"David Garbett"
<david@suwa.org>
07/14/2011 07:40 PM

To <UT_Comments@blm.gov>
cc
bcc
Subject Exhibits 3 to Comments on November 2011 Oil and Gas Lease Sale

Mr. Ogaard,

Please find attached to this email exhibits that accompany comments that will be submitted by the Southern Utah Wilderness Alliance tomorrow. This is the third of numerous emails to follow with attachments.

Thank you,

David Garbett
Staff Attorney
Southern Utah Wilderness Alliance
425 E 100 S
Salt Lake City, UT 84111
Telephone: 801.428.3992
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EPA PM2.5 Letter.pdf


EPA Scoping Comments Greater Chapita Wells Oct 16 2009.pdf


Gasco Draft EIS Excerpts.pdf


Letter from Martin to Palma.pdf

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

SEP 0 3 2009

Ref: 8P-AR

David Garbett
Staff Attorney
Southern Utah Wilderness Alliance
425 E 100 S
Salt Lake City, UT 84111

RE: "$PM_{2.5}$ Monitor in Vernal, Utah", your August 6, 2009 letter

Dear Mr. Garbett:

Thank you for your August 6, 2009 letter to Carol Rushin, Acting Regional Administrator for EPA Region 8, regarding ambient air monitoring in Vernal and the greater Uintah Basin. Ms. Rushin has asked me to address your letter in detail.

You expressed three specific concerns in your letter, which we address below.

1) First, you asked why the Utah Division of Air Quality (DAQ) was permitted to remove a monitor in Vernal after it recorded high $PM_{2.5}$ concentrations in 2007. 40 CFR Part 58, Appendix D, Section 4.7 requires $PM_{2.5}$ monitoring in any Metropolitan Statistical Area (MSA) with a population of more than 500,000 people. That section also requires monitoring in any MSA with more than 50,000 people if monitors in that MSA have a 3-year $PM_{2.5}$ design value greater than 85% of the NAAQS (that is, a design value of 30 $\mu g/m^3$ or greater). Since Vernal has a population of only 8,696, and Uintah County as a whole has a total population of only 29,885 (U. S. Census Bureau 2008 population estimates), the Code of Federal Regulations contains no requirement mandating monitoring in Vernal or the Uintah Basin. DAQ staff have explained that the monitoring the State conducted in Vernal in 2006, 2007, and 2008 was done exclusively with State funds, and so the monitoring did not need to comply with the monitoring requirements of 40 CFR Part 58.

We do want to note that EPA Region 8 funded the Utah DAQ to conduct limited survey ambient air monitoring in 2009 aimed at better understanding the nature of the $PM_{2.5}$ problem in Vernal. The data collected in 2009 is relevant to your second question. Also, related to your third question, two industry funded ambient air monitors located within the Uintah and Ouray Reservation will soon be collecting additional $PM_{2.5}$ data.

2) Your second question was whether the Utah DAQ had conducted speciation analysis of

$PM_{2.5}$ samples from Vernal. In 2008, DAQ collected $PM_{2.5}$ samples in February and March. The 2008 data included one exceedance of the $PM_{2.5}$ NAAQS on February 19, 2008. The Utah DAQ conducted chemical speciation analysis of this sample, and stated in its "Uintah Basin Special Study" monitoring plan from January 2009 that:

> "The levels of ammonia were non-detected on the passive ammonia samplers. The low molecular weight hydrocarbons were higher than samples from the Wasatch Front. The organic and elemental carbon fraction of the filters collected on the day with the highest $PM_{2.5}$ concentration were double and the concentration of Nitrate was about half of that observed from Wasatch Front filters."

We have not seen further data from 2008 apart from the statements included in this January 2009 monitoring plan.

In order to gain more information on $PM_{2.5}$ air quality in Vernal, EPA Region 8 agreed to provide funding to Utah under the annual EPA $PM_{2.5}$ monitoring grant to conduct episodic monitoring during wintertime inversions in the 1st quarter of 2009 using non-regulatory monitors. Utah monitored $PM_{2.5}$ in Vernal and Roosevelt from January 21, 2009 through March 5, 2009. Of the 30 days in that period on which Utah collected samples in each community, exceedances of the 24-hour $PM_{2.5}$ standard were recorded on three days in Roosevelt and four days in Vernal. Concentrations in Vernal were as high as 60.9 $\mu g/m^3$ while those in Roosevelt were as high as 42.4 $\mu g/m^3$.

Speciation analysis was done on the samples collected in 2009 that were above the level of the NAAQS. The Utah DAQ's draft project report describes the speciation analysis. However, the DAQ has noted that because of the small study size and uncertainties in the laboratory analysis, more data is needed in order to make final conclusions.

With the above qualifications, the DAQ does state in its draft project report:

> "The analysis of the filter data for the filters with mass concentrations greater than 35 $\mu g/m^3$ results in more unexplained mass than typically observed compared to previous sampling conducted along the Wasatch Front. Blank concentrations for the Teflon filter do not substantially affect the mass calculations but without the carbon fraction the unexplained mass is quite large. Prior sampling and analysis of filters from the Uintah Basin has attributed a large fraction of the total mass to the elemental carbon. The inversion period chemical profile for the Uintah Basin is not consistent with profiles observed along the urbanized Wasatch Front or in Cache Valley where elemental carbon (or "unexplained mass" from the Teflon filters) represents a smaller portion of the chemical speciation."

3) With regard to future data, EPA Region 8 can provide you a copy of the Utah DAQ final report on monitoring done in the Uintah Basin in 2009 once it is released by the Utah DAQ, as well as a copy of the January 2009 monitoring plan. You may also be able to obtain these documents directly from the Utah DAQ. In addition, ambient $PM_{2.5}$ data will soon be collected

by two industry funded monitors located on the Uintah and Ouray Indian Reservation. This $PM_{2.5}$ data will be loaded into AQS, and will be accessible through public portals to ambient air monitoring data (http://www.epa.gov/air/data/ for example) or directly from EPA Region 8 upon request. This continuous (hourly), but non-regulatory $PM_{2.5}$ monitoring, is currently expected to begin at the two sites in the Uintah Basin in October 2009. The data will be collected with Federal Equivalent Method (FEM) $PM_{2.5}$ monitors.

As a follow up on the $PM_{2.5}$ data collection activities over the past four years, and in light of the air quality issues identified, EPA Region 8 will be discussing Uintah Basin air quality and next steps with the Utah DAQ in the near future.

I hope that the information provided is helpful. If you have further questions, you may contact Richard Payton of my staff at (303) 312-6439.

Sincerely,

Stephen S. Tuber
Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

cc: Cheryl Heying, UT DAQ

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October 16, 2009

Ref: EPR-N

Bill Stringer, Bureau of Land Management
Vernal Field Office
170 South 500 East
Vernal, Utah 84078

Re: Scoping Comments on the Greater Chapita Wells Natural Gas Infill Project Environmental Impact Statement, Uintah County, Utah

Dear Mr. Stringer:

The U.S. Environmental Protection Agency Region 8 (EPA) has reviewed the Bureau of Land Management's (BLM) scoping notice for the proposed Greater Chapita Wells Natural Gas Infill Project Area (GCWPA) by EOG Resources, Inc. (EOG). Consistent with our authority under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, we respond with the following comments for your consideration as you proceed with the Draft Environmental Impact Statement (EIS).

Project Background

EOG proposes to drill up to 7,028 new infill natural gas wells in the GCWPA in Uintah County, Utah. The project area is 42,027 acres in size, of which 78% are federal lands administered by BLM, 16% are Northern Ute Tribal and allotted lands, 5% are state lands, and 1% are privately-owned lands. EOG plans to drill at a rate of 469 infill wells per year for approximately 15 years, resulting in construction of 700 new well pads and access roads and expansion of approximately 979 existing or previously authorized well pads. Under the proposed plan, each 640 acre section could contain 32 well pads on 20-acre spacing. EOG would directionally drill from one to six wells on each well pad to produce bottom hole locations at 5 to 10-acre spacing. The project would use both existing and new produced water disposal and treatment facilities, produced water pipelines, natural gas pipelines, and gas compression facilities.

Key Issues Identified by EPA

Based on our current understanding of the proposed project and the area, EPA has identified five key issues that will need to be thoroughly analyzed and addressed in this EIS:

(1) Regional air quality with an emphasis on regional $PM_{2.5}$ and ozone;
(2) Dust suppression on unpaved roads;
(3) Wetlands, streams, and riparian land protection;
(4) Alternatives for produced water management; and
(5) Analysis of potential impacts of the chemicals used for hydraulic fracturing.

Additional comments on other important environmental issues, including cumulative impacts, are provided in the enclosed "Detailed Comments."

(1) Regional Air Quality:

Given the declining air quality trends in the Uinta Basin area, air quality analysis will be particularly important in order to manage the direct impacts of Chapita Wells when combined with other existing and reasonably foreseeable development within the basin. EPA is especially concerned with measured ozone and $PM_{2.5}$ concentrations in the surrounding area. Ozone concentrations measured at an air monitoring site located in eastern Utah are currently approaching the National Ambient Air Quality Standard (NAAQS)[1]. $PM_{2.5}$ concentrations over the 24-hour NAAQS have been measured by the Utah Division of Air Quality in the Vernal, Utah area. The NEPA analysis for this project will need to carefully and thoroughly evaluate the proposed project's potential contribution to air quality in the area. The Draft EIS should analyze and disclose the project's direct, indirect, and cumulative impacts on all criteria pollutants to assure that the region remains under the NAAQS.

In 2007, BLM arranged for a regional numerical air quality model to be undertaken pursuant to a Memorandum of Understanding (MOU) between the BLM and the Independent Petroleum Association of the Mountain States (IPAMS). This substantial 2-year effort is known as the Uinta Basin Air Quality Study (UBAQS). As you are aware, the participating agencies, including EPA, the National Park Service, and the Forest Service, recognized that there were important shortcomings in the UBAQS modeling protocols that will need to be improved to meet the provisions of NEPA. Therefore we call upon the BLM to conduct modeling that will amend those shortcomings to be completed as part of the Chapita Wells EIS analysis. EPA's detailed technical concerns with the work so far performed for the UBAQS are provided in the enclosed Detailed Comments.

The revised modeling analysis needed for this EIS should also address and disclose the project's potential effect on Prevention of Significant Deterioration increments, as well as on air quality-related values in nearby Class II areas (e.g., visibility, acid deposition). Based on our recent discussions with the Utah Department of Air Quality, it now appears that the relatively high concentrations of $PM_{2.5}$ observed at the Vernal monitor could be a result of secondary particulate formation due to chemical reactions of nitrogen or organic compounds; this issue should be addressed in the air quality analysis as well. Given the large scale of the proposed action, the Draft EIS should include specific and detailed mitigation measures to reduce emissions to assure compliance with the NAAQS.

To accomplish this major endeavor, we recommend BLM coordinate an air quality workgroup involving the Utah Department of Air Quality, the Northern Ute Tribe, the Forest Service, the National Park Service, and EPA to guide and direct this vitally important regional air quality modeling effort.

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[1] Canyonlands NPS, 3-year average (2006-2008) 4th maximum 8-hour average is currently 71 ppb, http://www.epa.gov/oar/data/

(2) Dust Suppression from Unpaved Roads and Disturbed Areas:

Dust particulates from construction, vehicle travel on unpaved roads, and ongoing oil and gas operations are an important concern. It is vital to the operator's interests to assure that dust does not generate unsafe traveling conditions on these roads. The airborne dust can also be dangerous to asthma sufferers. In addition, long distance transport of fugitive dust out of the basin into the Uinta Mountains may contribute to dust on snow events in that area. Dust on snow can accelerate the snow melt, resulting in reduction in stream flow during the later part of the season. We suggest this EIS evaluate the direct and indirect contribution to dust on snow in the Uinta Mountains. (See, for example, research by Dr. Thomas Painter and others at the University of Utah's Snow Optics Laboratory, http://www.geog.utah.edu/faculty/index.html?id=53.) Every effort should be made by BLM to assure that the operator avoids vehicle use off highway and assure adequate road dust abatement, either by dust suppression or road surface improvements. EPA recommends the Draft EIS include detailed plans for dust control for the project and its related roads. The dust control plans should include dust suppression, inspection, and documentation of an accountable process.

(3) Wetlands, Streams and Riparian Habitat Protection:

The southwest corner of the GCWPA is adjacent to the White River, which has important riparian and wetland habitat. We suggest the Draft EIS provide in detail those management practices that would be obligated by the operators for all phases and actions involved in drilling and production. It is also important that the EIS include a detailed inventory and mapping of wetland resources within the area being proposed for drilling. This map should include both wetlands that are regulated under Section 404 of the Clean Water Act and wetlands that are determined to be non-jurisdictional and protected under Executive Order (EO) 11990 – Protection of Wetlands (May 24, 1977). EO 11990 applies to all wetlands located on Federal lands, which constitute a majority of the GCWPA. It directs Federal Agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. As the project proceeds, EPA encourages the BLM to require delineation and marking of perennial seeps, springs and wetlands on maps and on the ground before development so industry employees will be able to avoid them. We also recommend establishment of 100-foot buffer zones to avoid adverse impacts to streams, wetlands, and riparian areas.

(4) Produced Water Management Alternatives Analysis:

Under the proposed action, produced water from the gas wells may be stored in a tank on the well pad and transported by truck to an approved disposal site. Produced water from some of these natural gas wells may also be transported by pipeline to existing central facilities. The company may choose to either manage this produced water by disposal in an injection well or by evaporation in surface impoundments. EPA recommends the EIS include detail of the environmental risks of these alternative means of produced water management. In addition, we suggest that consideration be given to transporting this produced water to another Uinta Basin energy company for use in water flood operations. Water flood operations are currently ongoing in the Uinta Basin, typically located west of the Green River, and are using high quality culinary water for water flood purposes. There could be important environmental advantages of using the

produced water for water flood recovery in lieu of culinary water, as well as avoiding surface evaporation pit or well disposal. EPA further recommends the Draft EIS evaluate installation of a liquid gathering system. Liquid gathering systems can significantly reduce impacts to air quality and wildlife and have been successfully implemented in oil and gas fields.

