussed in the EIS because salt would continue to flow into the Sea during the operational period of power plants, and other activities would be taking place. Potential impacts of these other activities are discussed under Cumulative Impacts (Chapter 5).	Sections 3.2.1.1, 4.2.4.1, and 5.4.2

TABLE C-2 (Cont.)

Declaration Author and Affiliation	Summary of Issue and Resolution	Where Issue Is Addressed in the EIS
	Declarations Related to Water Impacts	
J. Nichols, Intervenors	*J. Nichols declared that a 0.14% increase in Salton Sea salinity after a year's time would have no adverse effect on aquatic organisms in the Sea.*	
	Calculations performed for this EIS indicated that the salinity of the Sea would increase by 0.14% due to a reduction in volume caused by a decreased inflow from the New River. After one year, an additional increase would occur due to continued salt inflow to the Sea. Impacts to organisms in the Salton Sea due to these increases could have adverse impacts to aquatic species, even before the critical level of 60,000 mg/L is reached (in an estimated 36 years).	Sections 4.2.4.2 and 4.4.4.3
	Declarations Related to Air Quality Impacts	
P. English, Plaintiff	*P. English declares that because the EA did not disclose levels of ammonia emissions from the plants, and thus, the corresponding increases in PM_{10}, the EA's projected 24-hour average of 3 $\mu g/m^3$, underestimates the true cumulative impact from the pollutant.*	
	This EIS accounts for both direct PM_{10} emissions and PM_{10} concentrations produced by secondary formation in the atmosphere from conservative estimates of plant emissions of ammonia and NO_x. The estimated maximum 24-hour concentration increase in the United States from direct emissions from both plants is 2.45 $\mu g/m^3$, while the estimated 24-hour contribution from secondary PM_{10} is 1 $\mu g/m^3$, which totals to less than the 5-$\mu g/m^3$ significance level (SL).	Section 4.3.4.4.2
W. Stockwell, Plaintiff	*W. Stockwell concurs with P. English, stating that maximum combined ammonia emissions of the plants of 1,016 tons/yr (922 t/yr) poses a serious threat of irreparable environmental harm from the production of secondary PM_{10} from plant ammonia emissions. He concludes that due to the relative presence of NO_x and ammonia in the atmosphere in the vicinity of the plants, a substantial fraction of ammonia emitted could form PM_{10} .*	

TABLE C-2 (Cont.)

Declaration Author and Affiliation	Summary of Issue and Resolution	Where Issue Is Addressed in the EIS
	Declarations Related to Air Impacts	
	In the EIS analysis of secondary PM_{10} formation in the form of NH_4NO_3, it is concluded that power plant contributions would be controlled by NO_x emissions rather than ammonia emissions and that the maximum 24-hour concentration increment would be 1 $\mu g/m^3$, as noted above. This estimate used a conversion factor of 0.6 grams of NH_4NO_3 formed for 1 gram of NO_x emitted from the plants, a value conservatively adapted from Stockwell et al. (2000) for winter-time conditions in the San Joaquin Valley to the north. This result is compared to a study by Chow and Watson (1995) that concluded that secondary NH_4NO_3 contributions from all sources to total PM_{10} in the border region were small, on the order of 2 to 3 $\mu g/m^3$. This EIS concludes that impacts of secondary PM_{10} from plant emissions would be de minimis.	Section 4.3.4.4.2
S. Heisler, Intervenors	*S. Heisler notes that while ammonia is not a regulated air pollutant, estimated concentration increases from plant emissions can be compared to health-based reference values. He computed a 1-hour maximum concentration at the border of 13.4 $\mu g/m^3$ and an annual average of 0.63 $\mu g/m^3$ and compared these increases to California acute and chronic RELs of 3,200 $\mu g/m^3$ and 200 $\mu g/m^3$, respectively. On the question of contributions of plant ammonia emissions to secondary PM_{10}, Heisler further concludes that because the region is ammonia rich, plant emissions would not lead to significant formation of NH_4NO_3.*	
	This EIS also modeled the air concentration increases that would be produce from plant emissions of ammonia slip. Estimated maximum values for the proposed action are 4.05 $\mu g/m^3$ for 1-hour average and 0.061 $\mu g/m^3$ for annual average. These values are far below the EPA's reference concentration for chronic exposure of 100 $\mu g/m^3$ to which they are compared (Table 4.3-4).	Section 4.3.4
	Regarding formation of secondary PM_{10} from plant emissions of ammonia, this EIS likewise concludes that the region is ammonia rich and that such formation would be controlled by plant NO_x emissions, as discussed above.	Section 4.3.4.4.2

TABLE C-2 (Cont.)

Declaration Author and Affiliation	Summary of Issue and Resolution	Where Issue Is Addressed in the EIS
	Declarations Related to Air Impacts	
	S. Heisler, in a supplemental declaration, reports that computed total PM_{10} levels attributable to both plant direct emissions and secondary formation from ammonia slip are below EPA SLs at the border.	
	This EIS conducts a similar analysis, except that it is assumed that secondary PM_{10} formation is governed by plant NO_x emissions, rather than ammonia emissions. This EIS also concludes that total PM_{10} contributions would be below SLs.	Section 4.3.4
P. Fontana, Intervenors	*P. Fontana calculated increases in ammonia concentrations in air in the border region assuming worst-case emission rates from the power plants. He reported 1-hour acute values and annual averages that are both below chronic RELs. He further notes, as did S. Heisler in his declaration, that cooling tower ammonia emissions, based on a calculation by J. Kasper, would be a small fraction of stack emissions of ammonia slip.*	
	The EIS analysis of direct ammonia impacts is discussed above. Ammonia emissions from cooling towers are also assumed to be a small fraction of ammonia slip emissions.	Section 4.3.4
P. English, Plaintiffs	*P. English, in a supplemental declaration, argues that, irrespective of SLs, any increase in PM_{10} would have serious and irreparable health impacts from respiratory causes. He further asserts that it is "commonly accepted that there is a causal linear non-threshold relationship between particulate matter with health outcomes." He then calculates such expected outcomes from plant impacts using factors he took from the scientific literature.*	
	This EIS acknowledges that increases in PM_{10} concentrations in the air basin could have adverse health effects in the way of respiratory illness. This EIS, however, does not attempt to compute the rates of any particular health outcomes, but defers instead to comparisons to SLs to gauge the magnitude of potential health impacts.	Sections 4.11.2 and 4.11.4

TABLE C-2 (Cont.)

Declaration Author and Affiliation	Summary of Issue and Resolution	Where Issue Is Addressed in the EIS
	Declarations Related to Air Impacts	
T. Tesche, Plaintiffs	*T. Tesche notes that the Conformity Review requires that Federal actions conform to the provisions of the State Implementation Plan and meet the provisions of the Clean Air Act. He asserts that since the project is in a nonattainment area for ozone and PM_{10}, a complete conformity analysis of these pollutants must be performed when emissions from the power plants are included.*	
	This EIS confines the discussion of conformity review to the transmission line projects. Estimates of PM_{10} and ozone precursor emissions from these projects are below those triggering such a review and, therefore, this EIS concludes that the actions are exempt from further review.	Section 4.3.4.3
	T. Tesche notes that the EA did not include the two domestic Mexico turbines in the analysis of air quality impacts for NO_x and CO, and, moreover, relied on "simple screening calculations" using the EPA's ISCST3 model.	
	This EIS includes analysis of the two domestic Mexico turbines to evaluate cumulative impacts to air quality, including that from NO_x and CO. The EPA's most recent dispersion model, AERMOD, was used to model pollutants from the power plants. Such modeling would not be considered "simple screening calculations."	Sections 4.3.2 and 4.3.4
	T. Tesche asserts that the EA did not "perform any substantive analysis of impacts to ozone levels in the air basin," noting that, while the EPA has not issued formal guidance on photochemical modeling of ozone production, it has sponsored a large body of literature devoted to the proper application of such models. He identifies several state-of-the art photochemical grid models available in the public domain. He further takes issue with the EA's assertion that the plant emissions of NO_x would have minimal impact on ozone levels in the U.S., saying this conclusion is "unsupported conjecture."	
	This EIS used EPA's OZIPR model to estimate possible incremental ozone formation from plant emission of NO_x and VOC. This model is a single-day, one-dimensional photochemical box model and is thus not a grid model as suggested by Tesche, but is considered adequate for the needs of the EIS.	Section 4.3.2.2.2

TABLE C-2 (Cont.)

Declaration Author and Affiliation	Summary of Issue and Resolution	Where Issue Is Addressed in the EIS
	Declarations Related to Air Impacts	
	T. Tesche agrees with the EA conclusion that the Salton Sea Air Basin is NO_x limited under most circumstances and notes that small additions of NO_x can have significant impacts on ozone formation and dismisses the use in the EA of an annual average NO_x level in the analysis of ozone impacts.	
	This EIS examined air chemistry conditions in the air basin, including hourly ozone and NO_2 levels, and characterizes the Mexicali-Imperial County area as being VOC limited with respect to ozone formation, rather than NO_x limited.	Section 4.3.4.4.2
B. Delany, Intervenors	*On the issue of emissions of the greenhouse gas CO_2 from the LRPC, B. Delany notes that there currently are no requirements to control or regulate emissions of CO_2 in either Mexico or California. He notes that the gas-fired turbines at the LRPC are low emitters of CO_2 per megawatt of energy produced and estimates that the LRPC would emit 1.24 million tons (1.12 million t) annually out of a global total of 26 billion tons (24 billion t).*	
	This EIS conservatively estimates CO_2 emissions to be 2.6 million tons/yr (2.4 million t/yr) each for the two export turbines and the two Mexico turbines at the LRPC. A global total of 25 billion tons/yr (23 billion t/yr) is cited for 2001.	Section 4.3.4.4.3

[a] Abbreviations: AERMOD = AMS/EPA Regulatory MODel; BOD = biochemical oxygen demand; CO = carbon monoxide; CO_2 = carbon dioxide; COD = chemical oxygen demand; DOI = U.S. Department of Interior; EA = environmental assessment; EIS = environmental impact statement; EPA = U.S. Environmental Protection Agency; ISCST3 = Industrial Source Complex Short Term Dispersion Model 3; LRPC = La Rosita Power Complex; NH_4NO_3 = ammonium nitrate; NO_2 = nitrogen dioxide; NO_x = nitrogen oxides; OZIPR = OZone Isopleth Plotting Package Research; PM_{10} = particulate matter with a mean aerodynamic diameter of 10 μm or less; SL = significant level; TDS = total dissolved solids; TSS = total suspended solids; USGS = U.S. Geological Survey; VOC = volatile organic compound(s).

APPENDIX C REFERENCES

Chow, J.C., and J.G. Watson, 1995, *Imperial Valley/Mexico Cross Border PM_{10} Transport Study, EPA Region IX*, Draft Final Report, Desert Research Institute (DRI) Document No. 8623.2D1, April 21.

Stockwell, W., et al., 2000, "The Ammonium Nitrate Particle Equivalent of NO_x Emissions for Wintertime Conditions in Central California's San Joaquin Valley," *Atmospheric Environment* 34:4711–4717.

