

From: Dale Harber <dharber@fs.fed.us>
To: <waynehedberg@utah.gov>, <waynehedberg@utah.gov>
Date: 1/13/2005 3:53:00 PM
Subject: I have added comments in blue to the e-mail I sent you on 12-16-04 and the e-mail I received from Pam on 12-29-04

Wayne:

Here is our response. I have put the comments on the e-mail I sent Pam on 12-10-04 and the e-mail she sent me on 12-29-04. Call me if you have any questions.

Dale

(See attached file: resp_dogm_01-12-05.doc)

CC: Dale Harber <dharber@fs.fed.us>

I have added comments in blue to the e-mail I sent you on 12-16-04 and the e-mail I received from Pam on 12-29-04.

12-16-04 e-mail, Dale Harber to Pam Grubaugh-Littig

We have reviewed Canyon Fuel Company's revised Skyline Mine North Lease Amendment for consistency with the Manti-La Sal National Forest Land and Resource Management Plan (Forest Plan) and applicable lease stipulations. Data are lacking to show that the amendment is consistent with the Forest Plan and lease stipulations for Riparian Management Units and hydrologic resource management. The data on macroinvertebrates also must be updated to be consistent with Forest Plan requirements.

The amendment does not contain data showing that proposed mining operations are consistent with direction for minerals activities within Riparian Management Units:

“Avoid and mitigate detrimental disturbance to the riparian area by mineral activities. Initiate timely and effective rehabilitation of disturbed sites.”

The company needs to explain how they will avoid “detrimental disturbance” to the riparian area. They are proposing to subside perennial streams, so they need to explain why there will be no negative effects.

The forest-wide direction for riparian, flood plain, and wetlands management is:

“Give preferential consideration to riparian area dependent resources in cases of unresolvable resource conflicts”,

If Skyline can not show that they can undermine the riparian areas without resource damage, we would have to give preference to the riparian resources.

and “Prior to implementation of project activities, delineate and evaluate riparian areas and/or wetlands that may be impacted.”

This goes along with Stipulation #7. How was the contractor able to delineate and evaluate riparian areas when there was snow on the ground? How could he accurately identify plant species?

The amendment also does not contain data showing that proposed operations would be in compliance with Forest Service lease stipulations #7 and #9:

Stipulation #7 – The Lessee shall be required to establish a monitoring system to locate, measure and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for

location and measurement of a number of points over the lease area. The monitoring shall incorporate and be an extension of the baseline data.

They need to explain briefly how they developed their water monitoring plan to be able to evaluate the impacts of mining on the hydrologic system. Explain why they picked the monitoring points and how they will show impacts. Their plans for monitoring the topographic surface and the vegetation are adequate.

Stipulation #9 – Except at specifically approved locations, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, and (3) damage or alter the flow of perennial streams. The Lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created.

The data presented in the amendment must be supplemented or clarified to show that the amendment is in compliance with the Forest Plan and the lease stipulations. As it is written, it is not possible to determine if the mining would potentially impact the hydrologic resources within the lease or alter the flow of Winter Quarters Canyon and Woods Canyon creeks. Items that must be addressed include:

1. Explain why only 2 to 4 feet of subsidence is expected when 9 to 11 feet of coal are removed. Using the standard value of 70% of the mined height, a maximum of approximately 7 feet of subsidence would be expected.
2. Explain the rationale of the hydrologic monitoring plan, such as the selection of monitoring points and how they will be representative of the effects of mining on the hydrologic system.
3. Explain why the areas of predicted surface cracking are only on the sides of the canyons. In the Burnout Canyon study, fractures occurred through the streambed and canyon bottom.
4. Describe the effects of subsidence on stream gradient in both Winter Quarters Canyon and Woods Canyon creeks.
5. Longwall panels are proposed under sections of perennial streams. Explain how full-extraction mining may occur beneath perennial streams without impacting flows, based on predicted subsidence, overburden thickness, and any other relevant factors. Describe effects to the streams.

The discussion and analysis of the macroinvertebrate data must also be updated to be consistent with Forest Plan direction. Macroinvertebrates are one of the “management indicator species” used in the Forest Plan as an indicator of forest health. The methodology varies between James and Burnout Creeks, Winter Quarters Canyon Creek, and Eccles Creek. Canyon Fuel Company should contact Katherine Foster, Forest Hydrologist, at 435-636-3503 for information on updating the macroinvertebrate data to be consistent with Forest Plan direction. Forest Plan direction for macroinvertebrates is:

“To improve and maintain a good or above Diversity Index (DAT) of 11-17, a standing crop of 1.6-4.0, and a Biotic Condition Index (BCI) of 75 or above, based on analysis from R-4’s Aquatic Ecosystem Analysis Laboratory.”

