



MAMMOTH COMMUNITY WATER DISTRICT

186 IBLA 108

Decided August 31, 2015



United States Department of the Interior
Office of Hearings and Appeals
Interior Board of Land Appeals
801 N. Quincy St., Suite 300
Arlington, VA 22203

MAMMOTH COMMUNITY WATER DISTRICT

IBLA 2013-217

Decided August 31, 2015

Appeal from a Record of Decision of the Field Manager, Bishop (California) Field Office, Central California District, Bureau of Land Management, approving drilling and construction, operation, maintenance, and decommissioning of a commercial geothermal energy-generating facility. CACA-054722.

Affirmed.

1. Environmental Quality: Environmental Statements--
Geothermal Leases: Drilling--Geothermal Leases
Production--National Environmental Policy Act of 1969:
Environmental Statements

A decision based on an EIS will be affirmed where it took a hard look at the significant environmental consequences of the proposed action and reasonable alternatives thereto and considered all relevant matters of environmental concern. An EIS need not discuss all possible details bearing on the proposed action, but it will be upheld if it sets forth *sufficient information* to enable the decisionmaker to consider fully the environmental factors involved and to make a reasoned decision after balancing the risks of harm to the environment against the benefits to be derived from the proposed action, as well as to make a reasoned choice between alternatives. An appellant challenging a BLM decision to approve construction, operation, maintenance, and decommissioning of a geothermal energy-generating facility and related activity, following preparation of an EIS, must carry its burden to demonstrate by a preponderance of the evidence, with objective proof, that BLM failed adequately to consider a substantial environmental question of material significance to the proposed action, or otherwise failed to abide by NEPA. An appellant cannot simply pick apart a record with alleged errors and disagreements.

2. Environmental Quality: Environmental Statements--
Geothermal Leases: Drilling--Geothermal Leases:
Production--National Environmental Policy Act of 1969:
Environmental Statements

In assessing and evaluating environmental impacts, BLM may properly rely properly on the professional opinions of technical experts on matters within the realm of their expertise that are reasonable and supported by record evidence. These experts need not be employed or paid by BLM, so long as BLM independently evaluated their professional opinions and analyses. In challenging a BLM determination that relies on the professional opinion of technical experts, the burden is on the appellant to establish, by a preponderance of the evidence, that BLM erred in its determination or that the expert erred in collecting data, interpreting that data, employing appropriate methodologies and analyses, or in reaching conclusions. Appellant must show not just that the expert opinion could be erroneous, but that it is erroneous. A mere difference of expert opinion does not suffice to show error.

APPEARANCES: Stephen A. Kronick, Esq., Katrina C. Gonzales, Esq., and Andrew J. Ramos, Esq., Sacramento, California, for the Mammoth Community Water District; Andrew C. Emrich, Esq., Greenwood Village, Colorado, and Emily C. Schilling, Esq., Washington, D.C., for ORNI 50, LLC; Janell M. Bogue, Esq., Office of the Regional Solicitor, Sacramento, California, and Dylan Fuge, Esq., Office of the Solicitor, U.S. Department of the Interior, Washington, D.C., for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE JACKSON

The Mammoth Community Water District (MCWD or District) has appealed from an August 13, 2013, Record of Decision (ROD) of the Field Manager, Bishop (California) Field Office, Bureau of Land Management (BLM), approving geothermal drilling and construction, operation, maintenance, and decommissioning of a commercial geothermal energy-generating facility by ORNI 50, LLC (ORNI), in connection with the Casa Diablo IV Geothermal Development Project (CD-IV Project or Project), CACA-054722, on leased Federal lands in the Inyo National Forest, Mono County, California.¹ The ROD was based on a July 2013 Environmental Impact

¹ The Forest Supervisor, Inyo National Forest, U.S. Forest Service, separately approved the Project on Aug. 12, 2013, which was also appealed by MCWD.

Statement/Environmental Impact Report (EIS/EIR),² that was prepared by BLM, together with Federal and State cooperating agencies, pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4332(2)(C) (2006), and its implementing regulations, 40 C.F.R. §§ 1500.1-1518.4.³ For the reasons discussed below, we affirm the ROD.

Background

MCWD provides the town of Mammoth Lakes (Town) and surrounding areas with municipal water and wastewater collection services under two licenses and a permit issued by the State Water Resources Control Board. See Notice of Appeal/Statement of Reasons/Petition for Stay (SOR) at 3. The District maintains nine groundwater protection wells and is principally concerned with effects to groundwater from extracting large quantities of geothermal resources for use in the Project's geothermal power plant and then returning them to the geothermal reservoir beneath its groundwater resource. Mammoth Pacific, L.P. (Mammoth Pacific), filed an application on February 17, 2010 (revised June 5, 2012),⁴ pursuant to the Geothermal Steam Act, 30 U.S.C. §§ 1001-1028 (2012), to construct, operate, maintain, and decommission the Project on Federally-leased lands within the Inyo National Forest.⁵

² The EIS/EIR is made up of two bound volumes plus a compact disk: Volume 1 is the final EIS/EIR; Appendices A through F are on the compact disk; Appendix G (Comment Letters) and Appendix H (Responses to Comments) are in Volume 2. As each appendix to the EIS/EIR is uniquely paginated, they are cited by using their appendix letter (e.g., page 23 of Appendix G is cited as "EIS/EIR at G-23").

³ The EIS/EIR was jointly prepared by BLM, the U.S. Forest Service, Department of Agriculture, and the Great Basin Unified Air Pollution Control District (APCD) to comply with their Federal and State environmental review requirements. BLM and the U.S. Forest Service administer the mineral and surface estates of the Federal lands at issue; APCD will issue the air quality permit for constructing and operating the Project.

⁴ Mammoth Pacific was then co-owned by Ormat Nevada, Inc. (ONI), and Constellation Energy, which was later acquired by ONI. ORNI, a wholly-owned subsidiary of ONI, is currently pursuing the Project.