APPENDIX D:

AIR QUALITY MONITORING DATA IN THE UNITED STATES AND MEXICO BORDER REGION

APPENDIX D:

AIR QUALITY MONITORING DATA IN THE UNITED STATES AND MEXICO BORDER REGION

Ambient air quality data nearest the proposed transmission lines are collected at air quality monitoring stations in El Centro and Calexico, California, that are operated by the Imperial County Air Pollution Control District. The El Centro monitoring station is at 150 9th Street, about 10 mi (16 km) northeast of the Imperial Valley Substation; the station in Calexico nearest the project area is at 900 Grant Street, about 12 mi (19 km) east of the proposed transmission lines border crossing. The 9th Street station measures ozone (O_3), carbon monoxide (CO), and particulates. The Grant Street station measures O_3, particulates, and noncriteria pollutants. Two other air quality monitoring stations are located in Calexico; the Ethel Street station is located at 1029 Ethel Street, and the Calexico East station is opposite the border checkpoint on Highway 111. Each of these stations monitors O_3, particulates, CO, nitrogen oxides (NO_x; measured as nitrogen dioxide [NO_2]), sulfur dioxide (SO_2), and noncriteria pollutants.

Ambient air quality data are also collected in Imperial County at monitoring sites that are farther from the project area. These are Brawly Main Street, Westmorland West 1st Street, and Niland English Road, approximately 19, 20, and 40 mi (31, 32, and 64 km) northeast from the project area, respectively. Within the Salton Sea Air Basin as a whole, two additional monitoring sites are located in Riverside County at Indo Jackson Street and the Palm Springs Fire Station approximately 60 and 80 mi (97 and 129 km) northwest from the proposed transmission lines, respectively. These data are not reported here because of the distances of these sites from the proposed transmission lines.

The Secretaría del Medio Ambiente y Recursos Naturales (SEMARNAT [the Mexican Environmental Agency]) also collects ambient air quality data at 10 monitoring sites in Mexicali immediately south of Calexico across the United States-Mexico border. These sites are also designated as California Air Resources Board (ARB) sites. They are loosely clustered within an approximate radius of several miles and generally lie approximately 11 mi (18 km) east of the southern end of the proposed transmission lines and approximately 8 mi (13 km) east of the Termoeléctrica U.S., LLC and Baja California Power, Inc. power plants that supply power to the transmission lines in the project area. All 10 sites collect particulates and noncriteria pollutants, and four collect CO, NO_x (measured as NO_2), O_3, SO_2, particulates, lead, and noncriteria pollutants. These four are located at the Instituto Tecnológico de Mexicali (ITM), Universidad Autonomos de Baja California (UABC), El Centro de Bachillerato Tecnológico Industrial y de Servicios (CBTIS), and Colegio de Bachilleres (COBACH). Figures 3.3-12 and 3.3-13 in the environmental impact statement show the locations of monitoring sites operated in 2001 through 2003 that are located in the United States and Mexico border regions, respectively, including those described here.

Tables D-1 through D-8 show a cross section of annual data of criteria air pollutant measurements in time frames ranging from 1988 to 2001 at monitoring sites in El Centro and

Calexico in Imperial County, and the four monitoring sites in Mexicali described previously. Measurements in the United States were made on behalf of the ARB, and in Mexico on behalf of SEMARNAT. These tables were abstracted from a larger summary database of border air quality maintained by the U.S. Environmental Protection Agency (EPA), Technology Transfer Network, U.S.-Mexico Border Information Center on Air Pollution (CICA: Centro de Información sobre Contaminación de Aire) (U.S.-Mexico Information Center on Air Pollution) (EPA 2003).[1]

The tables show the annual means of 1-hour measurements of CO, NO_2, O_3, and SO_2 recorded in each year at each site. Also shown are annual means of 24-hour measurements of particulate matter with an aerodynamic diameter of 10 µm or less (PM_{10}) that were generally made on an approximate 5-day cycle, although irregular sampling gaps also occurred. Measurements of criteria pollutants were not made every year at all of the sites listed or are not yet available in summary form in the CICA database. Annual arithmetic means, annual geometric means, highest annual values, and the number of observations for each air pollutant made in any year are listed.

[1] This database was prepared by CICA from data retrieved from the EPA Aerometric Information Retrieval System (AIRS) on January 1, 2002. The EPA has since changed the AIRS to a database that is solely related to tracking the compliance of stationary sources of air pollution with EPA regulations. The Air Facility Subsystem (AIRS/AFS) information is available at http://www.epa.gov/Compliance/planning/data/air/aboutafs.html.

TABLE D-1 Annual Criteria Pollutant Monitoring: Calexico, 1029 Ethel Street, Calexico High School

Year	Arithmetic Mean	Geometric Mean	Highest Value	Number of Observations
	CO 1-hour measurements			
1994	1.14 ppm	0.58 ppm	30.6 ppm	4,710
1995	1.22 ppm	0.59 ppm	32.0 ppm	8,289
1996	1.06 ppm	0.54 ppm	27.0 ppm	8,106
1997	1.05 ppm	0.55 ppm	24.0 ppm	8,306
1998	1.06 ppm	0.59 ppm	23.5 ppm	8,214
1999	1.13 ppm	0.62 ppm	22.9 ppm	8,281
2000	1.11 ppm	0.60 ppm	19.9 ppm	7,122
	NO_2 1-hour measurements			
1994	0.0149 ppm	0.0090 ppm	0.227 ppm	4,770
1995	0.0158 ppm	0.0054 ppm	0.217 ppm	8,334
1996	0.0143 ppm	0.0034 ppm	0.164 ppm	8,342
1997	0.0152 ppm	0.0092 ppm	0.128 ppm	7,569
1998	0.0143 ppm	0.0093 ppm	0.257 ppm	5,463
1999	0.0178 ppm	0.0122 ppm	0.286 ppm	8,205
2000	0.0186 ppm	0.0126 ppm	0.192 ppm	7,587
	O_3 1-hour measurements			
1994	0.0574 ppm	0.0529 ppm	0.125 ppm	4,795
1995	0.0616 ppm	0.0572 ppm	0.232 ppm	8,339
1996	0.0622 ppm	0.0583 ppm	0.146 ppm	8,381
1997	0.0557 ppm	0.0518 ppm	0.156 ppm	8,321
1998	0.0620 ppm	0.0590 ppm	0.139 ppm	8,307
1999	0.0616 ppm	0.0581 ppm	0.171 ppm	8,319
2000	0.0569 ppm	0.0538 ppm	0.169 ppm	7,592
	SO_2 1-hour measurements			
1994	0.0066 ppm	0.0036 ppm	0.060 ppm	4,052
1995	0.0052 ppm	0.0013 ppm	0.039 ppm	4,787
1996	0.0038 ppm	0.0016 ppm	0.036 ppm	7,826
1997	0.0028 ppm	0.0019 ppm	0.040 ppm	7,434
1998	0.0037 ppm	0.0024 ppm	0.035 ppm	7,359
1999	0.0028 ppm	0.0018 ppm	0.028 ppm	7,940
2000	0.0026 ppm	0.0018 ppm	0.026 ppm	7,595
	PM_{10} 24-hour measurements			
1995	65.0 $\mu g/m^3$	55.7 $\mu g/m^3$	180 $\mu g/m^3$	56
1996	73.9 $\mu g/m^3$	62.4 $\mu g/m^3$	193 $\mu g/m^3$	61
1997	77.8 $\mu g/m^3$	70.2 $\mu g/m^3$	166 $\mu g/m^3$	61
1998	66.5 $\mu g/m^3$	58.6 $\mu g/m^3$	160 $\mu g/m^3$	61
1999	72.2 $\mu g/m^3$	66.4 $\mu g/m^3$	181 $\mu g/m^3$	58
2000	84.3 $\mu g/m^3$	73.0 $\mu g/m^3$	268 $\mu g/m^3$	61
2001	85.3 $\mu g/m^3$	74.9 $\mu g/m^3$	437 $\mu g/m^3$	46

TABLE D-2 Annual Criteria Pollutant Monitoring: Calexico, Calexico-East, U.S. Port of Entry

Year	Arithmetic Mean	Geometric Mean	Highest Value	Number of Observations
		CO 1-hour measurements		
1996	0.0065 ppm	0.0009 ppm	0.072 ppm	5,364
1997	0.0108 ppm	0.0061 ppm	0.091 ppm	7,708
1998	0.0114 ppm	0.0070 ppm	0.105 ppm	7,618
1999	0.0133 ppm	0.0083 ppm	0.110 ppm	8,319
2000	0.0120 ppm	0.0072 ppm	0.124 ppm	6,979
		NO_2 1-hour measurements		
1994	0.0149 ppm	0.0090 ppm	0.227 ppm	4,770
1995	0.0158 ppm	0.0054 ppm	0.217 ppm	8,334
1996	0.0143 ppm	0.0034 ppm	0.164 ppm	8,342
1997	0.0152 ppm	0.0092 ppm	0.128 ppm	7,569
1998	0.0143 ppm	0.0093 ppm	0.257 ppm	5,463
1999	0.0178 ppm	0.0122 ppm	0.286 ppm	8,205
2000	0.0186 ppm	0.0126 ppm	0.192 ppm	7,587
		O_3 1-hour measurements		
1996	0.0609 ppm	0.0570 ppm	0.162 ppm	5,365
1997	0.0540 ppm	0.0520 ppm	0.121 ppm	7,484
1998	0.0656 ppm	0.0620 ppm	0.236 ppm	8,093
1999	0.0632 ppm	0.0610 ppm	0.156 ppm	8,323
2000	0.0558 ppm	0.0541 ppm	0.108 ppm	6,979
		SO_2 1-hour measurements		
1996	0.0018 ppm	0.0003 ppm	0.036 ppm	5,365
1997	0.0022 ppm	0.0013 ppm	0.035 ppm	7,487
1998	0.0031 ppm	0.0021 ppm	0.026 ppm	1,236
		PM_{10} 24-hour measurements		
1996	112.7 $\mu g/m^3$	90.3 $\mu g/m^3$	441 $\mu g/m^3$	44
1997	86.8 $\mu g/m^3$	76.9 $\mu g/m^3$	199 $\mu g/m^3$	60
1998	106.5 $\mu g/m^3$	79.1 $\mu g/m^3$	568 $\mu g/m^3$	58
1999	167.1 $\mu g/m^3$	130.1 $\mu g/m^3$	1342 $\mu g/m^3$	55
2000	244.1 $\mu g/m^3$	182.9 $\mu g/m^3$	1613 $\mu g/m^3$	58
2001	200.9 $\mu g/m^3$	123.3 $\mu g/m^3$	1867 $\mu g/m^3$	41

