EGL Resources, Inc.
Oil Shale Research, Development and Demonstration Tract

CO-110-2006-118-EA

Summary of Changes to EA based on Comments

Description of Proposed Action and Alternatives

1. Pg. 3 – First paragraph of section. Text added requiring the applicant to submit, as a standard lease term, a Plan of Development.

   Original Text: "BLM proposes leasing a 160-acre tract located approximately 20 miles west-northwest of Rio Blanco, Colorado and authorizing a Plan of Operations for an oil shale research, development, and demonstration project."

   Revised Text: "BLM proposes leasing a 160-acre tract located approximately 20 miles west-northwest of Rio Blanco, Colorado and requiring the applicant to submit, as a standard lease term, a Plan of Development for an oil shale research, development, and demonstration project."

Proposed Action

2. Pg. 5 – First paragraph of section. Text added requiring the applicant to submit, as a standard lease term, a Plan of Development.

   Original Text: "BLM proposes leasing a 160-acre tract located approximately 27 miles west-northwest of Rio Blanco, Colorado and authorizing a Plan of Operations for an oil shale research, development, and demonstration project."

   Revised Text: "BLM proposes leasing a 160-acre tract located approximately 27 miles west-northwest of Rio Blanco, Colorado and requiring the applicant to submit, as a standard lease term, a Plan of Development for an oil shale research, development, and demonstration project."

Process Overview

3. Pg. 6 – New paragraph added to end of Process Overview stating that the RD&D phases will consist of three components: bench tests; computer modeling; drilling and completion optimization, and ultimately a field test as described in the proponent's application.

   Original Text: None

   Revised Text: "The RD&D phases will consist of three components: bench tests; computer modeling; drilling and completion optimization, and ultimately a field

test. Bench tests conducted off-site will simulate process conditions and provide data to assist in computer modeling and the eventual field test. Computer models will not only guide the placement and pumping rates of the dewatering wells, but also assist in placement of the monitoring wells and placement of injection wells. All phases would be conducted in accordance with all applicable permits, regulations and standards."

Groundwater Management

4. Pg. 8 – Replaced the word "equivalent" with "same" in last sentence of the first paragraph.

   Original Text: "Extracted groundwater would be re-injected down gradient into the equivalent aquifer intervals in order to maintain the regional water table and avoid disturbing baseflow to nearby streams."

   Revised Text: "Extracted groundwater would be re-injected down gradient into the same aquifer intervals in order to maintain the regional water table and avoid disturbing baseflow to nearby streams."

Waste Storage and Disposal

5. Pg. 9 – First sentence. Added text clarifying wastewater storage prior to trucking:

   Original Text: "Wastewater from the site, including retort water (up to 50 barrels per day), boiler blowdown, and drilling waste would be trucked to a licensed disposal facility."

   Revised Text: "Wastewater from the site, including retort water (up to 50 barrels per day), boiler blowdown, and drilling waste would be initially stored in tanks at the site and then trucked to a licensed disposal facility."

Critical Elements

Regulatory Framework

6. Pg. 15 – First paragraph of section. Text added acknowledging CDPHE will implement recently revised EPA limits through permitting and air quality plans until the Colorado State Plan is formally approved by EPA.

   Original Text: "Although the EPA recently revised both the ozone and $PM_{2.5}$ NAAQS, these revised limits will not be implemented by the Colorado Department of Public Health and Environment-Air Pollution Control Division (CDPHE-APCD) until the Colorado State Implementation Plan is formally approved by EPA; until then, EPA is responsible for implementing these revised standards."

   Revised Text: "EPA recently revised both the ozone and $PM_{2.5}$ NAAQS, and these revised limits will be implemented by the Colorado Department of Public Health and Environment-Air Pollution Control Division (CDPHE-APCD) through

permitting and air quality plans until the Colorado State Implementation Plan is formally approved by EPA."

7. Pg. 17 – Second full paragraph. Text added to clarify CDPHE-APCD permit requirements.

   Original Text: "In addition, the CDPHE-APCD also requires various different pre-construction and operation permits, including: 1) any emission source with the potential to emit air pollutants in excess of 2 tons per year must submit an Air Pollution Emission Notice to CDPHE-APCD; 2) all emission sources with the potential to emit NO_x or CO in excess of 10 tons per year, or 5 tons per year of PM_{10}, are required to obtain a permit before construction can begin; 3) sources with potential emissions in excess of 100 tons per year of CO, 40 tons per year of NO_x, or 15 tons per year of PM_{10}, must also include a new source modeling analysis in their permit application."

   Revised Text: "In addition, the CDPHE-APCD also requires various different pre-construction and operation permits, including: 1) any emission source with the potential to emit criteria air pollutants in excess of 2 tons per year or hazardous air pollutants (HAPs) in excess of 50 to 5000 lbs (dependent on Bin and source distance to property boundary) must submit an Air Pollution Emission Notice to CDPHE-APCD; 2) all emission sources with the potential to emit NO_x, CO, TSP, or SO_2 in excess of 10 tons per year, or 5 tons per year of PM_{10} or VOCs are required to obtain a permit before construction can begin; 3) once the permit *de minimis* is triggered, for one of the criteria pollutants, then permits are required for all sources that meet the 2 ton per year APEN-required limit as pursuant to Colorado Regulation No. 3 Part B, Section II.D.5. 4) sources with potential emissions in excess of 100 tons per year of CO, 40 tons per year of NO_x, or 15 tons per year of PM_{10}, must also include a new source modeling analysis in their permit application."

Potential Direct Impacts from Proposed Action

8. Pg. 19 – First partial paragraph, last sentence. Text revised from comparing results to a 'just noticeable change' to stating the project would not violate PSD Class I increment at Flat Tops Wilderness Area or Dinosaur National Monument.

   Original Text: "No days were predicted to cause a "just noticeable change" in visibility conditions at the mandatory federal Flat Tops PSD Class I area from direct air pollutant emissions alone."

   Revised Text: "Direct proposed project emissions also do not violate PSD Class I increment at the Flat Tops Wilderness Area or Dinosaur National Monument."

9. Pg. 19 – Second paragraph. Text changed to modeled emission being presented in Table 4, and that tailpipe emissions were also included.