⁵ All Federal lands at issue are subject to four geothermal leases, CACA-11667, CACA-11672, CACA-14407, and CACA-14408, issued in 1982 and 1985, which are currently held by ORNI. This land is within the Mono-Long Valley Known Geothermal Resource Area (KGRA), which has produced geothermal power generation since 1984. See EIS/EIR at 1-4, 3.7-2 ("The [U.S. Geological Survey] designated the Mono-Long
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The Project would encompass a 42.4 gross/33 net megawatt (MW) geothermal energy-generating facility, a geothermal well field with up to 16 wells (8 production and 8 injection wells), plus pipelines and associated infrastructure. *See* EIS/EIR at 2-4, 2-8. The actual number and location of these wells would depend upon their productivity, as “determined by modeling and actual drilling results.” *Id.* at 2-8. Each well would be drilled to a total depth of 1,600 to 2,000 feet for production or 2,500 feet for injection. *See id.* The Project would temporarily disturb 78 acres, permanently disturb 18 acres, and have an anticipated life of 30 years. *See id.* at 2-6 (Table 2-1).

The Project is the latest in a series of geothermal projects in the vicinity of the 16 proposed wells⁶ and their 3 geothermal power plants that are approximately 0.5 miles southeast of the Project power plant. *See* EIS/EIR at 1-4, 1-5 (Figure 1-1), 1-6, 2-9 (Figure 2-2), 3.10-1. Once necessary permits and authorizations are in place, power plant construction, well drilling, and pipeline laying would begin and proceed concurrently (weather permitting), which would take more than 16 months, during which time ORNI would drill wells at a rate of 6 wells per year and also lay pipelines during one summer season. *See id.* at 2-36.

The Project power plant would be roughly 1.5 miles east of the Town, with two of its wells to the southeast. *See* EIS/EIR at 1-2, 2-7 (Figure 2-1), 3.10-1.⁷ The remainder would be west of the power plant, “in the Basalt Canyon Area, in the vicinity

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Valley region as a KGRA in the 1970s because of geologic features and widespread hot springs and fumaroles over a 45 square mile area that provided ample evidence of a viable magmatic heat source for a geothermal system.”). A prominent geologic feature of the KGRA is the “Long Valley Caldera,” a depression left by an ancient volcanic eruption. *See id.* at 3.7-2; *see also id.* at 4.7-10 (“MCWD produces water from nine water production wells located in the western part of the caldera.”).

⁶ Two production wells are currently situated in the Basalt Canyon area, where most of the 16 proposed wells will be located. *See* EIS/EIR at 2-18 (Table 2-2). Three of those proposed wells had been drilled (*i.e.*, Well 12-31, an exploration well currently used for monitoring, would be re-drilled as a production well; Wells 14-25 and 12-25 were drilled to delineate the resource and would also be used as production wells). *See id.* at 2-17.

⁷ The power plant would be situated in secs. 29 and 32, T. 3 S., R. 28 E., whereas the wells would be in secs. 25, 26, and 36, T. 3 S., R. 27 E., and secs. 30-32, T. 3 S., R. 28 E., Mount Diablo Meridian, Mono County, California. *See* EIS/EIR at 1-2.

of five existing wells (two production wells, two exploration wells, and one monitoring well),” which would be 1-2 miles closer to the District’s groundwater wells than other geothermal wells in that area. *Id.* at 3.10-2; *see id.* at 6-21 (Figure 2), D-68 (Figure 11), H-42, H-49 (“The primary MCWD production wells are about 3 miles west of Basalt Canyon”).

After it published a Notice of Intent to initiate a public scoping process for the proposed Project, BLM prepared and solicited public comment through January 30, 2013, on the Public Draft Joint Environmental Impact Statement and Environmental Impact Report for the Case Diablo IV Geothermal Development Project, BLM/CA-ES-2013-002+1793 (Draft EIS/EIR). *See* 76 Fed. Reg. 16,806 (Mar. 25, 2011); 77 Fed. Reg. 68,771 (Nov. 16, 2012). The Draft EIS/EIR considered several alternatives in detail: the proposed Project (Alternative 1); locating the geothermal power plant closer to the existing power plants in the area (Alternative 2); realigning production and injection pipelines to minimize biological, cultural, and visual resource impacts (Alternative 3 - BLM’s preferred alternative); and a No Action Alternative (Alternative 4). *See* Draft EIS/EIR at 2-1 to 2-80. It briefly considered several other alternatives but chose not to consider them in detail. *See id.* at 2-18 to 2-83.

MCWD submitted Freedom of Information Act (FOIA) requests on January 11, 2013, seeking documents to aid in its review of the Draft EIS/EIR. *See* 5 U.S.C. § 552 (2012); SOR, Ex. B. It requested “information, data, reports and materials” on each well’s history of production/injection, temperature, and reservoir pressure,” the model of “geothermal reservoirs in the Long Valley area that are being used for existing and proposed geothermal development,” reports documenting that model (*e.g.*, “input and output files, model assumptions, calibration, and planning simulations”),⁸ and other related documents. SOR, Ex. B at 2. Although some information was provided and more would be provided by BLM if “MCWD and its consultants signed non-disclosure agreements,” they refused to enter into such agreements. SOR at 8. The District thereafter commented on the Draft EIS/EIR, which BLM responded to. *See* EIS/EIR at G-38 to G-115, H-26 to H-52.

⁸ ORNI developed a model to simulate geothermal production and to predict the reservoir response to geothermal development, the Geothermal Reservoir Simulation Model (GRSM or Model), which was independently reviewed by SAIC, Inc., Long Valley Caldera/Diablo Geothermal Reservoir Simulation Model: Peer Review (2012) (SAIC Report). *See* SOR, Ex. F. The SAIC Report, including its modeling results, was disclosed by BLM, but neither the Model nor ORNI’s modeling results were publicly disclosed because they reflected proprietary information. *See* EIS/EIR at 4.7-5, H-33.

