

October 20, 2003

TO: Internal File

THROUGH: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Jerriann Ernstsens, Ph.D., Environmental Specialist/Biology

RE: Technical Field Visit, Prior to Undermining East Fork of Box Canyon, Canyon Fuel Company, LLC., SUFCO Mine, C/041/002

Other Attendees: Division – Dave Darby, Steve Fluke
SUFCO – Mike Davis, Chris Hansen
SUFCO consultants – Patrick Collins, Erik

Date & Time: September 22 and 23, 2003, morning and afternoon

PURPOSE:

The Division visited the east fork of Box Canyon at the SUFCO Mine on September 22 and 23, 2003. The Permittee will undermine the east fork of Box Canyon in November of 2003. It is expected that certain areas of the east fork will subside. The primary goal of the field visit was to assign subsidence and vegetation monitoring locations as well as video tape the entire east fork stream channel.

FIELD OBSERVATIONS: SEE IMAGES 09042003 IN DATABASE. The Division did not take additional images other than those taken on 09042003.

ALONG EAST FORK OF BOX CANYON

The Permittee will undermine the east fork of Box canyon and subside certain areas of the stream channel.

Prior to the field visit, all members met at a picnic area in Emery. At that point, the Division had drafted a proposed monitoring schedule and plan for SUFCO. We discussed BLM

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and USFS comments to the plan. The USFS had requested additional vegetation monitoring times as well as macroinvertebrate monitoring. SUFCO believed that the area would be impacted to two years.

On September 22, we started at Joe's Mill pond, walked to the east fork channel, and then walked along the channel to spring 217. On September 23, we started at the confluence of the east fork of the east fork. Our vehicles were parked just above and to the west of the confluence. We walked from the confluence to spring 217. At spring 217, we hiked up the eastern slope to an archeological site then across the slope to springs 215 (2 discharge sites), 216 (2 discharge sites), and a new spring (1 discharge site). We hiked along the channel edge to spring 105, then back to Joe's Mill pond.

Over the two-day period, the Division and SUFCO assigned 14 monitoring sites. SUFCO staked all sites. The sites are titled *EFB1-EFB14* (East Fork). Mike Davis video taped all sites, while all participants provided the audio. All of these sites are for water and subsidence monitoring. Most of these sites are also for vegetation monitoring and few for macroinvertebrate monitoring. Patrick Collins will also monitor vegetation at previously assigned monitoring locations.

The upper portion is intermittent and the lower stream channel is perennial. Flow on this day was lower than on September 4, 2003. Water was clearer within the black hawk formation than within the castle gate formation. There are many riparian plant species, few macros, and evidence of wildlife along the stream channel. Wildlife included bear and bob cat tracks, and bear scat and tree markings.

EFB1

This monitoring point is associated with Joe's Mill upper pond. The mine plan shows this area is over 5th left panel. This pond has an associated spring. The spring is near the hillside and south-southeast of the pond when sanding at the head of the pond (east). The pond was murky with algae. Patrick noted the riparian plants as sedge, rush, red top, carex, and ranuculus. Patrick noted the upland plants as ponderosa, Engleman spruce, aspen, and fir.

There is another pond approximately 200-300 feet below the upper pond.

As we approached the east fork, the habitat changed to slightly drier plant species such as, big sagebrush, potentilla, and rose.

EFB2

This monitoring point is about 100 feet below the second pond. The mine plan shows this area is inside the head gate of the 4th left panel. At this point, the dam of the second pond is

visible. Patrick noted the plants to include big sagebrush, cinquefoil, rush, coyote willow, and Kentucky bluegrass.

Below EFB2 is the confluence between the sawmill and Joe's Mill pond. This confluence was dry unlike on September 4, 2003.

EFB3

The mine plan shows this monitoring point is over the 4th left middle and edge of the gate road. Patrick noted the plants as ponderosa, Engleman spruce, aspen, big sagebrush, Kentucky bluegrass, lupine, red top, and carex. There was no water in the stream on this day unlike on September 4, 2003.

EFB4

This monitoring point is in a narrow channel where the stream is not yet perennial. Water was present, but flow was low – possibly 0.25-1 gallon per minute. The stream bank was very wet from colluvial seepage. This site had a number of different macroinvertebrate species. There was also a dead Mormon cricket in the water. Patrick noted the plants as ponderosa, Engleman spruce, aspen, big sagebrush, rose, Kentucky bluegrass, red top, rush, willow, and carex.