Original Text: "The emission estimates included both an anticipated maximum daily and annual bases."

Revised Text: "Modeled emissions are summarized in **Table 4.** The emission estimates provided below were used in the AERMOD model. Both the anticipated maximum daily and annual estimates are shown in **Table 4** along with the emission factors used to develop the estimates."

10. Pg. 19 - Table 4 was expanded to include more source descriptions, constituents, and emission factors. Emission values throughout the table changed based on the near-field model rerun. Two paragraphs were added under the table to describe the assumptions and inputs to the revised model.

Original Text: None

Revised Text: "Construction and road traffic were modeled assuming activities would occur during the 7 am to 7 pm 12-hour period 5 days per week. Surface preparation and trenching activities were modeled to occur during the summer. Fugitive dust and tailpipe emissions from traffic were modeled to occur year round and included road watering to mitigate fugitive dust emissions (50% reduction). Drilling activities were modeled assuming a 40 percent utilization and the drilling rig was assumed to operate 24 hours per day and 365 days a year. Although it is unlikely that drilling, surface preparation and trenching will occur all at the same time, the model was run to demonstrate worst case scenarios. As previously described, the drill rig and boiler were modeled assuming these activities would occur continuously.

RD&D operations include emissions from the boiler and fugitive dust and tailpipe emissions from traffic. The model assumed that the boiler operates 24 hrs per day and 365 days a year. To be most conservative, the boiler was also assumed to be fired on produced oil that meets or exceeds the specifications for No. 6 fuel oil. If the produced oil does not meet No. 6 fuel oil specifications then the oil will require offsite treatment before it can used. If this is the case the boiler will be fired by purchased natural gas. Similarly, if the RD&D project generates produced gas, the boiler will be fired with produced gas using purchased natural gas to make up the deficiencies. The estimated emissions for an oil fired boiler are greater than emissions from a gas fired boiler burning produced gas or purchased natural gas. The oil was assumed to have a sulfur content of 0.8% (wt) or lower. If the sulfur content is higher than 0.8% (wt) then it is likely that the exhaust will require mitigation or the sulfur will have to be removed or recovered. A flare has been included with EGL's operations but it will only be used under emergency conditions. Fugitive dust and tailpipe emissions from traffic were modeled to occur year round and included road watering to mitigate fugitive dust emissions (50% reduction)."

Construction Direct Impacts

11. Pg. 19 – First paragraph of section. Text revised to exclude reference to production since this section describes construction impacts only.

    Original Text: "Air quality impacts would occur during construction (due to surface disturbance by earth-moving equipment, vehicle traffic fugitive dust, drilling rig, facility construction and vehicle engine exhaust) and production (including water and product pumping, processing, and engine exhausts)."

    Revised Text: "Air quality impacts would occur during construction (due to surface disturbance by earth-moving equipment, vehicle traffic fugitive dust, drilling rig, facility construction and vehicle engine exhaust)."

12. Pg. 19 – Second paragraph of section. $PM_{2.5}$ added to list.

    Original Text: "Air pollutant dispersion modeling was performed to quantify potential reasonable, but conservative PM_{10} and SO_2 impacts during construction based on the individual pollutant's period of maximum potential emissions."

    Revised Text: "Air pollutant dispersion modeling was performed to quantify potential reasonable, but conservative $PM_{10,}$ $PM_{2.5}$ and SO_2 impacts during construction based on the individual pollutant's period of maximum potential emissions."

13. Pg. 20 – First full paragraph. Values of 24-hour $PM_{2.5}$ and PM_{10} changed in the model that was rerun. 19.6 and 66 $\mu g/m^3$ replaced 36 and 147 $\mu g/m^3$.

    Original Text: "The maximum potential 24-hour $PM_{2.5}$ and PM_{10} concentrations primarily from road emission sources and surface preparation (including a representative background value of 18 and 41 $\mu g/m^3$, respectively), would be nearly 36 and 147 $\mu g/m^3$, well below the applicable NAAQS of 65 $\mu g/m^3$ and 150 $\mu g/m^3$, respectively."

    Revised Text: "The maximum potential 24-hour $PM_{2.5}$ and PM_{10} concentrations primarily from road emission sources and surface preparation (including a representative background value of 18 and 41 $\mu g/m^3$, respectively), would be nearly 19.6 and 66 $\mu g/m^3$, below the applicable NAAQS of 65 $\mu g/m^3$ and 150 $\mu g/m^3$, respectively."

14. Pg. 20 – New paragraph added after first full paragraph describing 3-hour and 24-hour average SO_2 emissions and that the modeled results are below standards.

    Original Text: None

    Revised Text: "The maximum short-term (3-hour and 24-hour averages) SO_2 emissions would be generated by diesel engines used during construction and

drilling (sulfur is a trace element in diesel fuel). The maximum modeled concentrations, including representative background values of 24 $\mu g/m^3$ (3 hour) and 13 $\mu g/m^3$ (24-hour), would be 28 $\mu g/m^3$ (3-hour) and 13.8 $\mu g/m^3$ (24-hour), below both the restrictive Colorado SO_2 Ambient Air Quality Standard of 700 $\mu g/m^3$ (3-hour), the 3-hour SO2 NAAQS (1,300 $\mu g/m^3$), and the 24-hour standard (365 $\mu g/m^3$). PSD increments are not applicable since these SO_2 construction emissions are temporary."

15. Pg. 20 – Second full paragraph. Concentrations for NO2, $PM_{2.5}$ and PM_{10} values were revised based on model rerun.

    Original Text: "The maximum predicted long-term (annual) NO_2, PM_{10}, $PM_{2.5}$, and SO_2 impacts (including representative background concentrations) were all predicted during construction to be less than the applicable ambient air quality standards. The maximum predicted annual NO_2 concentration of 12.6 $\mu g/m^3$ (including a representative background value of 9 $\mu g/m^3$) would be less than the CAAQS/NAAQS of 100 $\mu g/m^3$. The maximum predicted annual $PM_{2.5}$ and PM_{10} concentration of 8.8 and 13.1 $\mu g/m^3$ (including representative background values of 8 $\mu g/m^3$ and 11 $\mu g/m^3$, respectively) would be less than the CAAQS/NAAQS of 15 $\mu g/m^3$ and 50 $\mu g/m^3$, respectively."

