UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

August 24, 2007

Harrilene Yazzi
Bureau of Indian Affairs
Navajo Regional Office
P.O. Box 1060
Gallup, NM 87305

Subject: Draft Environmental Impact Statement (DEIS), Desert Rock Energy Project, Navajo Nation (CEQ # 20070253)

Dear Ms. Yazzi:

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508) and our review authority under Section 309 of the Clean Air Act. Our detailed comments are attached.

The project proposes to construct and operate a coal-fired power plant and associated facilities on land leased from the Navajo Nation and extend surface coal mining within the BHP Navajo Coal Company lease area. The Draft Environmental Impact Statement (DEIS) analyzes the environmental effects of a 1,500 megawatt (MW) pulverized coal power plant (Alternative B), a 550 MW pulverized coal power plant (Alternative C), and a No Action alternative. The Bureau of Indian Affair's (BIA) preferred alternative is Alternative B.

EPA is a cooperating agency for the project EIS. In that role, we reviewed preliminary draft versions of the EIS and provided substantial comments to BIA. Most of our comments have been incorporated into the DEIS and we appreciate BIA's responsiveness to our input. The attached comments detail our unresolved concerns and include recommendations for improving the impact assessment and mitigating potential impacts to resources. We have rated the DEIS as Environmental Concerns – Insufficient Information (EC-2) (see enclosed "Summary of Rating Definitions").

EPA has concerns regarding the thoroughness of the evaluation of potential impacts from placement of coal combustion byproducts (CCBs) in Navajo Mine. The DEIS does not consider the effect that the advanced pollution control technology will have on CCB composition, nor does it evaluate and disclose all available information regarding existing CCB disposal impacts. For the protection of groundwater resources, EPA recommends all practicable protective measures be utilized in CCB placement in Navajo Mine. EPA also recommends that a comprehensive groundwater monitoring program, including the analysis of additional constituents, be presented in the Final EIS (FEIS) to help identify and mitigate potential future impacts.

Regarding air quality, EPA has concerns regarding the impact assessment for particulate matter less than 10 microns in diameter (PM_{10}). We recommend reevaluating PM_{10} impacts from commuter road use, especially since these emissions are expected to be much higher than the emissions from the power plant itself. The heavy use of diesel construction and other vehicles on unpaved roads can result in ambient mixes of PM_{10} particles similar to urban/industrial ambient mixes, which available evidence suggests are most associated with adverse health effects. Any reevaluation of PM_{10} impacts should determine if the ambient mix is dominated by high-density traffic/construction sources. If so, EPA recommends that additional mitigation to reduce PM_{10} emissions from those sources be proposed. We also recommend that mercury emissions be expressed as a range to identify the uncertainty of this estimate, and that the project state whether it is committed to achieving 80% mercury removal regardless of the $13,000 per pound price cap.

EPA will continue to work with BIA to resolve these issues in preparation of the FEIS. If you have any questions, please contact me at (415) 972-3846 or Karen Vitulano, the lead reviewer for this project, at 415-947-4178 or vitulano.karen@epa.gov.

Sincerely,

/s/

Nova Blazej, Manager
Environmental Review Office

Enclosures:
Summary of EPA Rating Definitions
EPA's Detailed Comments

cc: Stephen Spencer, Department of the Interior
Brenda Steele, Office of Surface Mining
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GROUNDWATER

Placement of Coal Combustion Byproducts (CCBs) in Navajo Mine

Potential for Leach Impacts to Groundwater

The DEIS does not fully evaluate the potential impacts from placement of coal combustion byproducts (CCBs) in Navajo Mine. The National Research Council report *Managing Coal Combustion Residues in Mines, 2006* (NRC Report) identifies potential public health and environmental risks from minefilling CCBs. The discussion of potential impacts to groundwater from the disposal of CCBs into the Navajo Mine, however, consists largely of a description of regulatory requirements by the Office of Surface Mining (OSM)(p. 4-45). This discussion does not include any information from past groundwater monitoring in areas of the Navajo Mine used for CCB disposal, nor does the DEIS discuss whether the potential public health and environmental risks identified in the NRC Report are applicable to the project.