(5) Impact of the Chemicals Used for Hydraulic Fracturing:

The EIS should describe any useable groundwater resources within the project area. We understand there is very limited use of ground water in the area. Nevertheless, we suggest this EIS identify if there are existing domestic wells within the Birds Nest and Douglas Creek aquifers within the Green River Formation or wells within the shallow alluvium along the White River within the GCWPA. This evaluation should include groundwater quality and quantity of all aquifers, recharge zones, any laterally extensive confining units or the lack there of, and zones of fracturing or faulting that extend to depth that could allow migration of fluids or gas during well construction or hydraulic fracturing. The use of hydraulic fracturing fluids is likely to recover natural gas in these formations. An analysis of the management of the fracturing fluids should be provided including the toxicity and fate of these fluids with a focus on avoiding surface spills or leaks of these fluids from the reserve pits. Some hydraulic fracturing compounds contain materials that could be harmful if released. This EIS should evaluate mitigation measures to protect surface and ground water sources, even if such protection is considered outside of the jurisdiction of the BLM. Mitigation measures (e.g., backflow preventers, adequate casing, pit lining) should be developed and implemented for this project to protect surface and ground water zones.

EPA would like to discuss with BLM the air and water quality impact analyses and mitigation measures planned for this proposed action. By working together early in the EIS process, we hope to be able to assist BLM with the development of an analysis which will adequately address potential air quality and water quality impacts and identify appropriate mitigation measures. If you have any questions about our comments, please contact me at 303-312-6004, or you may contact Molly Brodin of my staff at 303-312-6577.

Sincerely,

original signed by Joyel Dhieux, acting for:

/s/ Larry Svoboda
Director, NEPA Program
Office of Ecosystems Protection and Remediation

Enclosure: EPA's Detailed Scoping Comments

cc: Brock Labaren, UDEQ, Salt Lake City
Maxine Natchees, Uintah and Ouray Tribe, Ft. Duchesne
Chris Shaver, National Park Service, Denver
Jeff Sorkin, Forest Service, Denver

Detailed Comments by the Region 8 Environmental Protection Agency
Scoping for the Draft Environmental Impact Statement
Greater Chapita Wells Gas Infill Project

Jurisdiction

It appears that the proposed GCWPA is located on the southeastern portion of the Uintah and Ouray Reservation, which is known as the Uncompahgre Reservation. The Tenth Circuit Court of Appeals has determined that all lands within the Uncompahgre Reservation are Indian country as defined at 18 U.S.C. Section 1151. This is true regardless of the surface ownership of the land (thus, Tribal, State, private and federal lands in this area are Indian country). Please confirm that the proposed project is located within the Uncompahgre Reservation. Assuming that the proposed project is located on the Uncompahgre Reservation, we recommend that BLM offer to consult with the Ute Indian Tribe regarding this and other projects on the Reservation, if it has not already done so.

EPA directly implements most federal environmental programs, including the Clean Water Act (CWA), Clean Air Act (CAA), and Safe Drinking Water Act (SDWA), on Indian country lands in Utah. EPA has not approved the Ute Indian Tribe or the State of Utah to implement federal environmental programs in Indian country. Thus, assuming the project is located within the Uncompahgre Reservation, EPA is the appropriate governmental authority to issue federal environmental permits, conduct inspections, take enforcement actions, and take any other actions pursuant to our statutes and authorities.

Depending upon how the GCWPA development proceeds regarding additional gas compression and other facilities subject to Clean Air Act permits, this project may be affected by a clarification of EPA's regulatory policy under the Clean Air Act. A September 22, 2009, memorandum from Assistant Administrator Gina McCarthy, entitled "Withdrawal of Source Determination for Oil and Gas Industries"[2] reiterates the importance of the three regulatory criteria for identifying emissions activities that belong to the same industrial grouping, are located on contiguous or adjacent properties, and are under the control of the same person or persons under common control. This September 2009 memo withdraws the "Wehrum Memo" of 2007 and states that "permitting authorities should ... rely foremost on the three regulatory criteria for identifying emission activities that belong to the same 'building', 'structure', 'facility' or 'installation'" to make case-by-case source determination decisions.

Water Quality Impacts

The EPA recommends the Draft EIS include an accurate description of surface and groundwater resources, as both are essential to understanding the potential effects of any

[2] Withdrawal of Source Determinations for Oil and Gas Industries, EPA memo by Assistant Administrator Gina McCarthy, September 22, 2009, http://www.epa.gov/Region7/programs/artd/air/nsr/nsrmemos/oilgaswithdrawal.pdf.

management alternative. The Draft EIS should clearly describe water bodies within the analysis area which may be impacted by development activities. Identifying affected watersheds on maps of the various alternatives helps convey their relationship with project activities.

The EIS should analyze potential impacts to surface water, groundwater, and existing and potential drinking water. Impacts to consider include: water quality; water quantity; and any adverse change to current water quality of the rivers, streams, and their tributaries. Best Management Practices (BMPs) and mitigation measures should be used to protect these resources and designed into the alternatives under consideration.

The EPA also recommends the EIS disclose the extent to which aquatic habitat, including season and spawning habitats, stream bank vegetation, and riparian habitats, could be impaired by potential activities; this should include effects on surface and subsurface water quality and quantity, aquatic biota, stream structure and channel stability, and streambed substrate. Particular attention should be directed at evaluating and disclosing the cumulative effects of increased levels of erosion and sedimentation. Water quality parameters such as conductivity, dissolved and suspended solids, metals, pH, temperature, dissolved oxygen and physical aquatic habitat parameters may also be important monitoring indicators for determining stream or lake impairment or stress, as well as its sensitivity to further impacts. Existing water quality standards applicable to the affected water bodies should be presented to provide a basis for determining whether existing uses will be protected and water quality standards met.

Cumulative Impacts

The EIS should analyze impacts according to airsheds and watersheds, rather than political boundaries. The assessment should include the cumulative impact of reasonably foreseeable energy development, energy-related activities and other activities that may affect air quality, water quality, and other resources of concern in the area. The purpose of a cumulative impacts analysis is to assess the incremental impacts on each resource of concern due to connected and unconnected actions that take place in a geographic area over time (i.e., past, present, and future) no matter which entity (public or private) undertakes the actions. Cumulative impact analysis aids in identifying the level of significance of those impacts on a particular resource and the appropriate type and level of mitigation required to offset the current proposal's contribution to these impacts.

Greenhouse Gas Emissions

EPA recommends the Draft EIS include an analysis and disclosure of greenhouse gas emissions and climate change. While methane represents only 8 percent of the U.S. greenhouse gas emissions, it is 23 times more effective as a greenhouse gas than carbon dioxide. Oil and natural gas systems are the biggest contributor to methane emissions in the U.S., accounting for 26 percent of the total (EPA's Natural Gas Star Program and the U.S. Emissions Inventory 2007: Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005). For the Draft EIS, we suggest a four step approach:

1. Consider the future needs and capacity of the proposed action to adapt to projected climate change effects.

2. Characterize and quantify the expected annual cumulative emissions attributable to the pipeline, and use CO2-equivalent as a metric for comparing the different types of greenhouse gases (GHGs) emitted.

3. Briefly discuss the link between GHGs and climate change, and the potential impacts of climate change.

4. Discuss potential means to mitigate project-related emissions. One voluntary mitigation effort targeted at the oil and gas industry is EPA's GasSTAR program. Through the program, EPA technical experts help identify and promote the implementation of cost-effective technologies and practices to reduce GHG emissions.

Hazardous Air Pollutants

Hazardous air pollutants may be emitted during the drilling, completion and production of the wells. EPA recommends the EIS analyze and disclose the potential impacts on concentrations of hazardous air pollutants, including formaldehyde, benzene, toluene, ethyl benzene, xylene, n-hexane, and formaldehyde.

Additional Air Quality Comments

(1) Technical concerns regarding the Uinta Basin Air Quality Study (UBAQS)

As noted in previous correspondence between EPA Region 8 and your offices, the UBAQS modeling effort provided an important update to regional air emissions based on the Western Regional Air Program's Phase III inventory. This Phase III inventory is an important data set providing volatile organic compound (VOC) emission rates largely consistent with actual emission rates in the basin today. However, the BLM noted as part of the MOU with IPAMS, that the UBAQS effort was not an analysis undertaken pursuant to provisions of NEPA. NEPA requires the lead agency to conduct an analysis of past, present, and reasonably foreseeable development regardless of what entity is approving the action. In this area, both the Northern Ute Tribe and the State of Utah are approving other oil and gas development that will contribute air emissions within the basin. The participating agencies, including EPA, the National Park Service, and the Forest Service, recognized that there were important shortcomings in the UBAQS modeling protocols that will need to be improved to meet the provisions of NEPA.

EPA's primary concerns with this study include:

1) The expected PM_{10} (2006 and 2012), $PM_{2.5}$ (2006 and 2012), and O_3 (2012 only) values could be over the NAAQS, but there is little to no discussion of what is causing such impacts.

2) There is a lack of explanation for the poor particulate matter performance evaluation results. The inability of the model to predict the high $PM_{2.5}$ events in Vernal is of particular concern given the proximity to proposed major oil and gas developments.

3) The purpose of UBAQS was not clearly defined. The output was for the years 2006 and 2012 only, while for NEPA purposes analysis of the cumulative impacts should be based on the maximum emission year during the life of the project of about 30 years.

The 2009 Uinta Basin Air Quality Study (UBAQS) presents air quality impact results from emission sources located primarily in the Uinta Basin of eastern Utah using the CMAQ model conducted for the years 2006 and 2012. We believe this is one of the first attempts at predicting ozone with associated cumulative emissions from the oil and gas developments in Eastern Utah and Western Colorado. Our detailed technical comments on UBAQS follow.

Ozone:

The predicted 8-hour ozone levels in the 2006 modeling year achieved the NAAQS across the entire Uinta basin. When modeled using 2012 emissions (and 2006 meteorology) ozone NAAQS exceedences were predicted along the UT-CO border in Uinta and Rio Blanco Counties (page 4-69). The text indicates that these modeled exceedences are likely "just an artifact due to conservatisms in the model." The conservative factors cited include: (1) the CMAQ performance evaluation showed that the model estimated fourth highest ozone concentrations that were greater than observed at most ozone monitoring sites; and (2) the emission inventory used in 2012 overstated on-road mobile source activity that would result in overstated 2012 ozone estimates.

1. Because model performance overstated concentrations at some monitoring sites does not necessarily mean that the model is over predicting at the unmonitored locations where exceedances are predicted. In fact, CAMx (a grid-type model that is similar to CMAQ) under predicted ozone impacts related to Upper Green River Basin oil and gas development in the Hiawatha Model Performance Evaluation Study (2009). There is no similar ozone monitoring data downwind of major oil and gas source regions in the current study to adequately test the model for a potentially similar scenario in the Uinta /Piceance Basins. Moreover, the 12 km grid resolution used in this study would tend to make the UBAQS modeling even less likely to replicate ozone impacts from this source category than the 4 km grid resolution used in other NEPA project specific actions.

2. While it is possible that on road emission factors used in the model are high, off-road mobile source activity from oil and gas development have historically been understated by large amounts. Furthermore, development activity beyond 2012 is likely to increase, which will increase emissions and impacts to levels even higher than those projected in this study. EPA believes that these modeled exceedances in Uinta and Rio Blanco counties should be taken seriously in considering the modeling results. The difference in predicted ozone concentrations from 2006 to 2012 for this same area is greater

than 3.0 ppb. We believe this to be a substantial increase in ozone over a relatively short period of time and warrants additional review and analysis.

Ozone Performance Evaluation:

Page 4-45. The text notes that EPA guidance for ozone attainment demonstration modeling stresses that the Unmonitored Area Analysis has more uncertainties than the projections at the monitors and it should be treated separately from the monitor based attainment demonstration test (EPA, 2007). While it is expected that additional emission controls will likely be needed to eliminate predicted exceedances of the ozone NAAQS in the monitor based attainment test, the same requirements may not be appropriate in unmonitored areas. These comments are taken out of context. The referenced EPA guidance is intended for use in determining emission reduction requirements in well-monitored non attainment areas. This is not the situation in Uinta-Piceance Basin as monitoring data are extremely sparse. The area is experiencing rapid oil and gas development and ozone precursor emissions are increasing, but the area is currently attainment for the ozone NAAQS. While the unmonitored area analysis and the absolute predictions from the grid models have uncertainties, they are the only methodologies available to predict the potential ozone impact from these developments. These modeling tools are essential to determine air quality impacts for action subject to NEPA analysis, especially given the scale of the proposed action in the Greater Chapita Wells area.

$PM_{2.5}$:

Page 3-168 of the UBAQS text notes that CMAQ exhibited overall PM performance comparable to that of the Regional Planning Organization's (RPO's) 2002 CMAQ simulations that were judged acceptable for use in regional haze State Implementation Plans (SIPs). The acceptance of CMAQ for use in regional haze SIPs has no relationship to the potential use of CMAQ in project-specific NEPA analyses. In the regional haze SIP context, CMAQ predictions are used in a relative sense to determine future changes in measured visibility values at IMPROVE monitoring sites. In NEPA analyses, the model's absolute predictions of the incremental impact of the project are used to determine direct impacts. In the latter case, model performance is typically a much more serious concern.

The model predicted 24 hour $PM_{2.5}$ and PM_{10} NAAQS exceedences in the Unita/Piceance Basin during 2006 and 2012. We are unsure why these exceedances are predicted for this area. The report should describe which PM species are contributing to the exceedences. The text should also note that in the performance evaluation for $PM_{2.5}$ the model under predicted concentrations and thus it is possible that the extent and magnitude of the $PM_{2.5}$ exceedences have been underestimated.

Visibility:

The text on page 3-168 states that "overall the CMAQ has a nitrate (NO_3) over prediction bias for the highest days which would result in the modeling over predicting the potential visibility impacts at Class I areas due to oil and gas related emissions." It additionally states, "Again, the NO_3 over prediction bias needs to be accounted for in the interpretation of the future-year NO_3 and visibility impacts in the UBAQS." This statement is not supported by the data shown in Figure 3-22 indicating CMAQ under predictions of nitrate concentrations occur throughout the year at STN sites and during April through October at IMPROVE and CASTNET sites. The underestimation of nitrate at the more urbanized speciation trend network (STN) is of concern because it may be representative of model performance in high emissions regions associated with similar emissions from oil and gas developments. We note that this is similar to the issue noted above regarding ozone under predictions near areas of dense oil and gas development.