TABLE D-3 Annual Criteria Pollutant Monitoring: Calexico, 960 Grant Street

Year	Arithmetic Mean	Geometric Mean	Highest Value	Number of Observations
		O_3 1-hour measurements		
1998	0.0331 ppm	0.0307 ppm	0.090 ppm	1,690
1999	0.0583 ppm	0.0520 ppm	0.163 ppm	6,171
		PM_{10} 24-hour measurements		
1992	57.3 $\mu g/m^3$	49.2 $\mu g/m^3$	208 $\mu g/m^3$	48
1993	58.8 $\mu g/m^3$	49.2 $\mu g/m^3$	253 $\mu g/m^3$	61
1994	76.1 $\mu g/m^3$	65.4 $\mu g/m^3$	182 $\mu g/m^3$	45
1995	58.0 $\mu g/m^3$	47.2 $\mu g/m^3$	195 $\mu g/m^3$	62
1996	74.5 $\mu g/m^3$	64.7 $\mu g/m^3$	187 $\mu g/m^3$	57
1997	74.0 $\mu g/m^3$	62.7 $\mu g/m^3$	179 $\mu g/m^3$	50
1998	64.2 $\mu g/m^3$	52.0 $\mu g/m^3$	176 $\mu g/m^3$	60
1999	77.2 $\mu g/m^3$	66.2 $\mu g/m^3$	227 $\mu g/m^3$	60
2000	96.3 $\mu g/m^3$	85.2 $\mu g/m^3$	252 $\mu g/m^3$	56
2001	79.5 $\mu g/m^3$	65.0 $\mu g/m^3$	510 $\mu g/m^3$	46

TABLE D-4 Annual Criteria Pollutant Monitoring: El Centro, 150 9th Street

Year	Arithmetic Mean	Geometric Mean	Highest Value	Number of Observations
		CO 1-hour measurements		
1996	0.67 ppm	0.42 ppm	12 ppm	8,784
1997	0.48 ppm	0.34 ppm	6 ppm	8,702
1998	0.55 ppm	0.39 ppm	7 ppm	6,858
		O_3 1-hour measurements		
1992	0.0526 ppm	0.0479 ppm	0.12 ppm	7,966
1993	0.0629 ppm	0.0596 ppm	0.15 ppm	8,527
1994	0.0620 ppm	0.0579 ppm	0.13 ppm	8,384
1995	0.0601 ppm	0.0555 ppm	0.15 ppm	7,709
1996	0.0691 ppm	0.0660 ppm	0.14 ppm	7,100
1997	0.0628 ppm	0.0599 ppm	0.13 ppm	8,274
1998	0.0585 ppm	0.0562 ppm	0.13 ppm	7,685
1999	0.0681 ppm	0.0664 ppm	0.14 ppm	3,441

TABLE D-5 Annual Criteria Pollutant Monitoring: Mexicali, ITM

Year	Arithmetic Mean	Geometric Mean	Highest Value	Number of Observations
		CO 1-hour measurements		
1997	1.45 ppm	0.63 ppm	31.0 ppm	7,663
1998	1.50 ppm	0.67 ppm	27.5 ppm	8,081
1999	1.57 ppm	0.68 ppm	32.3 ppm	5,870
		NO_2 1-hour measurements		
1997	0.0186 ppm	0.0117 ppm	0.146 ppm	7,314
1998	0.0200 ppm	0.0127 ppm	0.158 ppm	8,189
1999	0.0204 ppm	0.0124 ppm	0.169 ppm	5,765
2000	0.0212 ppm	0.0138 ppm	0.179 ppm	8,059
		O_3 1-hour measurements		
1997	0.0629 ppm	0.0596 ppm	0.211 ppm	7,024
1998	0.0646 ppm	0.0615 ppm	0.155 ppm	8,082
1999	0.0614 ppm	0.0584 ppm	0.144 ppm	5,676
		SO_2 1-hour measurements		
1997	0.0027 ppm	0.0004 ppm	0.048 ppm	7,405
1998	0.0024 ppm	0.0003 ppm	0.055 ppm	7,894
1999	0.0033 ppm	0.0004 ppm	0.045 ppm	5,717
		PM_{10} 24-hour measurements		
1996	78.3 $\mu g/m^3$	70.1 $\mu g/m^3$	169 $\mu g/m^3$	12
1997	55.2 $\mu g/m^3$	50.5 $\mu g/m^3$	142 $\mu g/m^3$	51
1998	48.7 $\mu g/m^3$	41.9 $\mu g/m^3$	141 $\mu g/m^3$	58
1999	59.3 $\mu g/m^3$	51.8 $\mu g/m^3$	155 $\mu g/m^3$	61
2000	61.9 $\mu g/m^3$	54.6 $\mu g/m^3$	146 $\mu g/m^3$	58
2001	47.5 $\mu g/m^3$	41.3 $\mu g/m^3$	175 $\mu g/m^3$	36

TABLE D-6 Annual Criteria Pollutant Monitoring: Mexicali, UABC

Year	Arithmetic Mean	Geometric Mean	Highest Value	Number of Observations
		CO 1-hour measurements		
1997	1.75 ppm	0.74 ppm	40.0 ppm	6,678
1998	2.01 ppm	0.93 ppm	33.8 ppm	7,775
1999	2.14 ppm	0.95 ppm	36.1 ppm	8,150
		NO_2 1-hour measurements		
1997	0.0210 ppm	0.0142 ppm	0.138 ppm	6,845
1998	0.0228 ppm	0.0163 ppm	0.169 ppm	7,507
1999	0.0248 ppm	0.0175 ppm	0.216 ppm	7,502
2000	0.0242 ppm	0.0171 ppm	0.191 ppm	7,473
		O_3 1-hour measurements		
1997	0.0599 ppm	0.0554 ppm	0.171 ppm	6,208
1998	0.0551 ppm	0.0510 ppm	0.137 ppm	5,594
1999	0.0570 ppm	0.0525 ppm	0.143 ppm	7,495
		SO_2 1-hour measurements		
1997	0.0041 ppm	0.0009 ppm	0.088 ppm	6,508
1998	0.0028 ppm	0.0005 ppm	0.078 ppm	7,518
1999	0.0036 ppm	0.0008 ppm	0.054 ppm	8,060
		PM_{10} 24-hour measurements		
1997	98.0 $\mu g/m^3$	88.0 $\mu g/m^3$	231 $\mu g/m^3$	49
1998	82.6 $\mu g/m^3$	71.9 $\mu g/m^3$	190 $\mu g/m^3$	52
1999	88.4 $\mu g/m^3$	79.2 $\mu g/m^3$	285 $\mu g/m^3$	56
2000	96.8 $\mu g/m^3$	88.0 $\mu g/m^3$	276 $\mu g/m^3$	57
2001	73.8 $\mu g/m^3$	65.1 $\mu g/m^3$	349 $\mu g/m^3$	43

TABLE D-7 Annual Criteria Pollutant Monitoring: Mexicali, CBTIS

Year	Arithmetic Mean	Geometric Mean	Highest Value	Number of Observations
	CO 1-hour measurements			
1997	1.96 ppm	0.81 ppm	39.4 ppm	6,134
1998	2.09 ppm	0.98 ppm	41.8 ppm	7,896
1999	2.14 ppm	1.01 ppm	38.5 ppm	8,016
	NO_2 1-hour measurements			
1997	0.0232 ppm	0.0173 ppm	0.167 ppm	6,440
1998	0.0240 ppm	0.0177 ppm	0.18 ppm	7,771
1999	0.0268 ppm	0.0196 ppm	0.199 ppm	5,498
2000	0.0211 ppm	0.0145 ppm	0.163 ppm	3,892
	O_3 1-hour measurements			
1997	0.0636 ppm	0.0599 ppm	0.155 ppm	4,704
1998	0.0554 ppm	0.0517 ppm	0.194 ppm	7,212
1999	0.0567 ppm	0.0526 ppm	0.155 ppm	7,907
	SO_2 1-hour measurements			
1997	0.0035 ppm	0.0004 ppm	0.056 ppm	4,352
1998	0.0026 ppm	0.0002 ppm	0.046 ppm	7,701
1999	0.0033 ppm	0.0003 ppm	0.056 ppm	7,336
	PM_{10} 24-hour measurements			
1997	53.4 $\mu g/m^3$	49.5 $\mu g/m^3$	149 $\mu g/m^3$	46
1998	47.8 $\mu g/m^3$	40.9 $\mu g/m^3$	165 $\mu g/m^3$	58
1999	56.2 $\mu g/m^3$	49.8 $\mu g/m^3$	186 $\mu g/m^3$	61
2000	53.5 $\mu g/m^3$	47.5 $\mu g/m^3$	119 $\mu g/m^3$	58
2001	42.6 $\mu g/m^3$	37.5 $\mu g/m^3$	165 $\mu g/m^3$	40

TABLE D-8 Annual Criteria Pollutant Monitoring: Mexicali, COBACH

Year	Arithmetic Mean	Geometric Mean	Highest Value	Number of Observations
	CO 1-hour measurements			
1997	2.39 ppm	1.05 ppm	47.4 ppm	5,000
1998	2.49 ppm	1.08 ppm	48.4 ppm	7,956
1999	2.40 ppm	1.07 ppm	33.2 ppm	6,834
	NO_2 1-hour measurements			
1997	0.0206 ppm	0.0142 ppm	0.168 ppm	4,972
1998	0.0209 ppm	0.0133 ppm	0.228 ppm	7,502
1999	0.0245 ppm	0.0163 ppm	0.221 ppm	7,710
2000	0.0237 ppm	0.0157 ppm	0.189 ppm	6,261
	O_3 1-hour measurements			
1997	0.064 ppm	0.0596 ppm	0.168 ppm	4,557
1998	0.0702 ppm	0.0661 ppm	0.166 ppm	5,429
1999	0.068 ppm	0.0637 ppm	0.176 ppm	7,350
	SO_2 1-hour measurements			
1997	0.0027 ppm	0.0008 ppm	0.033 ppm	4,536
1998	0.0024 ppm	0.0006 ppm	0.038 ppm	7,424
1999	0.0034 ppm	0.0008 ppm	0.101 ppm	6,821
	PM_{10} 24-hour measurements			
1997	130.4 $\mu g/m^3$	111.1 $\mu g/m^3$	327 $\mu g/m^3$	30
1998	119.7 $\mu g/m^3$	102.3 $\mu g/m^3$	319 $\mu g/m^3$	46
1999	154.7 $\mu g/m^3$	132.2 $\mu g/m^3$	414 $\mu g/m^3$	61
2000	172.5 $\mu g/m^3$	156.8 $\mu g/m^3$	397 $\mu g/m^3$	55
2001	133.1 $\mu g/m^3$	115.5 $\mu g/m^3$	585 $\mu g/m^3$	40

APPENDIX E:

CONSULTATION LETTERS

Department of Energy
Washington, DC 20585

January 25, 2004

Kimberly Nicol
Eastern Sierra–Inland Deserts Region
California Department of Fish and Game
78078 Country Club Drive, Suite 109
Bermuda Dunes, CA 92201

Dear Ms. Nicol:

The U.S. Department of Energy (DOE), and the Department of the Interior's Bureau of Land Management (BLM) are preparing an environmental impact statement (EIS) concerning issuance of Presidential permits to Baja California Power, Inc. and Sempra Energy Resources. In the DOE proceedings, each applicant proposes to separately construct double-circuit 230,000-volt (230-kV) electric transmission lines across the U.S. border with Mexico. In the proceeding before BLM, each applicant has applied for a right-of-way grant in order to construct the domestic portion of the proposed transmission lines on Federal land. The transmission lines originate at new powerplants in Mexico, pass west of Calexico, California, and terminate at San Diego Gas & Electric Company's Imperial Valley Substation near El Centro, California. The EIS will evaluate the potential effects of construction of the transmission lines. Because operation of the powerplants may have a potential to affect the flow and quality of water in the New River, the EIS will also evaluate impacts of the project on the portion of the New River in the U.S. and also on the Salton Sea. The Notice of Intent to prepare the EIS was published in the *Federal Register* on October 30, 2003 (68 FR 61796). Additional information on these proposed projects can be found on the Internet at http://web.ead.anl.gov/bajatermoeis/documents/index.cfm.