> *Recommendations:* A discussion of potential leach concerns at Navajo Mine, including summaries of existing data and their uncertainties, should be included in the Final EIS (FEIS). We note that approaches to addressing incomplete information in the preparation of EISs are identified in 40 CFR 1502.22. If leaching to groundwater is possible, appropriate mitigation should be identified (discussed below under "CCB Placement").

CCB Composition and Characterization

As the DEIS notes, the NRC Report identifies characterization of a mine CCB disposal site and the materials placed in it as "essential" to proper CCB management (p. 4-42). The DEIS provides a mineral analysis and typical trace metal concentrations in ash in Tables 2-2 and 2-3; however, it is not clear where these data originate. This is important because, to be representative, the ash would need to have originated from a facility with similar combustion methods and air pollution control technologies as the proposed project. Since Desert Rock Energy will have more advanced pollution control technology than existing plants in the area, the ash resulting from the Desert Rock facility will likely have higher metals concentrations than locally generated ash, since metals are expected to be transferred from the flue gas to fly ash and other CCBs. In addition, the project may also generate activated carbon waste from reducing air emissions of mercury, per the voluntary air mitigation agreement (p. ES-8), which may increase mercury levels in CCBs.

> *Recommendation:* In the FEIS, discuss how the plant's combustion and pollution control technology will likely affect the composition of CCBs generated from the project. Clarify the applicability of the ash data in Tables 2-2 and 2-3 to the project. Discuss known ash leach study results in relation to expected project ash composition.
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> In EPA's recent comments to OSM on their advance notice of proposed rulemaking for CCB placement in active and abandoned mines (Federal Register, March 14, 2007), we identified an alternative leach test for determining the potential for environmental releases from CCBs. Since the project may utilize supplemental mercury control

involving activated carbon injection, we recommend this EPA report[1] be consulted in developing a protective leach testing protocol.

We also recommend that groundwater monitoring consider CCB composition and include additional test constituents, including sulfates, arsenic, boron, selenium, and mercury.

CCB Placement

The NRC Report recommended that CCB placement in mines reduce interaction with groundwater. Such actions include placement of CCBs well above the water table, compaction and cementation, and use of liners and low-permeability covers. The DEIS states that groundwater is observed in small amounts as highwall seeps at varying locations within the actively mined areas (p. 3-45) and that mining would result in the loss of coal-seam aquifers, but it does not identify whether or how minefilling of CCBs during reclamation will reduce interaction with groundwater. The DEIS (p. 2-14) states that all CCBs would be buried a minimum of 10 feet below the surface (Appendix D states an "average of 10 feet"), but it does not specify this to be a low-permeability cover.

Recommendation: In the FEIS, discuss how CCBs will avoid contact with groundwater and clarify whether the cover will be low-permeability. Discuss how CCB composition will be considered in placement.

EPA recommends all practicable and appropriate protective measures be utilized in CCB placement. If measures such as placement well above the water table, compaction and cementation, and use of liners and low-permeability covers will not be used for this disposal operation, document why they are not necessary for the protection of tribal groundwater resources.

CCB Reuse

The Desert Rock Energy Company has joined EPA's Coal Combustion Products Partnership and stated their commitment to beneficial reuse of CCBs, which includes use in concrete. The proposed pollution control configuration of injecting activated carbon for mercury control, however, would increase the carbon content of the CCBs, negatively affecting its reuse for concrete applications.

Recommendation: The DEIS should discuss the effect carbon injection will have on CCB beneficial reuse and explore ways to address mercury that does not preclude maximum beneficial reuse of CCBs. Halogenated sorbents, including brominated versions, have been found to be effective at mercury control while using much less sorbent. Halogenated sorbents are particularly effective for mercury capture when used with coals that have low chlorine content, such as many western coals. Other pollution control configurations also exist where the carbon is injected after the particle control device and a separate fabric filter is installed down stream of the injection site. EPA recommends the project investigate these and other options to maximize the beneficial reuse of CCBs.

[1] *The Characterization of Mercury Enriched CCR from Electric Utilities Using Enhanced Sorbents for Mercury Control* EPA 600/R-06/008 Available: http://oaspub.epa.gov/eims/eimsapi.dispdetail?deid=147063

Aquifer Testing and Impact Assessment

Computer modeling indicates less than significant impacts to groundwater resources from the preferred well field B (p. 4-43); however the modeling assumptions have not yet been verified by field information. We understand that aquifer testing is occurring now and is expected to be completed for inclusion in the FEIS. Calibrating the groundwater model with verified field information may affect the significance of impacts in the assessment.