    Revised Text: "The maximum predicted long-term (annual) NO_2, PM_{10}, $PM_{2.5}$, and SO_2 impacts (including representative background concentrations) were all predicted during construction to be less than the applicable ambient air quality standards. The maximum predicted annual NO_2 concentration of 13.7 $\mu g/m^3$ (including a representative background value of 9 $\mu g/m^3$) would be less than the CAAQS/NAAQS of 100 $\mu g/m^3$. The maximum predicted annual $PM_{2.5}$ and PM_{10} concentration of 8.2 and 12.6 $\mu g/m^3$ (including representative background values of 8 $\mu g/m^3$ and 11 $\mu g/m^3$, respectively) would be less than the CAAQS/NAAQS of 15 $\mu g/m^3$ and 50 $\mu g/m^3$, respectively."

RD&D Operation Direct Impacts

16. Pg. 20 – First paragraph of section. CO was added. Also, text added discussing operation emissions to include vehicular traffic and relative impact of heaters.

    Original Text: "Air pollutant dispersion modeling was also performed to quantify potential reasonable, but conservative NO_2, PM_{10}, $PM_{2.5}$, and SO_2 impacts during RD&D operations, based on the period of maximum potential emissions (**Table 5**). Operation emissions would occur primarily from boiler exhausts."

    Revised Text: "Air pollutant dispersion modeling was also performed to quantify potential reasonable, but conservative NO_2, PM_{10}, $PM_{2.5}$, CO and SO_2 impacts during RD&D operations, based on the period of maximum potential emissions (**Table 5**). Operation emissions would occur primarily from boiler exhausts with small contributions from vehicular traffic."

17. Pg. 20 – Second paragraph of section. Direct annual NO_2 impact of 3.1 $\mu g/m^3$ replaces 9.14.

Original Text: "As demonstrated below, all other air pollutants and averaging times are also predicted to be well below applicable ambient air quality standards and PSD Class II increments, although maximum predicted direct annual NO_2 impact of 9.14 $\mu g/m^3$ is less than half the applicable annual PSD Class II increment of 25 $\mu g/m^3$."

Revised Text: "As demonstrated below, all other air pollutants and averaging times are also predicted to be well below applicable ambient air quality standards and PSD Class II increments, although maximum predicted direct annual NO_2 impact of 3.1 $\mu g/m^3$ is less than half the applicable annual PSD Class II increment of 25 $\mu g/m^3$."

18. Pg. 20 – Table 5 changed to include Class II increment levels, to include revised results from the model rerun, and provided the NAAQS/CAAQS for comparison.

Original Text:

Pollutant	Averaging Time	Direct Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)
nitrogen dioxide	Annual	0.14	9	9.14
$PM_{2.5}$	24-hour	9	18	27
	Annual	0.1	8	8.1
PM_{10}	24-hour	58	41	99
	Annual	1.6	11	12.6
sulfur dioxide	3-hour	321.75	24	345.75
	24-hour	134.20	13	147.20
	Annual	11.61	5	16.61

Revised Text:

Pollutant	Averaging Time	Class II Increment Levels ($\mu g/m^3$)	Direct Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	NAAQS/ CAAQS ($\mu g/m^3$)
NO_2	Annual	25	3.1	9	12.1	100
$PM_{2.5}$	24-hour	NA	2.6	18	20.6	65
	Annual	NA	0.6	8	8.6	15
PM_{10}	24-hour	30	28.6	41	69.6	150
	Annual	17	2.0	11	13	50
SO_2	3-hour	512	179.3	24	203.3	700(1)
	24-hour	91	75.1	13	88.1	365
	Annual	20	6.5	5	11.5	80
CO	1-hour	NA	229.5	1145	1374.5	40,000
	8-hour	NA	55.1	1145	1200.1	10,000

Pollutant	Averaging Time	Class II Increment Levels ($\mu g/m^3$)	Direct Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	NAAQS/ CAAQS ($\mu g/m^3$)
Note: [1] CAAQS standard for SO_2, 3 hour averaging period.						

Subalternative – Proposed Action with Mitigation

19. Pg. 21 – Text added with additional types of mitigation for fugitive dust.

    Original Text: None

    Revised Text: "Road watering has been added to mitigate fugitive dust emissions associated with traffic that were causing Class II PSD increment exceedances. Additional mitigation can be added if needed to augment fugitive dust emissions controls such as erosion control measures during construction activities, dust control during construction, control of bare dust areas during wind events and covers on topsoil and other stockpiles."

Environmental Consequences of the Subalternative

20. Pg. 21 – Text added discussing erosion control and dust control measures.

    Original Text: "Fugitive dust impacts to air quality during construction and operation would be reduced as a result of the mitigation measures."

    Revised Text: "Fugitive dust impacts to air quality during construction and operation would be reduced as a result of road watering. Furthermore, if additional control measures are determined to be necessary to comply with state and federal standards, more effective mitigation measures may be implemented such as erosion control measures during construction activities, dust control during construction, control of bare dust areas during wind events and covers on topsoil and other stockpiles."

Migratory Birds

Subalternative – Proposed Action with Mitigation

21. Pg. 34 – Bullet items revised to clarify requirements of the WRFO and WRRMP.

    Original Text:

- If the project initiation and construction are delayed until February 1, 2007, then a new survey for nesting migratory birds, including raptors, will be needed before project initiation.
- No surface occupancy will be allowed within 1/2 mile of active nests of threatened, endangered, or BLM sensitive species of migratory birds, including raptors, from February 1 through August 15 (1/8 mile for all non-listed migratory bird species). The BLM will be contacted and USFWS will be consulted if any special status species nests are discovered on or adjacent to the project area.
- Timing Limitation stipulations would be applied to active, non-Special Status raptor nests (i.e., those species not classified as listed, proposed, or candidate

species for listing under the Endangered Species Act and non-BLM sensitive species). No development or construction-related activities would be allowed within 1/4 mile of identified nest(s) from February 1 through August 15.