An analysis of the potential impacts on species listed as endangered or threatened by the State of California will be conducted as part of the EIS. Consequently, we would appreciate receiving information on any state-listed species that may inhabit or visit the project area and on critical habitat that could potentially be affected by issuance of the presidential permit or the granting of a right-of-way through Federal lands.

Thank you in advance for your assistance. If you need further information regarding this request, please do not hesitate to contact me at (202) 586-9624 or call Dr. John Hayse at Argonne National Laboratory at (630) 252-7949. My mailing address is Ellen Russell, Office of Fossil Energy (FE-27), U.S. Department of Energy, 1000 Independence Avenue, SW, Washington, DC 20585. Copies of documents should be directed to Dr. Hayse at the address below.

Sincerely,

Ellen Russell

Ellen Russell
NEPA Document Manager
Office of Fossil Energy
U.S. Department of Energy

cc: John Hayse
Environmental Assessment Division
Argonne National Laboratory
9700 South Cass Avenue, Bldg 900
Argonne, IL 60439-4832

Lynda Kastoll
El Centro Field Office
Bureau of Land Management
1661 South 4th Street
El Centro, CA 92243

Department of Energy
Washington, DC 20585

January 25, 2004

Judy Gibson
Carlsbad Fish & Wildlife Office
6010 Hidden Valley Road
Carlsbad, CA 92009

Dear Ms. Gibson:

The U.S. Department of Energy (DOE), and the Department of the Interior's Bureau of Land Management (BLM) are preparing an environmental impact statement (EIS) concerning issuance of Presidential permits to Baja California Power, Inc. and Sempra Energy Resources. In the DOE proceedings, each applicant proposes to separately construct double-circuit 230,000-volt (230-kV) electric transmission lines across the U.S. border with Mexico. In the proceeding before BLM, each applicant has applied for a right-of-way grant in order to construct the domestic portion of the proposed transmission lines on Federal land. The transmission lines originate at new powerplants in Mexico, pass west of Calexico, California, and terminate at San Diego Gas & Electric Company's Imperial Valley Substation near El Centro, California. The EIS will evaluate the potential effects of construction of the transmission lines. Because operation of the powerplants may have a potential to affect the flow and quality of water in the New River, the EIS will also evaluate impacts of the project on the portion of the New River in the U.S. and also on the Salton Sea. The Notice of Intent to prepare the EIS was published in the *Federal Register* on October 30, 2003 (68 FR 61796). Additional information on these proposed projects can be found on the Internet at http://web.ead.anl.gov/bajatermoeis/documents/index.cfm.

An analysis of the potential impacts on federally-listed endangered, threatened, and candidate species and on critical habitats will be conducted as part of the EIS. Consequently, we would appreciate receiving information on any federally-protected species that may inhabit or visit the project area and on critical habitat that could potentially be affected by issuance of the Presidential permits or the granting of a right-of-way through Federal lands.

Thank you in advance for your assistance. If you need further information regarding this request, please do not hesitate to contact me at (202) 586-9624 or call Dr. John Hayse at Argonne National Laboratory at (630) 252-7949. My mailing address is Ellen Russell, Office of Fossil Energy (FE-27), U.S. Department of Energy, 1000 Independence Avenue, SW, Washington, DC 20585. Copies of documents should be directed to Dr. Hayse at the address below.

Sincerely,

Ellen Russell

Ellen Russell
NEPA Document Manager
Office of Fossil Energy
U.S. Department of Energy

cc: John Hayse
Environmental Assessment Division
Argonne National Laboratory
9700 South Cass Avenue, Bldg 900
Argonne, IL 60439-4832

Lynda Kastoll
El Centro Field Office
Bureau of Land Management
1661 South 4th Street
El Centro, CA 92243

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, California 92009

In Reply Refer To: FWS-IMP-7SP-3911.1

MAR 0 1 2004

Ms. Ellen Russell
Office of Fossil Energy (FE-27)
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Dear Ms. Russell:

We received on February 23, 2004, your letter dated January 25, 2004, regarding the Department of Energy proceedings pursuant to permit actions for the Baja California Power, Inc. and Sempra Energy Resources electric transmission lines originating from new power plants in Mexico. Per your request, we have enclosed with this letter a list of Federally listed species and candidates for Federal listing for Imperial County that may occur within the project area for your information. If you have any questions regarding this information, please contact Carol Roberts of my staff at (760) 431-9440 ext. 271.

Sincerely,

for Therese O'Rourke
Assistant Field Supervisor

Enclosure

cc: John Hayse, Argonne National Laboratory

TAKE PRIDE IN AMERICA

Listed Endangered, Threatened, and Candidate Species that May Occur in Imperial County, California

Common Name	Scientific Name	Status
MAMMALS		
Peninsular bighorn sheep	*Ovis canadensis*	E
Palm Springs ground squirrel	*Spermophilus tereticaudus chlorus*	C
BIRDS		
southwestern willow flycatcher	*Empidonax traillii extimus*	E
bald eagle	*Haliaeetus leucocephalus*	T, PD
brown pelican	*Pelecanus occidentalis*	E
Yuma clapper rail	*Rallus longirostris yumanensis*	E
California least tern	*Sterna antillarum browni*	E
least Bell's vireo	*Vireo bellii pusillus*	E, CH
yellow-billed cuckoo	*Coccyzus americanus*	C
REPTILES		
desert tortoise	*Gopherus agassizii*	T, CH
FISH		
desert pupfish	*Cyprinodon macularius*	E
PLANTS		
Peirson's milk-vetch	*Astragalus magdalenae* var. *peirsonii*	T, PCH

E: Endangered
T: Threatened
PE: Proposed Endangered
PT: Proposed Threatened
C: candidate for listing
CH: Critical Habitat designation
PCH: Proposed Critical Habitat
PD: Proposed for De-listing

APPENDIX F:

CALCULATIONS IN SUPPORT OF WATER RESOURCES ANALYSIS

APPENDIX F:

CALCULATIONS IN SUPPORT OF WATER RESOURCES ANALYSIS

F.1 MIXING MODEL

The principal type of calculation performed for this environmental impact statement (EIS) was a mixing calculation used to estimate upstream and downstream concentrations for the water quality parameters of interest (total dissolved solids [TDS], total suspended solids [TSS], biochemical oxygen demand [BOD], chemical oxygen demand [COD], selenium, and total phosphorus). This model was used for both the proposed action that would use a wet cooling system and the dry cooling alternative.

When two streams of water mix together to form a new stream, the following relationships can be used to estimate the properties of the new stream if the mass of water and mass of solute are conserved (Walski et al. 2001):

$$V_1 + V_2 = V_3 \,, \tag{F.1}$$

and

$$V_1C_1 + V_2C_2 = V_3C_3 \,, \tag{F.2}$$

where V_1, V_2, and V_3 are the flows in streams 1 through 3, respectively, and C_1, C_2, and C_3 are the concentrations for a water quality in streams 1 through 3, respectively. Equation F.1 expresses conservation of water mass, and Equation 2 expresses conservation of the mass of solute.

Equations F.1 and F.2 can be combined to find the concentration of a water quality parameter in a stream as follows:

$$C_3 = \frac{C_1V_1 + C_2V_2}{V_1 + V_2} \,. \tag{F.3}$$

Equation F.3 assumes that streams 1 and 2 are both upstream of stream 3, with known flows and concentrations.

For the present analysis, it was first necessary to evaluate the conditions upstream of the power plants (i.e., water quality parameters were known at the Calexico gage and in discharge water from the Zaragoza Oxidation Lagoons but not known upstream of these two facilities). For this initialization, C_3 and V_3, and C_2 and V_2 are known, and C_1 and V_1 are desired. Flow V_1 is simply the difference between V_3 and V_2; that is:

$$V_1 = V_3 - V_2 \,. \tag{F.4}$$

The unknown upstream water quality parameter, C_1, was then evaluated, with the following expression derived from Equations F.1 and F.2:

$$C_1 = \frac{C_3V_3 + C_2V_2}{V_3 - V_2} \ . \tag{F.5}$$

For operation of a single power plant (either the La Rostia Power Complex or the Termoeléctrica de Mexicali plant), water quality parameters were estimated by using Equation F.5 for initial upstream conditions (Calexico gage and Zaragoza Oxidation Lagoons), followed by Equation F.3 for the initial condition and modified lagoons flow, and then followed by another calculation for the power plant and combined output of the initial conditions and lagoons. For both plants operating at the same time, Equation F.5 was first used to estimate the initial upstream conditions, and then Equation F.3 was sequentially applied for the oxidation lagoons and each of the each of the power plants.

F.1.1 Salton Sea Salinity

The salinity of the Salton Sea was calculated as the mass of salt present divided by the volume of water in the Sea:

$$TDS = \frac{Mass\ of\ salt}{Volume\ of\ Sea} \ . \tag{F.6}$$

Changes in salinity for the Sea are a function of two processes: (1) a decrease in volume of the Sea because of water consumption by the power plants, and (2) continued inflow of TDS to the Sea.

The salinity of the Sea due to a reduction in volume was calculated with Equation F.6, using the modified Sea volume and a total mass of salt of 9.126×10^{11} lb (4.1×10^{8} kg).

Because of the high rate of evaporation from the Sea (70.8 in./yr) (1.8 m/yr), the Sea would adapt to its new inflow quickly. The reduction in Sea volume can be represented by the following equation, which is a form of level-pool routing (Henderson 1966):

$$\frac{dV}{dt} = I - O \ , \tag{F.7}$$

where:

I = inflow to the Sea,

O = outflow from the Sea (evaporation only),

t = time, and

V = volume of the Sea.

Integrating Equation F.7 and solving for time gives the following result:

$$\Delta t = \frac{\Delta V}{I - EA} \ , \tag{F.8}$$

where E is the rate of evaporation from the Sea, A is its surface area, and ΔV is the change in volume of the Sea caused by plant operations. In actual practice, the area of the Sea changes with time, and the integration cannot be performed as easily. However, because the change in area is small relative to the initial area of the Sea, it can be considered to be independent of time.

Equation F.8 was used to derive a time period of 0.2 year for the time needed for the Sea to adjust to its new, smaller volume for both power plants operating. Input parameters for this calculation were as follows: an annual average inflow to the Sea of 1,329,333 ac-ft (1.64×10^9 m^3) for both plants operating, an evaporation rate of 5.90 ft/yr (1.8 m/yr), and an area of 234,113 ac (94,780 ha).

The second component contributing to the salinity of the Sea is continued inflow of salt. The continued salt inflow acts as a source for further salinization. The rate of salinization of the Sea was estimated using an initial TDS load of 4.6×10^6 tons/yr (9.2×10^9 lb/yr) (4.2×10^6 tonne/yr), and an initial volume of the Sea equal to 7,624,843 ac-ft (9.4×10^9 m^3); all of the salinity entering the Sea was assumed to add to its TDS. The rate of increase is then given by the expression:

$$\Delta TDS = \frac{TDS\ inflow\ load}{Volume\ of\ Sea} \ . \tag{F.9}$$

For the above initial conditions, the rate of salinity increase for the Sea is about 444 mg/L/yr.