Aquifer testing should also reveal information as to whether groundwater is of suitable quality for project use. The DEIS states that water from the Morrison Aquifer was identified as suitable for industrial uses (p. 2-8) but this is based on shallow wells in Sanostee. Wells to be built for the project at close to 5,000 foot depth will likely yield water that is much higher in Total Dissolved Solids (TDS) than the Sanostee wells. For example, salinities calculated from geophysical logs at a depth of 6,000 feet in a well located approximately 15 – 20 miles northeast of this location range from 10,000 to 30,000 parts per million (ppm) TDS. The DEIS does not discuss this water quality issue. It states that "alternative sources of water are available and could be conveyed to the site, if needed" but does not identify these water sources or impacts.

> *Recommendation:* Include the results of the aquifer testing in the FEIS and ensure that changes to the impacts assessment are clearly presented to the reader. If field information indicates that additional well fields will be needed, or that the predicted impact of the preferred well field is greater (shows a larger area of impact), update all relevant sections of the FEIS to reflect the new information. For example, the land use and environmental justice impact sections should discuss any changes to the area of impact since this may affect additional individuals or development plans in nearby Chapters. The DEIS should also state whether the amount of water to be withdrawn is sustainable in terms of the natural recharge of the aquifer.
>
> Include the water quality sampling results of the Morrison aquifer in the FEIS. Discuss whether water quality will impact the project description, what changes to the project may be necessary to address poor water quality, and what alternatives are available if water quality is determined to be unacceptable. If it appears that alternative water sources may be needed, the FEIS should identify the water sources and assess the environmental impacts expected to occur from their use.

Groundwater Monitoring Program

The DEIS references a generic groundwater protection plan, which is important in addressing spills or releases from the power plant. However, this plan does not address the other potential impacts to groundwater such as CCB placement in the mine and impacts from groundwater withdrawal.

We understand from the Navajo Nation Division of Natural Resources (NNDNR) that if the project proceeds, a water monitoring program will be adopted as a primary condition of all water use permits. While NNDNR has not yet developed a project-specific groundwater and spring water monitoring plan, they indicated that the monitoring program would be modeled on the Black Mesa monitoring program that has been developed. Additionally, the DEIS states that groundwater monitoring will occur in the mine pursuant to the Surface Mining and Reclamation

Control Act (SMCRA) (p. 2-14). Because groundwater resources are important in the area and could have traditional cultural significance (p. 3-148), all groundwater monitoring commitments should be detailed together in the FEIS as mitigation. This would ensure that all water quantity and quality concerns are addressed through the monitoring program.

> *Recommendation:* EPA recommends a project-wide groundwater monitoring program be presented in the FEIS, with commitments, responsible parties, and funding sources clearly identified as a mitigation measure for potential groundwater impacts. This program should identify who will be responsible for funding and carrying out groundwater well installation and ongoing sample collection and analysis for each potential groundwater impact, including what factors will be considered in placing wells, what constituents will be analyzed at what approximate frequency for each project area, how any detected impacts will be assessed for significance, and how monitoring results will be communicated to the interested public. If significant impacts are identified, the groundwater monitoring program should indicate what actions would be taken to remedy these impacts.
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> For areas of the mine that receive CCBs, EPA recommends the groundwater monitoring program include testing for sulfates, arsenic, boron, selenium, and mercury. The DEIS states that some of these toxins "should" be tested in groundwater (p. 4-48) but current regulatory requirements do not specify this testing so the project does not offer this commitment.
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> EPA recommends that this groundwater monitoring program be explicated in the FEIS, referenced in the Record of Decision (ROD) as mitigation, and included as a condition of BIA's lease approvals per 40 CFR 1503.3.

AIR QUALITY

PM_{10} Emissions Calculations

Ridesharing During the Construction Phase

The DEIS documents over 14,000 tons per year (tpy) of emissions of particulate matter less than 10 microns in diameter (PM_{10}) from construction site vehicles and employee commuting for the 4 to 5 year construction phase. This emissions estimate assumes that 75% of employees would use ridesharing to commute (p. 4-9). EPA has learned that BIA intends to include rideshare requirements in construction contracts, but the DEIS does not include this requirement in the mitigation measures or discuss how a vehicle reduction of 75% was estimated.