The text also states that CMAQ has a bias toward over prediction on days when nitrate makes its largest contribution to visibility impairment, thus CMAQ will provide a conservative estimate of nitrate impacts. The performance statistics used to reach this conclusion were largely based on IMPROVE and CASTNet monitoring sites that are essentially background sites and do not reflect the impact of large nearby urban or industrial sources. For example, the IMPROVE site at Pinedale does not reflect major impacts for the oil and gas sources in the Upper Green River Basin. The nitrate performance of the model needs to be tested at transport distances of 50 to 200 km directly downwind of very large sources. The only data set that appears to reflect this situation is Rocky Mountain National Park (RMNP) and the sources in the Denver urban area. At RMNP, the model generally underestimated NO_3 during spring and summer of 2005 and greatly underestimated NO_3 during wintertime episodes at RMNP in February and March 2006. Based on this performance, we remain concerned about potential under predictions of visibility impacts at Class 1 areas directly downwind of large oil and gas developments.

PM Model Performance Evaluation:

We are concerned with the PM and visibility performance evaluation results and subsequent interpretation of these results from the other recent grid model analyses including the 2009 Southern Ute and 2009 Hiawatha EISs. When compared to the monitored IMPROVE or STN measurement data, the model operational evaluation for PM species in some cases is well over the model performance goals of $\leq$60% fractional bias and $\leq$75% fractional error identified in the modeling protocols. Rather than resolving the inaccuracies of these model predictions, a qualitative discussion dismissing the inability of the model to accurately predict particulate impacts with a discussion on summer and wintertime data trends has been presented for the various modeling results. This is not the intent of the modeling performance goals. According to EPA procedures, a diagnostic analysis should be considered whenever results from an operational evaluation exceed the performance goals. Since this was not presented in the UBAQS report, we have no indication of the source or subsequent resolution of these inaccuracies.

The results of the UBAQS study indicate that most areas near the various projects are in attainment with the current ozone NAAQS. However, we are concerned that the model years studied coupled with some of the technical concerns already presented casts some doubt for us that we do not fully understand the full impact of development in Eastern Utah and Western Colorado. Under NEPA, the Federal Land Managers (FLMs) must disclose cumulative effects along with the direct and indirect impacts of proposed developments and mitigate impacts that may cause or contribute to exceedances of an air quality standard. When selecting modeling year scenarios, EPA prefers that maximum emission (NOx and/or VOC) scenario years for determining maximum impacts during the life of a NEPA project. A cumulative effects analysis, such as the UBAQS, is useful in providing the overall condition of the entire airshed from all the various emission sources. The results of the study can then help inform the decision maker on possible planning decisions or mitigation strategies on future NEPA actions and selection of additional monitoring locations. We believe that UBAQS is a good first step in determining resultant impacts from the overall growth of primarily oil and gas in our Region and that additional studies are warranted.

(2) Recommendations for an Air Quality Workgroup and Air Quality Modeling Protocol:

EPA Region 8 recommends that BLM form an inter-agency air quality workgroup for Chapita Wells to define the air quality analysis, the results of the analysis, and appropriate mitigation measures. One of the primary purposes of an air quality workgroup would be to provide feedback to BLM at the earliest stages of EIS development. EPA Region 8 believes stakeholder involvement is important at all stages of the air quality analysis including the emission inventory, the modeling protocol, analysis of results, and identification of appropriate mitigation if necessary. As mentioned in the cover letter, EPA would like to meet with BLM to discuss the air quality impact analysis planned for this EIS.

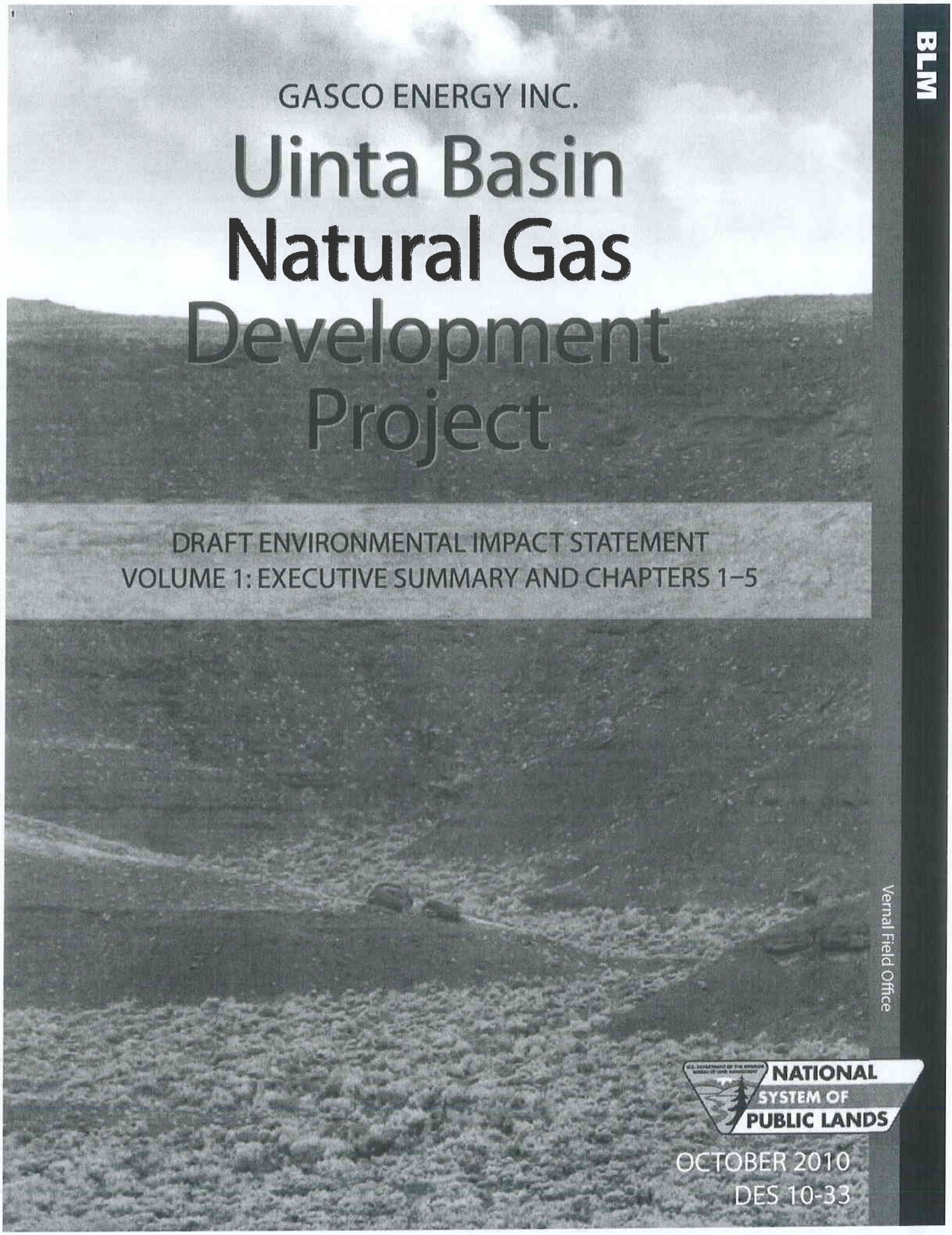
In preparing the EIS, EPA Region 8 recommends the approach used by BLM to analyze and predict air quality impacts be documented in an Air Quality Modeling Protocol and be fully vetted with the air quality workgroup. An Air Quality Modeling Protocol provides a "roadmap" for how the air analysis will be conducted and the results presented. It describes the model that will be used for analysis, including model settings, modeling boundaries, and important model inputs such as meteorology, background data, and emission inventories. The Protocol should also generally describe the standards and thresholds to which the air impact results will be compared. EPA Region 8 recommends that a Draft Air Quality Modeling Protocol be circulated among the air quality workgroup for comment and discussion. As part of this discussion, EPA Region 8 recommends workgroup members discuss and reach agreement on the emission inventories that will be used and the alternatives that will be modeled. EPA suggests BLM work with the air quality workgroup to obtain written concurrence from each member on the Protocol prior to proceeding with the air quality analysis. If significant disagreements persist, EPA recommends those issues be elevated within the respective agencies for resolution. By discussing the model, emission inventories, and alternatives up front, BLM may avoid additional costly and time consuming air quality modeling analysis revisions at a later date.

(3) Air Quality Mitigation

If the Chapita Wells air quality analysis discloses significant, adverse impacts to air quality, then EPA will insist that the EIS include specific and detailed mitigation measures to address the impacts. EPA Region 8 also recommends the Draft EIS include modeled demonstrations that the mitigation measures will be effective. A significant, adverse impact to air quality may include contribution to predicted violations of a NAAQS and/or predicted adverse impacts on air quality related values (i.e., visibility impacts to a Federal Class II area).

Air quality mitigation measures may include, but are not limited to:

- Tier II or better drilling rig engines (i.e. natural gas drilling rigs),
- Electric drilling rigs,
- Selective catalytic reduction or other secondary emission controls on drilling rig engines,
- Fuel additives,
- Electric or natural gas-fired compression,
- Condensate and water collection rather than tanks and trucks,
- Controls on start-up,
- Avoid natural gas driven pneumatic pumps if possible,
- Use of low bleed pneumatic devises or solar-electric pumps,
- Reduced pace of development,
- Phased development,
- Centralization of gathering facilities,
- Emission offsets,
- Green completions,
- Low or no flow pneumatic valves, and
- Additional EPA Gas Star program measures.


BLM
GASCO ENERGY INC.
Uinta Basin
Natural Gas
Development
Project
DRAFT ENVIRONMENTAL IMPACT STATEMENT
VOLUME 1: EXECUTIVE SUMMARY AND CHAPTERS 1–5
Vernal Field Office
NATIONAL
SYSTEM OF
PUBLIC LANDS
OCTOBER 2010
DES 10-33

2.2 ALTERNATIVE A: PROPOSED ACTION

Under Alternative A (the Proposed Action), Gasco would drill 1,491 new natural gas production wells and construct associated access roads, water supply pipelines, and gathering lines within the Riverbend, Wilkin Ridge, and Gate Canyon areas (see Map 2). Gasco currently operates approximately 80 wells in the project area, and proposes to drill additional wells at an average rate of 100 wells per year until the resource base is fully developed. Based on this drilling rate and assuming that the drilling program would begin in 2011, it is anticipated that the 1,491 proposed wells would be drilled by approximately 2026. The total number of wells would depend largely on geology, economic factors, and lease restrictions. The wells would be drilled to recover gas reserves from the Wasatch, Mesaverde, Blackhawk, Mancos, Dakota, and Green River formations at depths of 5,000–20,000 feet. At the end of each well's productive life (approximately 30 years), it would be plugged and abandoned and the affected area reclaimed (see Section 2.2.6). Thus, the total life of the project would be up to approximately 45 years. Although some wells may be drilled directionally from the same pad, each well was conservatively assumed to have its own pad for the purposes of analysis.

The extent of this proposed development and prospective nature of the natural gas resources is based on two-dimensional (2D) seismic data, geologic information, and data derived from exploratory wells drilled to date. The well density needed to develop the resource is expected to vary depending on the geologic characteristics of the formation being developed. The highest surface density assumed for this EIS's programmatic analysis is one well pad per 40 acres (in some areas of the Wasatch and Mesaverde formations), but the exact surface density would be defined during on-site review and permitting.

Approximately 325 miles of new road would be constructed to access the proposed wells. Gas would be transported via pipeline and related facilities to either intrastate or interstate pipelines. Depending on site-specific conditions, pipelines and collector lines would either be laid on the ground surface, typically next to a road, or trenched and buried. If dry, the wells would be plugged and abandoned as required by the surface management agency (SMA) and Authorized Officer (AO). The construction of new compressor facilities is not proposed as part of the Proposed Action. However, gas treatment capacity would be expanded by a total of approximately 21,000 horsepower (hp) at two existing gas plants to handle the increased production. Any produced water would be disposed of in a licensed evaporative facility proposed as part of this action (see Section 2.2.4).

2.2.1 ACCESS ROADS

2.2.1.1 LAND REQUIREMENTS

Existing roads and newly constructed roads would provide access to the proposed wells. Almost all the estimated 325 miles of new roads would be access (or spur) roads. The total surface disturbance associated with the construction of access roads would be approximately 1,182 acres.

Average construction disturbance widths would be approximately 45 feet for collector roads, 33 feet for local or secondary roads, and 25 feet for access (or spur) roads into well sites. However, the roads constructed in the project area would almost exclusively be spur roads from existing county or well field roads constructed to access well sites, since more than 560 miles of roads

Table 3-5. HAP Reference Exposure Levels and Reference Concentrations

Hazardous Air Pollutant (HAP)	Reference Exposure Level (REL 1-hr Average) ($\mu g/m^3$)	Reference Concentration [a] (RfC Annual Average) ($\mu g/m^3$)
Benzene	1,300 [b, c]	30
	160,000 [d]	-
Toluene	37,000 [b]	5,000
Ethylbenzene	350,000 [d]	1,000
Xylenes	22,000 [b]	100
n-Hexane	390,000 [d]	700
Formaldehyde	94 [b]	9.8

[a] EPA Air Toxics Database, Table 1 (EPA 2007a)

[b] EPA Air Toxics Database, Table 2 (EPA 2007a) REL from California EPA (most conservative level in Table 2)

[c] REL for benzene is for a 6-hr average.

[d] Immediately Dangerous to Life or Health/10, EPA Air Toxics Database, Table 2 (EPA 2007a) because no REL is available.

3.2.3.1.4 Greenhouse Gases

The Council on Environmental Quality (CEQ) has released new (2010) draft guidance on how NEPA should consider and evaluate greenhouse gas emissions and climate change. The draft guidance outlines how federal agencies should consider climate change issues under NEPA. Under this draft guidance, where a proposed federal action would be reasonably anticipated to emit greenhouse gases into the atmosphere in quantities that the agency preparing the NEPA document finds may be "meaningful," the agency should quantify and disclose its estimate of the expected, annual direct and indirect greenhouse gas emissions. Specifically, where a proposed action is anticipated to cause direct, annual emissions of 25,000 metric tons or more of CO_2-equivalent greenhouse gas emissions, a quantitative and qualitative assessment is required together with the consideration of mitigation measures and reasonable alternatives to reduce greenhouse gas emissions.

3.2.3.1.5 Existing Air Quality

The existing or background air quality of any given area can be estimated by a variety of methods. The most accurate and rigorous method is when adequate monitoring using Federal Reference Monitors (FRM) has been conducted in compliance with procedures defined in the Code of Federal Regulations 40 Part 51 Appendix W, and the monitoring has been conducted for an appropriate amount of time to determine compliance with the applicable NAAQS. For example, to determine compliance with the ozone NAAQS, an FRM site must be operated in compliance with Appendix W for at least three years to meet the averaging time given in the NAAQS. When adequate air monitoring has been conducted such that it can determine compliance with the NAAQS for a given air pollutant, the resulting highest applicable value is considered the "design value" for the area (typically a county). To date, no air monitoring has been conducted in Uintah County that would meet the FRM and CFR requirements; therefore, no design values exist for that county.