Impacts of plant operations on the rate of salinization were then analyzed using new Sea volumes based on plant operations and reduced salinity loads from the New River.

The combined processes of volumetric reduction and continued salinization were then evaluated for conditions specific to the two power plants, and a final TDS was calculated for one year of plant operations.

F.1.2 Time to Achieve 60,000 mg/L for the Salton Sea

The time needed for the Salton Sea to increase its TDS from an initial value to 60,000 mg/L was calculated with the following expression:

$$Time = \frac{60{,}000 - Initial\ load}{Salinization\ rate} \quad . \tag{F.10}$$

The time in Equation F.10 is in years for a salinization rate in mg/L/yr and an initial TDS in mg/L.

F.2 REFERENCES

Henderson, F.M., 1966, *Open Channel Flow*, Macmillan Publishing Co., Inc., New York, N.Y.

Walski, T.M., et al., 2001, *Haestad Methods Water Distribution Modeling*, Haestad Press, Waterbury, Conn.

APPENDIX G:

DATA IN SUPPORT OF AIR QUALITY ANALYSIS

TABLE G-1 Sempra and LRPC Power Plant Emission and Air Modeling Input Data

Parameter	Intergen LRPC Plant			Sempra TDM Plant	
	Value				
	EBC (1 gas turbine to 1 steam turbine)	EAX (3 gas turbines to 1 steam turbine)	Source/Basis	Value	Source/Basis
NO_2 concentration	3.5 ppm	25 ppm no SCR; 2.5 ppm when SCR added	Vendor guarantee; Intergen 2/5/04	2.5 ppm	Vendor guarantee and permit limit; Sempra 1/12/04
NO_2 mass rate	31.08 lb/h (136 tons/yr)	218 lb/h (955 tons/yr) no SCR; 21.8 lb/h when SCR added	Intergen 2/5/04	9.7 kg/h as NO_2 for each unit, 19.4 kg/h (187 tons/yr) for both units	Sempra 2/6/04
	Total: 3000 tons/yr (all 4 units)				
CO concentration	30 ppm	30 ppm	Vendor guarantee	4 ppm	Vendor guarantee and permit limit; Sempra 1/12/04
CO mass rate	166 lb/h (727 tons/yr)	498 lb/h (assume 3 × EBC)	EBC mass rate Sempra; EAX = 3 × EBC	9.4 kg/h for each unit, 18.8 kg/h (181 tons/yr) for both units	Sempra 2/6/04
	Total: 664 lb/h (2908 tons/yr) all 4 units				
PM_{10} mass rate (stacks only)	52.3 lb/h (229 tons/yr)	156.9 lb/h (3 × EBC)	Intergen 2/5/04 EBC); EAX = 3 × EBC	12.3 kg/h for each unit, 24.6 kg/h (237 tons/yr) for both units	Sempra 2/6/04
	Total: 209.2 lb/h (916 tons/yr) all 4 units				
PM_{10} cooling towers	9.4 tons/yr	28.2 tons/yr	Estimate based on Blythe II	18.8 tons/yr	Assume same as Blythe II
	Total: 37.6 tons/yr				
$PM_{2.5}$	Assume same as PM_{10}	Assume same as PM_{10}	Intergen 2/05/04	Assume same as PM_{10}	Sempra 1/30/04
SO_2	0.20 grains/100 SCF, and 0.008% H_2S (by volume)		Intergen 2/5/04	0.20 grains/100 SCF, and 0.008% H_2S (by volume)	Assume same factor as Intergen
VOC	0.02 lb/MMBtu	0.02 lb/MMBtu	Intergen 2/5/04	384 tons/yr (based on 0.02 lb/MMBtu)	Assume same factor as Intergen
NH_3 concentration	10 ppm	5 ppm (when SCR added)	Vendor guarantee	10 ppmv per day	Vendor guarantee; Sempra 1/12/04

TABLE G-1 (Cont.)

Parameter	Intergen LRPC Plant			Sempra TDM Plant	
	Value		Source/Basis	Value	Source/Basis
	EBC (1 gas turbine to 1 steam turbine)	EAX (3 gas turbines to 1 steam turbine)			
NH_3 mass rate	33.8 lb/h (148 tons/yr)	50.7 lb/h (222 tons/yr)	Intergen 2/5/04 EBC; EAX = 3/2 × EBC	276 tons/yr (28.6 kg/h for 8,760 h/yr operation, total for both units)	Sempra 1/12/04
	Total: 85.5 lb/h (370 tons/yr when all 4 units equipped)				
CO_2	296,000 lb/h (1.3 million tons/yr)	888,000 lb/h (3.9 million tons/yr)	Intergen 2/5/04	849 lb/MWh (679.7 MW), or 2.5 million tons/yr (both units)	Sempra 1/12/04
	Total: 5.2 million tons/yr				
Gas consumption	Total for LRPC: 68.5 million MMBtu/yr		Intergen 1/29/04	38.4 million MMBtu/yr	Sempra 1/12/04
Stack height	56 m	56 m	EA	60 m	Sempra 1/12/04
Stack diameter	5.49 m	5.49 m	Intergen 2/5/04	5.79 m	Sempra 1/12/04
Stack flow rate	21.0 m/s	21.0 m/s	Intergen 2/5/04	1,711,200 m^3/h	Sempra 2/6/04
Stack temperature	77°C	77°C	Intergen 2/5/04	85°C	Sempra 1/12/04
Meteorological data	Imperial County		Database	Imperial County	Database

TABLE G-2 Estimated Annual Average Emissions for 2002 in Imperial County

Air Resources Board

2003 Almanac Emission Projection Data

2002 Estimated Annual Average Emissions
IMPERIAL COUNTY

All emissions are represented in Tons per Day and reflect the most current data provided to ARB

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
FUEL COMBUSTION								
ELECTRIC UTILITIES	0.44	0.05	0.27	1.30	0.04	0.12	0.12	0.12
MANUFACTURING AND INDUSTRIAL	0.10	0.05	0.47	4.38	0.05	0.24	0.24	0.24
FOOD AND AGRICULTURAL PROCESSING	0.00	0.00	0.06	0.51	0.01	0.06	0.02	0.01
SERVICE AND COMMERCIAL	0.05	0.02	0.13	0.67	0.00	0.07	0.07	0.07
OTHER (FUEL COMBUSTION)	0.02	0.01	0.12	0.16	0.00	0.01	0.01	0.01
*** TOTAL FUEL COMBUSTION**	**0.61**	**0.14**	**1.05**	**7.01**	**0.11**	**0.50**	**0.46**	**0.45**
WASTE DISPOSAL								
OTHER (WASTE DISPOSAL)	0.02	0.02	-	-	-	-	-	-
*** TOTAL WASTE DISPOSAL**	**0.02**	**0.02**	-	-	-	-	-	-
CLEANING AND SURFACE COATINGS								
LAUNDERING	0.04	0.01	-	-	-	-	-	-
DEGREASING	0.23	0.20	-	-	-	-	-	-
COATINGS AND RELATED PROCESS SOLVENTS	0.88	0.84	-	-	-	-	-	-
ADHESIVES AND SEALANTS	0.07	0.06	-	-	-	-	-	-
*** TOTAL CLEANING AND SURFACE COATINGS**	**1.22**	**1.11**	-	-	-	-	-	-
PETROLEUM PRODUCTION AND MARKETING								
PETROLEUM REFINING	0.00	0.00	-	-	-	-	-	-
PETROLEUM MARKETING	0.55	0.54	-	0.00	-	-	-	-
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.01	0.01	-	-	-	-	-	-
*** TOTAL PETROLEUM PRODUCTION AND MARKETING**	**0.56**	**0.55**	-	**0.00**	-	-	-	-
INDUSTRIAL PROCESSES								

TABLE G-2 (Cont.)

FOOD AND AGRICULTURE	-	-	-	0.00	-	0.48	0.17	0.02
MINERAL PROCESSES	0.01	0.01	0.05	0.05	0.07	4.91	2.02	1.02
METAL PROCESSES	-	-	-	-	-	0.00	0.00	-
OTHER (INDUSTRIAL PROCESSES)	0.07	0.06	0.02	0.02	0.02	0.00	0.00	0.00
*** TOTAL INDUSTRIAL PROCESSES**	**0.08**	**0.08**	**0.07**	**0.07**	**0.09**	**5.39**	**2.19**	**1.04**
**** TOTAL STATIONARY SOURCES**	**2.49**	**1.90**	**1.12**	**7.09**	**0.19**	**5.89**	**2.65**	**1.49**
AREA-WIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**
SOLVENT EVAPORATION								
CONSUMER PRODUCTS	1.50	1.25	-	-	-	-	-	-
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	0.60	0.58	-	-	-	-	-	-
PESTICIDES/FERTILIZERS	2.01	2.01	-	-	-	-	-	-
ASPHALT PAVING / ROOFING	1.69	1.69	-	-	-	-	-	-
*** TOTAL SOLVENT EVAPORATION**	**5.80**	**5.53**	-	-	-	-	-	-
MISCELLANEOUS PROCESSES								
RESIDENTIAL FUEL COMBUSTION	0.09	0.04	0.63	0.10	0.00	0.09	0.09	0.08
FARMING OPERATIONS	-	-	-	-	-	26.88	12.54	2.15
CONSTRUCTION AND DEMOLITION	-	-	-	-	-	3.79	1.86	0.39
PAVED ROAD DUST	-	-	-	-	-	8.49	3.88	0.66
UNPAVED ROAD DUST	-	-	-	-	-	65.20	38.75	8.22
FUGITIVE WINDBLOWN DUST	-	-	-	-	-	325.06	166.38	36.11
FIRES	0.00	0.00	0.03	0.00	-	0.00	0.00	0.00
WASTE BURNING AND DISPOSAL	2.13	1.08	11.99	0.28	0.03	2.21	2.18	2.07
COOKING	0.03	0.02	-	-	-	0.08	0.06	0.03
*** TOTAL MISCELLANEOUS PROCESSES**	**2.24**	**1.14**	**12.65**	**0.38**	**0.03**	**431.81**	**225.73**	**49.71**
**** TOTAL AREA-WIDE SOURCES**	**8.05**	**6.66**	**12.65**	**0.38**	**0.03**	**431.81**	**225.73**	**49.71**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**
ON-ROAD MOTOR VEHICLES								
LIGHT DUTY PASSENGER (LDA)	3.75	3.44	31.12	2.92	0.01	0.08	0.08	0.05
LIGHT DUTY TRUCKS - 1 (LDT1)	1.63	1.51	16.16	1.41	0.01	0.03	0.03	0.02
LIGHT DUTY TRUCKS - 2 (LDT2)	1.16	1.06	11.32	1.21	0.00	0.03	0.03	0.02
MEDIUM DUTY TRUCKS (MDV)	0.49	0.45	4.69	0.53	0.00	0.01	0.01	0.01
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	0.23	0.21	1.39	0.12	0.00	0.00	0.00	0.00
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.03	0.03	0.24	0.04	-	-	-	-
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.38	0.35	2.73	0.20	-	-	-	-
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.21	0.19	2.83	0.35	-	-	-	-
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.01	0.01	0.02	0.14	0.00	0.00	0.00	0.00

TABLE G-2 (Cont.)

LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.01	0.00	0.01	0.07	-	0.00	0.00	0.00
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.02	0.02	0.14	0.65	0.01	0.02	0.02	0.02
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	0.41	0.36	1.66	6.36	0.06	0.19	0.19	0.17
MOTORCYCLES (MCY)	0.08	0.07	0.44	0.01	-	-	-	-
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.01	0.01	0.04	0.20	0.00	0.00	0.00	0.00
HEAVY DUTY GAS URBAN BUSES (UB)	0.20	0.17	1.83	0.13	-	-	-	-
SCHOOL BUSES (SB)	0.03	0.03	0.41	0.08	0.00	0.00	0.00	0.00
MOTOR HOMES (MH)	0.08	0.07	1.76	0.11	-	-	-	-
*** TOTAL ON-ROAD MOTOR VEHICLES**	**8.71**	**7.97**	**76.79**	**14.53**	**0.10**	**0.38**	**0.38**	**0.29**
OTHER MOBILE SOURCES								
AIRCRAFT	2.55	2.28	8.39	1.75	0.26	0.16	0.16	0.16
TRAINS	0.29	0.26	0.92	5.47	0.34	0.16	0.16	0.15
RECREATIONAL BOATS	0.43	0.40	4.56	0.20	0.00	0.02	0.02	0.01
OFF-ROAD RECREATIONAL VEHICLES	0.10	0.10	1.21	0.03	0.00	0.00	0.00	0.00
OFF-ROAD EQUIPMENT	0.49	0.44	4.62	1.65	0.00	0.11	0.11	0.10
FARM EQUIPMENT	0.37	0.33	2.26	2.39	0.00	0.16	0.16	0.14
FUEL STORAGE AND HANDLING	0.29	0.29	-	-	-	-	-	-
*** TOTAL OTHER MOBILE SOURCES**	**4.53**	**4.09**	**21.96**	**11.50**	**0.61**	**0.62**	**0.61**	**0.57**
**** TOTAL MOBILE SOURCES**	**13.24**	**12.05**	**98.75**	**26.03**	**0.71**	**1.00**	**0.98**	**0.85**
GRAND TOTAL FOR IMPERIAL	**23.78**	**20.62**	**112.52**	**33.49**	**0.94**	**438.69**	**229.37**	**52.06**

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http://www.arb.ca.gov/app/emsinv/emssumcat_query.php?F_DIV=0&F_DD=Y&F_YR=2002&F_SEASON=A&SP=2003f&F_AREA=CO&F_CO=13

TABLE G-3 Summary of Regional Emissions Inventories in Mexico[1]

Inventory Area	Base Year	Source Types	Emissions Estimates (Mg/Year)				
			NO_x	SO_x	HC[a]	CO	PM_{10}
ZMVM (GDF, 2001)	1998	Point	26,988	12,442	23,980	9,213	3,093
		Area	9,866	5,354	247,599	25,960	1,678
		Motor Vehicles	165,838	4,670	187,773	1,733,663	7,133
		Natural	3,193		15,669		7,985
		Total	**205,885**	**22,466**	**475,021**	**1,768,836**	**19,889**
Guadalajara (GJ, 1997)	1995	Point	3,148	5,506	4,269	1,322	1,595
		Area	218	118	57,248	729	40
		Motor Vehicles	33,820	2,461	82,318	895,991	5,845
		Natural					294,304
		Total	**37,186**	**8,085**	**143,835**	**898,042**	**301,784**[b]
Monterrey (GNL, 1997)	1995	Point	18,549	27,997	5,578	3,281	45,946
		Area	458		36,660	8	16
		Motor Vehicles	34,268	2,469	83,137	904,473	5,941
		Natural					763,725
		Total	**53,275**	**30,466**	**125,375**	**907,762**	**815,628**[b]
Ciudad Juarez (GCh, 1998)	1996	Point	1,393	716	2,395	861	210
		Area	802	1,834	19,244	2,055	281
		Motor Vehicles	23,920	1,596	54,493	449,844	1,020
		Natural					45,096
		Total	**26,115**	**4,146**	**76,132**	**452,760**	**46,607**[b]
Toluca (GM, 1997)	1996	Point	2,188	8,667	3,406	203	1,253
		Area	62	206	16,108	159	15
		Motor Vehicles	19,139	1,649	26,967	268,380	2,396
		Natural					119,711
		Total	**21,389**	**10,522**	**46,481**	**268,742**	**123,375**
Mexicali (GBC, 1999)	1996	Point	1,537	2,849	1,407	4,721	1,994
		Area	735	11	15,379	18,944	61,932
		Motor Vehicles	14,927	937	31,184	243,073	515
		Natural	1,348		3,441		20,548
		Total	**18,547**	**3,797**	**51,411**	**266,738**	**84,989**
Tijuana (GBC, 2000)	1998	Point	3,501	21,633	8,329	617	3,299
		Area	1,649	7,626	31,304	17,157	23,563
		Motor Vehicles	23,501	949	36,908	281,917	1,214
		Natural	145		1,195		1,273
		Total	**28,796**	**30,208**	**77,736**	**299,691**	**29,349**

[a] Emissions are reported as hydrocarbon (HC) except for Tijuana which are reported as total organic gases (TOG).

[b] Emissions are reported as total suspended particulate (TSP).

ZMVM = Zona Metropolitana del Valle de México

[1] Source: Table 8-2, Mexico National Emissions Inventory, Draft 1999.

APPENDIX H:

HEALTH RISK ASSESSMENT FOR AIR TOXICS

APPENDIX H:

HEALTH RISK ASSESSMENT FOR AIR TOXICS

This document presents the methodology and results of a health risk assessment (HRA) performed to assess potential public exposure and impacts associated with emissions of hazardous air pollutants (HAPs) and ammonia from the operation of the Termoeléctrica de Mexicali (TDM) and La Rosita Power Complex (LRPC) power plants. This document provides an overview of the methods used in the HRA, the assumptions used in calculating HAP emission rates, and a summary of the potential risks for the various alternatives described in Chapter 2 of this EIS.

H.1 PROJECT BACKGROUND

This HRA analyzes the potential risks in the United States that may result from operations of the LRPC and TDM power plants as described in Chapter 2. This HRA contains a review of the health risks associated with the no action and proposed action alternatives, as described below.

H.1.1 No Action

Under the no action alternative, no additional transmission lines would be built. Therefore, there would be no health risk impacts in the United States linked to operation of the additional lines. For the purposes of this analysis, it was assumed that the TDM plant, which would use the proposed transmission lines and would have no other outlet for power, would no longer operate or produce emissions. Therefore, the risks in the United States attributed to the TDM plant would be zero.

It was further assumed that the two export turbines at the LRPC power plant would no longer be able to export power to the United States over the proposed transmission lines. The Energiá de Baja California (EBC) unit would not operate and would produce no emissions. However, electrical output of the Energiá Azteca X, S. de R.L. de C.V. (EAX) export turbine would be integrated with the Comisíon Federal de Electricidad (CFE) system and would export power to the United States over the existing Imperial Valley (IV)-La Rosita line. Therefore, impacts in the United States would occur due to the EAX export turbine. Operation of and impacts from the two EAX Mexico gas turbines would also occur and are included in the no action alternative, for a total of three turbines at the LRPC.

H.1.2 Proposed Action

Under this alternative, Presidential permits would be granted by the U.S. Department of Energy (DOE) and corresponding right-of-ways (ROWs) granted by the U.S. Department of the

Interior, Bureau of Land Management (BLM); the additional transmission lines would be constructed; and the TDM power plant and the export turbines at the LRPC power plant would operate. Operation of the two EAX Mexico turbines would also occur; therefore, the proposed action contains an analysis of all six turbines at the TDM and LRPC power plants. Because the proposed action in the air impacts analysis presented in Section 4.3 includes TDM and only the two LRPC export units, the results obtained in this HRA are more conservative and are comparable to the cumulative impacts discussed in Section 4.3.

H.2 HEALTH RISK ASSESSMENT PROCEDURES

The methods used to assess potential human health risks due to emissions of HAPs followed the California Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines (OEHHA 2003), as supplemented by the California Air Resources Board (ARB 2003) Interim Guidance for residential inhalation exposure. In this document, these guidelines are referred to as the "HRA Guidelines." A Tier 1 point estimate HRA, as described in these guidelines, was performed for the projects.

The health risk assessment was conducted in three steps. First, emissions of HAPs, plus ammonia, from the no action and proposed action alternatives were estimated. Second, exposure calculations were performed using the same dispersion model as used for the air quality assessment described in Section 4.3.2. Third, results of the exposure calculations along with the respective cancer potency factors, and chronic and acute noncancer reference exposure levels (RELs) for each toxic substance were used to perform the risk characterization to quantify individual health risks associated with predicted levels of exposure.

Since a portion of the toxics potentially emitted by the TDM and LRPC power plants are considered multipathway air toxics, a multipathway risk analysis was performed. The multipathway analysis evaluated the following routes of exposure: inhalation, soil ingestion, dermal absorption, mother's milk ingestion, and plant product ingestion. Inhalation and ingestion of contaminated plant products would be the dominant pathways for public exposure to chemical substances released by the TDM and LRPC power plants.

H.2.1 Emissions Characterization

The TDM and LRPC power plant operations were evaluated to determine if HAPs would cause adverse health effects when released to the atmosphere. The HAPs evaluated in this HRA were identified from available emission factors obtained from the U.S. Environmental Protection Agency (EPA) AP-42 emission factor database (AP-42, Table 3.1-3, Natural Gas-Fired Stationary Gas Turbines, April 2000); the risk values were obtained from OEHHA. In addition to AP-42 emission factors, emission rates from ammonia slip were also included. To estimate emission rates, 8,760 hours per year of operations were assumed for all HAPs from the turbines and duct burners.

To calculate emissions using AP-42 emission factors, the maximum potential combined fuel heat input rates for the turbines and duct burners were used for each facility. The maximum potential fuel rate for the TDM facility is 38,400,000 million British thermal units per year (MMBtu/yr), while the maximum potential fuel rate for the LRPC power plant is 68,500,000 MMBtu/yr. Since the fuel rates are provided for all combined turbine/duct burner pairs at each facility, it was assumed that all of the natural gas would be burned in the turbines.

The TDM power plant emissions are controlled with oxidation catalysts, and a control efficiency of 50% was assumed for all HAPs. This control efficiency is a reasonable average level of control for organic HAPs from natural gas-fired combustion turbines equipped with oxidation catalysts. The actual control efficiency will vary for each compound, although the EPA has determined a control efficiency of 85 to 90% for formaldehyde, which is the predominant HAP emitted by the gas-fired combustion turbines (EPA 2002). The LRPC turbines do not have oxidation catalysts, therefore no control was assumed for the LRPC emissions.

To estimate the potential emissions of ammonia due to ammonia slip from the selective catalytic reduction (SCR) systems, the total annual ammonia emissions from each facility were assumed. This included the projected installation of SCR on all turbines at the LRPC by March 2005. The TDM power plant has been equipped with SCR since its inception.

To estimate hourly emission rates, the annual fuel input rates for each facility were divided by 8,760 hours per year. The plantwide natural gas fuel input rate was divided equally between the number of turbines to obtain modeled emission rates for a single turbine at each facility. Table H-1 presents the emission calculations for a single turbine at the TDM plant. Table H-2 presents the emission calculations for a single turbine at the LRPC plant.