- Migratory bird access to, or contact with, reserve pit contents that possess toxic properties from ingestion or exposure or have the potential to compromise the water-repellent properties of birds' plumage will be effectively precluded. Exclusion methods may include netting, the use of "bird-balls," or other alternative methods that effectively eliminate migratory bird contact with pit contents and meet BLM's approval. EGL will notify BLM of the method that will be used to eliminate migratory bird use two weeks prior to initiation of drilling activities. The BLM-approved method will be applied within 24 hours after drilling activities have begun. All lethal and non-lethal events that adversely affect migratory birds will be reported to a WRFO Petroleum Engineer Technician immediately.

Revised Text:

- Conduct follow-up surveys if construction activities do not begin prior to February 1, 2007;
- Minimize, where possible, vegetation clearing while migratory birds are nesting (February 1 through August 15);
- If reserve pits are deemed necessary on site, ensure that pits are lined, fenced on all four sides with net-wire, and covered with plastic barrier to exclude both large and small animals and netted to prevent birds from accessing these pits. Plastic flagging has proven to be ineffective at deterring migratory waterfowl from using reserve pits for foraging, resting or as a source of free water. The Operator will notify the BLM via Sundry Notice of the method that will be used to prevent impacts to migratory birds two weeks prior to the date when completion activities are expected to begin. The BLM-approved method will be applied within 24 hours after completion activities have begun. All lethal and non-lethal events that involve migratory birds will be reported to the Petroleum Engineer Technician immediately;
- All lethal and non-lethal events that adversely affect migratory birds will be reported to a WRFO Petroleum Engineer Technician and Wildlife Biologist immediately.

No special status species are presently known to occur in the project area. If surveys reveal special status species to be present, EGL must comply with the following measures detailed in Appendix A of the White River Resource Area RMP (1997):

- No development activities are allowed within l/2 mile of identified nest sites of listed, candidate, or BLM sensitive raptor species (except Bald Eagle and Ferruginous Hawk) from February 1 through August 15, or until fledging and dispersal of young. Development activities are allowed from August 16 through January 31;
- No development activities allowed within l/4 mile of identified nests of other special status raptor species from February 1 through August 15, or until fledging

and dispersal of young. Development activities are allowed from August 16 through January 31;

- No development is allowed within one (1) mile of identified nests of Ferruginous Hawks from February 1 through August 15, or until fledging and dispersal of young. Development activities allowed from August 16 through January 31;
- No surface occupancy within l/4 mile of an identified nest of an ESA listed, proposed, or candidate raptor species;
- No surface occupancy within l/8 mile of an identified nest of other special status raptor species;

"These mitigation measures can be exempted, modified, or waived by BLM if conditions warrant and the decision is documented through an environmental analysis. An exception would suspend the stipulation on a one time basis. Modifications would temporarily or permanently change the language or provision of a stipulation. Waivers are utilized to permanently remove the stipulation due to changed circumstances. Conditions for granting an exception, modification, or waiver are described in the Appendix A of the White River Resource Area RMP (1997)."

Threatened, Endangered, and Sensitive Animal Species

Table 11 – Special Status Wildlife Species

22. Pg. 38 – Bald Eagle text added;

Original Text: "Yes, a raptor survey was conducted in the project area during the appropriate time of year. No winter roost sites are known in the project area, and no bald eagles or nests were observed within the survey area."

Revised Text: "No, a raptor survey was conducted in the project area during the appropriate time of year. No winter roost sites are known in the project area, and no bald eagles or nests were observed within the survey area. Bald eagle make consistent opportunistic foraging forays across Piceance Basin through the winter months (October through March)."

23. Pg. 39 – Northern Goshawk text added;

Original Text: "Yes, a raptor survey was conducted in the project area during the appropriate time of year. Surveys for nesting birds were conducted by O&G Environmental Consulting at the EGL tract on March 28 and 29, 2006 using the Kennedy-Stahlecker method (Kennedy and Stahlecker, 1993), including use of tape recorded calls for northern goshawk. There were no northern goshawk observed during the survey."

Revised Text: "No, a raptor survey was conducted in the project area during the appropriate time of year. Surveys for nesting birds were conducted by O&G Environmental Consulting at the EGL tract on March 28 and 29, 2006 using the Kennedy-Stahlecker method (Kennedy and Stahlecker, 1993), including use of

tape recorded calls for northern goshawk. There were no northern goshawk observed during the survey. Although likelihood low, potential persists for future nest establishment in woodlands above 6,200 feet elevation."

24. Pg. 40 – Bonytail Chub, Colorado Pikeminnow, Humpback Chub, and Razorback Sucker. Text changed in table to support affect determination.

    Original Text: "Yes, the project activities would not affect any perennial waterbodies or tributaries to waters that could be possible habitat, including waters of the Colorado River system."

    Revised Text: "No, although project activities would not directly impact any perennial waterbodies or tributaries to waters that could be possible habitat, Water used for drilling and operations could result in a maximum 3.9 acre-feet depletion of the Upper Colorado River System. The USFWS considers any depletion to these waters as a 'May Affect, Likely to Adversely Affect' the bonytail chub." etc. for each species.

Mammals

25. Pg. 41 – Four paragraphs regarding bats inserted.

    Original Text: None

    Revised Text: "BLM-sensitive Townsend's big-eared bat, and fringed and Yuma myotis occupy a broad array of habitats in the West, and limited collections have documented their presence from western Colorado's semidesert shrublands and woodlands. The Yuma myotis and Townsend's big-eared bat, in particular, are often closely associated with riparian communities and permanent sources of water. Relatively simple, but persistent riparian communities are available in Ryan Guclh (2 miles west), Black Sulphur Creek (2 miles south), and Piceance Creek (6 miles east). The fringed myotis is more common in upland sage-steppe and xeric woodlands, including pinyon-juniper.

    Foraging habitat for the Yuma myotis includes edge habitats along streams and adjacent to and within a variety of wooded habitats where they forage primarily on flying aquatic insects. The fringed myotis and Townsend's big-eared bat more consistently use forested habitats for foraging. Over 90% of big-eared bat's diet is composed of moths. Consistent with its preferential use of uplands, the presence of non-flying invertebrates in the diet of fringed myotis suggests a foraging style that relies at least partially on foliage gleaning. All these bats are capable of traveling long distances between roosts and foraging areas (up to 10 miles).