> *Recommendation:* Identify what mitigation measures will be included in the project to achieve 75% ridesharing and how this was determined. The FEIS should substantiate the use of this high ridesharing percentage for use in calculating PM_{10} emissions from the project or make modifications to this calculation. The project should commit to all mitigation measures identified as necessary towards achieving 75% ridesharing. The FEIS and ROD should identify who would fund and implement these measures, and what contractual guarantees and obligations would ensure they take place.

In addition to the construction phase, commuters to the power plant during the operational phase will contribute over 6,000 tpy of PM_{10} emissions, which is five times greater than annual particulate emissions from the power plant. The FEIS should also identify mitigation measures to reduce these emissions. Ridesharing programs and incentives should be included as mitigation for the operational phase.

Vehicles Miles on Paved and Unpaved Roads

The emissions calculations for commuting during the construction phase assume that 20% of a 25-mile one-way commute would be traveled on unpaved roads, and 80% would be on paved roads (p. K-13). This assumption needs substantiation, especially since it is expected that most workers would come from within San Juan County, from the towns of Shiprock, Kirtland, Fruitland and Farmington, via Highway 64 (p. 4-168, 4-136). Workers originating in locations north would have to access the site using either N3005/Burnham Road (unpaved) or via Highway 491 to N5017 (unpaved) (Figure 3-19)(p. 4-168). If most workers use these unpaved roads, the proportion of unpaved to paved road travel would be greater than 20/80 percent. The DEIS does not identify which routes would be developed for access. It does state that permanent improvements would occur on N36, N3005, N5 and Burnham Road (p. 4-168) but it does not identify what these improvements would be.

In addition, the calculations estimating particulate emissions from vehicles on unpaved roads used assumptions (silt content, moisture content, etc.), but no source for these assumptions is identified.

Recommendation: In the FEIS, substantiate the $20^{\%}/80^{\%}$ unpaved/paved road travel assumption used for the PM_{10} impact assessment or modify it to one more consistent with the routes expected to be traveled by workers for the 4-5 year construction phase. Identify the source of the assumptions used for calculating dust emissions.

The FEIS should identify additional mitigation for reducing dust emissions from traveling on unpaved roads. This could include covering unpaved road surface soils with gravel, sealing unpaved roads with pavement or other impermeable materials, using chemical dust suppressants, and ensuring the plant access road is paved early in the 4-5 year construction schedule. An additional benefit of road paving is the reduction in water use for dust control.

Compliance with National Ambient Air Quality Standards (NAAQS) for PM_{10}

The DEIS states that the emissions from the project would be in compliance with the National Ambient Air Quality Standards (NAAQS) (p. 4-17), including emissions of PM_{10}. This conclusion is based on the Prevention of Significant Deterioration (PSD) permit application Class II PSD modeling. This modeling is based on power plant facility PM_{10} emissions of approximately 1,100 tpy (Desert Rock Ambient Air Quality Impact Report Table 1 on p.5). The PSD permit application modeling covers only PM_{10} emissions from the plant site, including one to four tons per year PM_{10} within the plant site due to internal material transportation.[2] The PSD permit application modeling does not include emissions from employee commute travel on

[2] Page 2-8 and Table 2-8 of the applicant's Class II Modeling Report.

paved and unpaved roads, including over 6,100 tons of PM_{10} that the DEIS estimates would occur annually during operations (p.4-15), and a peak of more than 14,300 tons per year of PM_{10} during construction (p. 4-9).

> *Recommendation:* EPA recommends modeling of PM_{10} emissions associated with employee commute travel to determine compliance with the NAAQS. At a minimum, the FEIS should include these emissions in the discussion of PM_{10} NAAQS compliance. Additionally, discussions of NAAQS compliance for all criteria pollutants should include emissions from employee commute travel.