In finalizing the EIS/EIR, BLM represented it had undertaken detailed modeling to understand and predict “the *geothermal reservoir* response to proposed production and injection scenarios,” not the *groundwater aquifer* response, and that some of the information requested by MCWD involved proprietary information *on the geothermal reservoir*. EIS/EIR at H-33 (emphasis added). BLM summarized available subsurface information and ongoing monitoring by MCWD and the Long Valley Hydrologic Advisory Committee (LVHAC)⁹ to conclude:

Available evidence indicates that the shallow Mammoth Groundwater Basin is physically isolated from the deeper geothermal system. Because these two systems are separate, the CD-IV Project would be unlikely to affect the availability or quality of shallow groundwater resources in the Project vicinity. No effects on the shallow cold water basin have been observed during monitoring of the 27 years of operation of the existing Casa Diablo [drilling and development] facilities.

Id. at 4.7-12; *see id.* at H-34 (“Because there is *no known hydrologic connection of the geothermal reservoir to the overlying groundwater aquifer* in Basalt Canyon, there is no forecast drawdown in groundwater levels as a response to predicted pressure and temperature changes in the geothermal reservoir”) (emphasis added); *see also id.* at 6-18, 6-19 (“Separation from cold groundwater is a fundamental concept of the geothermal system. Without separation from overlying cold groundwater, the hot geothermal system could not exist [as] it would be quenched by the infiltration of cold waters.”).

BLM approved the February 2010 application, as revised in 2012, and selected the Modified Pipeline Alternative, its preferred Alternative 3, subject to all project design features and mitigation measures set forth in the EIS/EIR.¹⁰ *See* ROD at 4-5, 17; EIS/EIR at 2-46 to 2-71. Since “currently available data indicate that the shallow

⁹ The LVHAC “was formed in order to serve an advisory role with respect to management of Long Valley geothermal resources”; it includes representatives of BLM, U.S. Forest Service, U.S. Geological Survey (USGS), California Division of Oil, Gas and Geothermal Resources, California Department of Fish and Wildlife, and Mono County. EIS/EIR at 3.7-19. LVHAC monitoring data are apparently online at the USGS website for Long Valley. *See id.* at H-41.

¹⁰ BLM prepared a Mitigation, Monitoring and Reporting Program as an appendix, which listed all project design features and mitigation measures adopted by BLM, in cooperation with the U.S. Forest Service and APCD, that were designed to avoid or minimize the Project’s likely environmental impacts. *See* ROD, Appendix 2.

Mammoth Groundwater Basin is *physically isolated* from the deeper geothermal system,” the Field Manager determined that the Project “is unlikely to affect the quality or availability of shallow groundwater resources.” ROD at 12 (emphasis added). Nonetheless, as a condition of Project approval, he directed ORNI to develop and implement “a cooperative shallow ground water plan . . . focused on detecting any direct or indirect effects on the municipal water supply that may occur from geothermal production and injection.” *Id.*; see EIS/EIR at 6-17 (“The BLM’s permit Conditions of Approval for the development of the CD-IV Project would include mandatory conditions requiring compliance with an expanded LVHAC hydrologic monitoring program . . . and potential recourse actions in the event substantial adverse effects on hydrologic resources resulting from project operation are identified”), D-27 (“Regular monitoring data reviews . . . should assure there are no adverse [e]ffects on the quality of shallow cold groundwater and would give permitting agencies the ability to order corrective actions should any adverse effects be determined”).¹¹ The Field Manager concluded the Project was thoroughly analyzed under NEPA and would not unnecessarily or unduly degrade any of the Federal lands at issue. See ROD at 6.

MCWD timely appealed and petitioned to stay the effect of the ROD, which had approved drilling and development of geothermal resources for the Project.¹² By

¹¹ MCWD claims the Mitigation, Monitoring and Reporting Program is “woefully inadequate,” should be subject to approval by MCWD, and incorporate measures to mitigate any negative impacts. SOR at 24-25. However, nothing in NEPA governs how such a plan is to be adopted or implemented to achieve intended results. See, e.g., *Rocky Mountain Pipeline Trades Council*, 149 IBLA 388, 404 (1999). As stated in *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 353 (1989): “[I]t would be inconsistent with NEPA’s reliance on procedural mechanisms—as opposed to substantive, result-based standards—to demand the presence of a fully developed plan that will mitigate environmental harm before an agency can act.” Moreover, we note that ORNI has an obvious incentive to avoid any groundwater drawdown that could cool the geothermal reservoir and adversely affect its power production, even assuming a hydrologic connection exists that would permit or induce such a drawdown. See EIS/EIR at 6-23, 6-26, 6-28 (“[I]t is in the developer’s interest to maintain optimal production of the hydrothermal resource”), H-43. We therefore consider these claims no further herein.

¹² BLM filed a request to limit public disclosure of approximately 368 documents containing geothermal well testing/production information or relating to geothermal resources, claiming they were exempt from mandatory disclosure under FOIA or otherwise exempt from public disclosure by law. See 43 C.F.R. § 4.31(a). We granted that request by Order dated Feb. 20, 2014. Pursuant to 43 C.F.R. § 4.31(c),
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Order dated July 14, 2014 (Order), we denied that stay petition, based largely on our finding MCWD had not sufficiently shown it was likely to prevail on the merits of this appeal. *See* Order at 11-17. The District has filed nothing further; this matter is now ripe for decision.

Arguments on Appeal

MCWD contends BLM violated NEPA in three principal respects. First, BLM failed adequately to consider groundwater impacts from drilling and developing the underlying geothermal resources in the Project area and to support adequately its determination of “no connectivity between the groundwater system and the geothermal system.” SSOR at 11; *see id.* at 11-13; SOR at 21 (“Neither the Project EIS/EIR nor the [SAIC] report contains any detailed geologic cross-sections or hydrogeologic data of the relevant area to support the Project EIS/EIR’s assumption that the shallow, cold groundwater system and the geothermal system are hydrogeologically separated.”). Second, BLM failed to include the Model “used to forecast the geothermal response to the Project” in the Administrative Record. SOR at 16; *see id.* at 14-18; SSOR at 10 (“[T]he Model and all relevant data used in the Model, including Model assumptions and calibrations, should have been made available for review and included in the administrative record.”); *supra*, note 8. Third, BLM failed to independently review the SAIC Report and a report by Mike Sorey, “Hydrologic and Geochemical Analyses of Reservoir Fluids in the Geothermal and Groundwater Systems in the Western Part of the Long Valley Caldera” (December 2011) (Sorey Report). *See* SSOR at 2-8; Reply at 2-4; *supra*, note 8. We summarize the applicable legal principles and then address each of these claims below.