EFB5

This monitoring point is not in the perennial portion and water was not present on this day. The sandy-silt in the stream channel bottom was very deep. The hillside was wet from colluvial seepage. Patrick noted that the vegetation community appears young. He explained that low stability was probably because of colluvial seepage. Plant species were similar to EBF4.

The perennial flow begins approximately 100 feet below EFB5 monitoring point.

EFB6

This monitoring point is also water-monitoring site 106 (SUFCA). The stream at this point is in the perennial portion of the east fork. Plant species were similar to EBF4.

EFB7

This monitoring point is about 200 feet below the confluence of the east fork of the east fork (EFEF). Flow had increased from above because of the addition from the EFEF. Flow was approximately 6-8 gallons per minute. The mine plan shows this area is on the edge of the gate

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row. SUFCO expects this area to subside. The channel bottom is bedrock of the castle gate formation.

EFB8

This monitoring point is associated with spring 217, which the 3rd left panel will be over spring 217. Spring 217 is the only spring that had its discharge site within a few feet of the stream. This area was also where rocks and boulders had recently fallen from the cliff walls. Patrick noted the plants in the spring alcove to include liverwort, algae, fern, moss, horsetail, sedge, violet, ranunculus, penstemon, aspen, spruce, rose, fleabane, snowberry, and juniper.

End of day 1

EFB9

This monitoring point is in the black hawk formation with a huge castle gate outcropping. Flow was approximately 10 gallons per minute. The hillside was very wet from colluvial seepage and had a huge population of horsetails. Other species included aspen, spruce, rose, rabbit brush, geranium, willow, and false Solomon seal.

Bear scat.

EFB10

This monitoring point is just below the 2nd large pool. The drop of the associated fall was about 2-3 feet high and 10' wide. The channel bottom was sandy-silt mixed with bedrock. The plant species were very similar to EFB9.

We decided not to monitor the pools because the bottoms were so sandy, which is supposedly poor habitat for macroinvertebrate (Chris Hansen).

Below EFB10 was the 3rd large pool. This pool was about 3 feet wide by 3 feet high. The bottom was very sandy. The hillside was wet from colluvial seepage.

Bear track.

There was a large crack in the bedrock.

Birds included raven, Clark's nutcracker, ruby crowned kinglet, and chickadee.

Below EFB10 is the 2nd long "stair-case like" water fall. This fall-like structure was approximately 100 feet long by 10-15 feet wide.

EFB11

This monitoring point is associated with spring 214 where the discharge site begins at an archeological site and enters into the stream channel within the black hawk formation. The channel at this spring junction included the largest fall and pool. The pool was about 9" deep and 2.5' wide on this day. The fall was about 8 feet wide by 2 feet high. The vegetation at the spring junction included geranium, birch, redosier dogwood, rose, twin berry, snowberry, willow, and orchid.

Spring 214 was the last of the springs along the east fork. The hillsides leading to the confluence of the east and main forks are supposedly drier (Mike Davis). The discharge site for 214 was approximately 700 feet above the stream.

At EFB11, we hiked up the hillside to the discharge site of spring 214. From there, we continued south towards the remaining spring discharge sites: 214, 215, 216, and an unnumbered spring.

EFB12

This monitoring point is associated with spring 215 that has two separate discharge sites. The discharge sites were approximately 20 feet apart and about 500 feet above the stream. Flow was about 1-2 gallons per minute. Flow appeared to remain on the surface to the stream. Plants included aspen, twin berry, redosier dogwood, rose, willow, spruce, horsetail, grass, ranunculus, and geranium.

EFB13

This monitoring point is associated with spring 216 that has two separate discharge sites. Chris expects that the flow for this spring should increase two-three fold because of subsidence. Plants included aspen, twin berry, redosier dogwood, juniper, mountain lover, willow, spruce, horsetail, grass, false Solomon seal, and geranium.

EFB14

This monitoring point is associated with a spring found that day. This spring has a single discharge site that is located approximately 50 feet south from EFB13. The discharge site was about 150 feet above the stream. Flow appeared to remain on the surface to the stream. Plants included aspen, spruce, horsetail, grass, ranunculus, and geranium.