It is not clear that the proposed activities will meet this requirement.

We also have the following general comments on the amendment:

1. The lease area that Canyon Fuel Company proposes to add to the Skyline Mines Mining and Reclamation Plan (MRP) was issued as the Winter Quarters Tract. Unless there is some necessity for a name change, please refer to this as the Winter Quarters Lease, not the North Lease, to avoid confusion in the future. Both names are used in the amendment (such as page 2-71), which is confusing to readers. All Forest Service records going back nearly 10 years refer to this tract as the Winter Quarters Tract.
2. There are numerous statements made that have no supporting reference. For example, there are numerous statements that fractures in the Blackhawk Formation seal rapidly due to their clay content. There is no reference to any research on this, clay mineralogy analyses, or any other data to support this statement. References must be cited that substantiate statements made in the amendment.
3. The Probable Hydrologic Consequences (PHC) has not been updated to reflect proposed undermining of perennial streams (Winter Quarters Canyon Creek and Woods Canyon Creek) and springs in the Winter Quarters Lease. The Forest Service requests both the updated PHC and the Cumulative Hydrologic Impacts Analyses for review.

The following are issues raised in our letter of November 21, 2002, that have not been addressed.

1. A map of the predicted extent and magnitude of potential subsidence has been added. However, there is still no discussion of how subsidence may be affected by the faulting in the area, such as the potential for focused subsidence along the faults.
2. There is no information provided on stream gradient surveys. Due to the generally low stream gradient in the canyon bottoms, we are concerned with the potential of forming sections of reverse gradient and the general effects of subsidence on stream flows.
3. Perennial stream reaches have not been mapped.
4. There is no objectives and methods discussion provided for the hydrologic monitoring plan. Explain how the monitoring points were selected.

The following are specific comments keyed to specific portions of the MRP text:

Page 2-10a, third paragraph.

Provide a reference to the study and report on *in situ* stresses along the faults.

Page 2-29a, first paragraph.

The potentiometric surface cannot be defined with only 2 data points. A minimum of 3 data points are required to define a potentiometric surface.

Page 2-51d, second paragraph.

Consultation on mitigation measures for a water loss must also include the Forest Service, the surface management agency.

Pages 2-63c to 2-63d, seed mix table.

Species changes can only be made with the concurrence of the botanist of the surface management agency. The term "qualified botanist" is too vague.

Page 2-63e, fourth and fifth paragraph.

Here is an example of interchanging the names Winter Quarters and North Lease. As stated above, the Forest Service prefers to call the area Winter Quarters.

Page 2-71, third paragraph.

The Forest Service must also be involved in establishing sampling intervals for macroinvertebrates.

Pages 2-71 to 2-71d.

The methods discussed for macroinvertebrate surveys and analysis of the data in James and Burnout Creeks, Winter Quarters Canyon Creek, and Eccles Creek are not consistent.

Page 2-104i, Herpetofauna.

This section should include a discussion on the spotted frog and boreal toad (conservation agreement species). State whether there is potential habitat, or if these species have been found in the area.

12-29-04 e-mail, Pam Grubaugh-Littig to Dale Harber

Stipulation #7

The Lessee shall be required to establish a monitoring system to locate, measure and quantify the progressive and final effects of underground mining activities on:

- Topographic surface.

The subsidence control plan is in Section 4.17 of the MRP. Map 4.17.3-1A, North Lease Presubsidence Survey Map and Map 4.17.5-1 Subsidence Monitoring Points show the location and number of monitoring points. Monitoring program includes subsidence maps generated from aerial photograph and on the ground surveys that will be conducted annually.

- Underground and surface hydrology.
I didn't respond to stip. #7 in detail – I thought Stip #7 was provided as reference.
- Vegetation.

Patrick Collins report (fall 2002) provides results of vegetation surveys along Woods and Winter Quarters steam channels. Note, the survey was conducted when the ground was snow covered.

The company needs to explain how they will collect riparian baseline data. It does not appear that they have adequate data, if the survey was conducted when the ground was covered with snow. They also need to explain how they will monitor the riparian vegetation. In some places it is a very narrow zone and probably cannot be delineated on the aerial photography data.