H.2.2 Risk Assessment Dispersion Modeling Methodology

The exposure assessment portion of the HRA was conducted using the proposed EPA guideline model AERMOD (AMS/EPA Regulatory MODel) Version 02222. Modeled stack parameters for the turbines represent 100% load conditions, consistent with the criteria pollutant modeling discussed in Section 4.3.2. Modeled stack parameters for all sources are provided in Table H-3.

Direction-specific downwash parameters were included for each stack, which were calculated using the EPA-approved Building Profile Input Program (Version 95086), as adapted to accommodate the Plume Rise Model Enhancements (PRIME) algorithms currently employed by AERMOD Version 02222. The modeled receptors were consistent with the criteria pollutant modeling performed in Section 4.3.2, and include receptors along the U.S.-Mexico border and a Cartesian grid inside the United States.

The same five years of meteorological data were used (1993–1995, 1998, and 1999) from the Imperial and Miramar Naval Air Stations, as discussed in the criteria pollutant modeling in Section 4.3.2. To determine the worst-case year for annual impacts (cancer risk and

TABLE H-1 Ammonia and HAP Emission Rates at the TDM Power Plant[a]

Pollutant	AP-42 Emission Factor[b] (lb/MMBtu)	Total Annual Emission Rate[c] (ton/yr)	Single Turbine Hourly Rate[d] (g/s)	Single Turbine Annual Rate[d] (g/s)
Acetaldehyde	4.00×10^{-5}	0.38	5.52×10^{-3}	5.52×10^{-3}
Acrolein	6.40×10^{-6}	0.06	8.84×10^{-4}	8.84×10^{-4}
Ammonia[e]	NA[f]	276.00	3.97	3.97
Benzene	1.20×10^{-5}	0.12	1.66×10^{-3}	1.66×10^{-3}
1,3-Butadiene	4.30×10^{-7}	0.00	5.94×10^{-5}	5.94×10^{-5}
Formaldehyde	7.10×10^{-4}	6.82	9.80×10^{-2}	9.80×10^{-2}
Naphthalene	1.30×10^{-6}	0.01	1.80×10^{-4}	1.80×10^{-4}
Propylene oxide	2.90×10^{-5}	0.28	4.00×10^{-3}	4.00×10^{-3}
Toluene	1.30×10^{-4}	1.25	1.80×10^{-2}	1.80×10^{-2}
Xylene (total)	6.40×10^{-5}	0.61	8.84×10^{-3}	8.84×10^{-3}
Ethylbenzene	3.20×10^{-5}	0.31	4.42×10^{-3}	4.42×10^{-3}
PAHs[g]	2.20×10^{-6}	0.02	3.04×10^{-4}	3.04×10^{-4}
Total HAPs (excludes ammonia)		9.9 tons/yr		

[a] HAP emissions assume 50% control from oxidation catalyst.

[b] Source: AP-42, Table 3.1-3, Natural Gas-Fired Stationary Gas Turbines (April 2000).

[c] Maximum fuel input = 38,400,000 MMBtu/yr for two turbines (19,200,000 MMBtu/yr per turbine).

[d] Modeled emissions rates calculated from ton/yr rates assuming 8,760 h/yr operation.

[e] Ammonia emission rates obtained from Table 4.3-1a (page 4-48 of the EIS).

[f] NA = not applicable.

[g] PAH = polycyclic aromatic hydrocarbons.

noncarcinogenic chronic hazard index) and peak hourly impacts (acute hazard index), all stacks were modeled with a unit emission rate of 1 gram per second (g/s). Because of the relatively large distance to the nearest receptors along the U.S.-Mexico border (approximately 4 mi [6 km]), the peak impacts due to each individual stack did not vary by more than 6% for each of the five years.

The worst-case peak hourly impact year for all stacks was 1998 and the worst-case annual impact year for all stacks was 1995. Thus, the 1998 meteorological data were used to estimate the acute hazard indices, and the 1995 meteorological year was used to estimate the cancer risks and noncarcinogenic chronic hazard indices. The worst-case single stack impact for each facility was conservatively assumed to represent the impact from all turbines for each facility.

TABLE H-2 Ammonia and HAP Emission Rates at the LRPC Power Plant[a]

Pollutant	AP-42 Emission Factor[b] (lb/MMBtu)	Total Annual Emission Rate[c] (ton/yr)	Single Turbine Hourly Rate[d] (g/s)	Single Turbine Annual Rate[d] (g/s)
Acetaldehyde	4.00×10^{-5}	1.37	9.85×10^{-3}	9.85×10^{-3}
Acrolein	6.40×10^{-6}	0.22	1.58×10^{-3}	1.58×10^{-3}
Ammonia[e]	NA[f]	370.00	2.66	2.66
Benzene	1.20×10^{-5}	0.41	2.96×10^{-3}	2.96×10^{-3}
1,3-Butadiene	4.30×10^{-7}	0.01	1.06×10^{-4}	1.06×10^{-4}
Formaldehyde	7.10×10^{-4}	24.32	1.75×10^{-1}	1.75×10^{-1}
Naphthalene	1.30×10^{-6}	0.04	3.20×10^{-4}	3.20×10^{-4}
Propylene oxide	2.90×10^{-5}	0.99	7.14×10^{-3}	7.14×10^{-3}
Toluene	1.30×10^{-4}	4.45	3.20×10^{-2}	3.20×10^{-2}
Xylene (total)	6.40×10^{-5}	2.19	1.58×10^{-2}	1.58×10^{-2}
Ethylbenzene	3.20×10^{-5}	1.10	7.88×10^{-3}	7.88×10^{-3}
PAHs[g]	2.20×10^{-6}	0.08	5.42×10^{-4}	5.42×10^{-4}
Total HAPs (excludes ammonia)		35.2 tons/yr		

[a] Assumes no control of HAP emissions.

[b] Source: AP-42, Table 3.1-3, Natural Gas-Fired Stationary Gas Turbines (April 2000).

[c] Maximum fuel input = 68,5400,000 MMBtu/yr for four turbines (17,125,000 MMBtu/yr per turbine).

[d] Modeled emissions rates calculated from ton/yr rates assuming 8,760 h/yr operation.

[e] Ammonia emission rates obtained from Table 4.3-1a (page 4-48 of the EIS).

[f] NA = not applicable.

[g] PAH = polycyclic aromatic hydrocarbons.

H.2.3 Risk Characterization

Carcinogenic risks (defined as a 70-year, residential exposure) and potential chronic and acute health effects were assessed using the dispersion modeling described above (OEHHA exposure assumptions and numerical values of toxicity provided in the HRA Guidelines). The environmental pathways analyzed consist of all pathways recommended in the HRA Guidelines, as appropriate for the impact area in the United States.

As specified in the HRA Guidelines, a Tier 1 HRA utilizes a combination of the average and high-end point estimates to estimate exposure. The average and high-end of point estimates are defined in the HRA Guidelines in terms of probability distribution of values for the given exposure variate. The mean represents the average values for point estimates, and the 95th percentiles represent the high-end point estimates from the distributions identified in OEHHA (2000).

TABLE H-3 Modeled Stack Parameters

Model ID[a]	UTM X (m)	UTM Y (m)	Height (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)
SESTK1	625477	3607809	60.0	358.2	18.05	5.79
SESTK2	625477	3607765	60.0	358.2	18.05	5.79
LRSTK1	628531	3607621	56.0	349.8	21.00	5.49
LRSTK2	628571	3607608	56.0	349.8	21.00	5.49
LRSTK3	628610	3607596	56.0	349.8	21.00	5.49
EPSTK1	628791	3607880	56.0	349.8	21.00	5.49

[a] SESTK1 and SESTK2 are the two TDM turbines. LRSTK1-3 and EPSTK1 are the four LRPC turbines.

This HRA followed the most current requirements adopted by the State of California for conducting risk assessments, including use of the "Hot Spots Analysis and Reporting Program" model. The HARP model (Version 1.0) is the only readily available software that conforms to the HRA Guidelines and is capable of performing both the average and high-end risk calculations. For the purposes of this HRA, the average point estimate inhalation and multipathway risks are defined as provided in the HRA Guidelines. The high-end point estimate risks are defined as a combination of the high-end exposure assumptions for multipathway toxics combined with the California Air Resources Board (ARB) Interim HRA Guidelines exposure assumptions for the inhalation pathway, which uses the 80th percentile breathing rate rather than the 95th percentile breathing rate (ARB 2003).

To calculate the risks for a single turbine at each plant, the HARP model[1] used the worst-case ground level concentrations (GLCs) of each pollutant using a two-step process as described below. The GLCs were calculated using the worst-case single turbine impact from each plant and the emission rates provided in Tables H-1 and H-2. Table H-4 provides the GLCs for a single TDM turbine and a single LRPC turbine. This GLC risk assessment method uses the latest dispersion techniques available from AERMOD, coupled with the current risk assessment guidelines required by OEHHA. It also provides consistency with the dispersion modeling approach used to assess impacts to air quality as described in Section 4.3.

[1] The HARP model has a significant limitation in that the EPA Industrial Source Complex Short-Term (ISCST3) model is the built-in dispersion model for performing the exposure assessment. HARP does not allow for the use of other dispersion models, such as AERMOD, in the full dispersion exposure assessment. However, HARP does have the ability to accept externally calculated GLCs of individual pollutants, thereby bypassing the soon-to-be phased out ISCST3 model with impacts calculated using AERMOD. This method of using GLCs calculated by AERMOD provides the ability to determine a conservative impact for each facility since the single turbine peak impacts are simply multiplied by the number of turbines for each alternative.

TABLE H-4 Maximum Ground Level Concentrations for a Single Turbine at the TDM and LRPC Power Plants

	Maximum TDM Ground Level Concentration ($\mu g/m^3$)		Maximum LRPC Ground Level Concentration ($\mu g/m^3$)	
Pollutant	1-Hour[a]	Annual[b]	1-Hour[c]	Annual[d]
Acetaldehyde	2.71×10^{-3}	2.92×10^{-5}	4.92×10^{-3}	5.50×10^{-5}
Acrolein	4.34×10^{-4}	4.67×10^{-6}	7.88×10^{-4}	8.80×10^{-6}
Ammonia	1.95	2.10×10^{-2}	1.33	1.48×10^{-2}
Benzene	8.14×10^{-4}	8.75×10^{-6}	1.48×10^{-3}	1.65×10^{-5}
1,3-Butadiene	2.92×10^{-5}	3.14×10^{-7}	5.29×10^{-5}	5.91×10^{-7}
Formaldehyde	4.81×10^{-2}	5.18×10^{-4}	8.74×10^{-2}	9.76×10^{-4}
Naphthalene	8.81×10^{-5}	9.48×10^{-7}	1.60×10^{-4}	1.79×10^{-6}
Propylene oxide	1.97×10^{-3}	2.11×10^{-5}	3.57×10^{-3}	3.99×10^{-5}
Toluene	8.81×10^{-3}	9.48×10^{-5}	1.60×10^{-2}	1.79×10^{-4}
Xylene (total)	4.34×10^{-3}	4.67×10^{-5}	7.88×10^{-3}	8.80×10^{-5}
Ethylbenzene	2.17×10^{-3}	2.33×10^{-5}	3.94×10^{-3}	4.40×10^{-5}
PAHs	1.49×10^{-4}	1.60×10^{-6}	2.71×10^{-4}	3.02×10^{-6}

[a] Maximum TDM single turbine hourly impact: 0.49101 $\mu g/m^3$.