The next best method for estimating existing air quality is based on air monitoring conducted that, while not meeting the standards described above, is still considered of sufficient quality to be used for modeling and initial or screening air quality determinations. Reasons for monitoring not meeting NAAQS CFR standards, but still be sufficient for other purposes, might include use of non-FRM certified monitors, not meeting all CFR standards for the monitoring site, or operating otherwise compliant monitors less than the averaging time of the applicable pollutant standard (e.g., less than three years for ozone). Air monitoring data over ten years old are generally considered to be out of date, though they still may be representative if emission sources in the area have not changed much. Given these qualifiers, there has been relevant air monitoring conducted recently in the Uinta Basin for $PM_{2.5}$ and ozone.

3.2.3.1.5.1 $PM_{2.5}$ Air Monitoring

Starting in December 2006 and running through December 2007, the Utah Department of Environmental Quality (UDAQ) conducted air monitoring for $PM_{2.5}$ in the town of Vernal, Uintah County. Over the winter, $PM_{2.5}$ levels were measured at the Vernal monitoring station that were higher than the new $PM_{2.5}$ NAAQS that became effective in December 2006. The maximum 24-hour average concentration over this period was 63.3 ug/m^3. Additional $PM_{2.5}$ monitoring was conducted by UDAQ in Vernal in 2008 and in Vernal and Roosevelt (Duchesne County) in 2009, which also monitored maximum 24-hour values above the NAAQS during the winter months. $PM_{2.5}$ monitoring conducted by UDAQ during the summer of 2007 did not find any elevated concentrations. A limited analysis of the filters used to collect the $PM_{2.5}$ samples was conducted to chemically speciate the particulate samples. This analysis found that the composition was primarily carbon-based. In the case of Teflon filters, the composition was unidentifiable, which in a Teflon filter is typically indicative of also being carbonaceous because these types of filters cannot be used to detect carbon-based particulate.

Beginning in the summer of 2009, $PM_{2.5}$ monitoring is being conducted in the Ouray and Redwash areas of Uintah County. This monitoring is being conducted to comply with an EPA consent order. It is located in a rural area contingent with oil and gas operations and removed from urban sources. No exceedences of the $PM_{2.5}$ 24-hour standard have been observed.

The sources of elevated $PM_{2.5}$ concentrations during winter inversions in Vernal and Roosevelt have not been conclusively identified yet. Based on experiences and studies in other areas of the Rocky Mountain west and the emission inventory in the Uinta Basin, potential sources can be tentatively identified. In Utah, elevated $PM_{2.5}$ concentrations along the Wasatch Front are associated with secondarily formed particles from sulfates, nitrates, and organic chemicals from a variety of sources (UDAQ 2006). In Cache Valley, approximately half of ambient $PM_{2.5}$ during elevated concentrations is composed of ammonium nitrate, most likely from agricultural operations. The other half is from combustion, primarily mobile sources and woodstoves (Martin 2006). For comparison, $PM_{2.5}$ in most rural areas in the western United States is typically dominated by total carbonaceous mass and crustal materials from combustion activities and fugitive dust, respectively (EPA 2009). Because the Uinta Basin is not a major metropolitan area (like those found on the Wasatch Front) nor does it have significant agricultural activities (like those found in Cache Valley), the most likely causes of elevated $PM_{2.5}$ at the Vernal monitoring station are probably those common to other areas of the western US (combustion and dust). The filter speciation that has been done to date tends to support this conclusion because the dominant chemical species from the filters is carbonaceous mass, which is indicative of wood burning,

diesel emissions, or both. It is unlikely that significant transport of $PM_{2.5}$ precursors are occurring during the intense winter inversions under which these elevated $PM_{2.5}$ levels are forming, and as there is extensive snow cover during these episodes fugitive dust is also an unlikely significant contributor.

The complete UDAQ $PM_{2.5}$ monitoring data can be found at http://www.airmonitoring.utah.gov/dataarchive/archpm25.htm

3.2.3.1.5.2 Ozone Air Monitoring

Active ozone monitoring in the Uinta Basin began in the summer of 2009 at the Ouray and Redwash monitoring sites (the ozone monitors are collocated with the $PM_{2.5}$ monitors). Both sites have recorded numerous exceedences of the 8-hour ozone standard during the winter months (January through March). The maximum 8-hour average recorded to date is 0.123 ppm, well above the current ozone NAAQS of 0.075 ppm. These data have recently been released by EPA. Although the monitors are not currently being operated to CFR standards, and are not considered adequate data to make a NAAQS determination, the data are considered viable and representative of the area. Apparently, high concentrations of ozone are being formed under a "cold pool" process, whereby stagnate air conditions with very low mixing heights form under clear skies with snow-covered ground and abundant sunlight that, combined with area precursor emissions (NO_x and VOCs), create intense episodes of ozone. Based on the first year of monitoring, these episodes occur only during the winter months (January through March). This phenomenon has also been observed in similar types of locations in Wyoming, and has contributed to a proposed nonattainment designation for Sublette County.

The National Park Service also operates an ozone monitor in Dinosaur National Monument during the summer months. No exceedences of the current ozone NAAQS have been recorded at this site.

Winter ozone formation is a newly recognized issue, and the methods of analyzing and managing this problem are still in development. Existing photochemical models are currently unable to replicate winter ozone formation satisfactorily, in part due to the very low mixing heights associated with the unique meteorology of these ambient conditions.

Based on the emission inventories developed for Uintah County, the likely dominant source of ozone precursors at the Ouray and Redwash monitoring sites are oil and gas operations near the monitors. The monitors are located in remote areas where impacts from other human activities are unlikely to be significantly contributing to this ozone formation. Although ozone precursors can be transported large distances, the meteorological conditions under which this cold pool ozone formation is occurring tend to preclude any significant transport. Currently, ozone exceedences in this area are confined to the winter months during periods of intense surface inversions and low mixing heights. Significant work remains to definitively identify the sources of ozone precursors contributing to the observed ozone concentrations. Speciation of gaseous air samples collected during periods of high ozone is needed to determine which VOCs are present and what their likely sources are.

The complete EPA Ouray and Redwash monitoring data can be found here: http://www.epa.gov/airexplorer/index.htm

4.2 Air Quality

Air quality impacts were evaluated for both near-field and far-field impacts. Near-field impacts quantify the direct and indirect local impacts created by each alternative, while far-field impacts describe the potential impacts at locations a significant distance away from the project area.

4.2.1 Near-Field Air Quality

The near-field analysis considered potential impacts to air quality that may occur within 3 miles (5 km) of the project area. The Near-Field Air Quality Technical Support Document (Buys & Associates 2008b and Appendix H) presents a complete description of the project emissions, the modeling protocol, and modeling results. There are two types of activities associated with each alternative that were evaluated for impacts to air quality; development and operations. Development includes: the construction of individual well pads and associated access roads, drilling, and completion activities. Operations include the running of equipment associated with production and the associated truck traffic.

Dispersion modeling was performed for all alternatives to evaluate both development and operational impacts. The AERMOD model (version 07026) was used to predict the impacts of pollutant emissions for comparison to the NAAQS for CO, SO_2, PM_{10}, and $PM_{2.5}$. Because development activities are temporary and short-term in nature, comparisons to PSD increments are not appropriate. AERMOD was used to predict impacts of NO_x emissions as a surrogate for NO_2. The meteorological data used were from surface and upper air stations developed for the *West Tavaputs Environmental Impact Statement* (BLM 2008d). Additional details about the modeling are in the Near-Field Air Quality Technical Support Document (Buys & Associates 2008b and Appendix H).

4.2.1.1 Development

Near-field impacts from development activities are predominantly short-term and localized to the nearby area. Pollutant emissions from development activities include the following sources:

- Well pad and road construction: equipment producing fugitive dust while moving and leveling earth;
- Drilling: vehicles generating fugitive dust on access roads, and drill rig engine exhaust;
- Completion: vehicles generating fugitive dust on access roads, frac pump engine and generator emissions, and completion venting emissions;
- Vehicle tailpipe emissions associated with all development phases;

Pollutant emissions generated from development sources are summarized in Table 4-2.

Table 4-2. Annual Well Development Emissions for Each Alternative

Pollutant	Well Development Emissions (tons/year)				
	Alternative A (Proposed Action)	Alternative B (Reduced)	Alternative C (Full)	Alternative D (No Action)	Alternative E (Directional)
Criteria Pollutants & VOC					
NO_x	1,298	1,027	1,357	511	1,762
CO	421	332	444	167	522
VOC	103	81.5	113	42.6	116
SO_2	23.2	18.3	23.9	9.01	30.8
PM_{10}	4,079	3,228	4,486	1,700	3,641
$PM_{2.5}$	433	343	476	180	395
Hazardous Air Pollutants					
Benzene	0.62	0.49	0.69	0.26	0.66
Toluene	1.06	0.84	1.17	0.44	1.08
Ethylbenzene	0.04	0.03	0.04	0.02	0.04
Xylene	0.55	0.44	0.61	0.23	0.56
n-Hexane	1.21	0.96	1.33	0.50	1.21
Formaldehyde	0.44	0.35	0.48	0.18	0.14
Acetaldehyde	3.34×10^{-03}	2.64×10^{-03}	3.67×10^{-03}	1.38×10^{-03}	4.62×10^{-03}
Acrolein	1.04×10^{-03}	8.23×10^{-04}	1.14×10^{-03}	4.31×10^{-04}	1.44×10^{-03}
1,3-Butadiene	1.34×10^{-06}	1.06×10^{-06}	1.48×10^{-06}	5.60×10^{-07}	1.34×10^{-06}
Naphthalene	0.02	0.01	0.02	0.01	0.02
Total HAPs	4.14	3.25	4.51	1.71	3.80
Greenhouse Gases					
CO_2	63,870	50,564	70,257	26,473	86,970
CH_4	517	409	568	215	530

4.2.1.1.1 Development Impacts

Table 4-3 shows all pollutants modeled for development for the Proposed Action compared to the NAAQS. The maximum modeled concentration for NO_2 reflects an adjustment by a factor of 0.75, in accordance with standard EPA methodology (60:153 FR 40469, Aug 9, 1995) to convert from the modeled NO_x annual concentration to a NO_2 annual concentration. The modeling showed that no exceedances of NAAQS would be predicted for all development activities. The annual results demonstrate that even if these activities lasted for an entire year in the same location, the effects would be less than all applicable standards.

Table 4-3. Alternative A (Proposed Action) Near-Field Development Impacts

Pollutant	Averaging Period	Ambient Air Concentration (µg/m^3)[a]				
		Predicted	Background[b]	Total	NAAQS	Percent of NAAQS (Project + Background)
NO_2[c]	Annual	5.0	17	22.0	100	22%
PM_{10}	24-Hour[d]	16.40	63.3	79.7	150	53%
$PM_{2.5}$	24-Hour[e]	8.61	15/52[g]	23.6[h]	35	67%
	Annual[f]	2.77	11	13.8	15	92%
CO	1-hour Maximum	700.00	1,111	1,811	40,000	5%
	8-hour Maximum Average	342.00	1,111	1,453	10,000	15%
SO_2	3-Hour	40.90	20	60.9	1,300	5%
	24-Hour	13.70	10	23.7	365	6%
	Annual	1.95	5	6.95	80	9%

[a] µg/m^3 is micrograms of pollutant per cubic meter of air.
[b] Source: Utah Division of Environmental Quality - Division of Air Quality (UDAQ).
[c] Reported value is converted from modeled NOx to NO_2. (multiplier 0.75)
[d] According to the AERMOD User Guide Addendum modeling demonstration of compliance with the PM_{10} NAAQS is based on the High N+1-High 24-hr value over N years; reported value is the High 6th High averaged over 5 years (EPA 2004).
[e] Based on EPA's revisions to the PM NAAQS published in the *Federal Register* October 17th, 2006, pp. 61144-1233. Concentration estimate represents the eighth maximum 24-hour $PM_{2.5}$ concentrations (on average over 3 years).
[f] Annual PM modeling assumed activity takes place year-round at the same location; the actual value would be less.
[g] The state of Utah currently does not require $PM_{2.5}$ modeling for new sources and does not have an official background. The $PM_{2.5}$ concentrations given in this table represent 98th percentile values from limited $PM_{2.5}$ monitoring conducted in Vernal and Uintah/Duchesne counties in 2007. The smaller figure is representative of average summer concentrations, whereas the larger value is representative of winter inversion conditions, based on this monitoring.
[h] Because the winter inversion $PM_{2.5}$ value does not represent typical conditions in the project area, the value for average summer conditions was used in analyzing $PM_{2.5}$ impacts from the proposed action. The $PM_{2.5}$ monitoring location in Uintah/Duchesne counties, Utah was located in an urban setting with a high density of inhabitants and in proximity to highways (Highway 40 and Highway 191). As such, the higher, winter time inversion $PM_{2.5}$ concentration value reflects impacts from activities and activity levels not expected in the rural and sparsely inhabited region of the proposed action. Potential impacts from agricultural activities and wood burning would not be expected to measurable contribute to $PM_{2.5}$ concentrations in the region of the proposed action.

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Ref: 8EPR-N

Original signed 01/07/2011

Juan Palma, State Director
Bureau of Land Management
Utah State Office
P.O. Box 45155
Salt Lake City, Utah 84145-0155

Re: Comments on the Gasco Uinta Basin Natural Gas Development Project Draft EIS
CEQ # 20100386

Dear Mr. Palma:

The U.S. Environmental Protection Agency (EPA) Region 8 has reviewed the Gasco Energy, Inc. Uinta Basin Natural Gas Development Project (Gasco) Draft Environmental Impact Statement (EIS) prepared by the Bureau of Land Management (BLM). Gasco Energy, Inc. proposes to develop oil and natural gas in the Monument Butte-Red Wash and West Tavaputs Exploration and Development Areas in Uintah and Duchesne Counties, Utah. Our comments are provided for your consideration pursuant to our responsibilities and authorities under Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4332(2)(C), and Section 309 of the Clean Air Act (CAA), 42 U.S.C. Section 7609.