Below is a list of general points covering the Permittees plan to monitor aquatics.

Vegetation: Aerial photography monitoring

Overseeing party: Division.

General objective: Color infrared photography monitoring to assess possible impacts of mining on vegetation.

Frequency of task: Annual starting in 2002.

Status: On going.

Required reports: A qualified biologist will review the pictures and the Permittee will submit a report in the Annual Report to the Division.

Citation: MRP page 2-63d; Section 4.17.5.

Below is a comment concerning aerial photography to the Division from the Permittee (email 9/13/2004). The Division considers baseline data as a necessary component to monitoring impacts of mining to vegetation. The Division will request the Permittee to conduct baseline. The FS may want to clarify any other assumptions.

As for the aerial photography, I believe the idea behind the aerial photo of the forest was to determine if the vegetation was being stressed due to subsidence. We did not subside the area (actually little mining has even occurred in the North Lease) but we did take pictures of the area. It was our intent to due the comparison after mining began up there. We still fly and take infrared photos and will do it again this month. IF you would like the photos before subsidence, we can do this.

Stipulation #9

Except at specifically approved locations, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would:

- Cause the creation of hazardous conditions such as potential escarpment failure and landslides. (The Lessee shall provide specific measures for the protection of escarpments and determine corrective measures to assure that hazardous conditions are not created.)

The North Lease Presubsidence Survey Map, Map 4.17.3-1A does not show the escarpment locations. The Division will require that the Permittee show escarpment locations on the maps. The Division request that the Forest Service explain what addition information must be included in the description of hazardous conditions.

The hazardous conditions that the Forest Service is concerned with in the Winter Quarters lease are escarpment failures, landslides, and surface fracturing. They need to describe the potential for any of these conditions and predict their nature if there is a potential for occurrence. For example, they show areas of potential surface fracturing. They should discuss the expected magnitude of the fracturing, potential for preventing fracturing, and possible mitigation.

- Cause damage to existing surface structures.

The North Lease Presubsidence Survey Map, Map 4.17.3-1A does not show any structures in the area. Does the Forest Service want specific language in the text about structures in the North Lease (Winter Quarters)?

If there are no structures, just say so.

- Damage or alter the flow of perennial streams.

The North Lease Presubsidence Survey Map, Map 4.17.3-1A shows the location of the perennial streams and the projected panels and subsidence zones.

There are projected panels and subsidence zones under perennial streams. The company must explain how they can subside perennial streams without damaging the stream or altering the flow.

Specific Items to be addressed

1. Explain why only 2 to 4 feet of subsidence is expected when 9 to 11 feet of coal are removed. Using the standard value of 70% of the mined height, a maximum of approximately 7 feet of subsidence would be expected. The Division will ask the Permittee to explain the procedure that they used to determine surface subsidence. In Section 4.17.4 the Permittee states that S_{max} is less than 50% of mined coal.

The Forest Service is just asking that the amount of predicted subsidence be explained. We are not saying that it is incorrect, but the company must explain the basis of this prediction.

2. Explain the rationale of the hydrologic monitoring plan, such as the selection of monitoring points and how they will be representative of the effects of mining on the hydrologic system. Re: Surface flow is monitored at boundary in both streams, both known wells are monitored, all reasonable springs (6) are monitored – one of the springs is a water right (5 other water rights are not monitored), they also have a subsidence flow monitoring program that is initiated once mining begins. Additional discussion in Append A-1 Vol.2, 1996 PHC

The Forest Service is asking that the methodology of the water monitoring plan be described. Why were these springs chosen? Why are they representative of the hydrologic system in the area? How will they indicate the effects of mining on the hydrologic system?

3. Explain why the areas of predicted surface cracking are only on the sides of the canyons. In the Burnout Canyon study, fractures occurred through the streambed and canyon bottom. The Division will ask the Permittee to explain why surface cracks are predicted only for the canyon sides and not the stream beds.
4. Describe the effects of subsidence on stream gradient in both Winter Quarters Canyon and Woods Canyon creeks. The Division will ask the Permittee for cross sections/profile of the streams with before and after subsidence profiles. Re: Woods – using fig. 2.3.6-2 and EarthFax gradient report, max. subsidence is 3-ft in a 1,500-ft stretch with 7% grade; pooling possible but not a significant factor. Winter Quarters – using same information, max. subsidence is 4-ft in a 2,200-ft stretch with a 6.7% grade; pooling possible but not a significant factor.
5. Longwall panels are proposed under sections of perennial streams. Explain how full-extraction mining may occur beneath perennial streams without impacting flows, based on predicted subsidence, overburden thickness, and any other relevant factors. Describe effects to the streams. The Division's concern is not that subsidence will not impact the streams but rather what the impacts could be and what can be done to mitigate. The Division will ask the Permittee to clearly state that information in the application. Re: Burnout Canyon had double the subsidence with approx. the same cover and same geology with no interruption or diminution of flow. Also discussions in MRP Sects 2.3, 2.3, and 2.5.2 and 1996 PHC.