    Birthing and the formation of maternity colonies for these species occurs from mid-spring through mid-summer; males tend to roost singly in the summer. The core distribution of these 3 bats tends to be strongly (almost solely) correlated

with the availability of caves, cave-like roosting habitat (e.g., mines), and buildings for night, maternity, and hibernation roosts, but these species have been found using rock crevices and trees. The nearest geology conducive to the formation of caves is 30 or more miles to the east and north of the project area. Bats roosting in woodland habitats use live and dead trees, roosting under loose exfoliating bark, in cavities, or vertical cracks—attributes that may be served by mature large-diameter pinyon and juniper trees. It is possible that mature pinyon-juniper woodlands offer limited day roost opportunity during the spring through fall months and there is some evidence to suggest that bat roost trees may be more often situated within the interior of stands rather than on the stand margins. Rock outcrops and mature pinyon-juniper woodlands, representing potential roost substrate for small numbers of bats, are widely available in the project area.

In summary, although the project area may support small numbers of bats (especially solitary males) during the summer months, overall abundance is likely constrained by the paucity of maternity and hibernation roost habitat (e.g., caves, mines, buildings) and this site's location relative to preferred riparian foraging habitat."

Fish

26. Pg. 43 – Text changed to;

Original Text: "Any depletions to waters of the Colorado River System may affect the four endangered species."

Revised Text: "Any depletion to waters of the Colorado River System is considered by the USFWS as a 'may affect, likely to adversely affect' the four endangered species."

Subalternative – Proposed Action with Mitigation

27. Pg. 45 – Bullet items revised to clarify requirements of the WRFO and WRRMP.

Original Text:

- conduct follow-up raptor surveys if construction activities do not begin prior to the 2007 raptor nesting season;
- conduct surveys prior to construction activities to determine which species will require clearance surveys in the project area if construction occurs in spring of 2007.
- enforce limitations on activities within a one-half mile radius of active nests of raptors that are threatened, endangered, or BLM sensitive between February 1 – August 15 (one-fourth mile for other raptors) and consulting with USFWS if any special status species nests are discovered on or adjacent to the project area;
- prevent vegetation clearing while migratory birds are nesting (February 1 through August 15); and
- ensure that reserve pits are lined, fenced on all four sides with net-wire and covered with plastic barrier to exclude both large and small animals and netted to

prevent birds from accessing these pits, and reclaiming the pits as soon as possible after use.
- adhere to the requirements of a USFWS Biological Opinion and USFWS Colorado River Fish Species recovery program.

Revised Text:
- The Operator or Operator's proponent will conduct follow-up raptor surveys if construction activities do not begin prior to February 1, 2007;
- Conduct special status species surveys prior to construction activities to determine which species clearances may be needed if construction is planned to begin after April 1, 2007;
- If reserve pits are deemed necessary on site, ensure that pits are lined, fenced on all four sides with net-wire, and covered with plastic barrier to exclude both large and small animals and netted to prevent birds from accessing these pits;
- Reclaim reserve pits as soon as possible after use;
- Adhere to the requirements of USFWS Biological Opinion and the Colorado River Fish Species recovery program.

No special status species are presently known to occur in the project area. If surveys reveal special status species to be present, EGL must comply with the following measures detailed in Appendix A of the White River Resource Area RMP (1997):

- No development activities are allowed within l/2 mile of identified nest sites of listed, candidate, or BLM sensitive raptor species (except Bald Eagle and Ferruginous Hawk) from February 1 through August 15, or until fledging and dispersal of young. Development activities are allowed from August 16 through January 31;
- No development activities allowed within l/4 mile of identified nests of other special status raptor species from February 1 through August 15, or until fledging and dispersal of young. Development activities are allowed from August 16 through January 31;
- No development is allowed within one (1) mile of identified nests of Ferruginous Hawks from February 1 through August 15, or until fledging and dispersal of young. Development activities allowed from August 16 through January 31;
- No surface occupancy within l/4 mile of an identified nest of an ESA listed, proposed, or candidate raptor species;
- No surface occupancy within l/8 mile of an identified nest of other special status raptor species.

These mitigation measures can be exempted, modified, or waived by BLM if conditions warrant and the decision is documented through an environmental analysis. An exception would suspend the stipulation on a one time basis. Modifications would temporarily or permanently change the language or provision of a stipulation. Waivers are utilized to permanently remove the stipulation due to changed circumstances. Conditions for granting an exception, modification, or waiver are described in the White River Resource Area RMP.

Water Quality, Surface and Ground

Surface Water

28. Pg. 54 – Text added below Table 12 reads;

    Original Text: None

    Revised Text: "Ryan Gulch is ephemeral, flowing only in direct response to snowmelt runoff and high-intensity precipitation events. Because of its ephemeral nature, water quality data are lacking."

29. Pg. 54 – Paragraph 3. Text added listing analytes.

    Original Text: "For stream segment 16 minimum standards for four parameters are listed as follows: dissolved oxygen = 5.0 mg/L, pH = 6.5 - 9.0, fecal coliform = 2000/100 mL, and *E. coli* = 630/100 mL."

    Revised Text: "For stream segment 16 minimum standards have been established for: dissolved oxygen, pH, fecal coliform, *E. coli*, ammonia, chlorine, cyanide, sulfide, boron, nitrite, nitrate, chloride, arsenic, cadmium, chromium (III and IV), copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc."

30. Pg. 54 – Paragraph 4. Sentence added;

    Original Text: None

    Revised Text: "Water quality standards have also been established for segment 20 and include all of the parameters regulated in segment 16 except for nitrate and chloride."

31. Pg. 55 – Paragraph 5. Text added defining Recreation Class II waters.

    Original Text: "*Recreation Class 2* waters are suitable or intended to become suitable for recreational uses on or about the water, including fishing and other streamside recreation."

    Revised Text: "*Recreation Class 2* waters are not suitable or intended to become suitable for primary contact recreation uses, but are suitable or intended to become suitable for recreational uses on or about the water which are not included in the primary contact subcategory, including but not limited to wading, fishing, and other streamside or lakeside recreation."