Discussion

Section 102(2)(C) of NEPA requires a Federal agency to prepare a “detailed statement” addressing the potential environmental impacts of a proposed action and alternatives thereto in the case of any major Federal action that “significantly affect[s] the quality of the human environment[.]” 42 U.S.C. § 4332(2)(C) (2006). It is well established that the statute does not mandate the particular substantive results of agency decisionmaking, but rather imposes procedural obligations on the agency, which require that the agency *and* the public be fully informed of the likely environmental consequences when the agency exercises its substantive discretion to approve a proposed action: “If the adverse environmental effects of the proposed action are adequately identified and evaluated, the agency is not constrained by NEPA

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BLM provided those documents to MCWD, after which it filed a supplemental statement of reasons (SSOR) that was responded to by BLM (Answer). MCWD replied to that response on July 3, 2014 (Reply).

from deciding that other values outweigh the environmental costs, [in deciding to go forward with the proposed action].” *Robertson v. Methow Valley Citizens Council*, 490 U.S. at 350.

[1] The adequacy of an EIS/EIR must be judged by whether it constituted a “detailed statement” that took a “hard look” at all potentially significant environmental consequences of the proposed action and reasonable alternatives thereto and considered all relevant matters of environmental concern. *Backcountry Against Dumps*, 179 IBLA 148, 161 (2010) (quoting 42 U.S.C. § 4332(2)(C) (2006), and *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n.21 (1976)), and cases cited. The EIS/EIR must contain “a ‘reasonably thorough discussion of the significant aspects of the probable environmental consequences’” of the proposed action and alternatives thereto. *State of California v. Block*, 690 F.2d 753, 761 (9th Cir. 1982) (quoting *Trout Unlimited v. Morton*, 509 F.2d 1276, 1283 (9th Cir. 1974)). To decide whether an EIS/EIR promotes informed decisionmaking, a “rule of reason” is employed. *County of Suffolk v. Secretary of Interior*, 562 F.2d 1368, 1375 (2d Cir. 1977), *cert. denied*, 434 U.S. 1064 (1978); *Northern Alaska Environmental Center*, 153 IBLA 253, 256 (2000). As stated in *County of Suffolk*:

[A]n EIS need not be exhaustive to the point of discussing all possible details bearing on the proposed action but will be upheld as adequate if it has been compiled in good faith and sets forth *sufficient information* to enable the decisionmaker to consider fully the environmental factors involved and to make a reasoned decision after balancing the risks of harm to the environment against the benefits to be derived from the proposed action, as well as to make a reasoned choice between alternatives. [Emphasis added.]

562 F.2d at 1375; see *Northwest Environmental Advocates v. National Marine Fisheries Service*, 460 F.3d 1125, 1139 (9th Cir. 2006) (“NEPA requires not that an agency engage in the most exhaustive environmental analysis theoretically possible, but that it take a ‘hard look’ at relevant factors”).

An appellant challenging a BLM decision to approve construction, operation, maintenance, and decommissioning of a geothermal energy-generating facility and related activity, following preparation of the EIS/EIR, must carry its burden to demonstrate by a preponderance of the evidence, with objective proof, that BLM failed to adequately consider a substantial environmental question of material significance to the proposed action, or otherwise failed to abide by section 102(2)(C) of NEPA. *Backcountry Against Dumps*, 179 IBLA at 161. The appellant must make an “affirmative showing that BLM failed to consider a substantial environmental question of material significance,” and cannot simply “pick apart a record with alleged errors and disagreements[.]” *Arizona Zoological Society*, 167 IBLA 347, 357-58 (2006) (quoting *In re Stratton Hog Timber Sale*, 160 IBLA 329, 332 (2004)).

[2] In assessing the environment and evaluating impacts, BLM may rely properly on the professional opinions of technical experts, on matters within the realm of their expertise that are reasonable and supported by record evidence. See *Backcountry Against Dumps*, 179 IBLA at 161-62. This deference applies not only to its own experts, but also to non-BLM expert opinions and supporting analyses, so long as BLM independently evaluated their professional opinions and analyses. See, e.g., *Coliseum Square Association, Inc. v. Jackson*, 465 F.3d 215, 236 (5th Cir. 2006), *cert. denied*, 552 U.S. 810 (2007); *Lesser v. City of Cape May*, 110 F. Supp. 2d 303, 329 (D.N.J. 2000), *aff'd*, 78 Fed. Appx. 208 (3rd Cir. 2003) (“The NEPA review process often involves the consideration of specialized scientific fields about which the reviewing agency itself lacks the knowledge to make an informed decision. To forbid consultation with outside experts would result in uninformed agency decisions.”). Such outside experts may be employed by parties with whom BLM consulted and/or by the proponent of the proposed action, since BLM will be the ultimate arbiter of the usefulness of the information submitted. See 40 C.F.R. § 1506.5(a) and (c); 43 C.F.R. § 46.105; *Sierra Club v. Lynn*, 502 F.2d 43, 59 (5th Cir. 1974), *cert. denied*, 421 U.S. 994 (1975) (“There is no NEPA prohibition against a . . . financially interested private contractor or a new community applicant providing the [F]ederal agency, which must of necessity work with these parties, data, information, reports, groundwork environmental studies or other assistance in the preparation of an [EIS]. . . . NEPA demands only that ‘the applicable [F]ederal agency must bear the responsibility for the ultimate work product designed to satisfy the requirement of § 102(2)(C).’” (quoting *Life of the Land v. Brinegar*, 485 F.2d 460, 467 (9th Cir. 1973), *cert. denied*, 416 U.S. 961 (1974))).¹³