Mercury Emissions

Concerns regarding mercury emissions were raised by the public during scoping. The DEIS estimate of 161 pounds per year annual emission rate is based on the assumption of a mean mercury concentration of 0.065 parts per million (ppm) in the coal (p. 4-11). EPA recommended and provided a higher mercury estimate for this calculation (0.081 ppm) obtained from the Four Corners Power Plant, but this data was rejected in favor of BHP data, partly because there were indications that the EPA-supplied data represented blended coal (Appendix K, p. K-24). The DEIS does not provide reasoning why blended coal would not be a more representative sample, but does acknowledge the uncertainty of using the 0.065 ppm mercury content value (p. 4-11). It states that additional coal sampling is ongoing to verify the mean estimate for incorporation into the FEIS.

The estimate of 161 pounds of mercury per year (lbs/yr) also assumes 80% mercury removal efficiency (p. 4-11, 4-12). EPA had commented that this estimate was not impossible, but seemed high, and estimated the control efficiency for the plant at 60 - 80%. We requested that the mercury removal efficiency and emissions estimates for the project be expressed as a range in the DEIS to communicate the uncertainty of the estimate, which will not be known until the plant is in operation.

The DEIS instead identifies the assumptions used in the calculation and states that if 80% mercury removal is not achieved, the Desert Rock Energy Company has committed to supplemental mercury control involving injection of activated carbon to achieve 80% removal (p. 4-12). This is a reference to the voluntary mitigation agreement negotiated between Sithe, the National Park Service, and the U.S. Forest Service discussed on page 4-20 and included in Appendix K, p. K-47. However, the mitigation agreement does not contain the commitment stated in the DEIS. The mitigation agreement states that Sithe will reduce mercury emissions a minimum of 80% on an annual average *using the air pollution control technologies as proposed in the permit application* (which does not include activated carbon), and would utilize additional controls, such as activated carbon, to achieve 90% removal provided that the incremental cost effectiveness of the additional controls does not exceed $13,000/lb of incremental mercury removed. It is not clear how the air mitigation agreement will apply if the 80% mercury removal is not achievable using the control technologies in the air permit application, nor is it clear whether the not-to-exceed cost of $13,000/lb mercury removed applies if carbon injection is being used to achieve the minimum 80% removal.

Recommendation: The FEIS should include coal sampling results from the current sampling effort and update the mercury emissions estimate based on these results. For this new estimate, clearly identify how mercury emissions were calculated using fuel concentrations and control efficiency. Disclose any uncertainties in these estimates. We continue to recommend that the expected mercury removal efficiency be expressed as a range to communicate the uncertainty of this estimate.

Also, clarify how the air mitigation agreement applies if 80% removal is not achievable through technologies specified in the PSD permit. For example, if additional controls such as activated carbon injection are needed to reach the minimum 80% removal, clarify if the not-to-exceed costs apply. If they do apply, the FEIS should be clear that achieving the minimum 80% removal is conditioned on cost. If it is the project proponent's intention to ensure 80% mercury removal without cost caps, the FEIS should identify the mechanism that will ensure this will occur since the mitigation agreement does not clearly specify this.

Finally, several locations in the DEIS contain an earlier estimate of 114 lbs/yr from the PSD permit application and preliminary drafts of the EIS before the number was recalculated. These locations are Table 4-3 (p. 4-11), Table 4-4 (p. 4-13), and the first paragraph of p. 5-16. This is confusing to the reader and these references should all be corrected in the FEIS.

Capacity Factor Used for Emissions Calculations

The DEIS calculates ammonia and carbon dioxide emissions using a 90% capacity factor (p. 4-19). Other calculations, including the criteria pollutant emission rates used in the PSD permit and cited in the DEIS, assume a 95% capacity factor. The DEIS does not adequately explain why different capacity factors were used in the calculations. It also incorrectly states that the PSD criteria pollutant emission rates were based on a 100% capacity factor.

Recommendation: Calculate emissions using a 95% capacity factor consistently throughout the document. Correct the statement that PSD criteria pollutant emission rates are based on 100% capacity factor (p. 4-10), and instead reference Desert Rock's PSD application (p. 3-4) stating that these emission rates are based on 95% capacity factor.

Public Health Discussion

The public health sections of the DEIS identify the health risks from ground-level ozone and indicate that ozone may be a potential concern in the Four Corners area because current ozone levels are approaching federal and state air quality standards (p. 4-189). The DEIS concludes that plant emissions of 3,325 tpy of nitrogen oxides (NOx) and 166 tpy of volatile organic compounds (VOCs) (p. 4-11) would not cause or contribute to significant ozone formation in the region (p. 4-190). This conclusion does not consider the emissions from vehicle use (construction vehicles will emit 199 tpy of VOCs and 1,314 tpy NOx - p. 4-9).