At the outset, I want to acknowledge the recent efforts of BLM Utah in working to achieve improved environmental protection for air quality and water quality while managing fossil fuel resource development on federal lands. EPA supports BLM's initiative in development of a statewide air management strategy. BLM's Air Resource Management (ARM) Strategy would provide a regional photochemical model that could be used to streamline air quality analyses during the NEPA process for all BLM oil and gas projects in Utah and set a framework for defining appropriate mitigation levels across the state. BLM Utah also recently published IM No. UT 2010-055 - Protection of Ground Water Associated with Oil and Gas Leasing, Exploration and Development, an impressive step in enhancing BLM's existing process for the continued protection of all usable groundwater zones.

Based upon our discussions with BLM, it is clear to us that we share common concerns regarding protection of air quality and water quality in the Uinta Basin. Under our CAA Section 309 review responsibilities, however, our review and rating of the proposed action must be based upon information contained in the Draft EIS. We would like to work with you in addressing the concerns expressed in this letter, as you proceed with the NEPA process for the proposed project.

PROJECT BACKGROUND

Five alternatives for development in the 206,826 acre Gasco project area are analyzed in the Draft EIS. Under Alternative A, the BLM Preferred Alternative, Gasco would drill 1,491 new natural gas production wells to depths of 5,000 to 20,000 feet. Wells would be drilled from individual well pads, with a maximum surface density of one well pad per 40 acres and at a rate of 100 wells per year. The Preferred Alternative includes construction of associated facilities such as access roads and pipelines, as well as construction of a water evaporation facility (WEF), consisting of 30 basins on 214 acres, to dispose of produced water. Other alternatives analyzed in the Draft EIS include: Alternative B, Reduced Development, with 1,114 new gas production wells developed in a phased manner and special exclusions for sensitive areas; Alternative C, Full Development, with 1,887 new gas production wells; Alternative D, No Action, under which 368 separately approved wells would be developed; and Alternative E, Directional Drilling, which has all the components of the Reduced Development Alternative, but wells would be directionally drilled from only 328 well pads. All alternatives include a WEF and other associated facilities in proportion to the number of wells and well pads.

EPA ISSUES OF CONCERN

Based on EPA's review of the Draft EIS, we have identified four primary concerns with the project: air quality impacts; the characterization of and potential for impacts to groundwater resources; impacts to impaired surface waters; and the development and analysis of alternatives. More importantly, EPA has also identified inadequacies in the Draft EIS that hinder a complete assessment of potential environmental impacts.

Air Quality

Evaporation Pond VOC and HAP Emissions

EPA is concerned that the emissions inventories used for all project-related modeling (near-field, far-field, and ozone) do not include volatile organic compound (VOC) emissions from the WEF. The produced water found in many gas operations can contain substantial levels of various VOCs, including those that when emitted are classified as hazardous air pollutants (HAPs). Given the large size of the proposed produced water disposal facility, there is potential for substantial emissions of VOCs from the evaporation ponds. The EIS should provide an estimate of the VOC content of the evaporation basins and an emissions inventory that indicates the level of VOCs emitted from the WEF, as well as disclose the potential impact on HAP and ozone concentrations in the project area.

Near-field Modeling

Modeling for the new one-hour near-field nitrogen dioxide (NO_2) National Ambient Air Quality Standard (NAAQS) (finalized on April 12, 2010) was not included in the Draft EIS. The explanation presented in the Draft EIS that gas development would not impact one-hour NO_2 because of its temporary nature is not valid because this is a one-hour standard. The lack of one-

hour NO_2 modeling constitutes an inadequacy in the Draft EIS, particularly because modeling results are necessary to plan adequate mitigation to reduce any predicted adverse impacts. Moreover, as discussed above, near-field modeling conducted for the Draft EIS also does not include HAP emissions. An accurate prediction of potential HAP impacts from the proposed project is necessary to protect those living, working, or recreating in or near the project area. In particular, we note that the Pariette Wetlands (a popular recreational destination) and the community of Ouray are approximately five miles and ten miles, respectively, from the proposed WEF.

Ozone

Measured ambient concentrations of ozone in the Uinta Basin during the period of January through March 2010 reached levels that are considerably above the NAAQS of 75 ppb for an eight-hour average, which was promulgated by EPA in 2008. EPA has proposed to lower the primary 8-hour ozone NAAQS to a level between 60 – 70 ppb and to establish a distinct cumulative, seasonal "secondary" standard; regardless of the outcome of this decision, it is clear that the measured values are a concern for public health. EPA appreciates that BLM acknowledged the measured wintertime ozone concentrations in Section 3.2.3 – Existing Air Quality. However, further information should be provided in the EIS to fully consider the potential impacts to wintertime ozone from the proposed action. Although current modeling capabilities do not allow for prediction of wintertime ozone concentrations, the wintertime ozone issues should be addressed qualitatively in light of the significant predicted project impacts with the knowledge gained from the modeling, monitoring and potential mitigation scenarios.

The project incremental increase with the Applicant Committed Environmental Protection Measures (ACEPMs) has been modeled at 1.3 ppb, which is considered a significant project-specific contribution given the recent ozone monitored exceedances in the Uinta Basin. We believe there are additional control strategies that could be utilized to effectively reduce NO_x and VOC emissions, which may include selection of a produced water disposal alternative that avoids or reduces use of surface evaporation pits.

Water Resources

Groundwater

Groundwater resources in the project area have not been adequately characterized in the Draft EIS to enable an assessment of the potential for impact to groundwater quality. All groundwater that has not been exempted through the aquifer exemption process and meets the definition of underground source of drinking water (USDW) at 40 C.F.R. § 144.3 is protected under the Safe Drinking Water Act. The brief description of the three principle aquifers in the project area indicates that there may be USDWs in the area of Gasco's proposed development; in particular, the Draft EIS notes that the Uinta-Animas aquifer contains freshwater in some areas. However, very little information is provided in the document regarding the location or depth of USDWs. In order to accurately assess the potential impacts of the proposed project, the EIS must provide substantially more detail characterizing groundwater resources, including

delineating the depth of all USDWs in the project area, and providing the quality of these aquifers in terms of total dissolved solids for each specific zone. EPA considers surface impoundment of produced water from oil and gas development as a potentially significant risk to groundwater and surface water. Therefore, adequate groundwater characterization is of special concern for the area underlying the proposed site of the evaporation pond complex.

Although there are no Sole Source Aquifers or Utah Drinking Water Source Protection Zones underlying the project area that would be at risk from the activities proposed, EPA is concerned that there still may be potential to impact public or private water supplies. The EIS should provide available location and other information regarding Public Water Supply wells or springs or private (domestic or stock) water wells or springs in the project area. This includes Tribal wells and springs and should include the alluvium along the Green River.

EPA disagrees with the determination in the Draft EIS that impacts to groundwater need not be discussed because they are "effectively eliminated, reduced, or mitigated" (pg. 4-264). The potential for significant impacts to water resources exists during all project stages, including drilling, well pad construction, production, hydraulic fracturing, produced water disposal, and freshwater withdrawal. EPA does not believe that deferring a detailed groundwater evaluation to the site-specific well reviews provides a complete analysis of potential cumulative environmental impacts to the aquifers. Further, we believe that the potential for groundwater impacts from leaks or spills from the WEF should be addressed in the EIS.

EPA is pleased to see the discussion of "suggested" or "encouraged" mitigation measures which the approving officer could require at the time of Application for Permit to Drill (APD) approval (pg. 4-264) and the discussion of protective drilling practices (Sections 2.2.2.3 and 2.2.2.4). These measures, if fully implemented, would provide effective mitigation of, for example, potential migration of production fluids away from the production zone during well drilling, completion, and production. However, it is unclear to what extent such mitigation will occur. Mitigation measures to protect groundwater should be clearly described in the EIS and required in the Record of Decision (ROD). Monitoring is also critical to document impacts during oil and gas development. A complete monitoring plan and program to track surface water or groundwater impacts as drilling and production operations occur should be included in the EIS.

Surface Water Quality

EPA considers impacts to surface water from runoff a substantial concern for the proposed project. Runoff of sediments, salts and selenium is the most substantial water quality concern in the Gasco project area as noted in the Draft EIS. Pariette Draw and Nine Mile Creek were listed on Utah's most recent 303(d) list of impaired waters, finalized in 2006, and both would receive increased loading of sediments, salts and selenium from this proposed project. A Total Maximum Daily Load (TMDL) was approved by EPA for Pariette Draw on September 28, 2010 that specifically calculates the reductions in total dissolved solids, selenium, and boron in the watershed that are necessary in order for surface water standards to be met. Increased loading of sediments to Pariette Draw would occur under all alternatives, although the use of

directional drilling would reduce runoff through a reduced number a well-pads. In addition to well-pads, loading would result from the construction of the evaporative ponds, which appear to be located within the Pariette Draw watershed, and from new roads and pipelines. Since the proposed project was not captured in the TMDL, any increase in sediment loading to Pariette Draw would represent a load that exceeds the TMDL and would be an unacceptable impact to surface water quality. Our recommendations for monitoring and mitigation to detect and prevent unacceptable impacts are described in the enclosed detailed comments.

Development and Analysis of Alternatives

Water Evaporation Facility

Significant environmental impacts are likely to be associated with disposal of produced water in the proposed WEF. EPA's concerns include the impact of potential WEF leaks on water quality, potential impacts to migratory birds and other wildlife from contact with the evaporation basins, and air quality impacts from VOC emissions. These potential impacts were not addressed in detail in the Draft EIS.

Over the past several years, EPA and the BLM Vernal Office have actively worked together to increase the number of underground injection permits and reduce the number of evaporation ponds in the Uinta Basin. Nonetheless, all five alternatives analyzed in the Draft EIS include surface evaporation as the means of disposal of produced water. The Draft EIS considered, but did not fully analyze, subsurface water disposal. No other alternative water management method or combinations of methods were considered or analyzed in the Draft EIS. Based on our preliminary review of available data, there appear to be reasonably available alternate disposal methods, including subsurface injection or treatment and reuse/recycling, which should be fully analyzed in order to reduce the potentially significant environmental impacts of the WEF. The decision to avoid surface evaporation disposal may resolve many of EPA's concerns regarding potential impacts to air quality, water quality, and wildlife from on-site produced water surface impoundments.

Additional data are available to better assess the feasibility of underground injection, including logs and driller's reports for over 100 production wells previously drilled in the project area. EPA's preliminary review of data logs suggests to us that underground injection could be a viable option in several zones of the Green River formation as well as the deeper Sego and Castlegate formations. Cross sections of the subsurface geology in the project area should be provided in the EIS to support conclusions of the feasibility of underground injection. The EIS should also consider water treatment options that would allow for reuse or recycling of produced water, an environmentally beneficial disposal method. Treated water could be reused in drilling or production operations in the Gasco field or recycled for a variety of uses, including waterflood for enhanced oil recovery, in other nearby fields. Treatment could also potentially allow for surface discharge.

Directional Drilling

BLM's Preferred Alternative proposes development of natural gas resources with each well drilled from an individual well pad; however, according to the analysis in the Draft EIS, implementation of directional drilling could reduce surface disturbance by approximately 60 percent if implemented as described in Alternative E and result in greatly reduced impacts to nearly all resources of concern. Minimizing surface disturbance is critical in the arid Uinta Basin, where reclamation is frequently difficult. Impacts of disturbed soils can include: erosion and sediment runoff impacts to surface water resources; impacts to local air quality from fugitive dust; dust impacts to vegetation and cultural resources (including the rock art of Nine-Mile Canyon); both direct and indirect impacts to the Uinta Basin Hookless Cactus, a federally listed threatened species; and long distance transport of fugitive dust out of the basin, which may contribute to dust on snow events in the mountains. The Draft EIS clearly indicates that resource impacts associated with surface disturbance are proportionate to the number of well pads. EPA therefore believes that directional drilling should be utilized to the maximum extent possible in the Uinta Basin project area. We recommend that BLM reconsider selection of Alternative E as the Preferred Alternative, or develop a new alternative that maximizes the valuable resource protection provided by directional drilling while maintaining reasonable cost and desirable development level.

Cumulative Impacts

The Reasonably Foreseeable Development (RFD) scenario used in the cumulative impact assessment for Gasco appears to undercount planned and projected development in the Uinta Basin. The RFD scenario appears to be based on the Vernal Resource Management Plan (RMP), which was finalized in 2008. However, based on information provided for NEPA projects currently undergoing scoping or review for oil and gas projects on federal lands managed by the BLM, U.S. Forest Service, and Bureau of Indian Affairs (BIA), it appears that more than three times as many oil and gas wells are now anticipated in the basin than were considered during RMP development. The Greater Natural Buttes Draft EIS (released for comment by BLM July 16, 2010) included 21,293 wells in its RFD, significantly higher than the 6,400 quantified in the Gasco Draft EIS. The under-accounting of RFD may have caused significant underestimation of cumulative air quality impacts, as well as cumulative impacts to all other resources of concern.

EPA'S RATING

The Draft EIS does not adequately analyze the project's potential impacts to air quality, particularly associated with VOC and HAP emissions from the produced water evaporation ponds. Moreover, inadequate characterization of groundwater resources results in an inability to determine whether adverse impacts to groundwater may occur as a result of the proposed action. EPA's review of the Draft EIS has also revealed significant environmental impacts from well-pad construction in the Pariette Draw watershed, which should be avoided, underscoring a need to fully consider the feasibility of directional drilling technology. In accordance with our policies and procedures for reviews under NEPA and CAA Section 309, EPA has rated this Draft EIS as "Inadequate" (3). As with all projects with potential unsatisfactory impacts or inadequate

assessment of such impacts, this proposal is a potential candidate for referral to the Council on Environmental Quality (CEQ). The "3" rating indicates EPA's belief that the Draft EIS does not meet the purposes of NEPA, and thus should be formally revised and made available for public comment in a supplemental or revised Draft EIS. A copy of EPA's rating criteria is enclosed. In addition, the enclosed detailed comments provide further discussion of our concerns regarding air quality and water resources, as well as our comments on climate change, potential impacts to environmental justice communities, tribal coordination, spill prevention, and impacts to wildlife and special status species.

Thank you for the opportunity to comment on this Draft EIS. We reaffirm our commitment to work cooperatively with BLM to address our significant concerns. If you have any questions on our rating or the comments provided in this letter, please contact Larry Svoboda, Region 8 NEPA Compliance and Review Program Director, at 303-312-6004, or Carol Campbell, Assistant Regional Administrator of Ecosystems Protection and Remediation, at 303-312-6340.