In challenging a BLM determination that relies on the professional opinion of its technical experts, the burden of proof falls to a party objecting to BLM’s decision to establish, by a preponderance of the evidence, that BLM erred in its determination. *West Cow Creek Permittees v. BLM*, 142 IBLA 224, 238 (1998). An appellant challenging such reliance must demonstrate, by a preponderance of the evidence, error in the data, methodology, analysis, or conclusion of the expert: “[An appellant must show that] BLM erred when collecting the underlying data, when interpreting that data, or when reaching the conclusion, and not simply that a different course of action or interpretation is available and supported by the evidence.” *Id.* The appellant

¹³ In addition to relying on in-house experts employed by BLM and the cooperating agencies, BLM relied on outside consultants, both contracted and sub-contracted experts, whose work was scrutinized by the BLM experts. See EIS/EIR at 7-1 to 7-3. No justification is offered by MCWD for this Board to disregard their review or the professional opinion and supporting analyses of those consultants.

“must show not just that the results of [BLM’s] study *could be* in error, but that they *are* erroneous.” *Id.*

Above all, a mere difference of expert opinion about the likelihood or significance of environmental impacts will not suffice to show, to the Board’s satisfaction, that BLM failed to fully comprehend the true nature, magnitude, or scope of the significant impacts. *Backcountry Against Dumps*, 179 IBLA at 162. As we have long stated, the Board’s role “is not to decide whether an EIS . . . is based upon the best scientific data and methodology available or to resolve disagreements in the scientific community as to th[e] issues” raised by the appellant, but rather to determine whether BLM’s analysis of “available data” regarding significant impacts was reasonable and supported by record evidence. *Center for Biological Diversity*, 181 IBLA 325, 341 (2012) (quoting *Wyoming Audubon*, 151 IBLA 42, 51 (1999)). Nor is the Board precluded from upholding an EIS/EIR that fails to remove all doubt regarding likely environmental impacts, since an EIS/EIR “need not achieve scientific unanimity[.]” *Id.* (quoting *Life of the Land v. Brinegar*, 485 F.2d at 473).

I. Whether BLM Violated NEPA by Failing Adequately to Address Likely Impacts to Groundwater Resources.

MCWD contends BLM failed adequately to consider the likely effects of geothermal drilling and development on groundwater resources because the EIS/EIR lacked sufficient record evidence to support its determining that there is no connectivity between groundwaters used by the District and their underlying geothermal resources. *See* SOR at 19-23; SSOR at 11-13, 19-23. We have carefully reviewed the record and find we are in complete agreement with the views expressed by Judge Price on this issue that were contained in her order denying a stay. We therefore expressly incorporate and adopt her analysis here, as supplemented by additional record references:

In approving the Project, the Field Manager clearly relied on the analysis of potential significant impacts in the Final EIS/EIR. *See* ROD at 6. BLM considered the likely effects of geothermal drilling and development on groundwater resources in the Final EIS/EIR, relying on the opinion of its technical experts to conclude there would be no significant impact to groundwater resources because there is no hydrologic connection between the geothermal resources that will be extracted and groundwater resources. *See* EIS/EIR at 3.7-1 to 3.7-18, 4.7-1 to 4.7-17, 6-17 to 6-28, [D-48 (“Basalt canyon wells will be completed and produce from zones two to three times deeper than the existing Casa Diablo production reservoir, consequently potential effects on shallower cold groundwater aquifers are expected to be minimized”)]. MCWD nonetheless contends the purported absence of a hydrologic connection

is only an “assumption,” because the administrative record reflects a “complete absence of any evidence bearing on this issue.” SOR at 5.

While it is true the Project’s geothermal well field will be located in relatively close proximity to MCWD’s water wells, the aquifer tapped by MCWD’s wells is located at a depth of from 82 to 869 feet, well above the geothermal reservoir the Project will exploit. See EIS/EIR at 6-23 [(“Based on shallow and deep well data, the piezometric (water elevation) surface of the deeper geothermal system has long been recognized as quite different and, therefore, separate from the shallow cold groundwater system”)] to 6-26 (“The targeted production zones in Basalt Canyon are substantially deeper than current production zones at Casa Diablo, providing a greater separation between the shallow groundwater aquifer and the deeper geothermal production zone”), H-27 (“The Project will produce geothermal fluid from the geothermal reservoir, which is separate from the Mammoth Groundwater Basin and hosted more than 1000 feet below the MCWD wells”). This fact is confirmed by borehole data obtained from the drilling that has already occurred in the area.

What remains is the question of whether the extraction of geothermal resources in the underlying reservoir is likely to draw down or contaminate the groundwater in the overlying aquifer. This question also seems to have been answered by the borehole data, which disclosed the existence of an impermeable or barely permeable layer: “The cold groundwater aquifers are separated from the deeper hotter geothermal system by either intense alteration of thick ash-rich Early Rhyolite units in the western caldera or low permeability rocks of a landslide that slid into the south central part of the caldera.” EIS/EIR at D-25; *see id.* at 3.7-11 (“[Available geologic and geochemical data in Long Valley support a separation between the shallow cold groundwater system, which includes the Mammoth Groundwater Basin, and the underlying high temperature geothermal system in the western caldera moat] Drilling results indicate that the shallow cold groundwater system is separated from potential geothermal influence by thick, low permeability sections of altered Early Rhyolite which underlie shallow groundwater aquifers”), 4.7-10 (“[A] generally impermeable barrier [exists] between the groundwater aquifer and the underlying geothermal reservoir”), 6-19, 6-20 (Figure 1), 6-22, H-32 (“The wells used to substantiate the conclusion that the aquifer [and reservoir] are separated are the same data points used in the Mammoth Basin Groundwater Modeling Report . . . with additional data from USGS maps and cross-sections referenced in the Draft EIS/EIR, Appendix D, and publicly available data from more recent wells [A]s geophysical data suggest and numerous deeper