Additionally, the DEIS states that review of the available literature has not found that the communities in the vicinity of the proposed plant have higher susceptibility to particulate matter emissions than other populations in the United States because asthma rates in New Mexico are

not significantly different than for other populations in the United States (p. 4-192). We note that a study by the U.S. Geological Service (USGS)[3] noted that people living in Shiprock are more than five times as likely to be seen at the local Indian Health Service clinic for respiratory complaints as are residents of other nearby communities. The study's interim results attribute this to atmospheric thermal inversions in Shiprock and the use of indoor coal-burning stoves.

> *Recommendation:* Amend the discussion of incremental health risk from ozone to include vehicle use contributions. Ensure the public health discussion includes the latest scientific information about air pollution and public health. Update the discussion of susceptible subpopulations to consider the USGS study interim results.

ENVIRONMENTAL JUSTICE

Access to Power

The Desert Rock Energy Project Scoping Report (July 2005) identified the frustration of some in the local community who live in proximity to large power plants but do not have electricity in their own homes. The DEIS identifies the financial benefits of the project to the government of the Navajo Nation, including the benefits of local job creation. However, the impact of the lack of access to power expressed by local individuals may still occur for affected community members, especially those not employed by the project.

Power distribution for the Navajo Nation occurs through the Navajo Tribal Utility Authority (NTUA), and the DEIS indicates that the NTUA has expressed interest in purchasing 50 MW of power from the project (p. 1-11). However, because many Navajo families reside in sparsely populated areas (p. 3-141), it has been costly for NTUA to connect these homes to the electric utility grid. The DEIS states that 75 people live within 7 miles of the power plant site, and there are 4 residences within 3 miles of the plant site. Burnham is the nearest town with 50 families, 10 miles southeast of the site (p. 3-185). The DEIS does not identify how many of these individuals have access to electrical power and it does not identify any mitigation for this environmental justice impact.

> *Recommendation:* EPA has encouraged the BIA to work with the Tribe and applicant to explore options that could facilitate local access to power within the context of this project, for mitigation of this environmental justice impact. Mitigation could include assistance to the affected community for residential solar, wind or other electrical generation projects, or assistance to NTUA for local connections to these affected residents. To the extent that existing diesel generators or coal-burning stoves are removed from operation, this mitigation could also have air quality and public health benefits.

Relocation Assistance

The DEIS states that homesites, grazing permits, and customary use areas located on the BHP Navajo Coal Company (BNCC) lease area would be compensated for the value of disrupted livestock production and relocation or replacement of improvements to their grazing area or homesite (p. 4-102). Agreements with homesite users on the mine area are scheduled to be

[3] Fact Sheet available: http://pubs.usgs.gov/fs/2006/3094/fs2006-3094_eng.pdf

entered into when the residential areas are to be fenced for mining and closed to grazing (p. 4-102). These agreements would comply with 13 Navajo Tribal Code Section 1401-1403, which requires compensation for all surface use, and would be reviewed by the Navajo Land Administration and BIA, but no other details are provided. Additionally, this discussion is presented in relation to the BNCC lease area, but no discussion is provided regarding compensation for grazing permit holders on other project site locations. For example, the DEIS indicates that there are 6 grazing permit holders for the power plant site and it is not clear how these displaced users will be assisted to mitigate their impact.

> *Recommendation:* In the FEIS, provide additional relocation information or include the applicable sections of the Navajo Tribal Code in an appendix to the FEIS. Because relocations will affect minority or low-income populations, EPA recommends that relocation and compensation services include (1) translation services, (2) assistance in locating and obtaining a replacement property (residential, grazing operation, etc.), (3) transportation to visit potential replacement housing, (4) assistance in packing and moving, (5) relocation specialists to work with the population, and, (6) if requested by the resident, assistance with moving or dismantling culturally significant structures (e.g. sweathouses, hogans).