32. Pg. 55 – Three paragraphs added discussing salinity in the Colorado River.

    Original Text: None

Revised Text: "The Colorado River Basin Salinity Control Forum (CRBSCF) is concerned with energy development and the movement of salts downstream in the Colorado River Basin. The CRBSCF was formed to develop interstate cooperation, and to provide the Basin States (Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming) with the information necessary to comply with Section 303(a) and (b) of the Clean Water Act. The U.S. Environmental Protection Agency (EPA) enacted a regulation in December of 1974 that set forth a basin-wide salinity control policy for the Colorado River Basin, and in 1975, the CRBSCF proposed, the Basin States adopted, and the EPA approved water quality standards to control salinity increases in the Colorado River. The nearest downstream water quality standard is below Hoover Dam and is 723 mg/L. Congress enacted the Colorado River Basin Salinity Control Act, Public Law 93-320 1974 Title II-Water Quality program for Salinity Control, and amended in 1984. This Act directed the BLM to inplement a comprehensive program to minimize salt loading in the Colorado River Basin, and coordinate salinity control activities with the CRBSCF, the Basin States, the U.S. Bureau of Reclamation (USBR), and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Other federal agencies that participate in the CRBSCF Work Group meetings include the EPA, U.S. Fish and Wildlife Service (USFWS), and the U.S. Geological Survey (USGS). In addition, the CDPHE-WQCC Regulation No. 39, Colorado River Salinity Standards, establishes water quality standards for salinity or total dissolved solids for the Colorado River and its tributaries in Colorado.

Because the proposed action would disturb soils, and could increase the potential for erosion and sediment transport, the aforementioned laws and regulations would be in effect at the proposed project location to minimize and/or prevent the movement of salts downstream."

Environmental Consequences of the Proposed Action
Surface Water Quality

33. Pg. 57 – Paragraph 2. Text added in sixth sentence;

Original Text: "Additionally, surface runoff and erosion could increase sediment loads to Ryan Gulch and Black Sulphur Creek if highly erosive soils or intense precipitation events occur."

Revised Text: "Additionally, surface runoff and erosion could increase sediment loads to Ryan Gulch and Black Sulphur Creek if highly erosive soils or intense precipitation events occur but typically only if Best Management Practices are not properly designed or implemented."

Ground Water Quality
Subalternatives – Proposed Action with Mitigation

34. Pg. 59 – Paragraph 4. Four sentences added on compliance with water well regulations.

Original Text: None

Revised Text: "All water wells constructed for the purpose of monitoring, dewatering, recharge, injection, and production must comply with CRS 37-90-137 and 37-92-602. All well construction must be in compliance with the Water Well Construction Rules 2CCR-402-2, which may require submittal and approval of a variance from the rules. All wells permitted by the State Engineer must be constructed by a water well construction contractor licensed by the State of Colorado. All permanent pump installations shall be completed by a pump installation contractor licensed by the State of Colorado."

Non-Critical Elements

Wildlife Terrestrial

35. Pg. 72 – Table 18. Text added explaining percentages of summer range in GMUs.

Original Text: "The entire 160-acre tract area is located within both winter range and summer range for elk and mule deer, but only a portion of the tract is anticipated to be disturbed. The critical range data and associated restrictions established by the BLM and CDOW are provided in **Table 18**."

Revised Text: "The critical range data and associated restrictions established by the BLM and CDOW are provided in **Table 18**. The 36 acres of elk summer range that would be disturbed represent approximately 0.013 percent of the approximately 281,920 acres present in GMU 22. For mule deer summer range, this represents approximately 0.012 percent of the approximately 298,344 acres in GMU 22. These percentages represent an insignificant fraction of the 10 percent summer range disturbance allowed within a GMU. Although the project area falls within elk and deer winter range, the closest identified severe winter range is approximately three miles to the northeast and would not be impacted by construction activities."

Environmental Consequences of the Proposed Action

36. Pg. 73 – Paragraph 2, last sentence. Text added;

Original Text: "The loss of habitat could impact local and long-distance migratory patterns."

Revised Text: "The loss of habitat attributable to this project is relatively discrete and static and would have no conceivable influence on local and long-distance migratory patterns."

37. Pg. 73 – Additional text discussing big game.

Original Text: "Clearing activities would result in the displacement of wildlife from areas in and adjacent to the EGL tract. This could cause crowding in adjacent habitat and result in reduced productivity and increased stress-related mortality. Reproductive success and nutritional condition could decrease due to increased energy expenditures that result from physical response to disturbance. Displaced animals may relocate into similar habitats nearby; however, the lack of adequate territorial space could increase intra- and inter-specific competition and could lower reproductive success and survival. Displacement would likely be a temporary impact and animals would likely return to the disturbance area after construction activities are complete."

Revised Text: "Considering vegetation and topographic screening and that big game tend to avoid areas up to 500 feet from concentrated human activity, the utility of forage and cover resources available on up to 160 additional acres would likely be reduced over the life of the project. This could increase animal densities adjacent habitat and result in incremental reductions in productivity and/or fitness. Reproductive success and nutritional condition could decrease due to increased energy expenditures that result from physical response to disturbance. Displaced animals may relocate into similar habitats nearby; however, the lack of adequate territorial space could increase intra- and inter-specific competition and could lower reproductive success and survival. With animal habituation (i.e., contingent on the character and predictability of operational activities), displacement would likely be a temporary impact and animals may approach preconstruction activity patterns after construction activities are complete."

Subalternative – Proposed Action with Mitigation

38. Pg. 73 – Bullet items revised to clarify requirements of the WRFO and WRRMP.

Original Text:

- prohibit construction activities in severe/critical mule deer and elk winter range between December 1st and April 30th;
- redistribute large, woody material salvaged during clearing operations so as not to exceed 3 to 5 tons/acre, and mulch excess woody materials;
- limit fencing on the tract to facilities that otherwise would present a hazard to humans and/or wildlife;
- seed disturbed areas according to BLM recommendations;
- support carpooling and establish a policy of reduced vehicular speed, especially at night; and
- ensure that reserve pits are lined, fenced on all four sides with net-wire and covered with plastic barrier to exclude both large and small animals and netted to prevent birds from accessing these pits, and reclaiming the pits as soon as possible after use.