holes have shown, the intracaldera Bishop Tuff and Early Rhyolite eruptive units can be extrapolated across the caldera with the same confidence that they were extrapolated in preparing the groundwater model.”), H-36 to H-37, H-46. In BLM’s expert opinion, the presence of a barrier ruled out a hydrologic connection between the groundwater aquifer and the geothermal reservoir. See EIS/EIR at D-27 (“Because the shallow cold groundwater system and the deeper geothermal system are physically separated from the principal supply aquifers of the western Mammoth Groundwater Basin, geothermal production from the [P]roject is *not expected to adversely the water quality in MCWD wells* through either depleting the aquifer or by drawing in lower quality waters because of pressure declines” (emphasis added)), D-47 [(“The shallow cold groundwater aquifers farther west in the mammoth Groundwater Basin are separated from the underlying geothermal system by thick altered and impermeable sections of ash-rich Early Rhyolite”)], H-44 [(“[N]o connection has been shown between the deep geothermal reservoir and the overlying shallow groundwater system in the western caldera.”)].

Moreover, groundwater monitoring by MCWD and LVHAC also seems to have confirmed the absence of a hydrologic connection: despite the extensive drilling and development of the geothermal reservoir that has already taken place in the area, there has been no actual drawdown or contamination of the groundwater aquifer to date. See EIS/EIR at 6-23, 6-26 [(“Geochemical data shows no consistent evidence of mixing between thermal and non-thermal waters beneath the western part of the caldera”)], D-27 (“Monitoring records document no changes [in] the chemistry of groundwater wells in the Mammoth Groundwater Basin from 1996 to 2009 during continual production of the geothermal system at Casa Diablo. There is no apparent relationship between the current-day groundwater and geothermal chemistry.”), D-68 (Figure 11), D-72 (Figure 15), H-49 (“Basalt Canyon wells have been producing an average of 2000 since 2006 and the MCWD has not reported any adverse effects on groundwater wells in its monitoring reports or to the LVHAC”)[; Sorey Report at 19 (“[T]here appears to be no reliable evidence of effects . . . of some 25 years of geothermal development on water level or fluid chemistry in the MCWD production wells.”)].

MCWD asserts that BLM lacked any “relevant scientific information” justifying its conclusion regarding the existence of a generally impermeable barrier between the groundwater aquifer and the geothermal reservoir. SOR at 19. It acknowledges BLM’s statement regarding the existence of an ash or rock layer separating the aquifer and reservoir, but asserts that BLM has no basis for concluding that the layer

is impermeable in the absence of evidence of “actual large-scale permeability or leaky aquifer tests.” *Id.* According to MCWD, the barrier “could very well be permeable,” especially since “the existence of a low permeable barrier is normal for geologic beds, such as the one in the Mammoth Lakes Groundwater Basin.” *Id.* at 20 (citing Letter to MCWD from Schmidt (MCWD consultant), dated July 12, 2013).

With respect to several MCWD wells in the western part of the Basin (Nos. 16-18 and 20), MCWD argues the intrusion of geothermal resources into the groundwater aquifer is evident in the “relatively high [Chloride/Boron] ratio of 22.4” (No. 17) and 10° C higher temperature (Nos. 16-18 and 20) exhibited in these wells “mean that the geothermal and shallow cold water aquifers are connected in some way in the western part of the Mammoth Basin.” SOR at 20 (quoting Letter to MCWD from Wildermuth (MCWD consultant), dated Jan. 30, 2013). Wildermuth suggested the hydrologic connection might be attributable to one of the “numerous NW-SE trending active faults and ruptures in the Mammoth Lakes-Casa Diablo-Hot Creek areas.” Wildermuth Letter, dated Jan. 30, 2013, at 2.

MCWD maintains BLM has no scientific data to support its conclusion regarding the absence of a hydrologic connection, because BLM’s data relates not to the area “between the Project’s proposed geothermal well field and where the MCWD wells are located,” but to the area “east of the area in question,” which is situated east of the existing Casa Diablo power plant. SOR at 11; *see id.* 17 (“[The SAIC Report] confirms that the GRSM was not calibrated using the area of MCWD’s groundwater production wells and the Project’s proposed geothermal wells Rather, the report clarifies that the GRSM was calibrated using the area of the existing Casa Diablo well field, which is much farther from MCWD’s wells.”). MCWD concludes BLM cannot rule out a hydrologic connection between the groundwater aquifer and the underlying geothermal reservoir in the area in question. *See id.* at 20.

MCWD specifically notes that the Final EIS/EIR does not contain “any detailed geologic cross-sections or hydrogeologic data” or any “borehole data” of the area between the proposed well field and MCWD’s wells. SOR at 21. It further notes that the EIS/EIR “repeatedly acknowledges that conditions in [that area] are different” from those in the area farther to the east that BLM mapped. *Id.* Finally, MCWD indicates the monitoring to date does not shed any light on the likelihood of a hydrologic connection in the area at issue because it relates to other geothermal drilling and development, and BLM must undertake additional testing to rule out such a connection. *See id.* at 21-23 (“[t]he

EIS/EIR *simply assumes* that there is no connection between the cold groundwater system and the geothermal system” (emphasis added)).

Based on existing drilling and ongoing monitoring data, the absence of any reported effects on water wells, and reasonable inferences to be drawn from available data, BLM determined that the geologic strata underlying the area east of the existing power plant extends under the area in question. BLM is entitled to rely on current data; it is not required to suppose the presence of conditions that are contrary to available evidence to conclude a hydrologic connection exists. Environmental review involves “reasonable forecasting and forecasting,” not a “crystal ball inquiry.” *Kern v. U.S. BLM*, 284 F.3d 1062, 1072 (9th Cir. 2002) (quoting *Scientists’ Inst. for Pub. Information, Inc. v. Atomic Energy Comm’n*, 481 F.2d 1079, 1092 (D.C. Cir. 1973)). MCWD offers no solid evidence to the contrary. It relies on the reports of consultants who, at best, have expressed “concern” that the removal of significant quantities of geothermal resources will draw down increased quantities of groundwater resources from the overlying aquifer. SOR at 22.