Sincerely,

//Original signed by James B. Martin//

James B. Martin
Regional Administrator

Enclosures: Detailed Comments
EPA's Rating System Criteria

cc: Daniel Picard, U&O Agency Superintendent, BIA
The Honorable Richard Jenks Jr., Chairman, Ute Indian Tribe
Bill Stringer, Green River District Manager, BLM

EPA'S DETAILED COMMENTS FOR THE GASCO DRAFT EIS

Consideration of Directional Drilling

EPA recommends that additional consideration be given to use of directional drilling in the EIS. We believe that directional drilling is a technologically and economically feasible alternative, which is being used extensively in nearby fields and throughout the world. It is recognized that directional drilling is more costly to implement than vertical drilling, however, it does not appear that the estimates of economic feasibility of the alternatives in the EIS have fully considered the many cost savings associated with construction of directionally drilled wells. Decreased construction of roads and well-pads and less time associated with moving the drill rig are among the factors that can offset many of the costs of directional drilling itself.

The need for utilization of directional drilling for Gasco is underscored by the challenges of reclamation in the project area, and the environmental impacts associated with surface disturbance. A total of 97,706 acres in the project area (47 percent) have soil characteristics that restrict reclamation. The Draft EIS acknowledges that it generally takes at least 10 years to reclaim a site following disturbance; other recent Uinta Basin EISs have indicated significantly longer time periods, up to 100 years, for revegetation of some plant species (Ashley National Forest South Unit Draft EIS, Greater Natural Buttes Draft EIS). According to the Draft EIS regeneration of biological soil crusts, which serve several critical ecosystem functions including stabilizing soils, could take up to 250 years. Long-term surface disturbance can contribute to regional dust concerns. For example, a recent study found that dust on snow in the Upper Colorado River Basin robs the Colorado River of about five percent of its water each year, enough to supply Los Angeles for 18 months.[1] EPA believes the substantial impacts to air quality, water quality, and threatened plant species from surface disturbance in the Gasco project area necessitates utilization of directional drilling to the maximum extent possible.

According to the Draft EIS (pg. 2-1), Alternative A was selected as the Preferred Alternative "because it best addresses issues raised in scoping about impacts to cultural resources in Nine Mile Canyon while meeting the purpose and need for the project." EPA is confused regarding this selection, and recommends that the EIS include an explanation of Preferred Alternative selection that is more transparent to readers of the EIS. We understand from Table 4-168 that, although Alternative A disturbs 844 acres in the Nine Mile Canyon Special Recreation Management Area (SRMA), none of this disturbance would be below the rim. Other alternatives include a small percentage of disturbance below the rim of Nine Mile Canyon. Utilization of directional drilling would likely allow for access to mineral resources within the Nine Mile Canyon SRMA without disturbance of cultural or other critical resources.

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[1] Painter et. al, "Response of Colorado River runoff to dust radiative forcing in snow," *PNAS* 2010 107 (40) 17125-17130.

Air Quality

Ozone

EPA disagrees with the Draft EISs characterization of ozone as able to "only be evaluated on a regional basis" on page 4-16. Although ozone is a regional pollutant, direct project impacts can be isolated from regional models. For this reason, we recommend that the project's incremental contributions to ozone be discussed in Section 4.2 – Air Quality rather than in 4.18 – Cumulative Impacts, to avoid confusion.

Table 1-1 of Appendix J presents emission from the Proposed Action and emissions from the Proposed Action with ACEPMs. EPA appreciates the addition of control emissions to mitigate impacts to the surrounding area by a modeled increment of 0.6 ppb. Please indicate by source category the emissions reductions taken and the number of units used in the modeled emissions inventory. Based on the modeled incremental impact of the Preferred Alternative with ACEPMs of 1.3 ppb, additional mitigation measures may be warranted. For example, additional NO_x reductions could be realized through use of Tier IV engines, which should be available later in 2011, and alternate produced water disposal methods could reduce VOC emissions from the WEF. Onsite air monitoring programs (e.g., O_3, NO_x, VOC, aldehyde), source emission monitoring (i.e., FLIR camera), and emission control recordkeeping should also be considered.

EPA is concerned the Draft EIS does not fully disclose the potential impacts to ozone from the proposed action. The Draft EIS indicates that ozone concentrations in areas impacted by the project will not exceed the 75 ppb ozone standard, but does not disclose the modeled absolute maximum value. It is unclear from the information presented in the Draft EIS and Appendix J whether values of 75 ppb may have been modeled, or how many values approaching or reaching the standard were modeled. The figures provided in Appendix J indicate numerous grid squares in the 73 – 76 ppb range, which is cause for concern. Additionally, given the sparse monitoring data in the project area, the Draft EIS should disclose the absolute modeling results in addition to the non-monitored area analysis.

A 12 km modeling domain was used in the CMAQ modeling. A smaller 4 km nested domain should be used in the project area. The 4 km higher resolution emissions/emissions/topographic information data would likely improve model performance. EPA has consistently expressed this concern with grid resolution over the past several iterations of modeling performed in the Uinta Basin (beginning with the Uinta Basin Air Quality Study, letter to Bill Stringer October 16, 2009, and most recently regarding the GASCO ozone modeling protocol, letter to Jeff Rawson, May 10, 2010). Regarding model performance evaluation, we note that the EPA guidance for determining attainment of the ozone standard is generally intended for use in urban State Implementation Plan applications where a large network of monitors is available to evaluate the model performance and there is reasonable assurance that the baseline monitoring data captures the locations of highest ambient ozone concentrations. The monitoring data are sparse in the Gasco area and so in some instances the guidance may not be applicable. Caution should be used in citing this guidance for NEPA projects in rural areas.

Near-field Modeling Protocol

An explanation is presented in the Draft EIS on page 4-9 as to why modeling for one-hour NO_2 was not performed. EPA does not agree with the determination in the document that the information needed to analyze potential impacts to the NAAQS is lacking. For example, a "detailed plan of the facility" is not required as implied on page 4-9; rather, modeling must only assess a reasonable scenario like that used for near-field dispersion modeling for PM_{10}, $PM_{2.5}$, SO_2 and HAPs. In fact, modeling for one-hour NO_2 has already been performed for oil and gas NEPA projects. The conclusion of one-hour impacts being temporary and not expected to exceed the NAAQS is not substantiated. In many cases, emissions from drill rigs or other nonroad sources are not required to obtain a construction or operating permits and therefore would not have to demonstrate compliance with modeling under permitting rules. We note that the same discussion regarding the one-hour NO_2 standard is repeated in Draft EIS Sections 4.2.1.1.1.1, 4.2.1.2.1.1, and 5.0 (additional note: there appear to be some numbering inconsistencies in the Draft EIS) for development, operations, and cumulative impacts, respectively. We recommend that BLM revise this discussion to be more relevant to each section of the EIS, as the current format is confusing.

The one-hour SO_2 should also be modeled and compared with the new NAAQS for that pollutant, which was finalized in June 2010.

EPA is concerned that meteorological data from Canyonlands National Park was used for dispersion modeling for Gasco. To provide more representative near-field results, meteorological data should be used from stations within the Uinta Basin, such as the Vernal Airport or the Redwash or Ouray monitoring sites. Additionally, please ensure that the background concentrations used for all NAAQS and PSD comparisons utilize the most recent and applicable values available (i.e., ozone and $PM_{2.5}$ data from the Ouray and Redwash sites).

Particulate Matter ($PM_{2.5}$ and PM_{10})

EPA is concerned that near-field modeling for impacts from Gasco operations showed a 24-hour average PM_{10} value of 149.5 $\mu g/m^3$, just below the NAAQS of 150 $\mu g/m^3$, and a predicted PSD Class II increment of 287 percent of the threshold. Although an exceedance of the standard was not modeled, the level of impact predicted indicates a substantial potential for health concerns in the project area. We recommend that additional PM mitigation strategies be employed to reduce these impacts.

The Draft EIS identifies vehicle traffic, and particularly truck traffic associated with the WEF, as the primary source of the PM_{10} emissions, which underscores the need to consider alternate water disposal methods. Due to the large amount of surface disturbance associated with the proposed project and the sensitivity of the soil resource, further efforts to reduce surface disturbance and promote successful reclamation are warranted for Gasco. We recommend that BLM consider installation of a liquids gathering system to reduce truck traffic in the project area. Travel management in the project area should be designed for maximum reduction in soil and vegetation impacts. Access roads and well pads should be sited to avoid highly constrained areas

and biological soil crusts whenever possible. Impacts associated with access roads should be reduced to the maximum extent practicable, by utilizing transportation planning to establish proper road location and design and through treatment of unpaved roads. We further recommend that a project-specific Reclamation Plan be developed and included in the EIS.

EPA appreciates the discussion of air quality measurements in the Uinta Basin that have recently shown elevated concentrations of fine particulate matter ($PM_{2.5}$). On page 3-12 of the Draft EIS, the discussion of $PM_{2.5}$ formation in rural areas maybe accurate for most rural areas of the United States, however, since complete chemical speciation of monitored $PM_{2.5}$ has not been completed, the conclusion made that the elevated $PM_{2.5}$ concentrations in Vernal are from similar sources is not supportable. Full speciation of particulate matter from $PM_{2.5}$ monitoring should be conducted in the Basin in order to identify these sources.

We also note that $PM_{2.5}$ data are now available for part of 2009 and 2010 from the Redwash monitoring site, and this data should also be included in the EIS. Based on knowledge gained through Uinta Basin air monitoring to-date, EPA is concerned with the characterization of $PM_{2.5}$ as "not appear[ing] to be an issue in rural areas of the Uinta Basin" (Draft EIS pg. 3-17). Again, the source of the high wintertime $PM_{2.5}$ concentrations measured during the 2007 and 2008 in Vernal are not currently well understood, and additional speciation data are needed to determine the characteristics of $PM_{2.5}$ in the Basin. Although potentially harmful levels of $PM_{2.5}$ were not modeled for Gasco, this may be because the near field modeling may not consider the particular conditions that lead to high wintertime concentrations. The near field modeling utilized meteorological data from the Canyonlands National Park monitoring site, which may not be indicative of the conditions found in the Uinta Basin. EPA is therefore concerned that the proposed project has potential to contribute to significant impacts to $PM_{2.5}$. Consequently, we recommend that all reasonable measures be taken to reduce $PM_{2.5}$ emissions from the project. The Draft EIS identifies road traffic emissions as primary contributors to $PM_{2.5}$ for Gasco. Measures to reduce truck traffic between well pads and to the WEF, such as multiple-well pads or a liquids gathering system, and provide unpaved road treatments should be considered.

The near-field modeling for the various scenarios of the Draft EIS was conducted to up to a 5 km domain. The near-field model AERMOD is applicable up to 50 km. We recommend that dispersion modeling for near-field criteria pollutant concentrations should include receptors located at least 20 km from the project sources, particularly to capture potential impacts at population centers.

Hazardous Air Pollutants

EPA is pleased that BLM included near-field modeling for HAPs. However, the modeling predicted concentrations of acrolein in excess of the Reference Concentration for continuous inhalation exposure (RfC) for Gasco. We recommend that BLM consider mitigation measures that would reduce acrolein emissions from the Gasco project. This mitigation should include consideration of alternative water disposal methods, which would reduce acrolein emissions from the WEF generator.

We note that new assessments are available for HAPs, and the acute RELs for acrolein, formaldehyde, and acetaldehyde in Table 4-12 of the Draft EIS and Table 6-27 of Appendix H should be updated[2].

Far-field Modeling

EPA has concerns regarding predicted impacts to air quality related values (AQRVs) for the proposed project. The Draft EIS identifies one day of impairment (visibility impacts greater than one deciview) predicted at a federal Class I area, Canyonlands National Park. Impacts to sensitive Class II areas included a maximum of 57 days of impairment at Dinosaur National Monument and 186 days at Ouray National Wildlife Refuge. We recommend mitigation measures to reduce these visibility impacts be discussed in the EIS. Further, we note that the cumulative screening visibility assessment conducted for the Gasco project differs significantly from the results presented in the Greater Natural Buttes Draft EIS. For example, the Greater Natural Buttes cumulative visibility impairment for Arches National Park was 311 days of impairment, while for the Gasco project the cumulative for Arches was 22 days of impairment. Given that the direct project impacts to visibility impairment were minor for both projects, please explain why there are such large discrepancies between these cumulative assessments. We additionally note that it is not clear to us which approved FLAG method was used to determine the "screening" level visibility impacts. EPA prefers Methods 2, 6 or 8 in determining visibility impairment.

Adaptive Management

The Adaptive Management Strategy described in the Draft EIS is a useful concept which may help to prevent significant adverse impacts to air quality from the proposed project. However, several critical components are lacking in the proposed strategy. First, the Draft EIS does not make clear what would constitute a "significant increase" in the emissions inventory, triggering a need for a new modeling analysis. Second, the strategy should include monitoring that conforms to 40 CFR Parts 50 and 58, with emphasis on obtaining measurements that contribute to the formation of secondarily formed pollutants such as $PM_{2.5}$ and ozone. The EIS should identify how monitoring results may trigger a need for additional modeling. Finally, the adaptive management strategy should address how BLM and Gasco will address the proposed lowering of the ozone standard. EPA would like to work with BLM to develop a comprehensive list of potential enhanced mitigation measures that may be employed under the Adaptive Management Strategy.

Climate Change

We appreciate the discussion of the 2010 CEQ Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions that was included in section 3.2.3.1.4 of the Draft EIS, and the disclosure of annual methane (CH_4) and carbon dioxide (CO_2) emissions for development and operations of the proposed project in Tables 4-2 and 4-5.

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[2] http://www.epa.gov/ttn/atw/toxsource/summary.html

However, further qualitative and quantitative assessment should be provided in the EIS to support a discussion of mitigation measures to reduce GHG emissions. This need is substantiated by the emissions figures in Tables 4-2 and 4-5, which are significantly higher than CEQs reference value of 25,000 metric tons of CO_2 equivalent per year.

We suggest the following four-step approach be used to ensure complete consideration and disclosure of potential GHG emissions and relevant mitigation:

1. Quantify and disclose projected annual and total project lifetime cumulative GHG emissions in CO_2-equavalent terms and translate the emissions into equivalencies that are easily understood from the public standpoint (e.g., annual GHG emissions from x number of motor vehicles, see, https://www.epa.gov/RDEE/energy-resources/calculator.html). In addition, because information on the "downstream" indirect GHG emissions from activities such as refining and end use may be of interest to the public in obtaining a complete picture of the GHG emissions associated with the proposed project, it may be helpful to estimate and disclose them. Please describe any potential inconsistencies between the proposed action and any relevant Regional, Tribal or State climate change plans or goals, as well as the extent to which BLM would reconcile, through mitigation or otherwise, its proposed action with such plans. For example, please consider the Governor's Blue Ribbon Advisory Council on Climate Change 2007 Final Report (http://www.deq.utah.gov/BRAC_Climate/final_report.htm), Utah's GHG reduction goals (to reduce GHG emissions to 2005 levels by 2020) (http://deq.utah.gov/Climate_Change/GHG.goal.htm) and the Western Climate Initiative (http://www.westernclimateinitiative.org).