Revised Text:

- Redistribute large, woody material salvaged during clearing operations so as not to exceed 3 to 5 tons/acre, and mulch excess woody materials;
- Limit fencing on the tract to facilities that otherwise would present a hazard to humans and/or wildlife;
- Seed disturbed areas according to BLM recommendations;
- Support carpooling and establish a policy of reduced vehicular speed, especially at night; and
- If reserve pits are deemed necessary on site, ensure that pits are lined, fenced on all four sides with net-wire, and covered with plastic barrier to exclude both large and small animals and netted to prevent birds from accessing these pits;

Environmental Consequences of the Subalternative

39. Pg. 74 – Last Paragraph. Text in added discussing reserve pits;

Original Text: "Fencing and covering reserve pits would minimize impacts to raptors, waterfowl, and other wildlife that may be attracted to the pits."

Revised Text: "Fencing and covering reserve pits should effectively preclude impacts to raptors, waterfowl, and other wildlife that may be attracted to the pits."

Geology and Minerals

Mineral Resources

40. Pg. 84 – Paragraph 1. Text added discussing historic well;

Original Text: "A plugged and abandoned oil and gas well, Great Yellowstone Sulphur Creek #1, is located in the northeast quarter of the tract. Records indicate the well was drilled to a depth of 4,540 feet."

Revised Text: "A plugged and abandoned oil and gas well, Great Sulphur Creek – Gov #1, is located in the northeast quarter of the tract. COGCC records indicate the well was drilled to a depth of 4,540 feet in 1962, but provide little additional information."

Hydrology and Water Rights

Environmental Consequences of the Proposed Action

41. Pg. 90 – Paragraph 4. Text added clarifying water usage;

Original Text: "Water consumption would be limited to drilling activities, on-site heating, and personnel requirements. The projected volume of water (about 27 barrels/day) would be purchased from municipal sources and trucked to the tract."

Revised Text: "Water consumption would be limited to drilling activities, dust suppression, on-site heating, and personnel requirements. The projected volume of water (about 80 barrels/day during the drilling phase, and 27 barrels/day during

the sustained operations phase) would be purchased from municipal sources and trucked to the tract."

Noise

Environmental Consequences of the Proposed Action

42. Pg. 93 – Paragraph 1. Sentence added;

    Original Text: None
    Revised Text: "Rio Blanco County has a noise standard of 65 dbA."

43. Pg. 94 – Paragraph 3. Text added for Rio Blanco County;

    Revised Text: "Equipment used in the facilities will be designed to meet COGCC noise levels and Rio Blanco County standards as required."

Socioeconomics

Environmental Consequences of the Proposed Action

44. Pg. 109 – Paragraph 5. Text added discussing grants;

    Original Text: None

    Revised Text: "Most grants administered by DOLA require a cash match from the applicant, and RBCs ability to provide cash for such grants is limited by County Use tax payments by energy companies."

Cumulative Impacts

Air Quality

45. Pg. 116 – Table 31 and Page 117 Paragraph 2. Definition of visibility impact changed to be "equal to or greater than 1.0 deciview" instead of "greater than 1.0 deciview.

46. Pg. 117 – Paragraph 2. Text added to first sentence.

    Original Text: "The Forest Service considers potential visibility impacts within their mandatory federal PSD Class I areas greater than a 1.0 deciview "just noticeable change" from cumulative air pollutant emission sources to be an adverse impact."

    Revised Text: "The Forest Service considers potential visibility impacts within their mandatory federal PSD Class I areas equal to or greater than a 1.0 deciview "just noticeable change" from cumulative air pollutant emission sources to be an adverse impact."

Water Resources, Surface and Ground

47. Pg. 119 – Paragraph 2. Text added discussing water standards;

Original Text: "The proposed actions would all perform suitable reclamation activities to meet Colorado Ground Water Quality Standards at compliance well locations, resulting in no cumulative downgradient impacts."

Revised Text: "The proposed actions would all perform suitable reclamation activities to meet state-wide basic standards for groundwater quality at compliance well locations, resulting in no cumulative downgradient impacts."

Wildlife, Aquatic, and Terrestrial

48. Pg. 122 – Paragraph added;

Original Text: None

Revised Text: "It has been agreed upon by the BLM, WRFO and the CDOW, Meeker Service Center that the extent, dispersion, and relatively short duration of big game impacts attributable to the proposed action would, at the present time, not radically alter the distribution or abundance of local big game populations."

Access and Transportation

49. Pg. 123 – Text added discussing emergency equipment;

Original Text: "The increasing traffic volume, frequency, and vehicle size on these rural roads has contributed to an increase in the costs associated with repair and maintenance of these county roads."

Revised Text: "The increasing traffic volume, frequency, and vehicle size on these rural roads has contributed to an increase in the costs associated with repair and maintenance of these county roads and to an increase in accidents requiring more emergency response."

Figures

50. Figure 2 – Item 1 in legend changed from 50MM BTU boiler to 25MM BTU boiler to correct the typographical error.
51. Figure 5 – Production Zone identified by cross-hatching under Stratigraphic Unit column.

Appendix A

52. Pg. A-1 – Air Quality. Bullet item added to last column discussing fugitive dust.

    Original Text: None

    Revised Text:
    - "Use dust inhibitors (surfacing materials, non-saline dust suppressants, water, etc.) as necessary on unpaved collector, local and resource roads to prevent fugitive dust problems."

53. Pg. A-2 – Migratory Birds. Bullet items revised to clarify requirements of the WRFO and WRRMP.

    Original Text:

- Re-survey for nesting migratory birds, including raptors, before project initiation if construction is delayed until February 1, 2007
- No surface occupancy allowed within one-half mile of active nests of threatened, endangered, or BLM sensitive species of migratory birds, including raptors, from February 1 through August 15
- No surface occupancy allowed within one-quarter mile of active nests for all non-listed migratory bird species from February 1 through August 15.
- Contact BLM for USFWS consultation if any special status species nests are discovered on or adjacent to the project area.
- No vegetation clearing while migratory birds are nesting (February 1 through August 15).
- Preclude migratory bird access to, or contact with, reserve pit contents using methods that effectively eliminate migratory bird contact with pit contents and meet BLM's approval.
- Notify BLM of the method that would be used to eliminate migratory bird use of reserve pits two weeks prior to initiation of drilling activities and implement within 24 hours after drilling activities have begun.
- Report all lethal and non-lethal events that involve migratory birds to a WRFO Petroleum Engineer Technician immediately.