Order at 11-14. In approving the Project, the Field Manager clearly relied on the analysis of potential significant impacts in the EIS/EIR. See ROD at 6. BLM considered the likely effects of geothermal drilling and development on groundwater resources in the EIS/EIR, relying on the opinion of its technical experts to conclude there would be no significant impact to groundwater resources because there exists no hydrologic connection between the geothermal resources that will be extracted by ORNI’s drilling and development and the groundwater resources. See EIS/EIR at 3.7-1 to 3.7-18, 4.7-1 to 4.7-17, 6-17 to 6-28, Appendix D. We therefore reject MCWD’s claim that there is a “complete absence of evidence bearing on this issue.” SOR at 5. To the contrary, we find the record contains reliable and credible scientific evidence regarding the absence of a hydrologic connection between groundwaters and underlying geothermal resources.

MCWD offers neither argument nor evidence to show there is a hydrologic connection between the geothermal reservoir and the overlying groundwater aquifer that would permit its drawdown or contamination. Instead, it alleges shortcomings in BLM’s evidence. See, e.g., Reply at 4 (“there is still a lack of any type of borehole data in the area”) (quoting Letter to MCWD from Wildermuth, dated July 12, 2013, at 1-2), 16 (“Amid the very real uncertainty surrounding the potential adverse impacts of the Project, the Mammoth Lakes community’s water supply should not be placed at risk”); SSOR at 11-12 (citing Wildermuth Letter, dated May 20, 2014, at 5 (“there is a lack of critical data and information that could be used by MCWD and the public to validate whether or not . . . the shallow cold groundwater system is completely separated from the deep geothermal system”) and Schmidt Letter, dated May 20, 2014,

at 2-3 (“there is a considerable lack of understanding of the groundwater flow systems west of Casa Diablo, including in the vicinity of the District well field”). MCWD does not identify any specific error or deficiency in BLM’s analysis or conclusion regarding the hydrologic connectivity between its groundwaters and the underlying geothermal reservoir, asserting only that BLM cannot rule out a possible hydrologic connection in the area. See SOR at 20.

BLM determined the aquifer is physically separated from the underlying geothermal reservoir, based only on “currently available data,” ROD at 12, but when faced with a modicum of uncertainty regarding that data, absent evidence contradicting that determination, BLM is entitled to rely on current data and the professional opinion of its technical experts. It simply is not required to suppose that other evidence exists to show there is a hydrologic connection. See, e.g., *Dorothy A. Towne*, 115 IBLA 31, 38-39 (1990) (“In cases involving evaluation of expert opinion such as the opinion of geologists who have described geologic formations that are believed to exist beneath the earth’s surface, we have consistently found that the Secretary may rely on the reports of his technical experts in the field, even where the evidence is conflicting or contradicted, unless such opinions are shown to be in error.”). After all, environmental reviews involve “[r]easonable forecasting and speculation” and are not a “crystal ball inquiry.” *Kern v. U.S. BLM*, 284 F.3d 1062, 1072 (9th Cir. 2002) (quoting *Scientists’ Institute for Public Information, Inc. v. Atomic Energy Commission*, 481 F.2d 1079, 1092 (D.C. Cir. 1973)).

MCWD has not carried its burden to establish, by a preponderance of the evidence, a material error in BLM’s consideration of likely groundwater effects from geothermal drilling and development or that BLM failed to take a hard look at such effects, consider all relevant matters of environmental concern, or properly conclude that such effects are not likely to be significant. See *Save Medicine Lake Coalition*, 156 IBLA at 231-35.

II. Whether BLM Violated NEPA by Failing to Publicly Disclose and Include the Model in the Administrative Record.

MCWD claims BLM failed to disclose critical information relied on in its EIS/EIR to assess likely groundwater effects from geothermal drilling and development, erroneously claiming it was proprietary and exempt from public disclosure, which rendered its conclusions arbitrary, capricious, and unsupported by a rational basis, and also deprived the public of a meaningful opportunity to evaluate that information in violation of section 102(2)(C) of NEPA. See SOR at 13-18 (citing *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1150 (9th Cir. 1998) (“NEPA requires that the public receive the underlying environmental data from which a [Federal agency] expert derived her opinion”)), see also SOR at 18 (“The lack of transparency exhibited by BLM . . . in declining to share such pertinent information precludes meaningful public review of the Project’s potential impacts and contravenes the spirit of NEPA.”).

This issue was also addressed by Judge Price in her order denying appellant's stay petition. Based on our review of the record, we again find complete agreement with her views and, therefore, incorporate and adopt her analysis here, as supplemented by additional record references:

We do not agree BLM failed to disclose the basis for its conclusions regarding likely groundwater effects. As discussed above, those conclusions were based on the existing borehole data indicating the existence of an impermeable or barely permeable barrier between the groundwater aquifer and the underlying geothermal reservoir, coupled with ongoing monitoring data, and the absence to date of any reported impacts on groundwater. It is true that not all of the borehole data was disclosed. See EIS/EIR at H-33 ("Borehole data, where publicly available, are presented"), H-36 to H-37, H-50 ("No data contrary to the conclusions of the Draft EIS/EIR were withheld"). It is also true, however, that disclosure of documents in the Government's possession is governed by FOIA, and documents properly may be withheld from disclosure on the basis of one of several exemptions enumerated in that Act. See 42 U.S.C. § 4332(2)(C) (2006) ("Copies of [the EIS] . . . shall be made available . . . to the public as provided by section 552 of Title 5"); *Weinberger v. Catholic Action of Hawaii/Peace Educ. Project*, 454 U.S. 139, 143 ("§102(2)(C) contemplates that in a given situation a [F]ederal agency might have to include environmental considerations in its decisionmaking process, yet withhold public disclosure of any NEPA documents, in whole or in part, under the authority of an FOIA exemption" (emphasis added)), 145 ("NEPA's public disclosure requirements are expressly governed by FOIA") (1981); *Parker v. BLM*, 141 F. Supp. 2d 71, 81 (D.D.C. 2001) ("[I]f agencies seeking assistance from private parties in fulfilling their obligations under NEPA cannot maintain the confidentiality of proprietary materials that have been submitted to it, the government's ability to obtain such information would be impaired").