[b] Maximum TDM single turbine annual impact: 0.00528 $\mu g/m^3$.

[c] Maximum LRPC single turbine hourly impact: 0.49959 $\mu g/m^3$.

[d] Maximum LRPC single turbine annual impact: 0.00558 $\mu g/m^3$.

The risks from a single turbine at each facility were calculated first, prior to estimating the risks for each alternative, which consist of multiple turbines. The worst-case GLCs for a single turbine at each facility were input to the HARP model directly. The default OEHHA site parameters were used for the multipathway analysis for polycyclic aromatic hydrocarbon (PAH) emissions (note that total PAH emissions were conservatively modeled as benzo(a)pyrene). The average point estimate risks were calculated in a single HARP run for each plant. To calculate the high-end residential cancer risk, HARP was run twice for each plant as follows:

1. An inhalation-only cancer risk assessment analysis was run using exposure assumptions consistent with the ARB Interim Guidance.

2. A multipathway cancer risk assessment analysis was run using high-end point estimate residential exposure assumptions to obtain the multipathway component of the PAH risks.

For the high-end risk calculations, the total inhalation cancer risk under Step 1 was added to the multipathway contribution under Step 2 to obtain the high-end residential cancer risk for a single turbine at each plant. The chronic noncancer and acute hazard indices for a single turbine at each plant were obtained from the high-end point estimate HARP runs.

Any number of worst-case single turbine risk calculations can be summed to estimate the total risk for the given scenario. This approach is reasonable since the emission rates for each turbine at each plant are identical, and the peak impacts for each individual turbine vary by only a few percent. Adding the worst-case turbine risks to estimate total plant risk is a conservative assumption and provides a health-protective approach to estimating the project risks.

The chief cancer risk exposure assumption is one of continuous exposure (at maximum emission rates) over a 70-year period. The RELs are defined as the concentration below which there are no observable health risks. When combined with proposed EPA dispersion modeling methodologies, the use of the HRA Guidelines risk methods (via the HARP model that incorporates cancer potency factors and RELs) provides an upper bound estimate of the true risks. That is, the actual risks are not expected to be any higher than the predicted risks and are likely to be substantially lower.

H.3 RISK ASSESSMENT RESULTS

The estimated risks for each alternative are discussed in this section. As described in the EIS, the no action alternative consists of three turbines operating at the LRPC. The proposed action consists of four turbines at the LRPC plant and two turbines at TDM plant, for a total of six turbines. For each alternative, it was assumed that the respective number of turbines operate concurrently and continuously (i.e., 8,760 hours per year).

To estimate the risks for the no action alternative, the single LRPC turbine risks were multiplied by three to estimate the total risks. To estimate the proposed action risks due to LRPC operation, the single LRPC turbine risks were multiplied by four. To estimate the proposed action risks due to TDM operation, the single TDM turbine risks were multiplied by two. The risks from all TDM and LRPC turbines were summed to obtain the total proposed action risks.

The current methodology for making risk management decisions in California only requires that a project analyze the incremental increase in the potential risks due to the project and does not require that existing sources be included in the risk calculations. Risks from existing sources are considered “background” sources of emissions. Therefore, the no action risks estimated for the three existing LRPC turbines are considered background sources and are subtracted from the proposed action risks to obtain the incremental increase in risk. On the basis of California risk assessment procedures, only the incremental increase in potential risks is compared to the significance thresholds.

The incremental increases in risk for the no action and the proposed action alternatives are presented in Table H-5. Two-point estimate cancer risks are presented that represent the average and high-end exposure assumptions. The no action cancer risk ranges from 0.41 per million to 1.50 per million for the average and high-end exposure assumptions, respectively. The proposed action cancer risk ranges from 0.60 per million to 2.22 per million.

TABLE H-5 Estimated Risks for the No Action and Proposed Action Alternatives

	Cancer Risk (Per Million)		Chronic Hazard Index[a]	Acute Hazard Index[a]
Alternative	Average	High-End	High-End	High-End
No action (background)	0.41	1.50	0.002 (0.00022)	0.02 (0.0013)
Proposed action	0.60	2.22	0.003 (0.00051)	0.03 (0.0029)
Incremental increase	0.20	0.72	0.001 (0.00028)	0.01 (0.0016)
Significance threshold	1 per million		1.0	1.0

[a] Values in parentheses represent the contributions from ammonia to the hazard index.

For this assessment, significance criteria of an increase in cancer risk of 1 per million and an increase in the chronic and acute hazard indices of 1.0 were chosen. As shown in Table H-5, the incremental (proposed action minus no action) increase in cancer risk ranges from 0.20 per million to 0.72 per million. The average and high-end point estimate risks are below the significance threshold of 1 per million. The estimated chronic and acute hazard indices, which include contributions from ammonia, are well below the significance threshold of 1.0 for the hazard indices. As stated above, only the incremental increase in risks are the values compared with the significance thresholds based on California risk assessment policy.

The results of the supplemental HRA are considered to be conservative, as the analysis includes the following aspects:

- The turbines were assumed to operate at a 100% capacity factor, that is, at 100% load for 8,760 hours per year.
- The AP-42 emission factors for HAPs and the health risk factors are considered conservative.
- The worst-case turbine impacts for each power plant were summed to obtain the total risks for each alternative.
- A 70-year, 24-hour per day residential exposure duration was assumed.
- An average control efficiency of 50% from the oxidation catalyst was assumed at TDM but the EPA (2002) indicates that up to 90% control is achievable for formaldehyde using an oxidation catalyst.
- The high-end cancer risk exposure assumptions are extremely conservative, and the actual risks are likely substantially lower.

Although the high-end cancer risks for both alternatives exceed the significance level of 1 per million, it should be noted that the Tier 1 high-end point estimate approach defined by OEHHA provides the absolute upper bound of the potential risks. The HRA Guidelines provide options for refining the HRA (Tiers 2 through 4). These higher tiers include site-specific site parameters and a stochastic, or probabilistic, approach using exposure factor distributions for one or more variables in the model. Statistical methods are applied to assess the variance and stochastic risk estimates expressed as a range rather than as a single point estimate, as provided in this HRA. However, since only the incremental increase in risk is required for risk management decisions, the incremental increase in risks due to the proposed action does not pose a significant health risk.

For reference, the risks due to each individual facility are provided in Table H-6. The same risk calculation methodology used for the alternatives was used in this analysis (four turbines operating at LRPC and two turbines operating at TDM). The TDM risk is much lower due to the fact that there are only two turbines present at the TDM power plant compared with four at the LRPC power plant. In addition, the TDM turbines are controlled with oxidation catalysts, while the LRPC turbines do not have HAP controls.

TABLE H-6 Estimated Risks for Each Power Plant

	Cancer Risk (Per Million)		Chronic Hazard Index	Acute Hazard Index
Facility	Average	High-End	High-End[a]	High-End[a]
LRPC (four turbines)	0.54	2.00	0.002 (0.00030)	0.02 (0.0017)
TDM (two turbines)	0.06	0.22	0.0007 (0.00021)	0.007 (0.0012)
Significance threshold	1 per million		1.0	1.0

[a] Values in parentheses represent the contributions from ammonia to the hazard index.

H.4 REFERENCES

ARB (California Air Resources Board), 2003, *Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk*, Oct.

EPA (U.S. Environmental Protection Agency), 2002, "Hazardous Air Pollutant (HAP) Emission Control Technology for New Stationary Combustion Turbines," Memo from Sims Roy to Docket A-95-51, April 3.

OEHHA (Office of Environmental Health Hazard Assessment), 2000, *Air Toxics Hot Spots Program Risk Assessment Guidelines, Part IV, Technical Support Document for Exposure Assessment and Stochastic Analysis*, Oct.

OEHHA, 2003, *The Air Toxics "Hot Spots" Program Guidance Manual for Preparation of Health Risk Assessments*, Aug. 2003 (released to the public in Oct. 2003).

APPENDIX I:

CONTRACTOR DISCLOSURE STATEMENTS

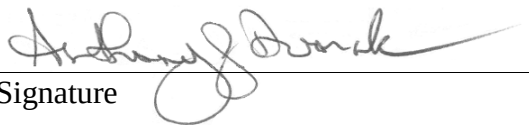
CONTRACTOR DISCLOSURE STATEMENT
Argonne National Laboratory

Argonne National Laboratory (ANL) is the contractor assisting the U.S. Department of Energy (DOE) in preparing the environmental impact statement (EIS) for the Imperial-Mexicali 230-kV transmission lines project. DOE is responsible for reviewing and evaluating the information and determining the appropriateness and adequacy of incorporating any data, analyses, or results in the EIS. DOE determines the scope and content of the EIS and supporting documents and will furnish direction to ANL, as appropriate, in preparing these documents.

The Council on Environmental Quality's regulations (40 CFR 1506.5(c)), which have been adopted by DOE (10 CFR Part 1021), require contractors who will prepare an EIS to execute a disclosure specifying that they have no financial or other interest in the outcome of the project. The term "financial interest or other interest in the outcome of the project" for the purposes of this disclosure is defined in the March 23, 1981, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 *Federal Register* 18026-18028 at Questions 17a and 17b. Financial or other interest in the outcome of the project includes "any financial benefit such as promise of future construction or design work on the project, as well as indirect benefits the consultant is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)," 46 *Federal Register* 18026-18038 at 10831.

In accordance with these regulations, Argonne National Laboratory hereby certifies that it has no financial or other interest in the outcome of the project.

Certified by:



Signature

Anthony J. Dvorak
Name

Director, Environmental Assessment Division
Title

2/25/04
Date

CONTRACTOR DISCLOSURE STATEMENT
aleslie associates LLC

aleslie associates LLC is a subcontractor to Argonne National Laboratory assisting the U.S. Department of Energy (DOE) in preparing the environmental impact statement (EIS) for the Imperial-Mexicali 230-kV transmission lines project. DOE is responsible for reviewing and evaluating the information and determining the appropriateness and adequacy of incorporating any data, analyses, or results in the EIS. DOE determines the scope and content of the EIS and supporting documents and will furnish direction to aleslie associates LLC, as appropriate, in preparing these documents.

The Council on Environmental Quality's regulations (40 CFR 1506.5(c)), which have been adopted by DOE (10 CFR Part 1021), require contractors who will prepare an EIS to execute a disclosure specifying that they have no financial or other interest in the outcome of the project. The term "financial interest or other interest in the outcome of the project" for the purposes of this disclosure is defined in the March 23, 1981, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 *Federal Register* 18026-18028 at Questions 17a and 17b. Financial or other interest in the outcome of the project includes "any financial benefit such as promise of future construction or design work on the project, as well as indirect benefits the consultant is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)," 46 *Federal Register* 18026-18038 at 10831.

In accordance with these regulations, aleslie associates LLC hereby certifies that it has no financial or other interest in the outcome of the project.

Certified by

ACDLeslie

Signature

Alistair C.D. Leslie

Name

Vice-President

Title

3/10/04

Date