Groundwater Use and Agriculture

During project scoping, local farmers expressed concerns regarding competition for water in a semi-arid environment and wondered if the project will affect the quality or quantity of water available to them (p. 1-13). It is possible that groundwater diversions could affect flow to existing wells, seeps or springs (p. 4-40). Because of this concern, BIA is identifying springs, seeps and wells in the study area to develop a baseline of these features so the potential impact of groundwater withdrawal can be predicted and assessed over time (p. 3-35). The DEIS states that the results of the seep and springs monitoring project will be included in the FEIS (p. 3-23).

We commend BIA for including the seeps and springs monitoring project. This is important because the local community has been identified as having environmental justice concerns, and surface water or shallow groundwater used for traditional purposes could have traditional cultural significance to tribal members (p. 3-148). The DEIS acknowledges that the potential impacts from reduction in groundwater flow would be "particularly damaging to the rural and often low-income residents of the region" (p. 4-40); however, the significance criteria do not appear to reflect this fact. For example, most of the wells within the project area are stock-watering wells. Those without windmills have pumping costs. The DEIS impact assessment assigned impact levels based on the percent increase in pumping costs, and determined that a 100% increase or less would be a minor impact, a 100-200% annual increase would be a moderate impact, and a greater than 200% increase in annual pumping costs would constitute a major impact (p. 4-41). The methodology also assessed a water quality impact that resulted in exceedance of stock watering water quality criteria to be minor.

> *Recommendations:* The FEIS should contain the results of the seeps and springs monitoring project. The results should be discussed in terms of potential impacts to shallow groundwater used for traditional purposes and the effects this would have on a community with environmental justice concerns.

In the FEIS, describe why the significance criteria are appropriate and how they reflect input received during scoping. If the significance criteria are modified based on public comment on the DEIS, this should be reflected in the FEIS

MISCELLANEOUS COMMENTS

- The DEIS states that the Desert Rock Energy Company would develop a plant-specific environmental management program in conformance with the ISO 14001 (Environmental Management Systems (EMS) and that BNCC would maintain current ISO 14001 certification (p. 4-4). EPA recommends that all ongoing monitoring obligations that will be assumed by the Desert Rock Energy Company and BHP Billiton be integrated into the company's EMS, including groundwater monitoring obligations and obligations under the air mitigation agreement.
- In the discussion of socioeconomic impacts, the DEIS states that no employees involved in the construction of the project would move into the areas on other than a transient basis for the construction phase, therefore there would be no effect on the permanent resident population or the housing inventory in the local area" (p. 4-137). The FEIS should provide the basis for this conclusion.
- Regarding invasive species, the DEIS states that an inventory of noxious weeds has not been conducted in the study area but that two New Mexico Class C weeds are common in ephemeral waterways and in the San Juan River floodplain in the study area (p. 3-60). It also states that in areas of severe infestations, management plans *should* be designed to contain the infestation and prevent any further spread, and that invasive species would be controlled in coordination with Navajo Nation or OSM (p. 4-3). No other information is provided regarding this coordination, such as how it would occur, what commitments would be made and who would be responsible for eradication and ongoing management, and it is not included in any mitigation measures. The FEIS should include more details of this strategy and commitments to action in the mitigation measures for biological resources.
- Page 2-14 should read, "In 2004, EPA commissioned a study from the National Academy of Sciences (NAS) addressing minefilling of CCBs.

Additional Groundwater Comments /Technical Considerations:

- Sewage generated from project facilities will be discharged to the shallow subsurface in an engineered drainfield (p. 4-106). This project element is not included in the list of facilities on page 2-4, nor is it on the general arrangement diagram in Figure 2-2. Please note that, pursuant to 40 CFR 144.81(9), drainfields, or septic system wells, that have the capacity to dispose of effluent from 20 or more people per day are regulated under the Safe Drinking Water Act's Underground Injection Control (UIC) Program as Class V injection wells. Per 40 CFR 144.27, EPA may require the owner or operator of any well authorized by rule to submit information deemed necessary by EPA to determine whether a well may be endangering an "underground source of drinking water" (USDW). EPA could require that all design plans (including percolation test results and depth of groundwater) be completed by a registered professional engineer and submitted to EPA

for review prior to any construction activities. If deemed necessary to protect public health and/or ground water quality, EPA may require that the project proponent obtain a Class V UIC operating permit (40 C.F.R. § 144.25). Please include this regulatory requirement in the FEIS.