2. Qualitatively discuss the link between GHGs and climate change, and the potential impacts of climate change. As discussed in the 2010 CEQ Draft Guidance, the estimated level of GHG emissions from the project and its alternatives can also serve as a reasonable proxy for assessing potential climate change impacts, and provide decision makers and the public with useful information for a reasoned choice among alternatives.

3. Include a summary discussion of ongoing and projected regional climate change impacts relevant to the action area based on U.S. Global Change Research Program assessments. EPA also recommends that the EIS identify any potential need to adapt the proposed action to these effects, as well as any potential impacts from the proposed action that may be exacerbated by climate change.

4. Analyze reasonable alternatives and/or potential means to mitigate project-related GHG emissions. For example, BLM could analyze a "GHG-reducing alternative" that would include measures that could be taken to reduce GHG emissions. BLM could also assess potential energy efficient technologies as well as technologies to reduce GHG emissions from oil and gas development. For instance, the analysis could include carbon capture and sequestration; measures from BLM's Supplemental Information Report for the eight EAs in Montana, North Dakota and South Dakota (http://www.blm.gov/mt/st/en/prog/energy/oil_and_gas/ leasing/leasingEAs.html); EPA's GasSTAR program

(http://www.epa.gov/gasstar/) which is a voluntary mitigation effort targeted at the oil and gas industry; and promoting the implementation of cost-effective technologies and practices to reduce GHG emissions.

Water Resources – Groundwater Protection

Groundwater Characterization

The Draft EIS does not identify existing or potential public or private drinking water supplies in the Gasco project area, nor aquifer zones that are USDWs under the Safe Drinking Water Act. The document indicates that this information will be collected during site-specific reviews at the APD stage. Deferring the evaluation of impacts to potential or existing drinking water supplies to the review of each well in the APD does not provide the opportunity for public comment nor does it provide analysis of cumulative environmental impacts to the aquifers.

The EIS must assess the risk to groundwater within the project area. Four basic categories of information should be contained in the Draft EIS:

1. Groundwater resource characterization,
2. Groundwater use characterization,
3. Potential impacts from the proposed project, and
4. Proposed alternatives and mitigation measures.

EPA would like to work with BLM to create an outline of the groundwater information that should be included in all project-level oil and gas EISs. In the meantime, we provide the following expansion upon the four basic categories listed above as an indication of the information EPA would ideally like to have for review of a project-level EIS. The West Tavaputs EIS included some of this information and could be used as a model.

1. The EIS should include a discussion of the viability of water bearing formations as underground sources of drinking water (USDW). USDWs include not only those formations that are presently being used for drinking water, but also those that can reasonably be used in the future. In general, this includes aquifers with TDS less than 10,000 mg/L and with a quantity of water sufficient to supply a public water system. Aquifers are presumed to be USDWs unless they have been specifically exempted or if they have been shown to fall outside the definition of USDW (e.g., over 10,000 mg/L TDS). Are there any fresh water zones/USDWs under the project area? What is known about the depth to and water quality of the fresh water zones/USDWs? We recommend using existing information to describe the resource (Utah Geologic Survey, USGS reports, geologic logs, etc.). Relevant information to disclose in the EIS includes: maps of the aquifers in the project area, formation names and depths, a table or graphic of hydrostratigraphic units, local outcrops of the aquifer, chemistry of the formation water (including TDS), well yield data for water bearing formations, recharge areas for the aquifers, mineral zones to be developed in relation to aquifers/aquitards, etc.

2. The EIS should characterize current and anticipated uses of the project area groundwater resources. Who is using the groundwater resource now, and what is the expected future use? Provide a list and map of water rights and users in the area and within one mile of the project boundary, including: wells and springs related to public water supplies, domestic and stock uses; Tribal wells and springs; and wells and springs in the alluvium along the Green River. This description should include the depth of the wells, the formations they are producing from, and the quality of the water being used currently in the area. If there are users, how will the quality be monitored to detect impacts from the project?

3. The EIS should assess the potential impacts of the proposed project. What is the potential for changes in the volume, storage, flow and quality of groundwater in light of the data obtained from the characterization of groundwater resources and groundwater use?

4. The EIS should describe alternatives and mitigation measures necessary to prevent or reduce the identified impacts. What actions have been considered to:
    a. Avoid impacts to groundwater,
    b. Limit the degree or magnitude of impacts to groundwater,
    c. Reduce impacts by long term maintenance,
    d. Repair or restore groundwater resource, and
    e. Compensate for groundwater impacts by replacement or substitution?

BLM Utah has developed an excellent policy for the protection of groundwater associated with oil and gas leasing, exploration and development (BLM Instruction Memorandum No. UT 2010-055). The purpose of the Instruction Memorandum (IM) is to enhance the existing process for the continued protection of all usable groundwater zones (< 10,000 mg/L as defined in Onshore Oil and Gas Order No. 2) associated with oil and gas exploration and development. We appreciate that, although the Draft EIS was largely completed prior to finalization of the IM, much of the substance of this policy was included. However, we recommend that the EIS incorporate the entire UT 2010-055 IM. This is especially important due to the fact that most wells in the project area will undergo hydraulic fracturing of the producing zone, thereby potentially posing a risk of contamination to any nearby USDW. Because the IM does not address groundwater protection related to evaporation ponds in detail, particular attention should be paid to identifying and mitigating potential impacts from the WEF in the EIS.

Water Quality Monitoring

A monitoring plan and program should be in place to track any groundwater impacts as drilling and production operations occur. Monitoring should be conducted during all project phases, including: background conditions before construction begins; during project implementation, including construction, production, and produced water disposal; and after project termination. This is especially pertinent to the existing wells and springs and near the proposed WEF. We recommend that the "Long-Term Plan for Monitoring of Water Resources"

developed for the West Tavaputs Plateau Natural Gas Full Field Development Plan (West Tavaputs) Final EIS be used as a guide in developing a monitoring plan for Gasco. Particularly critical components of the plan include baseline monitoring, inclusion of organic parameters in the monitoring suite, public disclosure of monitoring data, and discussion of mitigation measures to be employed if monitoring results in identification of impacts.

Mitigation

EPA is encouraged that BLM believes groundwater impacts from the proposed project can be prevented through implementation of mitigation measures. We commend BLM's effort to protect freshwater through the best management practices (BMPs) described in Section 2.2.2.3 - Well Drilling, including specifications for steel casing and cementing. However, we recommend that these well drilling practices be clearly identified in the list of mitigation measures. Additional mitigation measures beyond those described in the Draft EIS may also be appropriate for the proposed project; the EIS should clearly identify all relevant and reasonable mitigation measures to protect groundwater sources. We recommend that BLM may want to consider incorporating some additional mitigation measures that were included in the West Tavaputs Final EIS, including Toxic Characteristic Leaching Procedure testing. The ROD should clearly describe all mitigation measures that will be required.

There are additional issues related to groundwater protection that should be considered in the EIS, as well as additional practices and mitigation measures that may be necessary for adequate protection. For example, EPA recommends the following be added to the Gasco EIS:

- Cement bond logs should be evaluated to ensure adequate cement bonding to prevent fluid and gas migration.
- EPA encourages closed loop or pitless drilling of the production hole to avoid the need for mud reserve pits. Completion and stimulation fluids returned to the surface should also be contained in tanks to avoid the need for pits.
- However, if pits are necessary, after evaporation of fluids, pit sludges should be tested for toxicity and disposed accordingly. Pit liners should also be removed and disposed of according to solid waste rules. Compacted liners should be tested for toxicity and disposed. Soils below the pit liners should be tested for contamination. If compacted liner material is not contaminated it should be ripped and mixed with soil in order to allow infiltration.
- Appropriate closure should also be discussed for the WEF ponds.
- Aquifers with high quality fresh water must be drilled using fresh water based drilling muds. In addition any mud additives must be low toxicity and compatible with the aquifer so as not to cause contaminant introduction into the fresh water zones.
- If underground injection is used as a mechanism for disposing of produced water, then new production wells should be constructed appropriately and have adequate cement through the identified confining zone(s). Any current or future producing oil well could potentially be converted to an injection well; therefore, these wells should meet Class II construction criteria in order to avoid future remediation.

There are currently serious questions about whether the process of hydraulic fracturing could potentially result in groundwater impacts. Additionally, some hydraulic fracturing compounds contain materials that could be harmful if released to freshwater sources. The EIS should acknowledge and discuss this potential for impact. An analysis of the management of the fracturing fluids should be provided in the EIS, including the toxicity and fate of these fluids, with a focus on avoiding surface spills or leaks of these fluids from the reserve pits. Hydraulic fracturing of any production zones near freshwater zones should not be considered. This includes fracturing production zones that are not adequately isolated from freshwater aquifers with zones of low permeability that would prevent fluid and gas migration.

Produced Water Disposal

The Draft EIS suggests that disposal of produced water through underground injection is not feasible because there are no suitable injection zones in the project area, although it would be the preferred disposal method of the operator. Without providing cross sections of the subsurface geology in the project area, it is difficult to assess this assertion. There are over 100 production wells drilled in the project area, and much of the needed information could be gathered from the analysis of the logs and driller's reports for these wells. The Birds Nest Aquifer is a zone of the Green River formation that many operators utilize for water disposal in nearby fields. Although in the proposed Gasco project area the Birds Nest Aquifer is considered to be less permeable, this zone should be explored further to accurately determine permeability along with its potential to be a USDW. EPA believes that there may be other potential sands in the Green River Formation that could be used for disposal. In logs reviewed approximately two miles to the north of the proposed project area, sand lenses in the Green River Formation just below the Garden Gulch (GG2) were identified. These sands could be used as potential targeted injection zones. Currently, Newfield has a salt water disposal well (Pariette Bench 4-8-17 API #43-047-15681) located in the proposed project area. This salt water disposal well is injecting into sands found in the Green River formation. Analysis of logs and driller's reports for production wells would allow BLM to better determine where these sands are present throughout the Gasco project area. There are also other deeper zones that lie beneath the proposed production zones, specifically the Sego and Castlegate formations, which could be targeted for disposal. The EIS should include several subsurface cross sections that present the subsurface geology as presently known through the information derived from existing wells, as well as a more complete consideration of the extent to which subsurface injection may be possible.

An additional disposal method, which was not considered in detail in the Draft EIS, is treatment and reuse or recycling. The Draft EIS suggests the high total dissolved solids (TDS) of produced waters make it incompatible with waters from the Green River formation near the project area where produced waters are being injected for disposal and waterflood purposes. Reuse and recycling of produced water provides many environmental benefits, including reduced consumption of freshwater, and may be more viable than subsurface injection. Operators in the Uinta Basin are currently using water with TDS of 25,000-30,000 ppm for hydraulic fracturing, which is similar to the naturally occurring TDS levels in the formations of the Gasco project area. Treatment of produced water for enhanced oil recovery would most likely at a minimum need to go through a walnut shell filter to remove hydrocarbons and then a precipitation and

filtration process to remove metals. Additional treatment may be necessary, depending on water chemistry. Our understanding is that the cost per barrel of treatment for use in production would be comparable, or less expensive, than evaporation pond disposal. Based on local geology, it appears likely that bedrock will need to be blasted and removed in pond construction; the experience of another Uinta Basin operator indicates that this could double the estimated cost of pond construction. Water could also potentially be treated to allow for permitting for surface discharge through an NPDES permit process.

The EIS should include a water compatibility study that analyzes the extent to which water reuse or recycling could be utilized by Gasco or by operators in neighboring fields. In order to fully disclose the potential for positive environmental impacts from water conservation through reuse or recycling of produced water, the EIS should also include: the volume of water that may be recycled, whether this water will be used within the Gasco project area or elsewhere in the Basin, how water will be transported, and spill and leak prevention plans.

Freshwater Consumption

According to the Draft EIS, 90 percent of the water for drilling, completion, and production will come from Green River sources and tributaries. The associated environmental impacts of the use of this fresh water should be evaluated in the EIS. Four endangered fish species of the Colorado River system may be affected by water withdrawals from the Green River. The proposed action would result in an estimated maximum consumption of 450 acre-feet per year from the Colorado River Basin (6,745 acre-feet total). The cumulative consumption of fresh water for the Gasco project and other projects in the area may have the potential to impact aquatic special status species by reduction in water flow. Although the project proponent would pay a depletion fee to the U.S. Fish and Wildlife Service Recovery Program, EPA recommends additional emphasis on reuse of produced water to reduce water consumption impacts on Colorado River endangered fish species.

EPA has two concerns regarding the disclosure in the Draft EIS of the impacts of freshwater use. First, the amount of fresh water to be used appears to be based on one hydraulic fracturing job per well, however, it is our understanding that wells are often fractured as many as five times. This additional water use should be disclosed in the EIS. Second, we note that the discussion of groundwater depletion does not clearly indicate the anticipated impacts to freshwater aquifers.

<u>Water Resources – Surface Water Quality</u>

Potential for Impact to Impaired Waterbodies

EPA approved a TMDL[3] for Pariette Draw on September 28, 2010 that specifically calculates the reductions in total dissolved solids, selenium, and boron in the watershed that are necessary in order for surface water standards to be met. Since there are no point sources in the

[3] http://www.waterquality.utah.gov/TMDL/Pariette%20Draw%20TMDL%20Final.pdf

watershed, all loading and reductions in loading are from nonpoint sources. The Draft EIS (pg 4-268) has calculated that each well would result in an increased load of 259 tons per wellpad. Using this estimate, Alternative A would result in an increase of 16,058 tons of sediment load to Upper and Lower Pariette Draw. The Pariette Draw TMDL states that loading of TDS needs to be reduced by 48.72 tons per day to meet the water quality target of 1,200 mg/l. Even under Alternative E, through which directional drilling would greatly reduce the number of wellpads compared to Alternative A, increased loading of sediments to Pariette Draw would occur. Besides the sediment loading from wellpads that were calculated in the Draft EIS, there would also be additional loading from the construction of the WEF that appears to be located within the Pariette Draw watershed, as well as from the new roads and pipelines that would be constructed and disturb additional acres of soils in the watershed. Any increase in sediment loading to Pariette Draw is an unacceptable impact to surface water quality, as documented in the TMDL.