This MRP modification currently does not meet the requirements of 30 CFR 748.14 and 784.20, which require a determination of the probable hydrologic consequences of the mining on surface water resources. Also, without prior approval of the Forest Service, mining that will damage or alter the flow of perennial streams is prohibited. The Forest Service cannot consent to subsidence

of perennial streams until the company describes the effects on the perennial streams within the Winter Quarters lease.

The operator has not demonstrated that damage to perennial streams can be successfully mitigated. The streams in Winter Quarters and Woods canyons provide water used by Price and surrounding communities, for agriculture, and are important to fish and wildlife. Therefore, the company must explain how they plan to conduct full-extraction mining without impacting flows.

General comments of the amendment.

1. Refer to the area as Winter Quarters Tract instead of North Lease.
2. There are numerous statements made that have no supporting references. Please give the Division a list of those items so the Division can address them. RE: North Horn formation is not found in the permit area – All Blackhawk with the exception of a little Castlegate on the tops of ridges.

The following are some examples of the lack of supporting references. It is not a complete listing of the lack of documentation in the entire MRP modification.

Page 2-10, section 2.2.6, Structural Geology. One and one-half pages of information on faulting, fracturing, and the Clear Creek anticline are presented without a single reference. Did the data come from the mine, published research, or some other source? On page 2-11 of this section, there is a discussion of how the structural geology affects water in the Star Point sandstone and the Blackhawk Formation. There are no references. Is this just speculation?

Pages 2-23 to 2-24. Document the swelling clays in the Blackhawk Formation that “should, in most cases, form an effective barrier to vertical movement of ground water”. Without documentation, this appears to be nothing more than speculation.

Page 2-27, Stream Seepage. What is the source of the data on the contribution of ground water to the annual flow of Huntington Creek and Eccles Creek? Without a reference, how can this statement be accepted? The characteristics of stream flows described on page 2-28 appear to be pure speculation with no supporting data.

Page 2-50. Document the tendency for subsidence cracks to seal rapidly. Document the statement that no significant water loss is expected if spring locations change. Define “significant”. The Forest Service or wildlife may have a different definition of significant than the company.

3. The PHC has not been updated to reflect proposed undermining of perennial stream. RE: North Lease is discussed in MRP Sect. 2.5.2, Pg 2-50, 2-51, Sect 2.2.6, Sect 2.2 pg 2-11, Sect 2.3 Pg 2-25, 2-29c, Append A-1 Vol. 2 – 1996 PHC.

The 1996 PHC stresses, through water chemistry analysis, the lack of communication between the shallow groundwater system and the deep groundwater system. However, comments could be added to Sect. 3.2.5 – Potential Surface Water Impacts.

The following are issues raised in the Forest Service letter of November 21, 2002, that have not been addressed.

1. There is not discussion about how subsidence may be affected by faulting in the area. The Division will ask for that information.
2. There is no information on stream gradient surveys. Re; Report supplied in current submittal. Reverse gradient unlikely - 4-ft subsidence in ~ 7% grade section of channel
3. Perennial stream reaches have not been mapped. Re; Report supplied in current submittal.
4. There is no objectives and methods discussion provided for the hydrologic monitoring plan. Explain how monitoring points were selected. Re; answered above, but also developed with Operator and Division using the following criteria: proximity to mine/subsidence/impact area; geology; flow (determined with baseline spring and seep survey); and access. Also discussions in AppendA-1 Vol. 1 and Vol.2 (1996 PHC)

The following are specific comments keyed to specific portions of the MRP text:

Page 2-10a, third paragraph.

Provide a reference to the study and report on in situ stresses along the faults.