Revised Text:

- Conduct follow-up surveys if construction activities do not begin prior to February 1, 2007;
- Minimize, where possible, vegetation clearing while migratory birds are nesting (February 1 through August 15);
- If reserve pits are deemed necessary on site, ensure that pits are lined, fenced on all four sides with net-wire, and covered with plastic barrier to exclude both large and small animals and netted to prevent birds from accessing these pits.

No special status species are presently known to occur in the project area. If surveys reveal special status species to be present, EGL must comply with the following measures detailed in Appendix A of the White River Resource Area RMP (1997):

- No development activities are allowed within 1/2 mile of identified nest sites of listed, candidate, or BLM sensitive raptor species (except Bald Eagle and Ferruginous Hawk) from February 1 through August 15, or until fledging and dispersal of young. Development activities are allowed from August 16 through January 31;
- No development activities allowed within 1/4 mile of identified nests of other special status raptor species from February 1 through August 15, or until fledging and dispersal of young. Development activities are allowed from August 16 through January 31;
- No development is allowed within one (1) mile of identified nests of Ferruginous Hawks from February 1 through August 15, or until fledging and dispersal of young. Development activities allowed from August 16 through January 31;
- No surface occupancy within 1/4 mile of an identified nest of an ESA listed, proposed, or candidate raptor species;
- No surface occupancy within 1/8 mile of an identified nest of other special status raptor species;

54. Pg. A-3 – Threatened, Endangered, and Sensitive Animal Species. Bullet items revised to clarify requirements of the WRFO and WRRMP.

Original Text:

- Re-survey for nesting migratory birds, including raptors, before project initiation if construction is delayed until February 1, 2007
- Conduct surveys prior to construction activities to determine which species would require clearance surveys in the project area if construction occurs in spring of 2007.
- No surface occupancy allowed within one-half mile of active nests of threatened, endangered, or BLM sensitive species of migratory birds, including raptors, from February 1 through August 15
- No surface occupancy allowed within one-quarter mile of active nests for all non-listed migratory bird species from February 1 through August 15.
- Contact BLM for USFWS consultation if any special status species nests are discovered on or adjacent to the project area.
- No vegetation clearing while migratory birds are nesting (February 1 through August 15).
- Limit activities within a one-half mile radius of active nests of raptors that are threatened, endangered, or BLM sensitive between February 1 – August 15 (one-fourth mile for other raptors) and consulting with USFWS if any special status species nests are discovered on or adjacent to the project area; and Prevent vegetation clearing while migratory birds are nesting (February 1 through August 15).

Revised Text:

- The Operator or Operator's proponent will conduct follow-up raptor surveys if construction activities do not begin prior to February 1, 2007;

- Conduct special status species surveys prior to construction activities to determine which species clearances may be needed if construction is planned to begin after April 1, 2007;
- Adhere to the requirements of USFWS Biological Opinion and the Colorado River Fish Species recovery program.
- No special status species are presently known to occur in the project area. If surveys reveal special status species to be present, EGL must comply with the measures detailed in Appendix A of the White River Resource Area RMP (1997) which were listed under the Migratory Bird section, above.

55. Pg. A-6 – Wildlife, Terrestrial. Bullet items revised to clarify requirements of the WRFO and WRRMP.

Original Text:
- Prohibit construction activities in severe/critical mule deer and elk winter range between December 1st and April 30th;
- Redistribute large, woody material salvaged during clearing operations so as not to exceed 3 to 5 tons/acre.
- Mulch excess woody materials.
- Limit fencing on the tract to facilities.
- Seed disturbed areas according to BLM standard.

Revised Text:
- Redistribute large, woody material salvaged during clearing operations so as not to exceed 3 to 5 tons/acre, and mulch excess woody materials;
- Limit fencing on the tract to facilities that otherwise would present a hazard to humans and/or wildlife;
- Seed disturbed areas according to BLM recommendations;
- Support carpooling and establish a policy of reduced vehicular speed, especially at night; and
- If reserve pits are deemed necessary on site, ensure that pits are lined, fenced on all four sides with net-wire, and covered with plastic barrier to exclude both large and small animals and netted to prevent birds from accessing these pits.

56. Pg. A-7 – Inserted the Geology and Minerals Resource Area and prepared bullets which summarize mitigations discussed in the Subalternative - Proposed Action with Mitigation portion of the Geology and Minerals text on page 85.

Original Text: None

Revised Text:

Geology and Minerals	• Relocate gas gathering line crossing the tract. • Determine adequacy of plugging and abandonment of oil and	• Coordinate construction activities with gas well and pipeline operators near the site and along access roads. • Meet with Enterprise to determine a mutually-agreeable location for the

	gas well Sulphur Creek #1 prior to start of heating and recovery operations, and re-enter and re-abandon if necessary.	proposed NGL line which would cross the tract. • Contact the lease holder of federal oil and gas lease COC-062055 and inform them of the proposed activities. • Directional drilling to recover oil and gas resources would be required to prevent interference with RD&D development.

57. Pg. A-7 – Inserted the Hydrology and Water Rights Resource Area and prepared bullets which summarize mitigations discussed in the Subalternative – Proposed Action with Mitigation portion of the Hydrology and Water Rights text on page 91.

Original Text: None

Revised Text:

Hydrology and Water Rights	• Obtain all necessary federal and state permits and comply with all applicable water quality permitting requirements. • Install up-gradient and down-gradient multi level monitoring wells.	• Install up-gradient and down-gradient multi level monitoring wells to characterize the properties of local aquifers, establish pre-development baseline groundwater conditions, define the geology, and monitor water quality. • Construct monitoring, dewatering, recharge, injection and production wells in compliance with CRS 37-90-137 and 37-92-602 and in compliance with water Well Construction Rules 2CCR-402-2. • Construct all water wells and install permanent pumps by contractors licensed by the State of Colorado. • Monitor flow in nearby streams. • Submit all monitoring data to BLM for review. • Construct groundwater model to design the dewatering and reinjection plans and submit program design to BLM for review and approval. • Protect shallow aquifers from hydrofracturing and produced shale oil by installing and cementing surface and intermediate casing. • Truck groundwater produced from the Mahogany and R-6 zones offsite and dispose of properly.