For Nine Mile Creek, a TMDL has not yet been drafted that would address the impairment that has caused it to be included on the Utah 2006 303(d) list for temperature. Nevertheless, the increased sediment loading that would result from this project would be likely to further degrade the water quality and would most likely contribute to increasing the already unacceptable temperatures that have caused Nine Mile Creek to be impaired for the cold water aquatic life use designation (3A).

The primary cause of the loading across the entire project area would be from the 568 road crossings of ephemeral streams that would occur under Alternative A – the proposed action. The number of these crossings could be reduced to 190 if Alternative E (Directional Drilling) is selected according to estimates presented in Table 4-113 (page 4-267). Increasing the sediment load to the Green River will occur in all scenarios considered in this Draft EIS, so it would seem prudent to select the alternative that would go furthest in complying with the Colorado Basin Salinity Control Act of 1974. Allowing an estimated 77,085 tons of sediment to reach the Green River through the implementation of Alternative A does not seem to be the best choice when Alternative E would result in a 70 percent reduction in sediment load, with an estimated load of 22,829 tons. The document makes the conclusion that the impact of the increased sediment load to the Green River from its activities under Alternative A would be relatively low; but this can be said of almost any single project in a watershed as vast as the Green River. This type of analysis minimizes the impact of nonpoint source loading by only looking at a small portion of the watershed and not considering the cumulative impacts of similar projects being implemented throughout the entire watershed. The EIS should clearly disclose connections between sediment loads and local water quality impairments, as well as any potential for adverse impact to water quality.

Based upon the information contained in the Draft EIS, it is our understanding that the WEF will be constructed within the Pariette Draw watershed, and that the large amount of disturbance associated with the construction of the facility may impact water quality in Pariette Draw. However, it is difficult to be certain of the location of the WEF within the watershed, or the proximity to ephemeral streams, based on the maps and discussion provided. We recommend that the EIS include a more detailed map showing watersheds in the project area, as well as a discussion of the proximity of surface water resources to the WEF.

Monitoring

Given the variability in salinity and selenium across the landscape and the recognized concern with potential surface water contamination, the EIS should include monitoring and adaptive management requirements. Monitoring plans should be developed for areas potentially affected by highly erosive soils, as well as the perennial waterbodies including the Green River and the two streams on Utah's 303(d) list of impaired waters. EPA recommends the BLM implement a comprehensive water monitoring plan to ensure the BMPs are successfully mitigating the impacts from increased sedimentation and to direct reclamation resources and efforts. At a minimum, we recommend that BLM establish a monitoring program in Pariette Draw and Nine Mile Creek. The "Long-Term Monitoring Plan for Water Resources" developed by BLM for the West Tavaputs Final EIS is a good example of a comprehensive monitoring program.

Mitigation

We recommend that additional steps be taken to minimize erosion and sedimentation for watershed protection. BLM may want to consider project area-wide mitigation measures that may include: a cap on acres of surface disturbance, which can significantly limit TDS loading by increasing interim reclamation efforts and decreasing the amount of disturbed soils; phased drilling, which will also effectively reduce the amount of surface disturbance present at any time; reducing construction of roads or well pads in drainages; and use of directional drilling to reduce project total surface disturbance. To reduce TDS loading, directional drilling should be used to access mineral resources within drainages wherever possible, and roads and well pads should be sited outside of these sensitive zones.

It is best to involve a system of BMPs that targets each stage of the erosion process to ensure success from construction activities. The most efficient approach involves minimizing the potential sources of sediment from the outset. This means limiting the extent and duration of land disturbance to the minimum needed, and protecting surfaces once they are exposed. BMPs should also involve controlling the amount of runoff and its ability to carry sediment by diverting incoming flows and impeding internally generated flows. In addition, BMPs should include retaining sediment that is picked up on the project site through the use of sediment-capturing devices. On most sites successful erosion and sedimentation control requires a combination of structural and vegetative practices. Finally, BMPs are best performed using advance planning, good scheduling and maintenance.

Spill Prevention

We appreciate the discussion on "Spills Potentially Contaminating Surface Waters" in section 4.15.1.1.2.2 of the Draft EIS; however, we believe that some important information was left out of this discussion. Although the Draft EIS states that stipulations such as double-lining and leak detection for the WEF would result in an "extremely low risk," the potential consequences of a WEF spill or leak should have been addressed. Further, the discussion in the Draft EIS does not consider the potential for impacts to groundwater. A discussion should be

added disclosing the possible impacts to both surface and groundwater resources from a WEF leak. This discussion should include further information on the detection limits of the leak detection system, response times, and what will be done in the case of a leak. Water quality monitoring, discussed in greater detail above, will be particularly critical to reduce potential impacts from the WEF ponds. We additionally recommend further information be provided regarding the ACEPMS, such as use of shutoff valves, that will reduce the risks associated with pipeline spills.

The Draft EIS cites *BLM Onshore Order #7* as the source for construction and operation stipulations for all evaporative facilities, and asserts that because of these stipulations, potential impacts to surface waters would have an extremely low risk of occurring (pg. 4-273). Because the BLM Order includes very general provisions for several disposal methods (including lined and unlined pits), the EIS should include further details of the intended stipulations. These details should clearly outline project stipulations for the double lined pits, including prevention of surface water ingress and discharges, further details of lining requirements, leak detection requirements, etc. Further details of the construction and operation of evaporation ponds is necessary to substantiate the conclusion of extremely low risk of potential impacts.

The implementation of a Spill Prevention, Control, and Countermeasures Plan (SPCCP) will reduce the potential for direct and indirect impacts to sensitive resources from spills or accidental releases of hazardous substances. It is critical that all SPCCPs are appropriately designed given local geology and the level of risk associated with local conditions. We recommend that BLM describe in the EIS how site-specific SPCCPs will address low probability catastrophic spills.

Wetlands and Floodplains

Although Executive Order (EO) 11990 – Protection of Wetlands is referenced in Table 4-1 – Supplemental Authorities to be Considered, the EIS does not describe how actions authorized through the Gasco NEPA process will comply with the EO. The Draft EIS discusses only those wetlands and riparian areas associated with perennial rivers. It is unclear from the document whether additional wetlands such as isolated wetlands, springs, or riparian areas associated with ephemeral streams may exist in the Gasco project area. The EIS should address protective measures in the case of encountering an isolated or ephemeral wetland during project construction. EPA additionally recommends that Section 1.6 – Authorizing Actions should include regulation and permitting processes on Tribal lands according to Clean Water Act (CWA) Section 401 in addition to CWA Section 404, which applies to activity on a portion of the Gasco project area.

EPA is concerned that approximately 11 acres of surface disturbance would occur in wetland and riparian areas under the Preferred Alternative, resulting in the long term loss of riparian vegetation in these areas. The Draft EIS does not disclose whether this disturbance is associated with well pads, roads, pipelines, or other associated facilities, nor does it clearly specify where the riparian impacts will occur. Such information is necessary to determine

whether reasonable alternatives may exist, and to ensure adequate mitigation for unavoidable impacts. This information should be included in the EIS along with a description of proposed mitigation.

The Preferred Alternative also proposes 223 acres of disturbance in 100-year floodplains, including 48 well pads and 8.4 miles of road. This disturbance includes well pad construction in the floodplain of the Green River as well as other floodplains that have been identified as critical flood potential areas. Well pad construction in floodplains is a serious risk that should be avoided, particularly due to the potential for flood damage to well-heads and associated production equipment that could result in leaks or spills of toxic materials to waterbodies. Given the capabilities of directional drilling technologies, well pad construction in floodplains or riparian areas should be considered an unacceptable risk.

It is EPA's opinion that consideration of avoidance or mitigation for development in wetlands and floodplains should occur during the project-wide evaluation in the EIS, rather than for individual wells during site-specific review. We appreciate the proposed mitigation measures included in Section 4.15.2, and strongly suggest these mitigation measures be committed to by the applicant, and required in the ROD. In particularly, it is critical that closed-loop drilling be used in or near sensitive water resource areas. We also recommend that the measure which requires relocation of wells proposed within the 100-year floodplain of the Green River be extended to include all floodplains, wetlands, and riparian areas. Finally, we recommend that the last measure on the list, which restricts surface disturbing activities within active floodplains, wetlands, public water reserves, or within 100 m or riparian areas be significantly strengthened. EPA recommends complete avoidance of well pad construction within any of these areas. Where construction of associated linear facilities cannot be avoided, the NEPA analysis should identify specific mitigation requirements that will ensure full mitigation of unavoidable impacts.

Environmental Justice

As the CEQ guidance on considering Environmental Justice (EJ) under NEPA notes, Executive Order 12898 requires federal agencies to consider "whether there may be disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, or Indian tribes" from a proposed action. Although when viewed at the county level, as described in the Draft EIS, the region of the proposed project has minority and low-income characteristics that are not significantly different from the national average, communities near the Gasco project area have high percentages of low-income and minority residents. For example, two nearby communities that were enumerated by the 2000 U.S. Census, Fort Duchesne and Randlett, have greater than 50% of residents in poverty and greater than 90% minority residents. In the town of Myton, 38% of the residents are below the poverty line according to the 2000 Census. In accordance with CEQ guidance on identifying minority and low-income communities, EPA believes that these communities should be treated as EJ communities for the purposes of the NEPA analysis. Given the local nature of many human health and social impacts of oil and gas projects, EPA recommends that the appropriate scale at which to consider EJ impacts from the proposed Gasco project should be community, rather than county.

The Draft EIS concludes that, "Based on the distance of the project area from local communities, no minority or economically disadvantaged communities or populations would be affected" (pg. 4-112). EPA does not agree with this conclusion, and we note that BLM Instruction Memorandum Environmental Justice No. 2002-164 does not include any reference to distance or proximity in determining the potential for environmental justice impacts. EPA's opinion is that the area affected by the proposed project will contain EJ communities, therefore the human health, economic, and social effects of the proposed action on potential EJ communities should be thoroughly evaluated in the EIS for Gasco. The towns of Randlett and Myton are approximately 12 miles from the Gasco project area, while Fort Duchesne is approximately 16 miles away. There are also other small communities near the project area that were not enumerated in the 2000 U.S. Census, but which likely possesses similar population characteristics to Fort Duchesne and Randlett. For example the community of Ouray is located less than 5 miles from the Gasco project area. Additionally, the EJ analysis should define the affected area based on the location of environmental impacts, not merely on proximity, and the analysis should take into account whether EJ communities use subsistence or cultural resources that may be affected by the proposed project. The nature of the project's rural setting should also be considered. For example, the simple act of shopping for groceries may involve a twenty or thirty mile drive. EPA is willing to assist BLM in identifying minority, low-income, or tribal communities that may be impacted by the proposed project.

Environmental justice issues encompass a broad range of potential impacts, including impacts on the natural or physical environment and interrelated social, cultural and economic effects. The Draft EIS acknowledges that the "boom-and-bust" cycle of oil and gas development in the Uinta Basin is likely to adversely impact communities due to impacts on employment, housing, population, poverty rates, public finances, and infrastructure. According to the Draft EIS, public services and infrastructure are already over-taxed in the region. The document also identifies the potential for disproportionate, adverse impacts to low-income populations from increased housing costs. Mitigation should be considered for these potential adverse social and economic impacts. Examples of mitigation may include outreach to low income and tribal persons to provide counseling on finding affordable housing, consultation with those who use the land for recreational and spiritual purposes, and providing job training for local residents to take advantage of the project's employment opportunities.

The document does not discuss the potential for disproportionately high adverse human health and environmental impacts from the proposed project. However, air quality and water quality impacts are a significant potential concern for this project. BLM's EJ analysis should therefore evaluate whether the proposed project may result in environmental or human health impacts to minority, low-income, or tribal communities in the area. Impacts of implementation causing an increase in HAPs (especially acrolein) or criteria pollutants (including ozone and particulate matter) should be shared with the surrounding communities. According to CEQ guidance, the identification of an adverse impact to EJ populations should heighten attention to alternatives, mitigation strategies, monitoring needs, and preferences expressed by the affected community. If such impacts are identified, BLM should explore whether additional mitigation strategies will be sufficient to reduce those impacts. Mitigation measures relating to potential EJ Communities may include outreach and health services in the communities.

Tribal Coordination

As noted in the Draft EIS, the project is located partly within the southeastern portion of the Uintah and Ouray Indian (U&O) Reservation, which is known as the Uncompahgre Reservation. The Tenth Circuit Court of Appeals has determined that all lands within the Uncompahgre Reservation are Indian country as defined at 18 U.S.C. Section 1151. *Ute Indian Tribe v. Utah*, 773 F.2d 1087 (10th Cir. 1985) (en banc), *cert. denied*, 479 U.S. 994 (1986); *Ute Indian Tribe v. Utah*, 114 F.3d 1513 (10th Cir. 1997), *cert. denied*, 522 U.S. 1107 (1998). We therefore recommend that relevant Tribal environmental laws be referenced in the EIS as appropriate. You may wish to consult with BIA on the status of the project location.

EPA recommends that BLM perform the following coordination with the Ute Indian Tribe, and reference relevant authorities where appropriate in the EIS:

- Cultural Resource consultation should include the Tribal Historic Preservation Officer.
- The Ute Indian Tribe Energy and Minerals Department regulates oil and gas development within the U&O Reservation, and should be contacted regarding resource protection measures on Tribal lands.
- The Tribal Wetland program is implementing wetland mitigation projects.
- The Tribal Environmental Program of the Ute Indian Tribe should also be contacted regarding environmental regulations on Reservation lands.

Wildlife and Special Status Species

EPA has several concerns with the proposed project with respect to impacts to wildlife and special status species. Our concerns for water withdrawal and sediment impacts to the Colorado River endangered fish species are addressed above in our comments on surface water resources. Reduced surface disturbance and recycling of produced water will reduce these potential impacts. The need to consider alternatives that reduce surface disturbance is also heightened by the presence of the Uinta Basin Hookless Cactus, which is federally listed as threatened under the Endangered Species Act. The U.S. Fish and Wildlife Service has determined that the proposed action "may affect, and is likely to adversely affect" the species. The potential impacts to migratory birds or other wildlife from the WEF are not analyzed in the Draft EIS. Although audible and visible deterrents are planned as BMPs to deter birds from utilizing the ponds, wildlife impacts should be discussed in the Environmental Consequences chapter of the EIS. This discussion should include the likelihood of wildlife utilizing the WEF basins, the potential impacts to wildlife from utilization, and the predicted effectiveness of deterrent BMPs.