In this case, documents were withheld pursuant to the exemption for proprietary data. See EIS/EIR at H-34 ("Only proprietary information in the possession of the Agencies was withheld [since] . . . BLM and the [Forest Service] have an affirmative obligation to limit the disclosure of the underlying data which has been identified as proprietary.") FOIA notably contains no relief from its provisions because a disclosure question arises in the context of a NEPA analysis. MCWD therefore has not established reversible error merely because the Agencies did not release proprietary documents or data.

In addition to the borehole and monitoring data, MCWD refers to information concerning the GRSM, including input/output data,

modeling assumptions, and modeling results, all of which relate to the anticipated effects of geothermal drilling and development *on the geothermal reservoir*. See, e.g., SOR at 18 (“[I]n refusing to disclose the G[RS]M and the relevant modeling information, BLM essentially asks that MCWD blindly accept, without conducting an independent assessment, the validity of the G[RS]M”)

BLM’s description of how the GRSM was used is markedly different. See EIS/EIR at 6-27 (“*Flows, drawdowns, or temperature changes for groundwater resources in the Project area . . . were not calculated from the model’s predictions of pressure and temperature declines in the geothermal reservoir, because there is no indication that the shallow groundwater responds to geothermal reservoir pressure and temperature changes. Disclosure of proprietary information on numeric model assumptions, calibrations, and simulations, as requested by MCWD, would not provide additional insight on the [physical] separation between the groundwater aquifer and the geothermal reservoir*”) (emphasis added)¹⁴), H-32.

Order at 15-17. MCWD insists BLM must be required to disclose the GRSM and related information so that it may be able to discern, for itself, whether it has any bearing on the question of a hydrologic connection.¹⁵ See SOR at 18. This is a very different question from whether BLM adequately considered the information it had before it, as required by NEPA. Given the borehole and monitoring evidence, coupled with the lack of any observed effects from nearly 30 years of geothermal operations, we do not find BLM violated NEPA under the above-described circumstances. See EIS/EIR at 4.7-1, 4.7-10 to 4.7-13, 6-27 (“Disclosure of proprietary information on

¹⁴ Although the GRSM was not designed to gauge groundwater effects, BLM used it to discern a lack of impacts. See EIS/EIR at 4.7-5, 4.7-12 (“[E]ven if there are [hydrologic] connections, the forecast pressure declines [from geothermal drilling and development] are unlikely to cause adverse impacts to the overlying groundwater systems.”); see also *id.* at 6-27 (“Model results indicate that reservoir pressures would decline from 1.45 to 10.2 pounds per square inch and temperatures of produced fluids would decline about 18°F (10°C), over the 30-year life of the project.”), D-46.

¹⁵ MCWD states that “[w]ithout the ability to review the GRSM and the raw data used to calibrate the model and make modeling forecasts, it is impossible for MCWD . . . to verify whether the conclusion concerning *the separation of the cold groundwater aquifer and the geothermal water system* is scientifically sound.” (Emphasis added.) SOR at 16. But as discussed above, it proffers no evidence to show that the GRSM, assumptions, data, and/or results have any bearing on the existence of a hydrologic connection.

numeric model assumptions, calibrations, and simulations, as requested by MCWD, would not provide additional insight on the separation between the groundwater aquifer and the geothermal reservoir.”), H-32, H-44 to H-45.

III. Whether BLM Violated NEPA by Failing to Independently Review Reports and Information Relied on in its EIS/EIR.

MCWD claims BLM was required by NEPA and 40 C.F.R. § 1506.5 to independently review and verify “the Model, including the assumptions and underlying data used to calibrate the Model,” and that BLM could not rely on the technical reviews performed by SAIC or Sorey because Sorey is an ORNI consultant and “[n]owhere in the record does it say that SAIC was independently retained by BLM.” SSOR at 4; *id.* at 6 n.3; *see id.* at 7 (“SAIC’s review of the Model cannot take the place of BLM’s own review as required under 40 C.F.R. § 1506.5.”); Reply at 2. BLM contends it complied with NEPA and applicable guidance when it used third party contractors and subcontractors to prepare the EIS/EIR and its analyses (*e.g.*, it remained responsible for and actively participated in preparing the EIS). *See Answer* at 5. MCWD has provided no “evidence challenging the credentials or objectivity of the experts who prepared the SAIC Report [and] offers no explanation . . . of the Model, as opposed to the Model itself.” *Id.* at 6; *see id.* at 8 (“BLM’s reliance on its technical experts (whether internal or external) is entitled to deference and should be affirmed.”) (citing *Center for Biological Diversity*, 181 IBLA 325, 365-66 (2012)).

We assume for purposes of deciding this appeal that ORNI paid for both the SAIC and Sorey Reports. However, the issue here does not turn on who paid for them, but on whether they were independently reviewed by BLM. BLM and the U.S. Forest Service personnel who prepared the EIS/EIR are identified, which include physical scientists, a hydrologist, and an environmental coordinator, as are contractor personnel. *See EIS/EIR* at 7-1; *see also id.* at 7-2 to 7-3 (contractor and subcontractor personnel identified); *supra*, note 8. The record therefore appears to support BLM’s assertion that it independently reviewed the SAIC and Sorey Reports. Moreover and more importantly, the burden here is on MCWD to demonstrate that BLM did not do so. We find it neither met that burden nor explained why BLM could not rely on the SAIC Report to evaluate and assess the Model, provided it independently reviewed that evaluation and assessment.

In sum, MCWD has not shown BLM erred in issuing the ROD because it had violated NEPA by failing to consider adequately groundwater effects from drilling and developing underlying geothermal resources, to publicly disclose the Model relied on by ORNI, or to independently review reports and other information relied on in the EIS/EIR.

Accordingly, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 C.F.R. § 4.1, the decision appealed from is affirmed.

James K. Jackson
Administrative Judge

I concur:

James F. Roberts
Administrative Judge