- The seep and springs monitoring project includes constituent testing to determine whether the water "footprints" of these features corresponds with that of the Morrison aquifer. A close correspondence would indicate a closer hydrological connection which could indicate a greater potential for adverse impact to these features. The Water Quality Comparison Report of January 31, 2007 and the DEIS, page 4-45 states that there is no conclusive similarity or dissimilarity with respect to geochemical footprints of either of the Morrison aquifer wells and artesian wells (flowing) in the Sanostee Chapter. However, the geochemical comparisons of samples from the sources do appear to show a similarity based on inspection of the stiff diagrams in Figure 3 of the Water Quality Comparison Report. It would be more accurate to say that the two water sources are similar, but not identical in geochemical characteristics. Further sampling from test wells at the proposed water well field B that is taking place now will assist in determining classification of the water supply and any geochemical footprint between the Morrison Aquifer and seep and springs (p. ES-9).
- On page ES-8 and 4-43, the DEIS states that the 10-foot contour overlaps one well. The Miller Brooks Final Well Impact Report – Revision No. 2 states that the 10-foot contour overlaps two monitoring wells (wells 71 and 72) registered with the New Mexico Office of the State Engineer. The depths are reported to be 593 feet in both wells, which is approximately 4,000 feet above the Morrison aquifer at that location. Please clarify or correct this in the FEIS.
- In the discussion of water quality in the mine area's Pictured Cliffs Sandstone and Fruitland Formation (p. 3-46), delete the last sentence in the third paragraph that states: "For these reasons, the classification of the Pictured Cliffs and Fruitland Formation as aquifers is questionable." This statement is not consistent with the preceding sentence in which it says that "Local use does occur in areas closer to the outcrop…" and the descriptions of the hydrology of those formations provided in the W. J. Stone, 1983 reference titled "Hydrologic Report 6". Wherever geologic units contain groundwater containing less than 10,000 ppm TDS and are capable of yielding useable quantities of water, they are considered USDWs and are protected under the Safe Drinking Water Act.
- USDW should be added to the list of (potential) drinking water sources protected by the SDWA in the "Water Quality Regulation" section on page 3-49. USDWs are protected whether used as a current source of drinking water or not (see 40 CFR 144.3 for full definition of USDWs) and may need extensive treatment to improve water quality in order to use as a source of drinking water.
- Section 3.2.4.6.2, Groundwater, page 3-45, No. 8 Coal Seam: No thickness of the seam is given and the flow velocities range is given as a single value.
- No. 7 Coal Seam: The direction of groundwater flow is not given as it is for the other coal seams; nor are the flow gradients and velocity given.

- Water Well Field, page 3-47: The depth to the top of the Morrison Formation at the northern end of Well Field B is approximately 4,600 feet below ground surface according to the structure contour map in Figure 8 of the Final Well Impact Report, Revision No. 1 dated October 5, 2006, labeled "Approximate Depth to Top of the Morrison Formation", not 2,500 feet as stated in the last sentence of this section of the DEIS. The 2,500-foot depth refers to Figure 5 in the earlier version of the well impact report dated September 23, 2005, which is included in Appendix B. All the figures from the October 5, 2006 report were omitted from Appendix B and should be included.
- Regional Geologic Setting, Menefee Formation, page 3-96: Insert "locally" in the last sentence as follows; "It is locally an aquifer……." Regionally, in the San Juan Basin, the Menefee is much too high in salinity to be acceptable for livestock and domestic use.
- Section 4.2.2.2.3, Alternative C: Replace "measurable" with "significant" in the first sentence since there is a measurable difference between the quantity effects of Alternative B compared to Alternative C. It would be more accurate to say that the water demand and well field comparisons are similar, not the same as stated in the third sentence.
- Cumulative Impacts on Groundwater, page 5-19: The DEIS states that "there is no suggestion that any foreseeable actions in the region would add to a cumulative adverse impact on groundwater use from the proposed project". However, Table 5-1 identifies planned projects that will utilize groundwater, including the 100-acre proposed housing project in the Sanostee Chapter. It should also be stated that the expectation of no adverse impacts to wells for Alternatives B and C is based on computer modeling that will be subject to re-evaluation and adjustment, based on the results of aquifer testing and logging in the test and monitor wells drilled at the proposed project well field.