Page 2-29a, first paragraph

The potentiometric surface cannot be defined with only 2 data points. A minimum of 3 data points are required to define a potentiometric surface. Re: Those are the only two wells in the North Lease, however other wells located south of the North Lease support the data (provide additional data point for the potent. Surface)

The first paragraph on page 2-29a states there appears to be a hydrologic disconnect between the Winter Quarters area and the area to the south, due to an east-west fault. Thus, the well (third data point) located to the south cannot be considered valid in defining the potentiometric surface in the Winter Quarters area. The potentiometric surface defined by Skyline appears to be pure speculation unless other supporting data are provided.

Page 2-51d, second paragraph

Consultation of mitigation measures for a water loss must also include the Forest

Service, the surface management agency. Re: Is FS asking for this statement? Comment does not belong in that section (2.5.2 Mining Impacts on Water Quantity). More appropriate in following section (2.5.3 Alternative Water Supply), paragraph 3 pg 2-51e when discussing impacts to water.

Pages 2-63c to 2-63d, seed mix table.

Species changes can only be made with the concurrence of the botanist of the surface management agency. The term "qualified botanist" is too vague. The Division is not sure what is requested to replace "qualified botanist"? Is it 'the surface management agency, USFS, Manti-LaSal USFS?

Yes. Species changes in the seed mix could impact the non-coal resources of the area, so they should only be made with the concurrence of the surface management agency.

Page 2-63e, forth and fifth paragraph.

Be consistent about name Winter Quarters instead of North Lease.

Page 2-71, third paragraph

The FS must also be involved in establishing sampling intervals for macroinvertebrates.

Below are general points covering their plan to monitor aquatics. The Division will request that the Permittee consult with the Division and USFS for future monitoring procedures and scheduling.

Macroinvertebrates

Overseeing party: Division.

General objective: Survey macroinvertebrates in Winter Quarters and Woods streams.

Frequency of task: Two times a year (fall and spring) for two consecutive years and then every three years or for a period determined by the Division and other agencies until data supports a population trend. Must conduct the surveys two years before longwall mining and at least two years after mining and when subsidence ceases in the area.

Status: On going.

Required reports: Provided with the Annual Report to the Division.

Citation: MRP page 2-71a.

Fish

Overseeing party: Division

General objective: Survey fish in Winter Quarters and Woods streams.

Frequency of task: Two times a year (fall and spring) every third year beginning fall 2002 and spring 2003.

Status: On going.

Required reports: Provided with the Annual Report to the Division.

Citation: MRP page 2-71b.

Pages 2-71 to 2-17d.

The methods discussed for macroinvertebrate surveys and analysis of the data in James and Burnout Creeks, Winter Quarters Canyon Creek and Eccles Creek are not consistent.

The Permittee submitted the macro surveys in a binder "Skyline aquatic monitoring 1997-2002" (Division pic room).

"The permit describes the sampling program as follows: Multi-pass electrofishing to estimate fish populations will be conducted in October for two consecutive years and then every three years thereafter. The fish surveys will be done in the fall. A macroinvertebrate study of James Creeks will be conducted twice a year for two consecutive years and every three years thereafter. The surveys will be done in the spring and fall."

The 2002 macroinvertebrate report provides a summary of the data taken to date. It appears that sampling actually began in fall of 2001 and not 2000. For 2002, the contractor sampled in the spring and fall. To complete the two full years of required sampling, the Permittee must sample again in spring of 2003. Spring of 2006 is the timing for the first of the "every third-year" required sampling of macroinvertebrate.

The 2002 annual report did not include data for Yellowstone cutthroat fish or any other fish. The Permittee committed to sampling fish in the fall and must initiate the approved survey requirements. The Permittee must sample in the fall for two consecutive years and then every three years thereafter. Include the survey results in annual reports or as appendices to the MRP

Dennis Shiozawa of Mt. Nebo Scientific, Inc. conducted the macroinvertebrate and fish surveys for 2002 and 2003.

Macroinvertebrate survey for Eccles creek: Required and submitted as indicated in Annual Report 2002 cover sheet. This report covers the 2002 results of a benthic invertebrate monitoring program. The intent of the program is to biannually evaluate the impact of mining subsidence on macrobenthos in Eccles creek.

Page 2-104i, Herpetofannua

This section should include a discussion on the spotted frog and boreal toad (conservation agreement species). State whether there is potential habitat, or if these species have been found in the area.

Below is from an email (9/13/04) from the Division to Craig Walker. If the FS has additional comments for me to add, please let me know.

One of my deficiencies was for the Permittee to place in their MRP (not just some verbal agreement) that they will conduct amphibian surveys one year prior to subsiding stream

channels. If you want more information included in their plan, let me know and I'll see if I can add your request.

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